ZOFNASS PROGRAM
FOR SUSTAINABLE INFRASTRUCTURE
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FLORIDA WIND FARM – URUGUAY

Figure 1: Wind Farm Florida
Sources: Polesine S.A

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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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1. PROJECT DESCRIPTION & LOCATION

The Uruguayan Wind Farm "Florida" is developed and built through Akuo Energy and Polesine S.A. as part of the Uruguayan national effort to diversify energy sources and to decrease the dependence on fuel imports. As a baseline scenario, the project activity will help displace CO2 emissions from electricity generated in fossil fueled plants. Uruguay's CO2 greenhouse gas (GHG) emissions are expected to effectively decrease through its national strategy to replace fossil-fuel dependent carbon intensive power plants with renewable energy sources.

Polesine S.A, a Uruguayan company owned by Akuo Energy, constructed the Wind Farm Florida through a 20-year contract. The Florida Wind Farm has 21 turbines with a total capacity of 50.4 megawatts and uses NORDEX equipment with the latest N117 model wind turbines, each having a capacity of 2.4 megawatts. However, only 2.0 megawatts will be utilized due to national regulations and from the 21 turbines all together only 50 MW will be utilized. In 2011, the Uruguayan UTE (National Administration of Electricity Plants and Transmission) publicly solicited a request for proposal (RFP) from different bidders to install 30 to 50 MW wind farms. The national government only needed 50 megawatts of energy generated into the grid. The purpose of the wind farm is to diversify the national energy matrix towards more sustainable sources. From the total investment, 40% or approximately US $80 million will be invested in local production. Akuo Energy generated a national strategy to employ local people from the area by nationalizing the wind farms tower construction by using local manpower to perform all necessary works to transform the empty tower sections into fully equipped, stackable pieces ready to be simply connected. The implementation of the project will include the following sectors: logistical services, professional services (technicians), civil engineering, monitoring and evaluation.

The European Development Finance Institutions Proparco, DEG and FMO have invested through financing credits in the Florida Wind Farm to integrate it to the Uruguayan goal of increasing renewable energy dependence. The French company Akuo Energy, is a private power producer that invests in renewable energy projects across 10 countries. Its business strategy is to utilize Uruguay's commitment to wind power as another source of energy (diversification of their grid) by 2015. Florida wind farm represent the strategy following the model of the French company as a way to establish their renewable energy technologies in the Latin American region. The company has managed to work with UTE and with Polesine, SA to run 21 turbines each 91 meters high using the company's latest NORDEX platform in Florida, Uruguay.

The existing land-use in the project area is predominantly set for agriculture. The land-use and rates of degradation are not affected by the project activity. The evaluation of the

environmental assessments conducted on the project and presented to the Ministry of Housing (DINAMA) identified "no major impacts during construction or operational phase. Under the construction phase, activities such as moving soil for roads, digging the foundation, and increasing traffic were assessed and determined as having little to no impacts. Under the operational phase the noise, landscape ecosystem alterations and socio-economic implications were assessed as having no deleterious effects.

The most environmentally sensitive issues are endangered species and the potential of bird and/or bats deceased due to the wind farm's location. There are 200 different types of species registered in the area of Florida and observed to navigate within the prairies of this region of Uruguay. The general landscape is composed of agro-ecosystems within extensive prairies.[1] The area between San Gabriel, San Ramon and Florida are used for milk production and extensive cow farming. A 16.5% of the population in the area is characterized as elderly (with 65 years or older).[2]

The Uruguayan energy matrix is mainly composed of 1.114 mega-watts of thermal energy and 1.538 megawatts of hydraulic energy. In 2010, the Balance Energético Global (DNTEN) calculated that the Uruguay's energy mix was composed of 65% hydropower energy, 12% fuel oil, 10% gas oil, 10% diesel and 1% natural gas/wood/wind. Likewise, in 2010, the installation capacity of the Uruguayan grid was of 2,962 megawatts.[3] This wind farm avoids 62,782 tons of CO2 every year (equivalent to 29,437 households emissions), and is currently in operation with a 20 year contract. Under this scenario, the national government agreed that by 2015, 500 megawatts would be produced and incorporated into the national integrated energy system (UTE). The Florida Wind Farm will produce 50 megawatts of the totaled 500 megawatts expected in 2015. On the international scene, the United Nations Framework Convention on Climate Change documents the project as part of the Climate Development Mechanism (CDM), being eligible to receive credits under the Kyoto Protocol.

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. In this case study, the infrastructure to be assessed is the wind farm from La Florida in the San Gabriel region, Uruguay.

[1] CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Octubre 2010, 22-28
[2] (CSI, EIA, Oct 2010: 29-33).
[3] (PDD- Doc 12122012)

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 if the qualifications for each level of achievement have been met for a particular credit. In each of the five categories there is a specific 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[4] and Zofnass Program[5] websites.

3. QUALITY OF LIFE CATEGORY

Envision's first category, Quality of Life, pertains to potential project impacts on surrounding communities and their respective wellbeing. More specifically, it distinguishes infrastructure projects that are in line with community goals, clearly established as parts of existing community networks, as well as consider the 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 further divided into three sub-categories: Purpose, Wellbeing, and Community.

Purpose

Within the Purpose category of Envision, the assessment looks for whether the project's choice was the best option for its goal towards wind energy. Some important areas from this subcategory include creating functional solutions to social needs like community education as

[4] www.sustainableinfrastructure.org

[5] www.zofnass.org

well as building outreach, knowledge and capacity.

A wind farm with 21 turbines is within the smaller scale infrastructure projects in Uruguay. The project has matched its small scale with the sparsely populated area in Florida, neighboring San Gabriel. The infrastructure's scale is pertinent to choosing a site that can meet the community needs. When locating the project, there were several criteria that the project team took into consideration. The first approach was to make sure the project was developed in a rural area with few surrounding homes. The latter ensured few interruptions to the lives of local people. The second approach was to avoid communication interruptions between all the parties involved and create additional infrastructure, if necessary. In addition, the wind farm targets successful local capacity building, employing 80% of local Uruguayans, which total 200 newly created jobs. The development of the metal structures of the turbines and other turbine related materials are also being manufactured and built in Uruguay. These new technologies have created capacity building programs, which enhance the health and safety of associated practices. The project has hired outside auditors to perform environmental & social reports.

The project analyzed the needs of the community and took an active participatory approach working together with the nearby school. Akuo Energy and Polesine S.A. invested in new infrastructure and long-term capacity building. The community has 45 homes with a population composed of 51 men and 33 women. These are being described here as an aggregate but surrounding the site and land zones.[6] The town has a rural school, a police station and 7 homes that exist around the site. It is located at 8 km from the site, and has 20 homes. In addition, San Gabriel, the neighboring town, has a set of constructions that by 2010 had not been populated or sparsely populated.[7] According to this community needs, creating a school program that can extend over time would have a long-term effect. Also, developing projects that invite outside communities to learn about the benefits of renewable energy, while contextualizing its effects on the country's economy, health and overall well being is crucial for creating a breakthrough in renewable energy expansion at a national scale. The more that the existing infrastructure serves as a stepping stone for the country's own understanding of wind energy, the more expansive its effects can be on the broader economy of the country's overall health.

Community

The Community subcategory targets the understanding of the relationship between infrastructure and the surrounding comfort, health and mobility. In wind farm projects, noise, mobility and transportation during the construction phase are the most pertinent hazards for a

[6] (EIA, 31)
[7] (EIA, 31-32).

wind farm and should be addressed to ensure a healthy and content community.

Wind farms' potential negative effects on humans are commonly associated with the noise from turbines. Noise management is achieved through preventative and corrective maintenance of the park. A report assesses that optimal turbines ensure the least amount of noise. In addition, the project has a "Noise Management Plan,"[8] which verifies and monitors turbine noise every six months for two years. The noise is monitored from the homes identified as potentially being affected as well as from the nearby school.[9] In terms of light pollution, there is no evidence that there is any real effect to the natural environment.

The environmental impact evaluations observed that the wind farm has relatively small impact on traffic creation in the nearby routes and ensured a satisfactory transit in the area as well as on other important national highways.

The design of the park was changed after a report determined that the initial design and location would produce noise that would negatively affect the surrounding population. Wind farms cannot achieve soundproof levels with current technologies. However, they can mitigate the deleterious effects by complying with local laws and regulations. The inspections and enforcement go above and beyond what is required. The project team could benefit from giving out memoranda, minutes of meetings with managers and operators regarding access. The team studied congestion during the construction phase, which later led to planning ways to minimize the congestion. National and local regulations were implemented, such as: physical barriers between sidewalks and certain roadways as well as access ways,[10] lights, reflective materials, and adequate signage, with very strict regulations for incoming and outcoming automobiles (registered and documented).[11]

Wellbeing

Envision measures the wellbeing category with context-sensitive design. Here, the built environment and all its components should consciously use design as a tool to connect the natural local character of the area while minimizing the visual effects of development and above the surface renewable energy sources. Wind farms must make a greater effort to disguise their presence in comparison to other renewable energy infrastructure projects. Turbines have to be engineered for best results and high performance energy outputs. This

[8] EIA, 31-32
[9] Ibid
[10] (EIA Oct 2010, p. 185)
[11] Ibid, p. 185

section must integrate the turbine's presence in rural greenfields while acknowledging the importance of national patrimony, enhancing the local character and public space.

With regards to national patrimony, the team performed excellently in identifying opportunities in nearby towns to do similar public space improvements. In *Santa An*a, and *Costas de Santa Ines*, the national patrimony is protected by law and suffers from "boleadores," which are stones used by indigenous communities two hundred years ago. A team of experts investigating the effects of *boleadores* described these in a report. It is recommendable to have an active plan to find creative ways to improve this issue and create art or cultural space from these materials. This process ensures that the wind farm actively finds spaces to introduce cultural events and thus gives back to communities. Wind farms often times have negative after-effects that have been caused by the installation of the wind farm in the nearby area, therefore, special attention should be paid to this aspect.

Land changes from the development of roads for the trucks and turbines are potential sources that could destroy pictograms. Therefore, finding these before land shifts can save Uruguayan patrimony. However, there are no pictograms in the site. The project team has hired a preservationist, an archaeologist, and has documented the archaeologist's findings on potential damage to the area's archaeological artifacts. All regulations were identified and key stakeholders were asked to comply with surveys. The national law requires some of these steps to ensure patrimony is safely guarded. Since the artifacts and pictograms can be permanently destroyed through land movements, the team tested the area to find archeological sites, where some were found just few kilometers away.

4. LEADERSHIP CATEGORY

Leadership 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 sub-categories: Collaboration, Management, and Planning."

Collaboration

This category looks into the organization and external references to identify a large scope of stakeholders and engage these findings within the process of developing the infrastructure. Leadership roles within the organization are essential at accomplishing this goal. Continuous

meetings and communication are key aspects that lead to meaningful collaboration. The goal is to create synergies in a holistic system.

In this subcategory, appropriate business processes are identified to successfully monitor, control, and mitigate the impact that a given project has on the natural environment. To achieve the latter, contingency management plans, impact assessments, monitoring, follow-ups, and auditing systems and plans have been set-up. All of these have sustainability components that align with Uruguayan national regulations concerning sustainability goals as well as the company's own sustainability goals, which include a triple bottom line aspect.

Collaboration is achieved through close work between the director of construction and the environmental manager overseeing the work of 200 people who will be divided into the following: subcontracted companies and operators during the construction phase. The organizational structure is setup to achieve the sustainability goals set-forth through the planning of the Environmental Manager. The policies and goals are aligned with Akuo Energy and Polesine S.A.'s objectives and goals as these all work in parallel. The Environmental Management Plan-C serves to ensure the proper management among the people working in this matter to achieve these goals.

From the stakeholder perspective, the project has developed a successful engagement process. The project leader uses "AA1000 AccountAbility Principles"[12], which according to Pricewaterhouse Coopers (PwC), leads the way in assuring standard in design of stakeholder engagement processes that involves all stakeholders to create sustainability based reporting mechanisms.

Management

Sustainability is accomplished through meaningful and complete management. Envision crediting seeks great management to accomplish mechanisms to save money, achieve triple bottom line, sustainability and life project expansion.

In Florida Wind Farm, management is accomplished based on the project's smaller scale. The management team is composed of 2 positions-- the Construction Manager and the Environmental Manager. They must coordinate with one another and direct all goals of the wind farm project. Contracting out services to national companies is done under their administration. The Construction Manager is in charge of the coordination with the Environmental Manager to contract companies that are in charge of detailing and executing the

[12] (SEP 2014:3)

monitoring and maintenance of several procedures. These include the proper management of fuel and its proper disposal, filtering the fuel from water, and fuel storage.[13] Additionally, soil movements must be monitored and checked against the surrounding soil that is unaffected by the construction phase. Any soil that is damaged must be removed and replaced to its original state. All changes are dutifully registered in inventories that report delivery to DINAMA and the Lenders.[14]

The Environmental Manager is in charge of establishing a schedule that is frequent enough to check all equipment and machinery related to the wind farm at the operational and construction phases.[15] In addition, all professional transport vehicles such as trucks or cars must be checked when coming in and out of the site. All machinery must adhere to a strict maintenance plan whereby visual inspections oversee the proper use of the equipment. If mishandling or disruptions are observed, the oversight is meant to follow corrective measures immediately to ensure durability of the equipment.[16]

In order to construct 21 turbines to accomplish the assemblage of the turbines and its on-site anchoring in Florida, the project team had an Environmental and Social Action Plan (ESAP). Also, an Environmental and Social Management Plan for the construction phase, with three contractor companies managing the different focus areas. Jayme Da Costa managed the design, provision of all the civil works and electric work. Nordex was in charge of putting in place and assembling the 21 turbines, which included logistics associated with mechanical and electric installations. Finally, LKSur managed all project management and supervision of contracts, ensuring all contracts are being fulfilled.[17]

An area that needs to be enhanced is the identification of "by-product synergy opportunities". The project team could collaborate with nearby facilities for acquisition of unwanted materials. By targeting nearby facilities that offer potential opportunities, the project team should attempt to incorporate industrial *ecological principles*. There is a need for the project to document project-wide systems integration. Assessment of the infrastructure and information to obtain their goals are available, but a direct view of an integrated system of infrastructure with other supply-chain systems, waste, water or energy systems is missing. Maps, aerial

[13] (EIA 2010, p 201)
[14] (EIA 2010, p 193)
[15] (EIA 2010, 193-200)
[16] (EIA 2010, 199)
[17] Pinon, Andrea, "Environmental & Social Report 2 Florida Plant 50 MW." Dec. 2013, Florida- Uruguay, Polesine S.A. – Parque Eólico Florida, p. 2.

photographs, and spatial rural plans of roads after the park was built are necessary. In essence, a wind farm is meant to look beyond its own site's boundaries to integrate with the surrounding areas.

Human settlements are also monitored through surveys, group interviews, focus groups, random questionnaires and other forms of participatory methods. The plan ensures enough active participation with consistent communication.[18] Noise as well as bird populations are constantly being monitored and registered for any changes in these populations or noise problems.[19] These are important contributions that allow the project to score higher in these respective categories. An initiative that has been noted, as being conscious of the landscape is the project's goal to return the landscape conditions to its original form after the construction phase is finished. The next step is to integrate these on-site conscious efforts with a balance in environmental, economic and social opportunities off-site.

Planning

Planning is about having long-term vision for the project. One important procedure is to understand the regulatory environment in order to streamline all processes involved with developing the infrastructure for the wind farm.

The owner and project team participated in Uruguay's Wind Energy Generators' association. This strong relationship and active participation has led to understanding of all related laws, regulations and policies that affect sustainability practices which will help the project team identify conflicts over current laws and modification.

In addition, the project shows high commitment towards leadership and stewardship in reaching its sustainability goals. However, to achieve the highest scores, the project should provide a separate and concise sustainability plan that goes above and beyond the Uruguayan laws and regulations, and best practices already achieved in private industries.

Innovation and further sustainability is achieved with a 'think outside the box" mentality, which can make the project a leader in the eolic energy industry. The project achieves very high standards and would achieve more if it attempted to look at the wind farm integrated within a holistic system whereby all the actions taking place in the wind farm can be traced to other systems (for example in waste management) around the wind farm. The documentation establishes a hierarchy and system to prevent the potential dangers in noise, visibility and

[18] CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Octubre 2010, p. 210.
[19] *Ibid*, 200

waste, and also has addressed the triple bottom line with documentation that showcases performance. Many of the documents are in the pre-planning stages and therefore any further evidence of performance achievement in waste, water and overall life cycle would greatly improve the wind farm's achievements in this category.

The project manager is able to resourcefully study and examine the correct equipment needed to ensure the longevity of the turbines. Planning is carefully taking place around all the different potential areas, however, there is a need to identify ways a wind farm's material selection could adapt enough to endure changes from temperature shifts resulting from climate change. The scale of the project, choice of location and/or site, as well as the number of turbines allows for the project to be capable of enduring changes in the land-use zoning. The surrounding population increase and any infrastructure needs around the communities can be taken into account to ensure the wind farm can reach its potential life span.

5. RESOURCE ALLOCATION CATEGORY

Resource allocation 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, is 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

Envision takes into account the most efficient use of materials, trying to source materials in close proximity to the site. A life-cycle analysis of sourced materials should be done in order to choose the most appropriate materials for the project. Durable and adaptable materials are also key characteristics in this category.

The best feature of this project is its locally sourced production. The project used 40% of its materials from national resources. Part of the Nordex equipment was developed by materials nationally supplied, which would have been imported otherwise. This decreases the carbon emissions that would have been produced due to transportation of materials, and at the same time helps develop local economies.

While the project accomplishes sourcing 40% of their material nationally, specifics regarding the material and where it comes from were not available. Inventories pointing towards specific

amount of recycled materials or recycling content of the materials being used were not provided. It is recommended to keep a thorough inventory of the materials used and where they are being extracted. This is linked to the idea of creating a life cycle analysis of each process involved. A life cycle analysis of the materials would include inventories of types of materials, place where they were originally extracted and the amount of distance travelled. The process therefore connects the dots between an initial resource extraction activity and the end product: 21 turbines in Florida Uruguay. Decisions often times change when these processes are viewed and accounted for in this ecological, whole-systems processes. A potential recommendation is to hire an independent party guaranteeing the transparency of the whole process. Those materials that are locally extracted produce less greenhouse gas emissions and may help the local economy.

The project is conscious of construction environmental hazards to soil depletion and air pollution. Therefore when it came to on-site analysis of material use, the project successfully attempted to find mitigation solutions. An example of this was the reuse of soil excavated on roads that served for transportation of trucks bringing the turbines to the site during the construction phase. By reusing the soil excavated for the turbine installation there is an intrinsic use of material.

Energy

According to the CDM Project Design Document[20] there is a 100% increase in renewable energy, which greatly benefits air quality and achieves national goals of an increase on renewable energy dependence. The Uruguayan national grid expects to replace fossil fuels otherwise used with the wind energy, a renewable source.

> "*There is no generation of significant negative environmental impact during the construction and operation of the wind power plant.*"[21]

The above synthesis includes negative impacts associated with transportation of material and personnel. In fact, the project's consumption of energy is very little in comparison to the amount of energy it produces, creating a net energy output that is beneficial to the environment at large.[22]

[20] UNFCC, "Project Design Document form for CDM Project Activities (F-CDM-PDD Version 4.2)", Dec 2012, p. 1-10., p. 12-14)
[21] *Ibid.* p 2)
[22] *Ibid.* p 1-10

The wind farm adds wind-generated energy (50MW) onto the National Grid. It diversifies the Uruguayan national energy matrix mix of energy sources with locally generated renewable energy. The latter benefits the country as it decreases its dependency on fuel imported from neighboring countries, at the same time that reduces the country's greenhouse gas emissions.[23]

To guarantee the highest levels of efficiency, the project commissioned long-term monitoring in the wind farm. Energy sub-meters are used as part of the monitoring system. The team also hired an independent commissioning authority. The meter assigned to monitor the project's energy records every 15 minutes (on average).[24] In addition, the operation and monitoring team reads the meters and separately records energy consumption versus energy delivered to the Uruguayan grid. The team delivers this information to a plant manager who verifies the record keeping and sends the checked data to the CDM Manager, which are recorded on site. The CDM Manager oversees the monitoring of energy consumption and delivery, and calculates the difference between the data delivered.

Water

Under the resource allocation category, the project estimates the effects on water to be negligible. In this subcategory there was little score since the protection of freshwater, reduction of potable water consumption, and monitoring of water systems was not an area where the project focused their attention. Although the environmental impact assessment does have a set of contingencies on how to remove all fluids from the site, the application of a system to filter these fluids and its deposit occurs in areas considered safe. The project does not document the reduction of potable water, and treats water as non-existent on site. There is possibility to reduce any stress on existent waters and therefore a more "whole systems approach" should be engaged and evaluated.

The use of toilets that do not depend on water is one way the reduction of water can be implemented. Another relevant recommendation is to analyze the water related to rainfall and soil erosion pollutants into the waterways. It is important to realize that water exists and is affected by any new design or addition in the built environment.

6. NATURAL WORLD CATEGORY

Natural World focuses on how infrastructure projects may impact natural systems and promotes opportunities for positive synergistic effects. Envision encourages strategies for

[23] *Ibid,* p 47
[24] *Ibid.,* p 47.

conservation and distinguishes projects with a focus on enhancing surrounding natural systems. Natural World is further divided into three sub-categories: Siting, Land and Water, and Biodiversity.

Siting

For Envision, the project site selection process must bridge the potential conflicts between the ecology of the site's geography and the built infrastructure. In this case, the wind farm has selected a great location to place its 21 turbines, taking into account Uruguay's extensive farmland. The site's land use is characterized with little to no adverse geologic features with soil used for a diverse set of uses: eucalyptus fields, thirty year old farmlands with eroded surfaces, artificial pastures, and natural green field landscape.

In fact the choice of using this site was based on a series of factors, one being an analysis of the country's land-uses in combination with the area in Uruguay where there are strong winds in proximity to the national grid. Another key factor that greatly helps the site selection is the fact that the project is located on soil that has experienced an intense level modification due to its intense use due to the milking industry. The San Ramon Region and Florida, specifically, are areas with high amounts of human intervention due to its geographic location and farming potential. Using the depleted and overused soil for a wind farm is an effective use of this apparent greenfield, because it offer renewable energy while using little of the landscapes surface area. The new infrastructure remediates the area's decreasing land value.

Large-scale infrastructure projects, such as wind farms, have the potential of disrupting the area's biodiversity with the turbines causing bat and bird deaths at a higher frequency than usual. However, the wind farm's site location selection has decreased the potential for bird collision as well as the scale of the project. With 21 turbines it has effectively used advanced technology at the small scale to prevent its potential conflict with area's habitat.

Land & water

Wind farms have the potential of disturbing the area's geography, soil and water with pollutants from the construction or operational phase. The development of stormwater runoff management and avoidance of pesticides or fertilizers, limits the potential contaminants that can accumulate in the soil and waterways around the site.

In this particular project, the soil and water has been properly studied, monitored and mitigated with management plans that decrease any potential risks associated with each. For

one, the soil has a solid plan to restore it to its original state after the construction phase, which is achieved through compacting the soil. Compacting is one way to maintain pollutants away from the air. Another way to manage the soil in a wind farm site is to decrease the velocity of trucks entering the site on dirt roads, and making sure all waste and spillages are contained, isolated, disposed outside of the site and in pre-planned waste disposal containers.[25] These two best practices are achieved to avoid pollutants that can have an effect on community's health and/or biodiversity.

An example of a water protection mechanism is their choice of bathroom disposal. The bathrooms are portable stalls that use toilets that dispense chemicals whereby all bathroom waste (human or otherwise) is degraded using a liquid chemical that turns these into a biodegradable contaminant. The contaminants remain odorless and are transported in special trucks and containers once the waste has reached its limit.[26]

Another example of manners in which they ensure water does not contaminate the soil or waterways is through a meticulous plan to ensure all machine repairs are done outside of the site in a specialized room with impermeable floors. An internal drainage system with a filtering container separates oils from grease before these can ever reaches any of the drainage systems.[27] In addition, the cleaning of all vehicles and machinery are carefully done. All fluids are taken to a separate room with specific gutter systems that take all discharge to a metallic container. Any liquids are then filtered in a container that separates oils from water and then recycled or treated with external contractors that are authorized to deal with each specific discharge.[28]

However, when it comes to storm water management the project has yet to develop specific mechanisms that would deal with these effectively. In general all soil and water management systems follow best practices according to environmentally conscious goals. The site selection and these specific plans make the project very conscious of its effects on their surrounding environment.

Biodiversity

Envision ensures careful attention to a site's biodiversity and habitat protection. Infrastructure projects, such as wind turbines, are placed in natural areas, hence potentially majorly affecting

[25] CSI Ingenieros, Plan Gestión Ambiental Etapa de Construcción (PGA), Abril 2012.
[26] CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Octubre 2010, p. 181.
[27] *Ibid,*I p. 187.
[28] *Ibid*, p. 199.

greenfields' biodiversity. Particularly, wind farms can have deleterious effects by potentially creating conflicts between advancing climate change agendas and harming a region's biodiversity through its effects on bird and bat populations. To address the latter, the project has conducted environmental assessments analyzing the area's waterways, diversity of soils and slopes, and determining the types of plants, wildlife with particular attention to the bat and bird populations.

In the EIA, bats and birds were described as being abundant. To study the bat populations, mist nets were places on three separate forests on a boundary around route 12 and 56, which add up to 32 square meters.[29] These were paced for two hours and checked every 20 minutes. For the bird populations, the project used national data to estimate the amount of birds that were available. In addition, 200 species were registered with three types being heavily affected by the wind turbines due to their propensity to fly at an altitude where collision with the turbines can easily occur. The site is located in a natural environmental area that has not been conserved due to the agroindustry uses, which have made the natural habitat to lack endangered species.

One area that the wind farm could improve is developing a holistic perspective of the site relative to its surroundings. While the project seeks to restore the soil and subsoil to their original state before the construction of the wind farm, other activities include restoring the natural landscape to render it more productive. An example of this is restoring soil productivity or yield for farmlands in the region. A potential area of improvement is in viewing biodiversity or environmental groups as important stakeholders for the project. Currently, the stakeholders include the community, governmental agencies, and the nearby town. A broader view of stakeholders could include environmental groups or conservationists. By reaching out to scientific communities, the project could invest in research for innovative mechanisms to have bird populations, mostly affected by the wind farm, to avoid the area. This recommendation is made with the awareness that the industry has yet to achieve this level of scientific research, but wind farm owners could also invest in research on how to best decrease bird and bat collisions. Ignoring the hazards should be avoided. Investing in understanding how bird species could avoid wind farms through innovative techniques known to bird specialists could make a wind farm a true innovator.

Enhancing methodologies and innovative research could ultimately decrease bird and bat collisions with the turbines, and restore the depleted soils that surround this area. Taking the investments made in renewable energy in Uruguay a step further, is to invest in the creation of

[29] *Ibid*

restorative mechanisms for the area's water and land. This would make the project standout and achieve environmental sustainability that could benefit the surrounding forests, agro industry, and overall natural habitat.

7. CLIMATE & RISK CATEGORY

Envision aims to promote infrastructure development 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 sub-categories: Emissions and Resilience.

Emission

The Emissions subcategory looks for a better understanding in greenhouse gas emissions mitigation as well as other air pollutants during all stages of a project's life cycle. Reducing emissions improves the project performance and minimizes short and long-term risks to the life cycle of the project.

A wind farm develops renewable energy, which directly mitigates the effects of climate change based on the reduction of greenhouse gases emissions into the atmosphere. As mentioned in the previous sections, the development of this infrastructure is in itself a step in the right direction. The wind farm also attempts to reduce air pollutant emissions at the construction phase by minimizing the emissions of particulate matter. One of the core strategies implemented in the project for this purpose is compacting the dirt roadways.

In essence, the overall pollutant reduction plans cause negligible pollutant levels at the operation and construction phases as well as by displacing demand for fossil fuels with renewable energy.[30] Polesine and Akuo Energy, though, rely heavily on the integration of renewable energy in the area and the different sites that can be appropriated due to high winds, low populations, and small communities. The project could benefit from using renewable energy to produce a closed loop life cycle.

Resilience

Climate change can have a strong negative effect on the durability and longevity of the

[30] UNFCC, "Project Design Document form for CDM Project Activities (F-CDM-PDD Version 4.2)", Dec 2012, p. 1-10., p. 12-14) , p. 2.

turbines. The project identifies a list of potential environmental hazards but lacks alternative design options in the event that the weather conditions change in the area. These considerations, once taken into the design of the project, can result in achieving long-term adaptability.[31]

There are 120,680.00 tones of carbon emissions being replaced through the clean energy produced by the wind farm. Taking into the account the potential for wind transformations due to climate change, the project can benefit from the climate risk wind change assessments that take wind power shifts into account. The project has yet to provide an assessment of natural hazards in the area, such as heat waves, droughts, rise in temperatures, wildfires, etc. If any of these natural occurrences were to be identified, the project should match these assessments with potential contingency plans for each natural hazard. When assessing man-made contingencies, such as air pollutant emissions or oil spills during construction, the project effectively designed contingency plans, monitoring systems, and management plans that follow best-practices.

In order to achieve higher levels of sustainability, the team should consider extending the research into how wind farm materials could be sourced or produced to the highest technical capability that ensures adaptability to unforeseen climate change consequences. Wind energy can have greater impact by using a profit margin as a way to research wind farm construction and scientific evidence on effective site selection, holistic mechanisms of interaction with the ecology as well as with humans. In terms of other climate related effects, the wind farm is located on a greenfield, which by definition, lacks paved zones and makes heat island effects not significant.

8. SUMMARY AND CONCLUSION

The Florida Wind Farm aligns well with the regulatory environment in Uruguay favoring renewable energy infrastructure. The Uruguay's national government is striving to increase the national energy matrix to 50% renewable resources, which includes wind energy. This evaluation will help guide private wind farm infrastructure projects in understanding the contextual implications and decisions made that can affect the environment, community, and economy of a place. A holistic view of these systems, how they relate with society, the economic goals, national interests and regional goals are essential to draw useful and relevant conclusions.

[31] CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 179-201.

Uruguay's renewable energy market is opening to develop the right set of energy policies for foreign and national renewable energy companies to invest in the country. The country has slowly and progressively increased the diversity of their energy matrix, recently reaching a goal of 50% energy coming from renewable sources. Uruguay relies heavily on hydroelectric power but is increasing their reliance on wind power. The Florida Wind Farm is therefore a great infrastructure project that takes advantage of available subsidies, policies and incentives. The push for renewable energy begun in 2008, with solar and wind farms being built to decrease the reliance on the utilization of fossil fueled technologies. In 2011, the country called for proposals, and 17 wind projects bid for opportunities with a low price of $63/MWh.

The wind farm performs very well in the Quality of Life and Leadership components, as well as within the Energy subcomponent of Resource Allocation. The reason for this is two-fold. One is the nature of the wind farm infrastructure project that allows it to score highest in the energy subcomponent. By virtue of the project and its product—clean energy—the project is successful in these subcategories, specifically in the decrease of greenhouse gas emissions, development of renewable energy and creation of sustainable outlets.

The second reason for performing highly in the Leadership and Quality of Life categories is the project team keen focus on creating economic opportunities in the country, developing a concise and rigorous stakeholder engagement plan, and exploring ways to connect with the few people that live in the surrounding area through a school infrastructure project. These steps show their commitment to connect the wind farm with society, the community's well being and have an overall increase in quality of life. Small gestures such as performing a complete analysis of the views from each home surrounding the site, show the sincere efforts to decrease the impact wind farms have on a person's life, which are significant and show a commitment to social sustainability. It also demonstrates a self-awareness of the positive effects a wind farm produces while realizing the negative effects such as noise, biodiversity effects, and community impact.

In terms of resource allocation, 35% of the total amount of materials consumed has been locally manufactured. Assembly is all conducted on site; likewise all transport, assembly, commissioning and administration are conducted through a national contractor. All technical consultants are domestic as well as the insurance for various potential hazards and employee health insurance is also locally derived. The administration of project is essentially managed locally as well. This is a great first step towards creating an independent economy in Uruguay and utilizing national social capital to further the country's labor force.

Furthermore, the project seeks to find opportunities to develop nearby existing infrastructure. The school in the town needed to be upgraded, and the wind farm project took the initiative to accomplish this. These types of initiatives that take into consideration community and social elements are beneficial and equitable. This type of thinking would also be useful when dealing with water management. In the documentation provided, the project does not put a lot of attention on water systems. While the project design document pinpoints water use as negligible, the environmental impact assessment seems to have contingency systems for the disposal of liquids. In these cases, there is a contradiction between the risk and contingencies that follow a "check-the-box" mentality of safety and hazard conscientiousness and how they seem to view and treat water. The site location seems to be isolated from this natural component but it can still have effects on the environment. Therefore, it is essential not only to develop contingencies for liquid disposal but to also establish a way to view water management as part of the local environment. Scoring and recommending on water-related issues was difficult due to the silo mentality that views water as unaffected and not relevant for wind farms, when in fact it can be compromised.

Envision encourages a whole systems approach, wherein nearby resources can become opportunities for a closed loop operation. For example, the project could potentially use its own energy output to power the school or all of the nearby homes. This would take the project a step further. This leads to the next point, which is developing synergies through integrating natural world, resource allocation, material use, recycling and water/waste/energy in a unified loop. This recommendation again is about approaching a wind farm with an ecological approach to infrastructure. Synergetic systems would involve more coordination between supply chain mechanisms, finding opportunities in the local community and enhancing the connections between these.

It is the site location, selection and scale what makes for an efficient infrastructure project. The scale and location allows the wind farm to connect with the community and develop strong contingency plans. The management of 200 employees is also facilitated. The project overall is impeccable and follows a scientific approach to most of its endeavors. It attempts to develop a national economy and create change in national policies that would enhance renewable energy. These efforts go above and beyond, making this small wind farm a leader in the field. However, the project needs to develop a life-cycle analysis, which would cast a broader net for sustainable improvement.

This report evaluates the sustainability performance of the wind farm Florida project according

to the Envision™ Rating System. The report identifies areas in which the project scored highly, as well as low-scoring areas that represent opportunities for which the project team can learn and improve on in future projects, as they strive to achieve sustainable project design and construction methodologies.

APPENDIX:
APPENDIX A: PROJECT PICTURES AND DRAWINGS

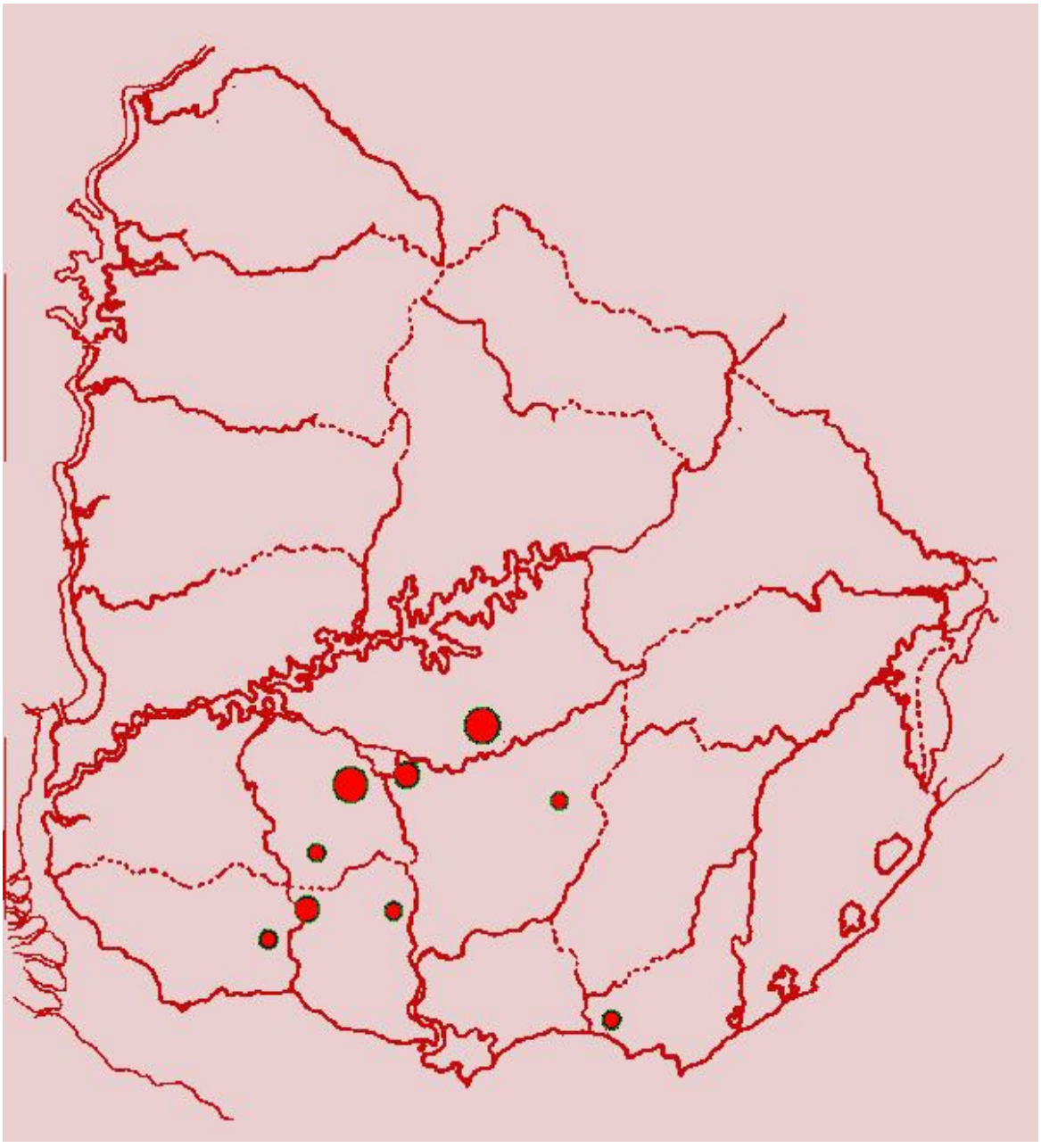


Figure 01: Location of Archeological Artifacts
Sources: CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Octubre 2010, p 48

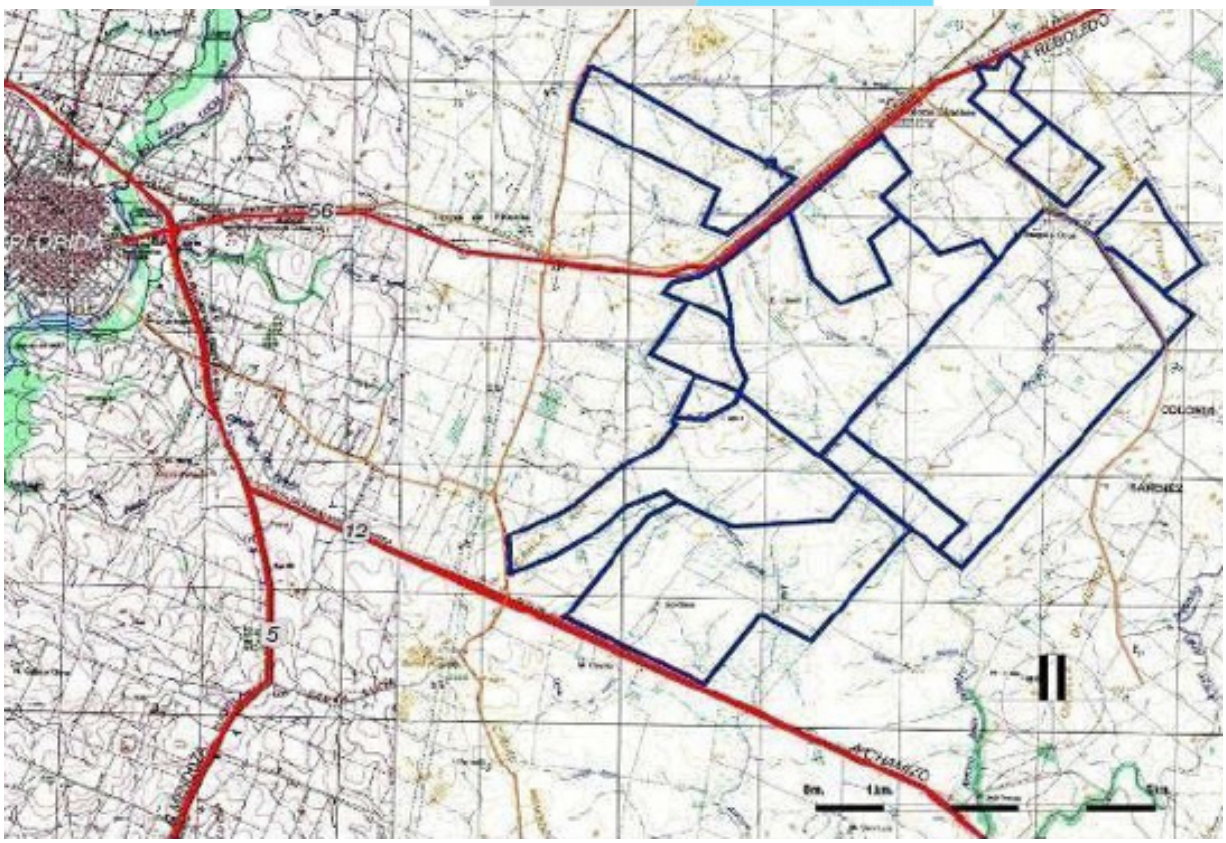


Figure 02: Location map.
Sources: "Parque Eolico Estudio de Impacto Ambiental (EIA)." Octubre 2010.

Figure 3: “Boleadores” found by older relatives of one of the owners several years ago
Sources: CSI Ingenieros, “Parque Eolico Estudio de Impacto Ambiental (EIA).” Octubre 2010,p. 83

Figure 4: Vision Analysis of before and after.
Sources:CSI Ingenieros, “Parque Eolico Estudio de Impacto Ambiental (EIA).” Octubre 2010, p 145

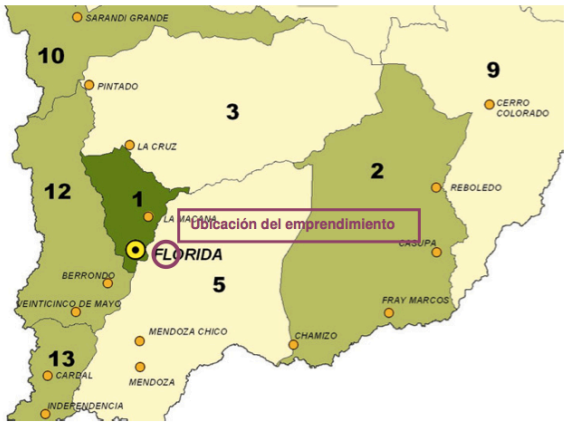


Figure 5: Location of The Wind Farm
Sources :CSI Ingenieros, “Parque Eolico Estudio de Impacto Ambiental (EIA).” Octubre 2010, p. 31.

Figure 6: Perspective views from the roadways and nearby town
Sources: CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 101

Figure 7: The surrounding infrastructure, roads and waterways.
Sources: CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Octubre 2010, p.34, p.34,p .21

Figure 8: Construction of Turbines
Sources: CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 26.

Figure 9: Akuo Energy assembling the turbines.
Sources: CSI Ingenieros, "Solicitud de Autorización Ambiental de Operación (SAAO) – Parque Eólico Florida." Agosto 2013., p.15,

Paisaje con primeros planos indefinidos que se propagan con continuidad hacia un segundo plano predominante

Figure 10: Surrounding grounds and soils
Sources :CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Octubre 2010, p. 58., p. 41,.
CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012,p. 53.

Figure 11: Construction of Materials and Creeks
Sources: CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012., p. 33.

Figure 12: Trimec where assembling the turbines takes place
Sources: Piñon, A, Polesine S.A., " Componente Nacional de Inversión Parque Eólico Florida." Jul. 29 2013, p. 4.

Figure 13: Official Site Visit from different Stakeholders
Sources: Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014., p. 9.

Figure 14: Place where turbines are assembled.
Sources: Piñon, A, Polesine S.A., " Componente Nacional de Inversion Parque Eólico Florida." Jul. 29 2013, p. 5.

Figure 15: Site Trimec where Turbines are Developed
Sources: Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014., p. 9.

Figure 16: Florida Site where the turbines are being anchored into the ground.
Sources: Piñon, A, Polesine S.A., " Componente Nacional de Inversión Parque Eólico Florida." Jul. 29 2013, p. 8.

Figure 17: Putting the turbines together on the site.
Sources: Piñon, A, Polesine S.A., " Componente Nacional de Inversión Parque Eólico Florida."

Figure 18: The interior of the towers where all electric wiring and metallic installations have been completed.
Sources: Piñon, A, Polesine S.A., " Componente Nacional de Inversión Parque Eólico Florida." Jul. 29 2013, p. 4.

Figure 19:Fluids contained to be filtered and disposed in specific containers meant for each filtered liquid.
Sources: CSI Ingenieros, Plan Gestión Ambiental Etapa de Construcción (PGA), Abril 2012, p. 41.

Figure 20: Example of Biodiversity Analysis of birds in the area-affected and unaffected.
Sources: CSI Ingenieros, "Solicitud de Autorización Ambiental de Operación (SAAO) – Parque Eólico Florida." Agosto 2013.,Annex Iv, p 1

Figure 21: A second example of the bird analyses done to the species mostly affected by the wind turbines through potential collision.
Sources: CSI Ingenieros, "Solicitud de Autorización Ambiental de Operación (SAAO) – Parque Eólico Florida." Agosto 2013.Annex Iv, p 2.

Figure 22: Wind Farm Florida
Sources: Polesine S.A

Figure 23: Wind Farm Florida
Sources: Polesine S.A

APPENDIX B: ENVISION POINTS TABLE

CREDIT SCORING

					IMPROVED	ENHANCED	SUPERIOR	CONSERVING	RESTORATIVE
1	QUALITY OF LIFE	PURPOSE	QL1.1	Improve community quality of life	2	5	10	**20**	**25**
2			QL1.2	Stimulate sustainable growth and development	1	2	5	13	**16**
3			QL1.3	Develop local skills and capabilities	1	2	5	12	**15**
4		COMMUNITY	QL2.1	Enhance public health and safety	2			**16**	
5			QL2.2	Minimize noise and vibration	1			8	**11**
6			QL2.3	Minimize light pollution	1	2	4	8	**11**
7			QL2.4	Improve community mobility and access	1	4	7	**14**	
8			QL2.5	Encourage alternative modes of transportation	1	3	6	12	**15**
9			QL2.6	Improve site accessibility, safety and wayfinding		3	6	12	**15**
10		WELLBEING	QL3.1	Preserve historic and cultural resources	1		7	**13**	**16**
11			QL3.2	Preserve views and local character	1	3	6	11	**14**
12			QL3.3	Enhance public space	1	3	6	11	**13**
							Maximum points possible:		**181**
13	LEADERSHIP	COLLABORATION	LD1.1	Provide effective leadership and commitment	2	4	9	**17**	
14			LD1.2	Establish a sustainability management system	1	4	7	**14**	
15			LD1.3	Foster collaboration and teamwork	1	4	8	**15**	
16			LD1.4	Provide for stakeholder involvement	1	5	9	**14**	
17		MANAGEMENT	LD2.1	Pursue by-product synergy opportunities	1	3	6	12	**15**
18			LD2.2	Improve infrastructure integration	1	3	7	13	**16**
19		PLANNING	LD3.1	Plan for long-term monitoring and maintenance	1	3		**10**	
20			LD3.2	Address conflicting regulations and policies	1	2	4	**8**	
21			LD3.3	Extend useful life	1	3	6	**12**	
							Maximum points possible:		**121**
22	RESOURCE ALLOCATION	MATERIALS	RA1.1	Reduce net embodied energy	2	6	12	**18**	
23			RA1.2	Support sustainable procurement practices	2	3	6	**9**	
24			RA1.3	Use recycled materials	2	5	11	**14**	
25			RA1.4	Use regional materials	3	6	9	**10**	
26			RA1.5	Divert waste from landfills	3	6	8	**11**	
27			RA1.6	Reduce excavated materials taken off site	2	4	5	**6**	
28			RA1.7	Provide for deconstruction and recycling	1	4	8	**12**	
29		ENERGY	RA2.1	Reduce energy consumption	3	7	12	**18**	
30			RA2.2	Use renewable energy	4	6	13	16	**20**
31			RA2.3	Commission and monitor energy systems		3		**11**	
32		WATER	RA3.1	Protect fresh water availability	2	4	9	17	**21**
33			RA3.2	Reduce potable water consumption	4	9	13	17	**21**
34			RA3.3	Monitor water systems	1	3	6	**11**	
							Maximum points possible:		**182**
35	NATURAL WORLD	SITING	NW1.1	Preserve prime habitat			9	14	**18**
36			NW1.2	Protect wetlands and surface water	1	4	9	14	**18**
37			NW1.3	Preserve prime farmland			6	12	**15**
38			NW1.4	Avoid adverse geology	1	2	3	**5**	
39			NW1.5	Preserve floodplain functions	2	5	8	**14**	
40			NW1.6	Avoid unsuitable development on steep slopes	1		4	**6**	
41			NW1.7	Preserve greenfields	3	6	10	15	**23**
42		LAND & WATER	NW2.1	Manage stormwater		4	9	17	**21**
43			NW2.2	Reduce pesticide and fertilizer impacts	1	2	5	**9**	
44			NW2.3	Prevent surface and groundwater contamination	1	4	9	14	**18**
45		BIODIVERSITY	NW3.1	Preserve species biodiversity	2			13	**16**
46			NW3.2	Control invasive species			5	9	**11**
47			NW3.3	Restore disturbed soils				8	**10**
48			NW3.4	Maintain wetland and surface water functions	3	6	9	15	**19**
							Maximum points possible:		**203**
49	CLIMATE & RISK	EMISSIONS	CR1.1	Reduce greenhouse gas emissions	4	7	13	18	**25**
50			CR1.2	Reduce air pollutant emissions	2	6		12	**15**
51		RESILIENCE	CR2.1	Assess climate threat				**15**	
52			CR2.2	Avoid traps and vulnerabilities	2	6	12	16	**20**
53			CR2.3	Prepare for long-term adaptability				16	**20**
54			CR2.4	Prepare for short-term hazards	3		10	17	**21**
55			CR2.5	Manage heat islands effects	1	2	4	**6**	
							Maximum points possible:		**116**
									803

**The five innovation credits are bonus points and not included in total point tallies*

APPENDIX C: GRAPHS

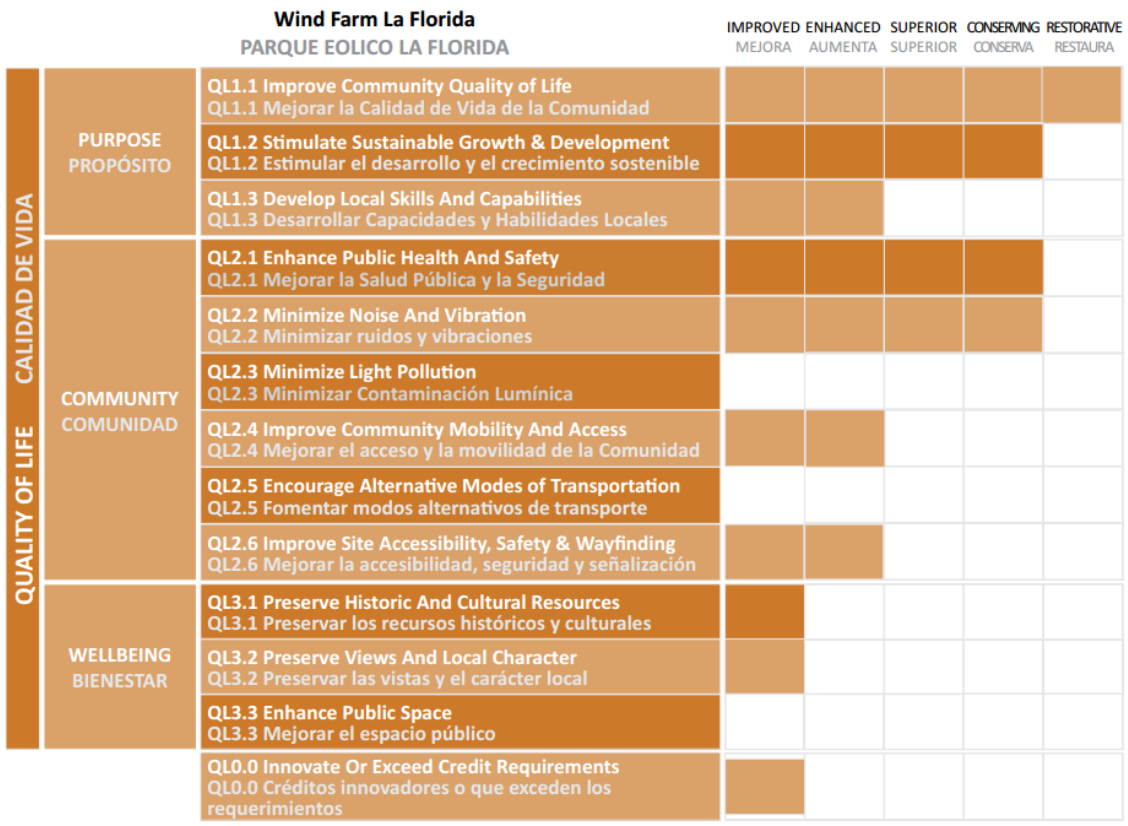


Figure 22: Quality of Life category Summary of results

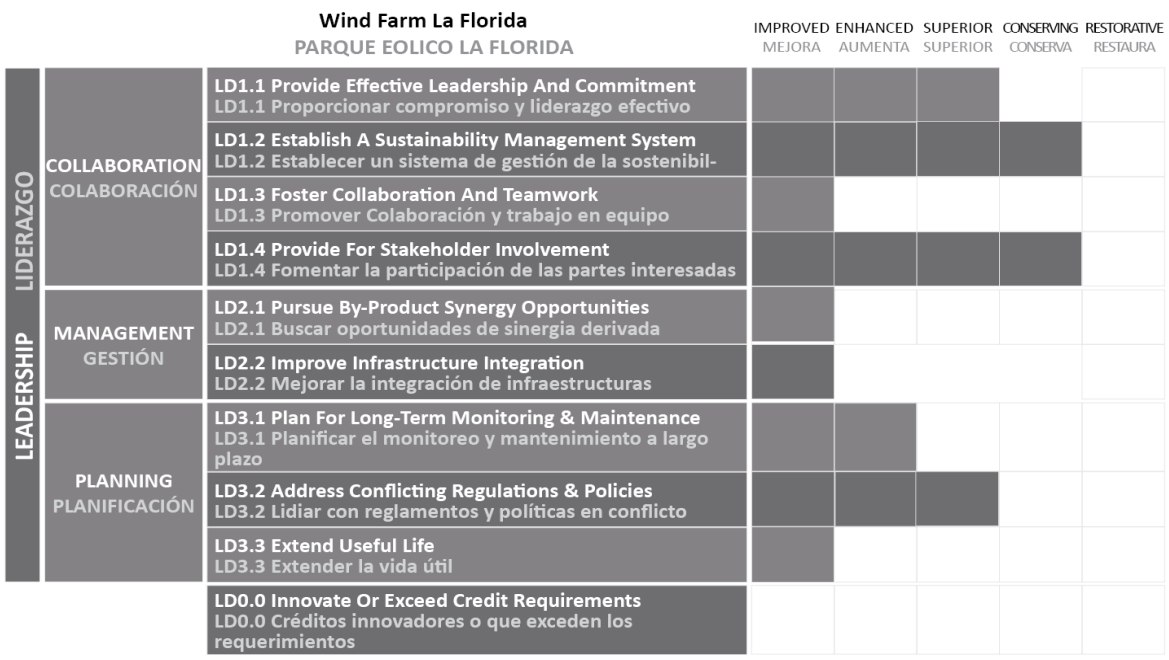


Figure 23: Leadership category Summary of results

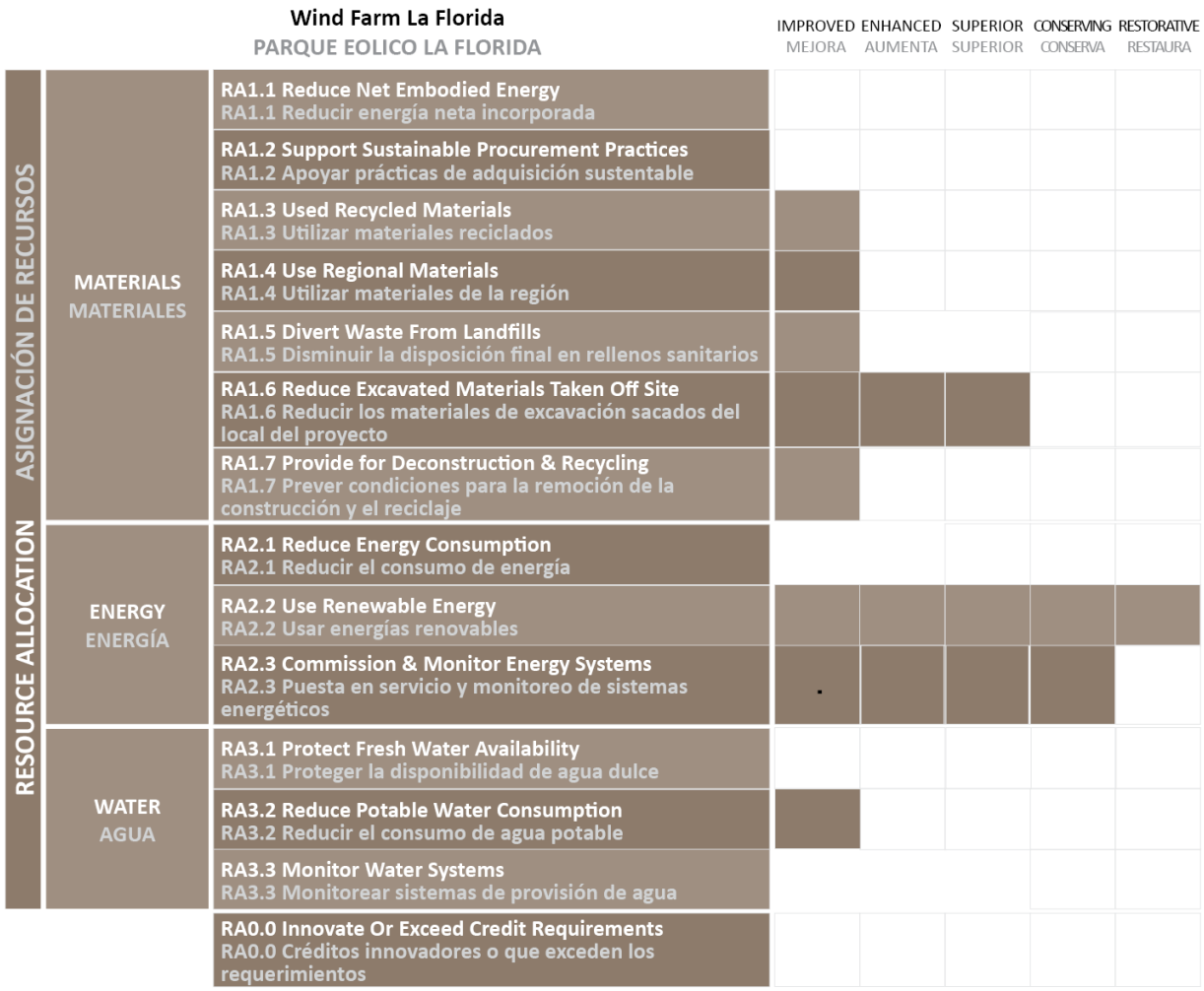


Figure 24: Resource Allocation category Summary of results

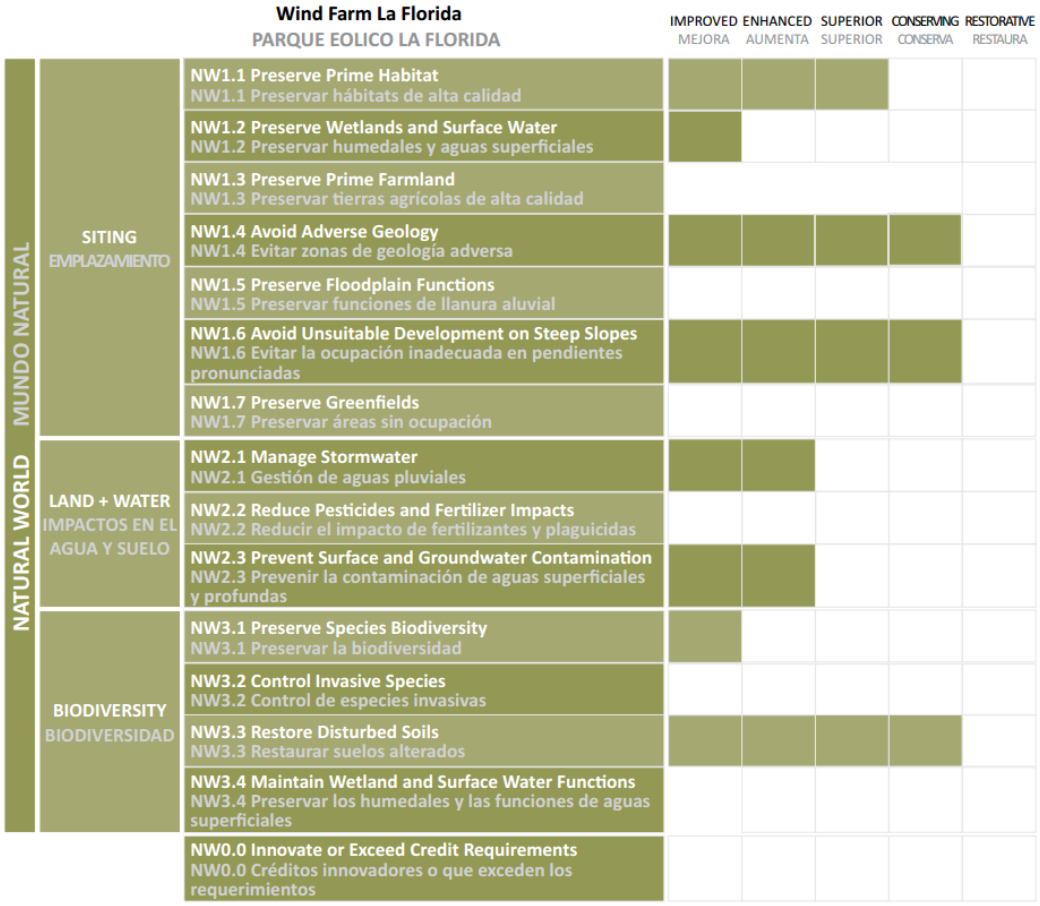


Figure 25: Natural World category Summary of results

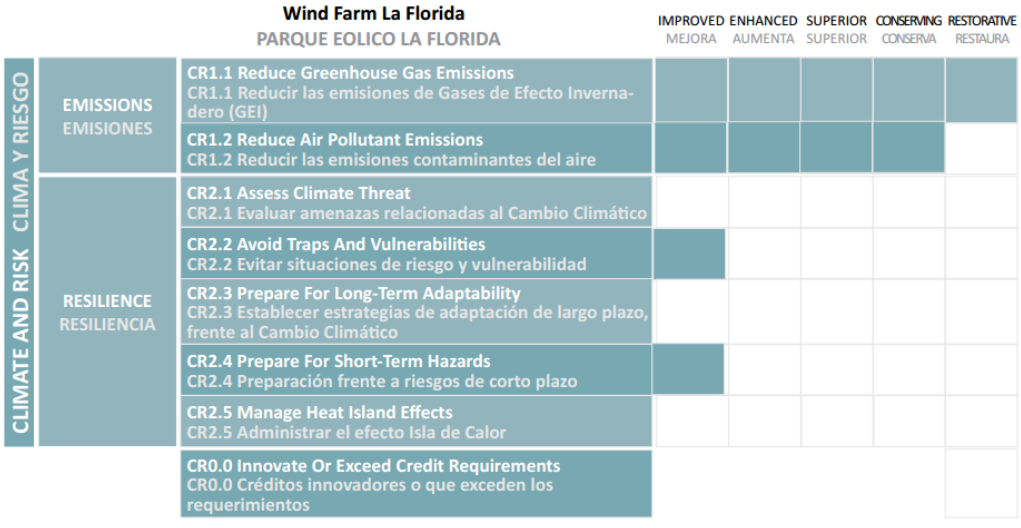


Figure 26: Climate & Risk category Summary of results

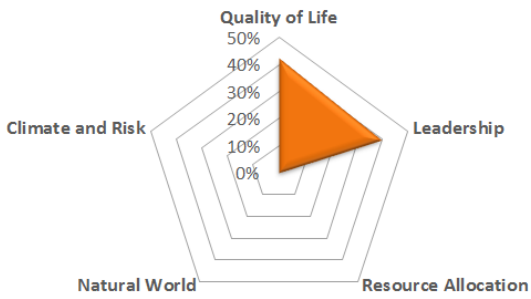
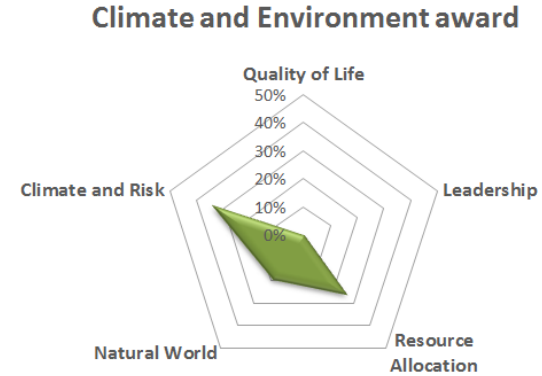


Figure 22: People & Leadership award Summary of results



igure 23: Climate & Environment award Summary of results

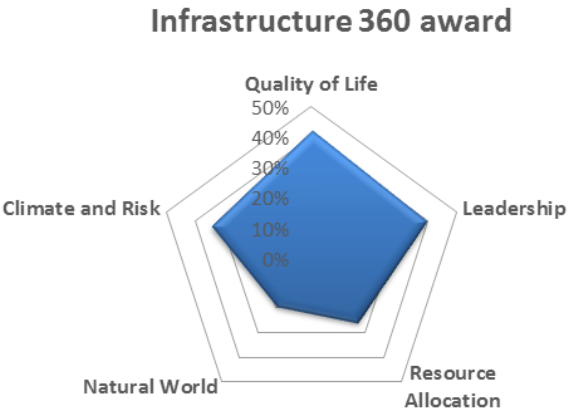


Figure 24: Infrastructure 360 award Summary of results

FLORIDA WINDFAR, URUGUAY				PT.	Performance
1	QUALITY OF LIFE	PURPOSE	QL1.1 Improve Community Quality of Life	25	Restorative
2			QL1.2 Stimulate Sustainable Growth & Development	13	Conserving
3			QL1.3 Develop Local Skills And Capabilities	2	Enhanced
4		COMMUNITY	QL2.1 Enhance Public Health And Safety	16	Conserving
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	1	Improved
11			QL3.2 Preserve Views And Local Character	1	Improved
12			QL3.3 Enhance Public Space	0	No score
			QL0.0 Innovate Or Exceed Credit Requirements	3	
			QL	76	
FLORIDA WINDFAR, URUGUAY				**PT.**	**Performance**
13	LEADERSHIP	COLLABORATION	LD1.1 Provide Effective Leadership And Commitment	9	Superior
14			LD1.2 Establish A Sustainability Management System	14	Conserving
15			LD1.3 Foster Collaboration And Teamwork	1	Improved
16			LD1.4 Provide For Stakeholder Involvement	14	Conserving
17		MNGMT.	LD2.1 Pursue By-Product Synergy Opportunities	1	Improved
18			LD2.2 Improve Infrastructure Integration	1	Improved
19		PLANNING	LD3.1 Plan For Long-Term Monitoring & Maintenance	3	Enhanced
20			LD3.2 Address Conflicting Regulations & Policies	4	Superior
21			LD3.3 Extend Useful Life	1	Improved
			LD0.0 Innovate Or Exceed Credit Requirements	0	N/A
			LD	48	
FLORIDA WINDFAR, URUGUAY				**PT.**	**Performance**
22	RESOURCE ALLOCATION	MATERIALS	RA1.1 Reduce Net Embodied Energy	0	No score
23			RA1.2 Support Sustainable Procurement Practices	0	No Score
24			RA1.3 Used Recycled Materials	2	Improved
25			RA1.4 Use Regional Materials	3	Improved
26			RA1.5 Divert Waste From Landfills	3	Improved
27			RA1.6 Reduce Excavated Materials Taken Off Site	5	Superior
28			RA1.7 Provide for Deconstruction & Recycling	1	Improved
29		ENERGY	RA2.1 Reduce Energy Consumption	0	No Score
``			RA2.2 Use renewable energy	20	Restorative
31			RA2.3 Commission & Monitor Energy Systems	11	Conserving
32		WATER	RA3.1 Protect Fresh Water Availability	0	No score
33			RA3.2 Reduce Potable Water Consumption	2	Improved
34			RA3.3 Monitor Water Systems	0	No score
			RA0.0 Innovate Or Exceed Credit Requirements	0	N/A
			RA	**47**	

FLORIDA WINDFAR, URUGUAY				PT.	Performance
35	NATURAL WORLD	SITING	NW1.1 Preserve Prime Habitat	9	Superior
36			NW1.2 Preserve Wetlands and Surface Water	1	Improved
37			NW1.3 Preserve Prime Farmland	0	No score
38			NW1.4 Avoid Adverse Geology	5	Conserving
39			NW1.5 Preserve Floodplain Functions	0	No Score
40			NW1.6 Avoid Unsuitable Development on Steep Slopes	6	Conserving
41			NW1.7 Preserve Greenfields	0	No score
42		L & W	NW2.1 Manage Stormwater	4	Enhanced
43			NW2.2 Reduce Pesticides and Fertilizer Impacts	0	No score
44			NW2.3 Prevent Surface and Groundwater Contamination	4	Enhanced
45		BIODIVERSITY	NW3.1 Preserve Species Biodiversity	2	Improved
46			NW3.2 Control Invasive Species	0	No score
47			NW3.3 Restore Disturbed Soils	8	Conserving
48			NW3.4 Maintain Wetland and Surface Water Functions	0	No score
			NW0.0 Innovate or Exceed Credit Requirements	0	N/A
			NW	39	
FLORIDA WINDFAR, URUGUAY				**PT.**	**Performance**
49	CLIMATE	EMISSION	CR1.1 Reduce Greenhouse Gas Emissions	25	Restorative
50			CR1.2 Reduce Air Pollutant Emissions	12	Conserving
51		RESILENCE	CR2.1 Assess Climate Threat	0	No score
52			CR2.2 Avoid Traps And Vulnerabilities	2	Improved
53			CR2.3 Prepare For Long-Term Adaptability	0	No score
54			CR2.4 Prepare For Short-Term Hazards	3	Improved
55			CR2.5 Manage Heat Island Effects	0	No score
			CR0.0 Innovate Or Exceed Credit Requirements	0	N/A
			CR	42	
			Total points	**252**	**0**

APPENDIX D: CREDIT DETAIL

WIND FARM FLORIDA: CREDIT SPREADSHEET WITH DETAILS

CATEGORY I, PEOPLE AND LEADERSHIP		
SUB CATEGORY: QUALITY OF LIFE		
	Score	**Wind Farm Florida**
QL1.1 Improve Community Quality of Life	**25**	**Restorative** The Wind Farm is located in an area that is predominantly tied with the agricultural industry. The wind farm's site is within zone 203 where there are 24 houses with 51 men and 33 women. In zone 3 segment 7, there are 21 households with 38 men and 22 women. The low-density area is a good choice for a wind farm because of the potential noise, vibrations, and visibility of the turbines, which can have impacts on humans and wildlife. However, it is the low density that allows the wind farm to achieve a high score in this credit because it identifies the stakeholders at all scales, opens the surrounding area to participate in the development of the project, and makes interventions that improve the local community. The latter is achieved through the transformation of a nearby school with new infrastructure. In this credit, the project achieves high scores through choice selection, identifying the highest number of stakeholders, and determining ways to improve nearby infrastructure, such as roads and homes. *Source:* *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 29-57.* *Ibid., p. 160 "Evaluacion de Impacto Social Del Proyecto"* *Ibid p. 200, "Plan de Monitoreo de Alteraciones sobre Grupos Humanos."* *Ibid, Anexo VII Informe Social.* *CSI Ingenieros, "Parque Eolico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p 25-27, p. 28* *Ibid p. 28. ; p. 30-38 (conexto medio ambiente ypoblaciónn (intro))* *Ibid, p. 131 "Evaluacion de Impacto Social del Proyecto"* *Ibid, p. 139 "Plan de Monitoreo de Alteraciones sobre Grupos Humanos".* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011, p. 43-53, capítulo "Medio Humano".* *Ibid. p. 54 "los Impactos Positivos del Proyecto.* *Ibid. p. 129140 Evaluaciónn de Riesgos.* *Burson-Marsteller, "Plan de Comunicación Parque Eólico Florida." Julio 2012.* *Akuo Energy Uruguay, "Plan de Desarrollo Comunitario." 2012.* *Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014, p. 6-14.* *RECOMMENDATIONS* -
QL1.2 Stimulate Sustainable Growth & Development	**13**	**Conserving** The Florida Wind Farm successfully addresses and assesses community needs while improving local quality of life. The project analyzed the needs of the community and took an active participatory approach to a nearby school, whereby Akuo Energy and Polesine S.A. invested in new infrastructure and long term capacity building. The project took a two-pronged approach: 1) it made sure the project was developed in a low density area with few interruptions to the lives of local people; 2) when it did have any impact on social needs, the project addressed these needs with active participation. Several documents showcase and evaluate their performance in this area (Environmental Impact Assessments Oct 2010, March 2011 and July 2012, Community Development Plans and the Stakeholder Engagement Plan- SEP) whereby the project targets its efforts at addressing capacity building for local Uruguayans and job creation for 80% of Uruguayan nationals

		from 200 created jobs.
		Source: *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 25-27.* *Ibid.Jul. 2012, p. 28.* *Piñon, A, Polesine S.A., " Componente Nacional de Inversión Parque Eólico Florida." Jul. 29 2013, p. 2.* *Ibid. p. 9.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011, p* *Ibid Marzo 2011, p* *Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014, p. 6-14.* *Burson-Marsteller, "Plan de Comunicación Parque Eólico Florida." Julio 2012.* *Akuo Energy Uruguay, "Plan de Desarrollo Comunitario." 2012* *Burson-Marsteller, "Plan de Comunicación Parque Eólico Florida." Julio 2012.* *Akuo Energy Uruguay, "Plan de Desarrollo Comunitario." 2012.*
		RECOMMENDATION: The project could create a mechanism through which the development money is used to enhance recreational and cultural assets. Although the density of the population and geographic location does not make this a necessity, the project could find ways to produce cultural activities in Uruguay as a response to their investments in the region.
QL1.3 Develop Local Skills and Capabilities	**2**	**Enhanced**
		The project effectively hires 80% of the local population. Specifically, during the construction phase more than 90% of the workers were Uruguayan and during the operation phase the team will be 100% Uruguayan. The subcontractors are all from Uruguayan companies, and the capacity building was effectively developed to keep this capacity in the country. This credit was achieved with excellence, although to obtain higher scores the project must take it a step further on developing training programs and educational programs to improve local productivity in the long-term. Polesine S.A. formed a team of four local technicians and a local company for Nordex equipment's maintenance and operation during the lifetime of the project to ensure that local skills are being developed and sourced.
		Source: *Akuo Energy Uruguay, "Plan de Desarrollo Comunitario."* *Burson-Marsteller, "Plan de Comunicación Parque Eólico Florida." Julio 2012.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 28.* *Ibid. p. 25-27."Etapa Constructiva"* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen." Marzo 2011, p. 29-33. "Etapa Constructiva"* *Ibid. p. 33-35.* *Piñon, A. Polesine S.A., "Componente Nacional de la Inversión Parque Eólico Florida." June 29 2013, p. 2-9.* *Piñon, A. Polesine S.A., "Componente Nacional de la Inversión Parque Eólico Florida." June 29 2013.* *Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014, p. 7-14.*
		RECOMMENDATIONS: The project would score higher if they included documentation on hiring or including the number of local workers who are disadvantaged, the number of businesses that are growing from the employment developed through the project, an analysis of the current mix of skills used to develop local employment, and a document that lists how the project will develop educational programs implemented. The analysis should show how the increase in educational programs actually achieves an improvement in community competitiveness.
QL2.1 Enhance Public Health	**16**	**Conserving**
		The development of cables, the metal structures of the turbines, and other turbine related materials

And Safety		are being manufactured and built in Uruguay. These new technologies have created capacity building programs, which enhance the health and safety of the associated practices. These new technologies have been assured through Polesine's strict health and safety guidelines. There have been no health or security issues thus far, except for a non-conformity issue because of poor documentation submitted. The current status of health and safety are adequately addressed and surpassed. The project has hired outside auditors to perform Environmental & Social Reports (three being published).
		Source: *CSI Ingenieros, "Plan de Contingencia" in Plan Gestion Ambiental Etapa de Construcción (PGA). Abril 2012, p. 59-62.* *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 180-193.* *Ibid. p. 195-198.* *Ibid. p. 199-200.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011, p. 129-134. "Eval. De Riesgos y Plan de Contingencias"* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 66-70 "Eval Impactos Humanos parte Construcción."* *Ibid. Jul. 2012, p. 66.* *Pinon, Andrea, "Environmental & Social Report 1 – Florida Plant 50 MW (Revision 1)."June 2013, p. 2-3, appendix 1 and 3. [1]* *Pinon, Andrea, "Environmental & Social Report 2 Florida Plant 50 MW." Dec. 2013, Florida- Uruguay, Polesine S.A. – Parque Eólico Florida, p. 2-3, Appendix 2,6,7.* *Pinon, Andrea, "Environmental & Social Report 3 – Florida Plant 50 MW." July 2014, Florida-Uruguay, Polesine S.A. – Parque Eólico Florida, p. 2-3, Appendix 3,5,7.* *CSI Ingenieros, "Solicitud de Autorización Ambiental de Operación (SAAO) – Parque Eólico Florida." Agosto 2013, p. 35-37.*
		RECOMMENDATIONS
QL2.2 Minimize Noise And Vibration	**8**	**Conserving** The project team has assessed noise impacts and has determined that the turbines constitute the main source of wind farm noise. Noise management is achieved through preventative and corrective maintenance on the park. A report assesses that optimal turbines ensure the least amount of noise. In addition, the project has a "Noise Management Plan" (SAAO 2013, chapter 6) which verifies and monitors turbine noise every six months for two years. The noise is monitored from the homes identified as potentially being affected as well as the nearby school (SAAO, p. 27). Polesine S.A assesses the reports that evaluate noise production. The wind farm also follows national and local policies and regulations pertaining to noise, such as "Decreto 16/1996 Idf Ordenanza de Ruidos molestos y sus modificaciones" and Norm ISO 1996 on Noise [Norma ISO 1996 Acústica] (SAAO, p. 31). "Sound impact – Operating stage: In the Environmental Viability stage, measurements were made of five points where it was found the presence of houses with permanent households, and taking into consideration the usual wind speeds, they did not exceed 55dBA; the classification was "from quiet to less quiet". This impact was not deemed significant. During the Environmental Impact Assessment, a more accurate methodology is expected to be used in the measurement of the noise levels in the nearby residences." - CDM, Executive Board, p. 46 The design of the park was changed after a report determined that the initial design and location would produce noise that would negatively affect the surrounding population. However, wind farms cannot achieve soundproof level with current technologies. In essence a wind farm will always produce noise that affects the surrounding population.
		Source: *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 63-77.* *Ibid. p.179-193.* *Ibid. Oct. 2010, Anexo IV.* *Ibid. Anexo V.*

		CSI Ingenieros, "Parque Eolico Florida Informe Ambiental Resumen (IAR)." Marzo 2011, p. 12. *Ibid. p. 72-119.* *Ibid., p. 148.* *CSI Ingenieros, "Parque Eolico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 11-12.* *Ibid., p. 72-128.* *Ibid., p. 140.* *CSI Ingenieros, "Solicitud de Autorización Ambiental de Operación (SAAO) – Parque Eólico Florida." Agosto 2013, p. 35-37.*
		RECOMMENDATION: The project was designed to achieve national noise and vibration requirements and standards. However, an analysis of community livability standards and the development of newer technologies as pilots for noise reduction in wind farms are higher standards that can be sought. In order to create quieter communities, the wind farm can use profits obtained through the project itself to research technologies that can diminish the vibrations and noise it produces. The selection of the site can also reduce impacts on community livability if the farm has no surrounding community. However, this does not take away the vibrational effects it can have on biodiversity or wildlife in the surrounding areas.
QL2.3 Minimize Light Pollution		**No score**
		No light pollution will occur as a consequence of the construction of the turbines. Illuminations of the turbines follow best practices. No information has been provided according to the impact of the office buildings on light pollution.
		Source:
		RECOMMENDATIONS: *Documentation to substantiate claims of a completed overall assessment of overall lighting needs, reduced or eliminated light spillage into sensitive environments, and preservation of the night sky.*
QL2.4 Improve Community Mobility And Access	**4**	**Improved**
		The Park is at the east side of Route 5, a nationally important highway in Uruguay, which interconnects Montevideo, Canelones, Florida, Durazno, Tacuarembo and Riviera, and an access point between Brazil and Uruguay. The routes 5, 12, and 56 will be utilized to carry materials to and from the project site during the construction phase. Each generator needs a convoy of 10-13 truckloads (EIA Oct 201, Annex 3, p. 10-11). The project does not in any way improve existing infrastructure, partially because it is not necessary, being that the transport needed for the generators is only 12-16 months (construction phase). The impact of the project will be considerable at the construction phase but marginal once the operational phase begins. (EIA OCT 2010, Annex 3, p. 9). In October 2010, the team followed national environmental regulations and set up the first evaluation in accordance with the Environmental Impact Evaluations. The evaluation observed whether any additional transit was produced due to the project's physical presence. They calculated the increase or decrease in truck frequency during different times of the day and observed the wind farm's relatively small impact, confirming satisfactory transit in this area as well as on the national highways that surround the park's infrastructure.
		Source: *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. Annex 3.*
		RECOMMENDATIONS The project has complied with local laws and regulations. The inspections and enforcement go above and beyond what is required. The project team could benefit from giving out memoranda, minutes of meetings with managers and operators covering access. While the team project lead has studied the amount of congestion the project can create at the construction level, and with these estimates leveled the possibility of congestion. The long-term improvement of access is not required because during the operational phase, it is not necessary. However, the number of employees that need transportation have not been calculated. Community mobility involves ways in creating an inclusive environment, which involves staff lunchtime transportation and transportation from and to Montevideo if employees need it (for healthy work programs).
QL2.5		**No score**

Encourage Alternative Modes of Transportation		The project team didn't provide enough information according to the improvement in accessibility considering use of non-motorized or public transit. *Source:* *RECOMMENDATIONS*
QL2.6 Improve Site Accessibility, Safety & Wayfinding	**3**	**Enhanced** The strategies for safety are well documented (EIA Oct 2010, p. 180-189) The safeguards are delineated and serve as a good outline of measures to ensure accessibility, safety and wayfinding. Roads especially for heavy machinery are separated from normal circulation. National and local regulations were implemented, especially those such as: physical barriers between sidewalks and certain roadways as well as access ways (EIA Oct 2010, p. 185), lights, reflective materials, and adequate signage, with very strict regulations for incoming and outcoming automobiles (registered and documented) (Ibid, p. 185). Adequate contingency plans are specified for fires and/or spills. Preventative measures are ensured of all materials. The EIA Oct 2010 document provides with safe access, adequate signage, safe removal of waste and good practices with regards to all materials. *Source:* *CSI Ingenieros, "Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 180-189.* *Ibid. Annex II.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen." Marzo 2011.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."July 2012.* *CSI Ingenieros, Plan Gestion Ambiental Etapa de Construcción (PGA), Abril 2012.* *RECOMMENDATIONS* *The project team identifies ways to improve signage, safety, and proper handling of material. However, the project could alternatively attempt to integrate better with its surrounding neighborhoods by developing infrastructure and creative designs for more mobility and connectivity between towns. The project seems to address the issues as the legal framework expects it to comply, but doesn't go above and beyond on developing creative mechanisms for improving.*
QL3.1 Preserve Historic and Cultural Resources	**1**	**Improved** The project attempts to respect (Decreto 536/1972), a national law that takes this specification into account. The studies addressed show that relevant potential land movements can cause some damage to some nearby archaeological sites that have pictograms. The archeological sites are found just kilometers from the site. Land changes due to the development of roads for the trucks and the turbines have the potential of destroying pictograms if these are not found before the changes are made. The project team has hired a preservationist, archaeologist, and documented the archaeologist's findings on potential damage to the area. All regulations were identified and key stakeholders were asked to comply with surveys. The additive and summarized result was to avoid "boleadores" that can negatively affect the patrimony of the site. Also, the material for local paint making is potentially also affected. The project documented the necessity to develop strategies to decrease impact (IAR March 2011, p. 70-75). *Source:* *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010, Annex II.* *Ibid., p. 170.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen.(IAR)" Marzo 2011, p. 72-74.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 66-70.* *RECOMMENDATIONS:* The documentation showcases the potential damage and creates a strategy. However, pre-project artifact or pictograms should be removed by a specialist from site and rescued for further investigation. The excessive undertaking of hiring a preservationist is unclear if it is a national law or the project's own "best-practices" that led to these investigations of grounds. The national law requires some of these steps to ensure patrimony is safely guarded. If this is the case, the project should make sure levels of detail should be equally distributed in all areas of the project (with or without national laws) obliging the project to do so.
QL3.2 Preserve Views and Local Character	**1**	**Improved** The views and landscape around the site are affected due to the turbines that change the general landscape. The project uses the guidelines and methodologies set-forth through the Environmental

		Ministry in Spain. The Spanish guidelines use some of the central authors to evaluate the physical impacts of wind farms. The study then identifies key actors that will see the park at all times or the majority of time: Routes 12 and 56 users School 74- Parada Sanchez Homes in the perimeter of the studied affected area (for landscape visual purposes) The second level of users that were identified were: Route 5 users East-southern side of Florida city San Gabriel town, specifically MEVIR homes and 5 buildings that existed before MEVIR were built The assessment's results were divided into sets of observers from pre-established points within the parks perimeter and outside. The magnitude of visual impact the wind farm had was low to observers within the park and very low to observers outside the park's perimeter (EIA, Oct. 2010, p.139).
		Source: *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p.126-131.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011, p. 99-118.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 99-127.*
		RECOMMENDATIONS: The project team could use mechanisms to decrease the deleterious effects its turbines have on passing cars in Routes 12 and 56, as well as those in School 74-Parada Sanchez and the few homes identified in the Evaluation Report. The Project should reach out to the community and develop a plan that also addresses the visual contamination produced by the Wind Farm. Reports, memoranda, minutes of meetings can show the added quality of the Project in determining the best visual components. This Project successfully addresses the local policies and complies with the national legal framework set-forth through DINAMA. However, the Project could try to create a landscape analysis that preserves landscape features while encouraging local communities to feel empowered and find ways to develop a comprehensive set of policies that would aid their visual contamination.
QL3.3 Enhance Public Space	**0**	**No score**
		No documentation describing new public spaces associated with the project, which would include common spaces like parks or plazas.
		Source:
		RECOMMENDATIONS: According to Envision's definition of terms, a "public space" is a "social space that is open and accessible to all, regardless of gender, race, ethnicity, age, or socio-economic level, such as commons, town square, or public park." (Envision- Version 2.0, p. 173). The project team could score higher if it looked at existing public spaces in the surrounding areas and analyzed how the Wind Farm could contribute to the improvement of these spaces. While a nearby school is identified and restored, a school is not a public space even if the public can use it. If these public spaces were identified, the project would need to include documentation showing how their restoration plans will impact the surrounding community through an increase of its use. Drawings and diagrams of the design plans would back-up the efforts and would produce a higher score.

QL0.0 Innovate Or Exceed Credit Requirements	**3**	During the development of the park, the team identified School No. 74 "Parada Sanchez" to have a significant amount of missing infrastructure. The school has a total of 21 students with one director and one assistant. The students are between the ages of 4 and 12. In August 2012, the Project Team gave a talk on renewable energy and taught the kids about the importance of wind farms, their positive effects on decreasing climate change, and other related topics. Due to the lack of proper infrastructure, Polesine gave $50,000 to the school, and the company improved the existing infrastructure, including the main installations, beams, paint, electric wires and cables, as well as any other needed improvement. The school was re-inaugurated on the 26th of mAy 2014 with members of UTE, national authorities and local leadership present, students, parents and nearby citizens. The project team did an overall great job in this credit and the only improvement would be to identify opportunities in nearby towns to do similar public space improvements. In Santa Ana, and Costas de Santa Ines there were instances of "boleadores" that affects the patrimony. While a great level of detail went into investigating the effects of boleadores, creative ways to improve this issue and create art or cultural space from these materials could be useful. Doing this would ensure that the team gives back to communities that potentially feel negative after-effects that have been caused by the installation of the wind farm in the nearby area.
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SUB CATEGORY:LEADERSHIP		
	Score	**NAME OF THE PROJECT**
LD1.1 Provide Effective Leadership And Commitment	**9**	**Superior** The team has shown effective commitment to integrate sustainable practices into the project. At the construction phase, all environmental issues are directed under a "construction director", "the environmental manager" [Responsable de Medio Ambiente- RMO], who coordinates the efforts between the construction director [director de la obra - DO] and the rest of the personnel. The environmental manager is in charge of ensuring all environmental assessments are made on the wind farm, identifying management systems (visual, noise, waste, and water), and monitoring and control mechanisms as well. The Environmental Manager [Responsable de Medio Ambiente- RMO] verifies and inspects the site so that it complies with the PGA-C. In addition, the RMO works with the personnel, the DO, and arranges all internal and external audits, while ensuring all environmental stakeholders cooperate to achieve proper regulations and sustainability goals (PGA-C, p. 19-21). The environmental objectives with sustainability goals are achieved and outlined in the PGS-c whereby a hierarchical structure specifying responsibilities, utilizing strategic decision making in both normal and emergency situations to achieve the aforementioned sustainability goals. In addition, the project follows the policy called "AA1000 AccountAbility Principles" (SEP 2014:3), which determines inclusive practices and sustainability best practices. However, although the documentation provided showcases the involvement of all stakeholders, it does not provide documentation that showcases the effective use of sustainability practices within the organization. While the AA1000 standards are exceedingly good objectives for proper stakeholder engagement, The Accountability Principles Standard (AA1000APS) provides a framework that identifies and exceeds best practice sustainability actions within the organization. The Project can include published sustainability reports including organizational policies that surpass the basic sustainability practices being practiced in private organizations. *Source:* *Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014, p. 3-5.* *CSI Ingenieros, Plan Gestión Ambiental Etapa de Construcción (PGA), Abril 2012, p. 19-25.* *RECOMMENDATIONS*

		Many of the documents are in the pre-planning stages and therefore any further evidence of performance achievement in waste, water, and overall life cycle would greatly improve the wind farm.
LD1.2 Establish A Sustainability Management System	**4**	**Conserving**
		The project documents showcase and demonstrate a high level of engagement on sustainable practices in the following areas: social, environmental and economic sustainability. The appropriate business processes are identified to successfully monitor, control, and litigate sustainable issues relating to water management, waste management, and disposal of dangerous or toxic chemicals. Contingency management plans are in place for emergency situations such as spills, fires, unexpected cracks and breaks. Monitoring, follow-up, and auditing systems and plans have been set-up. All of these have sustainability components that align with national regulations concerning sustainability goals as well as the company's sustainability goals, which include a triple bottom-down line aspect. The Environmental Director develops a hierarchical system of decision-making that encompasses every area in terms of sustainability goals -- equity, environment and economy. The park is relatively small, and therefore the team being contracted is also small, and easily can create a good sustainable management system.
		Source: *Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014, p. 3-5.* *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 72-127.* *CSI Ingenieros, Plan Gestión Ambiental Etapa de Construcción (PGA), Abril 2012, p. 19-25.*
		RECOMMENDATIONS
LD1.3 Foster Collaboration And Teamwork	**1**	**Improved**
		Collaboration is achieved through close work between the director of construction and the environmental manager overseeing the work of 200 people who will be divided in sub-categories: subcontracted companies and operators during the construction phase. The organizational structure is setup to achieve the sustainability goals set-forth through the planning of the Environmental Manager. The policies and goals are aligned with Akuo Energy and Polesine S.A.'s objectives and goals and these all work in parallel. The PGA-C serves a contract that ensures the proper work among the people hired to achieve the goals. While the PGA-C is very comprehensive at checking all the different management and monitoring plans, the collaboration is only superficially outlined. The project leader ensured the development, the sourcing, construction, and operation of the park is in synergy. The design of the all the aforementioned elements were strategically developed to make sure each one was in synergy with the rest. The project was willing to develop a design plan so that each phase of construction worked well with to achieve the construction of the park within 11 months, with the least amount of emergencies or contingencies, and enhanced productivity. However, it did not share the risks with the project team. The project team did not incorporate new and untried technologies, but maintained the already tried and tested technologies. There were little incentives documented as helping to improve achieving the goals. No information according to the project delivery method or the reward sharing strategies has been provided.
		Source: *Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014.* *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011.* *CSI Ingenieros, Plan Gestion Ambiental Etapa de Construcción (PGA), Abril 2012, p. 19-25.*
		RECOMMENDATIONS *The project team leader should provide further documentation such as:* *1) Design charrettes,* *2) Develop ways to share the risks involved in the synergetic project,*

		3) Incorporate untried technologies. *Whole-systems design processes can be documented and developed within the goals of the project. This would ensure a higher rating. A way to do this is to potentially hire consultants or sustainability consulting firms to create innovative whole-systems design processes that involve national and international stakeholders as well as risk management that involves all actors that constitute the process.*
LD1.4 Provide For Stakeholder Involvement	**14**	**Conserving**
		The project does a good job at developing strong stakeholder engagement practices. The project leader and team had several stakeholder meetings, April 24th 2013 and May 26th 2014, to include national government officials, the local government, employees, landowners of plots sold for the project and interested citizens (Polesine, (SEP 2014). These meetings allow for effective social engagement of issues being addressed, which is one pillar of sustainability. The remaining sustainable practices, practiced within the organization, have not been given clear documentation. The project effectively developed a successful stakeholder engagement process. The project leader uses "AA1000 AccountAbility Principles",(SEP 2014:3), which according to Pricewaterhouse Coopers (PwC) leads the way in assuring standard in design of stakeholder engagement processes that involves all stakeholders to create sustainability based reporting mechanisms. The project enables a critical management of stakeholder's priorities and concerns while developing a way to negotiate the different actor's needs. The project has performed quite well and the following simply highlights the areas that were sufficiently catered to in order to receive full credit. Stakeholder input has been involved at each stage- construction and opening of operations.
		Source: *Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014.* *Burson-Marsteller, "Plan de Comunicación Parque Eólico Florida." Julio 2012.* *Akuo Energy Uruguay, "Plan de Desarrollo Comunitario." 2012.*
		RECOMMENDATIONS
LD2.1 Pursue By-Product Synergy Opportunities	**1**	**Improved**
		The Environmental Assessments performed in October 2010 and March 2011 show a detailed assessment of the potential use of unwanted by-product or discarded materials from nearby operations. The documentation shows casual search of by-product synergies. Assessments are made to identify waste management systems, but only at a basic level.
		Source: *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011.*
		RECOMMENDATIONS *The following recommendations are made:* *1) The project team could improve at identifying a fully synergetic waste system.* *In order to get credit in this category, proper documentation of contacts and searches on nearby facilities that offer potential opportunities.* *2) The project team should attempt to incorporate industrial ecology principles. In order to do so, the project team should be addressing nearby facilities and create by-product synergy opportunities. Similar to the operation and construction phase synergies developed through optimal design, the project manager can create opportunities to create positive and parallel progress with nearby facility managers.*
LD2.2 Improve Infrastructure Integration	**1**	**Improved**
		The project effectively assesses the infrastructure in the surrounding areas and internal to the park itself. These assessments (IAR March 2011, IAR July 2012) are conducive to a full infrastructure

		integration. However the plans and documentation that serve to show how these systems are fully integrated were not given in order to better assess how the project effectively integrates existing infrastructure with the internal infrastructure of the wind park itself.
		Source: *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 11-55.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011, p. 35-55.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012, p. 29-48; p.137.*
		RECOMMENDATIONS: There is a need for the project to document project-wide systems integration. Assessment of the infrastructure and information to obtain the goal is available, but not the results of these integrated systems. Maps, aerial photographs, and spatial rural plans of roads after the park was built are necessary. Renders of the differences between before and after the project is finished are needed in order to assess this credit with a higher level of achievement.
LD3.1 Plan For Long-Term Monitoring & Maintenance	**3**	**Enhanced**
		The project's contract is set to last 20 years. The longevity of stringent long-term monitoring and maintenance of the completed work is ensured. The project documented the plans for efficient long-term maintenance and monitoring of the park as well as control mechanisms and proper registration of both national entities and the Environmental Manager [RM] (SAAO 2013). The resources needed to develop a stringent continuity of proper maintenance have been planned for in advance. The EIA 2010 demonstrates that the project has worked-out a long-term maintenance and monitoring plan with personnel and identified contracting companies to achieve each goal. The monitoring, control and registration has been identified for each one of the following areas: facilities such as offices, waste of construction materials, laboratories, changing rooms as well as other construction practices such as management of fuel and its proper disposal, soil movements, checking of all equipment and machinery related to the wind farm at operational and construction phase, noise and birds among others.
		Source: *CSI Ingenieros, "Solicitud de Autorización Ambiental de Operación (SAAO) – Parque Eólico Florida." Agosto 2013.* *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 193-211.*
		RECOMMENDATIONS: The project manager should provide planning documentation that showcases the personnel, contracting companies, or service providers assigned to monitor and maintain the constructed work. The work plan is provided and is a very thorough plan, but a budget to accompany these is missing and would be useful in obtaining a higher score.
LD3.2 Address Conflicting Regulations & Policies	**4**	**Superior**
		The owner and project team participated in Uruguay's Wind Energy Generators' association. This strong relationship and active participation has led to understanding all of the related laws, regulations and policies that affect sustainability practices which will allow to the project team to identify conflicts over current laws and modification of them if required. In terms of Uruguay's particular legal framework, the project team's active participation observes a two-way communication stream between policy changes and implementation with renewable energy companies and the country's applicable regulations. The administration of energy markets, the national energy provider (UTE), and national level entities all participate to develop fluidity between private sector, civil society organizations, and the national government's energy policies.
		Source: *Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014.* *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010.*

		CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011. *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)."Jul. 2012.*
		RECOMMENDATIONS: Minutes and documentation for each meeting that the project owner attended with the government officials to lobby for transformative policy change should be created and accessible.
LD3.3 Extend Useful Life	**1**	**Improved**
		Wind Farm Florida life expectancy is estimated at 20 years, the duration of the contract. The Site Assessment Report indicates that the careful maintenance and the effective use of the turbines can have a positive effect of expanding the turbine's life expectancy. The site assessment also indicates the potential of ensuring the quality of the materials are the best in its kind in order to surpass the average expectancy stated above (Jaffe et al. Site Assessment 2012). The project has not stated specific measures to identify materials, future investments or technological improvements that can result in a longer lifespan of the project over project delivery. The project has a thorough maintenance, monitoring and control of the turbines to ensure durability.
		Source: *Jaffe, K., J. Kallinich, and M. Marburger. "Site Assessment Report Florida (UY) 21 x Nordex N117/2400 R911EC3A," June 2012.*
		RECOMMENDATIONS: Use project design to look into potential expansion and reconfiguration. Move outside the norm whereby the project considers functionality within the boundaries of the construction. - Expand the scope of the current sourcing of materials to include an assessment of material durability - Demonstrate documentation of ways the farm can easily be upgraded and expanded. - Include ways in which the design considers potential retrofitting features.
LD0.0 Innovate Or Exceed Credit Requirements		*N/A*
	48	

CATEGORY II: CLIMATE AND ENVIRONMENT		
RESOURCE ALLOCATION		
	Score	**NAME OF THE PROJECT**
RA1.1 Reduce Net Embodied Energy	**0**	**No score**
		The project lacks life cycle assessments needed to achieve a score in this section. The project should consider the incorporation of a life cycle analysis in order to assess the net embodied energy. Life cycle analyses are generally produced using databases and can be added to the documentation needed to score higher in this category.
		Source: *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010.*
		RECOMMENDATIONS: The results of a life-cycle energy assessment are needed to improve the score for this credit. The documentation should be as specific as possible, including a recognized set of methodologies and the best practices with relation to data sources. In addition, the net embodied energy of the project should be reduced through strategic approaches meant to tackle energy misuse identified within the life cycle analyses. Design documents that showcase specific reasons for selecting specific material that reduces net energy are also advised for a higher score. Photographs and images as well as discussion minutes regarding the motivations behind the materials used, perhaps locally produced

		and travel gas emissions, are highly recommended. Moreover, the project could explain in detail how the reductions in net embodied energy can balance the lifespan of the project.
RA1.2 Support Sustainable Procurement Practices	**0**	**No Score** This credit category is central to help keep the project's total greenhouse gas emissions at a minimum. In order to achieve a high score in this credit category, the project must have used very specific guidelines for the selection and/or procurement of all the materials, suppliers, equipment, and general fabrication of materials used to construct and operate the wind farm. The project did not have any documentation recorded on specific sustainable procurement program. *Source:* *CSI Ingenieros, Plan Gestion Ambiental Etapa de Construcción (PGA), Abril 2012, p. 55-57.* *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 11-55.* *RECOMMENDATIONS:* - Identify suppliers that have sustainable practices. These suppliers would be specifically sustainable if and when their triple bottom line coverage is targeted with specific policies that enable the supplier to perform well in equity, environment and economic development. - The suppliers' triple bottom line coverage can be documented as supplemental information used to receive a high score in this credit. - The more specific the documentation, the higher the score. Therefore, the volume and weight of materials supplied according to sustainable procurement practices should be included. - Include an inventory list of the materials that are specifically engaged in a sustainable procurement program set-forth by the project. - Include third-party certifications that account for the reputable standards of the supplies and purchased materials. - An important subcomponent is to identify manufacturers, suppliers and materials that will be used in the wind farm whereby the suppliers were chosen based on their stellar health and safety standards.
RA1.3 Used Recycled Materials	**2**	**Improved** The soil is mainly reused under the documentation provided. The soil is set-aside to develop the needed dirt roads for all the transportation during the construction phase for the turbines and all extra materials. The soil is used to develop the landscape and return it to its original format (PGA, 55). In order to reduce the amount of materials that are fabricated, using material from the local economy is useful. Considering procurement of materials and suppliers that have been used previously has a positive effect on reducing the net energy produced for the construction of the project. The credit does not offer any documentation in this section that leads to the reduction of net-energy through careful procurement of nationally recycled materials. *Source:* CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010. CSI Ingenieros, Plan Gestion Ambiental Etapa de Construcción (PGA), Abril 2012 *RECOMMENDATIONS* In the case of a wind park, deconstructing the wind park at the end of its use (or contract) and re-selling to future parks as part of their sustainability plan would help increase the score. - Include the weight of all materials coming from recycled sources. - Include the volume of recycled material used in the wind farm. An example would include identifying any material that would conform part of the turbines that uses recycled materials. - In order to increase the score, an inventory with the name of the manufacturer, the weight or volume of material and the percentage of recycled material should accompany the general specification. - The more specific the inventories are, the higher the score will be.

		- Since the material is recycled, there are additional quality assurance requirements that ensure the materials actually can be used for the intended purpose. Submitting supporting documentation that shows the recycled materials are sustainable would gain the project a higher score. - Solid waste agency requirements should be compiled and a report listing the state or regional and national laws regarding solid waste requirements for these recycled materials is also an important subtopic that would help achieve a higher score. -
RA1.4 Use Regional Materials	**3**	**Improved** The project used 40% of its materials from national resources. The Nordex equipment was developed by materials nationally, which otherwise would have been imported from abroad. The increase of national sourcing and suppliers allows for the project to decrease its carbon emissions that otherwise would have been used from a further distance. Quality assurance documentation and the appropriate procurement procedures were handled correctly. Polesine identified components of the turbines that could be manufactured and assembled in Uruguay. The components that were potentially produced locally were identified as well as the local suppliers. The quality of the supplies was considered and third-party certification of quality assurance was produced. *Source:* *Piñon, A, Polesine S.A., " Componente Nacional de Inversion Parque Eolico Florida." Jul. 29 2013, p. 2-9.* *RECOMMENDATIONS* - The project has successfully identified local and regional materials used that further decrease the carbon emissions from the project. - The first recommendation is to include the distance needed to transport those materials and equipment within the country. - An inventory of the materials, weighed or by volume, with the manufacturer's name and distance from the site is an important factor at determining the performance of the materials. - Include a list of the materials locally produced by cost. -
RA1.5 Divert Waste From Landfills	**3**	**Improved** While the project estimates that the waste produced is minimum, they have not identified a waste management strategy (CSI Ingenieros, SAAO, p. 23-27). The documentation estimated a total of 3 m3 of waste produced by turbine during the operational phase (SAAO, p. 23). For this total waste produced, the project outlines the appropriate national and local legislation regarding the proper disposal of the waste produced. A specific measure implemented is battery program, wherein the project team identified a means to recycle all batteries as soon as they were disposed The waste it produces at the operational phase is negligible. During the construction phase, the proper management of soil excavated to put the turbines in place are appropriately reused, avoiding the diversion of the soil from landfills. While the waste it uses is negligible, the amount of waste of the total amount of materials used during the life expectancy is not. The waste management programs are available for different types of waste are not to be incinerated or placed in landfills. The legal infrastructure in Uruguay has standard environmental safeguards in place for infrastructure projects of such magnitude to ensure a healthy environment. The project meets the criteria set-forth by international best practices. *Source:* *CSI Ingenieros, "Solicitud de Autorización Ambiental de Operación (SAAO) – Parque Eólico Florida." Agosto 2013, p. 23-27.* *RECOMMENDATIONS* - The project could include an inventory of project waste streams, and include comprehensive waste management plans/documentation of the waste produced during the construction phase, which has already passed. - Calculations of the amount of waste diverted, or expected to be diverted, or reused would help increase the score. In the SAAo document, the expected amount of waste to be produced is documented. Identifying the percentage of the total expected waste would increase the project's score in this credit.

		- The appropriate waste management program that identifies potential buyers of recycled materials would also increase the score.
RA1.6 Reduce Excavated Materials Taken Off Site	**5**	**Superior**
		The project developed a successful way to use the soil excavated on site for the trails and dirt roads needed for truck transportation of the turbines during the construction phase. The project also reuses the soil to reintegrate with the natural landscape around the site.
		Source: *CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 180-199.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011, p.180-199.* *CSI Ingenieros, Plan Gestion Ambiental Etapa de Construcción (PGA), Abril 2012, p. 48-52.*
		RECOMMENDATIONS: - To increase your score in this credit, please include calculations of the material retained on site over the industry norm. - The documentation provided is very complete and photographs were included. To increase the score, 100% of reused excavated materials and the appropriate documentation to show the case would ensure a restorative score.
RA1.7 Provide for Deconstruction & Recycling	**1**	**Improved**
		The Nordex cylinders equipment will be contracted in four years and be taken apart at the end of their 20 year contract. The project has identified a way to reuse the equipment through the disassembling of the turbine parts of the wind-farm with the end goal of re-selling the materials and making sure the environment is delivered to its original landscape. Disassembly of the materials used in the wind farm (mainly turbines), is planned to be executed through a plan of action.
		Source: Contrato de Compraventa, Cláusula XIV.5 Notificación Resolución Ministerial No. 1391/2013 Conferencia de Vista (art. 75 Decreto 500/991) Notificación Certificado de Proyecto, Nov.10 2013 de Dinama.
		RECOMMENDATIONS The project team has successfully identified a way to up-cycle materials. The next step is to develop a mechanism to measure the amount of material that is estimated will be recycled. - Include an inventory of the total volume or weight likely to be recycled or re-used at the end of the cycle. - Contract or hire a third-party consultant to identify with more certainty how much material is estimated based on studying other wind farms and the relative amount of material that can be re-used at the end of a similar project life (20 years). - Include documentation that demonstrates the design of the pre-fabricated materials and how these materials are planned to be re-sell.
RA2.1 Reduce Energy Consumption	**0**	**No Score**
		The product's consumption of energy is very little in comparison to the amount of energy it produces; creating a net energy output that is beneficial to the environment at large (PDD-CDM, p 1-10). The project itself delivers renewable energy to the grid, but has not identified how much energy is being saved on they process base in a more optimal use.
		Source: UNFCC, "Project Design Document form for CDM Project Activities (F-CDM-PDD Version 4.2)", Dec 2012, p. 1-10.
		RECOMMENDATIONS

RA2.2 Use Renewable Energy	**20**	**Restorative**
		The project output aims to provide a reduction in the GHG emissions caused by fossil fuel consumption, generally used to meet the country's electricity needs. Once fossil fuels are substituted with the wind's kinetic energy, the project's net energy consumption becomes zero (CDM PDD, p. 2). In addition, the GHG emissions are not generated on Wind Farms due to the fact that the production comes from the wind itself. In 7 years: "The estimate of annual average and total GHG emissions reduction for the crediting period of 7 years renewable chosen in this Project activity, are 120,680 tCO2e/y and 844,761 tCO2e respectively." (CDM PDD p 2). The wind Farm will add 50MW of wind-powered energy into the National Grid. According to the CDM Project Design Document (UNFCC, 12-14), this will help the Uruguayan national grid with a 100% increase in total wind sources. The energy produced is expected to replace fossil fuels otherwise used. The wind farm diversifies Uruguayan national energy mix with locally generated energy, which benefits the country through a decrease in its dependency on oil imported from neighboring countries and reduces the country's greenhouse gas emissions. (CDM, p 47)
		Source: *UNFCC, "Project Design Document form for CDM Project Activities (F-CDM-PDD Version 4.2)", Dec 2012, p. 1-10.*
		RECOMMENDATIONS *Not applicable, has reached highest score.
RA 2.3 Commission & Monitor Energy Systems	**11**	**Conserving**
		The project commissioned a long-term monitoring of the wind farm. Energy sub-meters are used as part of the monitoring system. The team also hired an independent commissioning authority. The meter assigned to monitor the project's energy records every 15 minutes (on average) (CDM, p 47). The operation and monitoring team reads the meters and separately records energy consumption versus energy delivered to the Uruguayan grid. The team delivers this information to a plant manager who verifies the record keeping and sends the checked data to the CDM Manager, which are recorded on site. The CDM Manager oversees the monitoring of energy consumption and delivery, and calculates the difference between the data delivered. The CDM Manager verifies that the data given through the meters and archived matches the sales records delivered through the ADME (CDM, p. 44). One deliverable is to calculate the emission reductions through a Grid Emission Factor. All this data is archived. Technology control is ensured through two anemometers, which can all be monitored and checked through a computer remotely, whereby the data is made available with internet access, all software is supplied through Nordex (CDM, p2). In addition there is a verification process that adheres to the "UTE Connection Agreement Part IVa (CDM, p.7). Operation and Maintenance costs a year are $350,000.00 (CDM, p.20).
		Source: *Allain, Bruno, The Experts in Renewable Energy, "EoC Inspection", 2014.* *UNFCC, "Project Design Document form for CDM Project Activities (F-CDM-PDD Version 4.2)", Dec 2012, p. 1-48.*
		RECOMMENDATIONS The project score would improve by adding a description of the rationale used on how to monitor the equipment over industry norm.
RA3.1 Protect Fresh Water Availability	**0**	**No score**
		There is no information available related to freshwater availability
		Source:

		RECOMMENDATIONS - Conduct a water availability assessment. - Measure the rate of recharge of fresh water supplies. - Identify location of all water discharge. The documentation describes it will be disposed of by the correct disposal trucks off-site, but it never shows the contractor in charge of liquid waste and if they consider discharging in a way that would replenish the liquid. All water comes from somewhere and ends somewhere. Therefore, including the quantities and mechanisms to replenish the usage would be beneficial.
RA3.2 Reduce Potable Water Consumption	**2**	**Improved**
		The design team has not included a measurement for the quantity of fresh water in the project. The team is aware of the potential negative effects of contaminating fresh water resources with a contingency monitoring plan to measure downstream effects, but it does not consider water usage at peak hours. The team explains the water usage is negligible, but then showcases monitoring the effects of its water usage or potential liquid usages on the nearby environment. This contradiction can be solved if the team simply measures or estimates the water used and its source with the goal of saving as much of it. Examples of minimizing potable water are the toilets. The bathrooms are portable stalls that use toilets that dispense chemicals whereby all bathroom waste (human or otherwise) is degraded using a liquid chemical that turns these into a biodegradable contaminant. The contaminants remain odorless and are transported in special trucks and containers once the waste has reached its limit (EIA 2010, 181). This mechanism of dealing with human waste reduces potable water. If an estimate were measured on the relative savings of water, the credit would score higher.
		Source: CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010,p. 67-77.
		RECOMMENDATIONS Include an inventory of water impacts the project cannot mitigate.
RA3.3 Monitor Water Systems	**0**	**No score**
		No Score
		Source: *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010,p. 67-77.*
		RECOMMENDATIONS - Due to the fact that the project water usage is negligible, this credit does not include recommendations.
RA 0.0 Innovate Or Exceed Credit Requirements		*N/A*
	47	

NATURAL WORLD		
	Score	**NAME OF THE PROJECT**
NW1.1 Preserve Prime Habitat	**9**	**Superior**
		The overall area where the park has been developed has a significant amount of wildlife that has been studied, and determined to be naturally conserved without any necessary additional protection mechanisms. The park itself has made the necessary checks needed to conserve the area's fauna, and supports the high value species. A third-party verifier has demonstrated that the park's location does not compromise areas of prime hábitat (EIA Oct 2010: pg 21).

		Source: CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 192, Appendix 1. CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011, chapter 3. Ibid. Marzo 2011, chapter 3.
		RECOMMENDATIONS The project would score higher if the project team provided documentation that shows a buffer around underdeveloped land to successfully fulfill its appropriate protection. The project would also succeed if it attempted to restore the area's vegetation and habitat connectivity.
NW1.2 Preserve Wetlands and Surface Water	**1**	**Improved**
		The project successfully complies with local regulations and examines the extent of surface water, and the wind farm's potential effect on these waters (IAR 2012 11-12). The documentation provided demonstrates that the site does not have any wetlands and surface waters. Therefore, conducting any of the requirements recommended through Envision Rating there is no development that potentially affects wetlands and surface water.
		Source: *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, pg 19-21.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." July 2012, p. 11-12 , p. 32-36. CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." March 2011,p 12-13, p. 35-55.*
		RECOMMENDATIONS - In order to receive an increase in score in this section, the project could develop a vegetation and soil protection zone (VSPZ) that would effectively provide a natural zone protected through a buffer from the implementation of the project, in this case the wind farm. - The project were further increase their score to restorative if the identified bodies of water mentioned in the documentation developed specific plans on how to restore water bodies and wetlands. - A plan that includes how the water bodies, shorelines, rivers will be stabilized through ecological mechanisms that would restore the water purity. - An increased score would result from development of a plan with an outlined area of action to plan native vegetation. In order to achieve the latter, the project could develop further the geomorphic analysis by studying channel dynamics and sediment transport. This study would then allow for re-vegetation plans to be implemented.
NW1.3 Preserve Prime Farmland	**0**	**No score**
		The project's documentation showcases a high level of consciousness with regards to prime farmland, unique farmland, and farmland of national importance. Studies that identified the types of farmlands could be found in the EIA Oct 201, IAR July 2012, and IAR March 2011. The soil was surveyed and documented. The documentation provided identifies the soil as a poor quality due to the repeated use for agroindustry purposes. This has created a loss of the original soil minerals resulting in a low productivity area. The project does not seek to further restore it as it is seen, already used farmland.
		Source: *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 14, p. 32-39; p. 39-46.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." July 2012, p. 31; p. 37-38; p. 41-44.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." March 2011,p 37-39; p. 44-47; p. 47-51.*
		RECOMMENDATIONS The project can identify the prime farmland needed in the state or region of Florida and attempt to restore it. - An effective plan of action should demonstrate the steps taken or planned for complete restoration of agro industrially used farmland.

		- Photographs and third-party consultants' contracts can be sent for further documentation.
NW1.4 Avoid Adverse Geology	**5**	**Conserving** The project and project team ensured the wind farm was on a site that has little adverse geologic features with no negative effects on aquifers. The project scored the highest credit possible in this category. Both documents a) Ingefund Consultores May 2012 and Ingefund Consultores March 2012 identify: - A site that avoids karst features and/or earthquake faults. - An in depth study of the geology of the site to identify and manage any potential risks. - Aquifers, low lying coastal areas for potential tsunamis and other geological studies were carried out comprehensively. - Identified the potential strategies to manage risks, which in this case the documentation showed was low. *Source:* *Ingefund Consultoras, "Estudio Geotécnico Futuro Parque Eólico Parque de Florida- Informe Técnico Complementario", May 2012, p. 3-11.* *Ingefund Consultoras, "Estudio Geológico - Geotécnico Futuros Aerogeneradores "Parque Florida" Akuo Energy Departamento de Florida Informe Técnico Final," March 2012, p. 5-77.* *RECOMMENDATIONS* This project has done a thorough review of the site's geology in order to plan and strategize to minimize adverse geology related adverse consequences.
NW1.5 Preserve Floodplain Functions	**0**	**No Score** The documentation provided demonstrates that the site does not have any floodplain functions. Therefore, conducting any of the requirements recommended through Envision Rating is not applicable to this project due to its location. *Source:* *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR), March 2011.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR), July 2012.* *RECOMMENDATIONS* N/A due to the site and the documentation that proves this not to be relevant to the site itself.
NW1.6 Avoid Unsuitable Development on Steep Slopes	**6**	**Conserving** The site was selected based on a minimum of steep slopes or hillsides. All three documents demonstrate the site and its elevations, whereby the site itself avoids steep hillsides. *Source:* *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, 192-196.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR), March 2011, p. 12.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR), July 2012.* *RECOMMENDATIONS:* All documentation provided which ensures a high score in this category.
NW1.7 Preserve Greenfields	**0**	**No score** Greenfields are described as undeveloped land that may be considered for urban development. These type of areas tend to have natural landscape, natural amenities or agricultural land. Due to this project it is considered to be located on a greenfield, it is considered not preserving them.

		Source: CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010. CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)", March 2011. CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)", July 2012.
		RECOMMENDATIONS This credit does not apply to greenfield projects.
NW2.1 Manage Stormwater	**4**	**Enhanced**
		Due to the typology of infrastructure analyzed, the storage capacity is not expected to be altered from the pre-development stage. The impervious areas will increase just on the foundations of the towers, which is considered not significant according to the whole area of the project. The project documentation does not provide stormwater management systems except in operating areas outside of the site whereby a filter separates sediment solids that could run off into waterways -- streams and downstream flooding. In terms of choices regarding roadways, construction was used with soil that allows rainwater to infiltrate. There is little documentation showcasing the monitoring of the runoff (PGA 35).
		Source: *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 187.* *CSI Ingenieros, Plan Gestion Ambiental - Etapa de Construcción (PGA), Abril 2012, p. 35.*
		RECOMMENDATIONS The project would benefit from increasing the percentage a site proposed for water storage, infiltration, evaporation, water Harvesting and cistern Storage.
NW2.2 Reduce Pesticides and Fertilizer Impacts	**0**	**No score**
		There are no references in the documentation regarding measures to avoid the use of pesticides or fertilizers in the project. The current land use is predominantly based on agribusiness as well as the use of artificial pasture treated with fertilizers.
		Source: *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)", July 2012, p. 47.*
		RECOMMENDATIONS: The credit could score higher once the project identifies the current use of pesticides and/or fertilizers in the close-by agribusiness and identify a plan to minimize its use. An added recommendation would be to measure the toxicity of the fertilizer used and minimize the toxicity by replacing the existing ones with lower toxic fertilizers or find practices that replace fertilizers all together.
NW2.3 Prevent Surface and Groundwater Contamination	**4**	**Enhanced**
		The project conducted an environmental impact assessment that proves that the project activity at both construction and operational phases does not have an adverse environmental impacts. In the cases that there were identified in the environmental impact, the project developed environmental monitoring plans as well as mitigation plans to ensure the project achieved its goals while maintaining environmental safeguards (PDD, p. 47). They have a waste management plan for waste produced during both phases -- construction and operational. They also consider activities from complimentary contracted companies (PGA, p. 42). The Waste Management Plan is specifically created for the project on Water and Solid Waste (PDD, p. 47). Machinery repairs (PGA, p.42), oil spills, and contamination of any water, surfaces, or soils have an Environmental Monitoring Plan. Spills are accounted for in a management plan avoiding any potential spillages (EIA, p. 45) through the removal of oil spilled on the surface, disposing of these in specialized bags used for such removal of up to 50 kg per bag (EIA 2010, p. 200).

		Source: *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 200.* *CSI Ingenieros, "Plan Gestión Ambiental Etapa de Construcción (PGA)", Abril 2012, p. 42.* *PDD- Doc 12122012, p. 47.*
		RECOMMENDATIONS: The project has done a good job and could achieve higher level once the project includes efforts to replace hazardous materials with non-polluting materials and proves the location of potentially polluting substances away from sensitive environments. Also including larger land-use controls, such as creating or changing land use on site that decreases pollutants in the area, would increase the score.
NW3.1 Preserve Species Biodiversity	**2**	**Improved**
		The Wind Farm "Florida" has identified the different species potentially affected on site. Assessments on the effects the turbines have on birds, bats, and any other species have been identified in order to reduce the impact and achieve net habitat quality. The project identified collisions and displacement as the main impacting elements on surrounding species, especially bats and birds. In general, the wind farm is located in an area of low environmental value. The decision to place the wind farm in such an area is one that benefits the potential negative effects it could have on the surrounding biodiversity. In addition, the geography of the area is not conserved and therefore the EIA (October 2010) considers less species that are endangered (EIA 2010: 28).
		Source: *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)", March 2011, p. 41-42.* *CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)", July 2012, p. 34-36.* *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 24-28.*
		RECOMMENDATIONS The project can achieve a higher score in this credit category by developing a plan to help incorporate connections to habitats that can be fractured and displaced with the wind farm. The vibrations caused when the turbines are in function, noise and shadows should be all taken into account to understand its potential harm to fauna and species. Research in this area can be furthered to counter the potential deleterious effects. - Include a habitat expansion strategy plan.
NW 3.2 Control Invasive Species	**0**	**No score**
		There is no information in the project documentation that describes the introduction of local or exotic vegetation due to the project's introduction into "Florida". Therefore, this credit has no score
		Source:
		RECOMMENDATIONS
NW3.3 Restore Disturbed Soils	**8**	**Conserving**
		The PGA (2012) demonstrates that the project will restore the soil to its original state. Soil restoration is an objective of the project and is delineated within a plan to be totally achieved except for at the footprint of the turbines. The rest of the soil is planned to return to the state that it was found (considering which soil was top soil and which was subsoil). Soil compaction is a control mechanism that is identified in the PGS (2012). Monitoring the soil is also part of the plan where before and after photographs will be used as well as yearly supervision.
		Source: *CSI Ingenieros, "Plan Gestión Ambiental Etapa de Construcción (PGA)", Abril 2012, p. 54-58.*
		RECOMMENDATIONS The project must restore the soil to its original use. In Florida, soil is used for agribusiness, milking industry, artificial pastures and other rural landscape usage.

		The documentation of soil reuse is also necessary. For example, documenting insurance to return soils to the project's original state through financial and legal means can help justify restorative level credit.
NW3.4 Maintain wetland and surface water functions.	**0**	**No score** There is no information according to the affection of the project to the ecosystem functions, wetlands, or any other type of water body as well as riparian. *Source:* *RECOMMENDATIONS*
NW 0.0 Innovate Or Exceed Credit Requirements		N/A
	39	

CLIMATE AND RISK		
	Score	**NAME OF THE PROJECT**
CR1.1 Reduce Greenhouse Gas Emissions	**25**	**Restorative** The project's greenhouse gas emissions are reduced due to the nature of the facility: wind power. This electricity will be injected into the national grid. 120,680.00 tones of carbon emissions are being replaced with clean energy produced through the wind farm's wind power. This project, therefore, contributes to diversifying the national energy matrix in Uruguay. The project also has allowed for national capacity building of Uruguayan workforce to build future wind farms in the country. The project is assumed to not produce any net carbon emissions, which would allow for a higher score (conserving). However, the project will score superior due to the lack of documentation of a life-cycle carbon assessment. *Source:* UNFCC, "Project Design Document form for CDM Project Activities (F-CDM-PDD Version 4.2)", Dec 2012, p. 1-48. F-CDM-MoC. Modalities of Communication Statement (version 02.1), Oct 25, 2012 *RECOMMENDATIONS*
CR1.2 Reduce Air Pollutant Emissions	**12**	**Conserving** The project enhances the region's sustainability. The CDM-PDD verifies the project as reducing CO2, NOX, and SO2 through the displacement of power plants that would otherwise emit these pollutants. The project itself has a negligible effect on the air quality. In summary, the project's overall pollutant reduction is achieved directly with zero pollutants created at the operation and construction phases as well as by displacing demand for fossil fuels with renewable energy. (CDM-PDD, 2). *Source:* *UNFCC, "Project Design Document form for CDM Project Activities (F-CDM-PDD Version 4.2)", Dec 2012, p. 1-48.* *RECOMMENDATIONS* Due to the fact that no pollutants will be emitted as verified through the documentation provided, there are no recommendations.

CR2.1 Assess Climate Threat	**0**	**No score**
		The project's documentation reaches the benchmark for this credit and conducts a survey for resource constraints. The team is very comprehensive in its pre-planning phases (EIA 2010, chapter 3). The wind farm is successful at diversifying the country's energy matrix. This allows for the country to rely less on fossil fuels and on importing them from neighboring countries. The project identifies a list of potential environmental hazards but lacks creating alternative design options in the event that the weather conditions change in the area. These considerations, once taken in the design of the project can result in achieving a higher score in this section. Climate change can have a strong negative or positive effect on the durability and longevity of the turbines.
		Source: *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 179-201.*
		RECOMMENDATIONS: - The project's development of a life-cycle assessment could result in calculating net carbon emissions. - The project can conduct a Climate Impact Assessment and an Adaptation Plan for climate related impacts in the region where the project is located.
CR2.2 Avoid Traps And Vulnerabilities	**2**	**Improved**
		The project's documentation reaches the benchmark for this credit and conducts a survey for resource constraints. The team is very comprehensive in its pre-planning phases (EIA 2010, chapter 3). The wind farm is successful at diversifying the country's energy matrix. This allows for the country to rely less on fossil fuels and on importing them from neighboring countries. The project identifies a list of potential environmental hazards but lacks creating alternative design options in the event that the weather conditions change in the area. These considerations, once taken in the design of the project can result in achieving a higher score in this section. Climate change can have a strong negative or positive effect on the durability and longevity of the turbines.
		Source: *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 179-201.*
		RECOMMENDATIONS Taking into the account the potential for wind transformations due to climate change, the project would benefit from wind assessments that take into account wind power shifts.
CR2.3 Prepare For Long-Term Adaptability	**0**	**No score**
		No information has been provided according to long-term adaptability.
		Source:
		RECOMMENDATIONS: The project is recommended to include a long-term plan to address the potential weather changes that can take place in the site location. These include droughts, heat waves, etc. The project can also include explanations on how the wind farm can aid the country is there are other climate change related effects like energy shortages due to a decrease in hydroelectric power (for instance). Plans and design documents that include how the design restores or rehabilitates environmental changes/shifts due to climate change should be included.
CR2.4 Prepare For Short-Term Hazards	**3**	**Improved**
		The project identified manmade and/or natural hazards that could occur during the construction and operational phase. Each potential hazard has a contingency plan, monitoring system, and management plan that follow best-practices. Spills are an example of the ample consideration given to any contingency that could occur, the project team has produced specific plans set-up to effectively manage the issue (EIA 2010, chapter 3).
		Source: *CSI Ingenieros, "EIA: Parque Eólico Estudio de Impacto Ambiental (EIA)." Oct. 2010, p. 179-201*

		RECOMMENDATIONS - The project has yet to provide assessment of natural hazards in the area, such as heat waves, droughts, rise in temperatures, wildfires, etc. - If any of these natural occurrences were to be identified, the project should match these assessments with potential each potential event.
CR2.5 Manage Heat Island Effects	**0**	**No score** The project is to be located in a greenfield (CDM-PDD, p 2-11). In Wind Farms, the general lack of the paved zones makes heat island effect not significant. *Source:* *RECOMMENDATIONS* The project can showcase the surface area and the respective materials used in the project zone.]
CR0.0 Innovate Or Exceed Credit Requirements		*N/A*
	42	

OVERALL:	**252**	**Wind Farm "Florida"**

APPENDIX E: SOURCES

DOCUMENTATION PROVIDED
General Information.
CSI Ingenieros, "Plan de Contingencia" in Plan Gestion Ambiental Etapa de Construcción (PGA). Abril 2012
CSI Ingenieros, "Parque Eolico Estudio de Impacto Ambiental (EIA)." Octubre 2010.
CSI Ingenieros, "Parque Eólico Florida Informe Ambiental Resumen (IAR)." Marzo 2011.
Pinon, Andrea, "Environmental & Social Report 1 – Florida Plant 50 MW (Revision 1)."June 2013.
Pinon, Andrea, "Environmental & Social Report 2 Florida Plant 50 MW." Dec. 2013, Florida- Uruguay, Polesine S.A. – Parque Eólico Florida.
Pinon, Andrea, "Environmental & Social Report 3 – Florida Plant 50 MW." July 2014, Florida- Uruguay, Polesine S.A. – Parque Eólico Florida
CSI Ingenieros, "Solicitud de Autorización Ambiental de Operación (SAAO) – Parque Eólico Florida." Agosto 2013.
CSI Ingenieros, Plan Gestion Ambiental Etapa de Construcción (PGA), Abril 2012.
Polesine S.A., "Plan de Relacionamiento con las Partes (Stakeholder Engagement Plan – SEP) Etapa de Operación Parque Eólico Florida." Junio 2014.
Burson-Marsteller, "Plan de Comunicación Parque Eólico Florida." Julio 2012.
Akuo Energy Uruguay, "Plan de Desarrollo Comunitario." 2012.
Jaffe, K., J. Kallinich, and M. Marburger. "Site Assessment Report Florida (UY) 21 x Nordex N117/2400 R911EC3A," June 2012.
Contrato de Compraventa, Cláusula XIV.5
Notificación Resolución Ministerial No. 1391/2013 Conferencia de Vista (art. 75 Decreto 500/991) Notificación Certificado de Proyecto, Nov.10 2013 de Dinama.
UNFCC, "Project Design Document form for CDM Project Activities (F-CDM-PDD Version 4.2)", Dec 2012, p. 1-10.
Allain, Bruno, The Experts in Renewable Energy, "EoC Inspection", 2014.
F-CDM-MoC. Modalities of Communication Statement (version 02.1), Oct 25, 2012
Piñon, A, Polesine S.A., " Componente Nacional de Inversion Parque Eolico Florida." Jul. 29 2013.