

Luxembourg, 4th April 2022**Public**

Environmental and Social Data Sheet

Overview

Project Name: ENDESA WIND AND SOLAR TICO ALLOCATION
 Project Number: 2021-0642
 Country: Spain
 Project Description: Solar and wind renewable energy generation projects. Allocation under the Framework Loan (FL) 2020-0916

EIA required: yes

Project included in Carbon Footprint Exercise¹: yes

(details for projects included are provided in section: “EIB Carbon Footprint Exercise”)

Environmental and Social Assessment

Environmental Assessment

The project is an allocation under the operation ENDESA WIND AND SOLAR GREEN FRAMEWORK LOAN (2020-0916). The project consists of the construction and operation of 10 solar photovoltaic (PV) plants organised in three clusters (Brovales, Veracruz and Tico Solar), one wind farm (Tico Wind) and other ancillary facilities -such as transmission lines, substations and access roads- for a total capacity of ca. 645 MWp. The project is located in Spain. Cluster Brovales and Veracruz in the region of Extremadura and Tico Solar and Tico Wind in the region of Aragón. The plants included in the project are identified in the table below:

¹ Only projects that meet the scope of the Carbon Footprint Exercise, as defined in the EIB Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: 20,000 tonnes CO₂e/year absolute (gross) or 20,000 tonnes CO₂e/year relative (net) – both increases and savings.

Luxembourg, 4th April 2022

Cluster	Plant name	Technology	Capacity [MW _p]	Province	Municipality
BROVALES	Apicio	Solar PV	47.9	Badajoz	Fregenal de la Sierra, Burguillos del Cerro y Jerez de los Caballeros
	Beturia	Solar PV	49.6	Badajoz	Fregenal de la Sierra
	Nertobriga	Solar PV	49.0	Badajoz	Fregenal de la Sierra
	Ardila	Solar PV	49.9	Badajoz	Fregenal de la Sierra
	Cincinato	Solar PV	49.9	Badajoz	Fregenal de la Sierra y Bodonal de la Sierra
VERACRUZ	El Doblón	Solar PV	46.6	Badajoz	Almendralejo y Mérida
	Veracruz	Solar PV	47.5	Badajoz	Almendralejo y Mérida
	Puerta Palmas	Solar PV	48.0	Badajoz	Mérida
TICO SOLAR	Tico 1	Solar PV	43.4	Zaragoza	Azuara, Villar de los Navarros y Herrera de los Navarros
	Tico 2	Solar PV	33.6	Zaragoza	Azuara, Villar de los Navarros y Herrera de los Navarros
TICO WIND	Tico Wind	Onshore wind	179.9	Zaragoza	Azuara, Villar de los Navarros y Moyuela

The transmission line for “Apicio” PV plant (part of “Brovaes” cluster) is included in the Annex I of the EIA Directive (Directive 2014/52/EU amending the EIA Directive 2011/92/EU), with ca. 22 km in 400 kV. All the PV plants and other grid interconnection infrastructure are included in the Annex II of the EIA Directive and have been screened in by the competent authority, requiring an EIA, including public consultation. The competent authorities considered all the comments presented during the EIA, in line with the relevant legal framework. General quality of the Environmental Impact Studies (EIS), in terms of the impact assessment methodology, studies and fieldwork conducted is considered acceptable. The EIS of each plant and ancillary facilities such as the transmission lines included a cumulative impacts assessment taking into account the neighbouring (existing and planned) infrastructures, including the plants within the relevant cluster. The plants and associated infrastructure obtained their environmental permits (Declaración de Impacto Ambiental - DIA) between December 2019 and February 2021. The project schemes are currently under construction and the last plants are expected to be operational by end of June 2022.

The closest Natura 2000 sites to the project are listed in the table below:

Cluster	Plant name	Size (ha)	Closest Natura 2000 site to the plants and associated infrastructure - distance (km) and direction
BROVALES	Apicio	133.0	Line runs across SAC ES4310019 "Río Ardila Alto", 0.15 km to W SPA ES0000330 "Embalse de Valungo"
	Beturia	165.3	7 km to NE SAC ES4310019 "Río Ardila Alto", 8km to S SPA ES0000051 "Sierra de Aracena y Picos de Aroche"
	Nertobriga	108.1	2 km to NE SAC ES4310019 "Río Ardila Alto"
	Ardila	146.1	7 km to NE SAC ES4310019 "Río Ardila Alto", 8km to S SPA ES0000051 "Sierra de Aracena y Picos de Aroche"
	Cincinato	150.7	8 km to S SPA ES0000051 "Sierra de Aracena y Picos de Aroche"
VERACRUZ	El Doblón	127.6	9.2 km to SW SPA ES0000398 "Complejo Lagunar de La

Luxembourg, 4th April 2022

Albuera ²			
	Veracruz	120.0	8 km to NE SPA ES0000334 "Sierras Centrales y Embalse de Alange"
	Puerta Palmas	122.9	7.7 km to NE SPA ES0000334 "Sierras Centrales y Embalse de Alange"
TICO SOLAR	Tico 1	80.0	8.3 km to W SCI ES2430110 "Alto Huerva-Sierra de Herrera" and 8.6 to E SPA ES000300 "Río Huerva y Las Planas"
	Tico 2	75.9	8.6 km to W SCI ES2430110 "Alto Huerva-Sierra de Herrera" and 8.6 km to E SPA ES000300 "Río Huerva y Las Planas"
TICO WIND	Tico Wind	75.9	0.23 km to W SCI ES2430110 "Alto Huerva-Sierra de Herrera" and 5.9 km to NW SPA ES000300 "Río Huerva y Las Planas"

The Spanish EIA process incorporates the Habitats assessment, whereby competent authorities can only issue the environmental permit once the project has been either screened in or screened out for both EIA and an appropriate assessment (AA).

The four clusters and ancillary facilities are expected to generate limited impacts during both construction and operation phases. The project, taking also into account cumulative impacts, entails limited negative impacts in particular on the runoff characteristics of the drainage basin, fauna, landscape and soil.

During the construction phase, main impacts are associated with the presence of machinery, vehicles, construction workers, and the erection of the PV and wind plants infrastructure. The impacts relate to increase of dust and noise due to construction related activities, increased wildfire risk, as well as increased traffic in the surrounding areas, soil erosion due to the loss of vegetal cover, visual impacts due to the construction operations and loss or fragmentation of habitats. During the operation phase, the main impacts are related to loss and fragmentation of habitats, barrier effect, visual impacts and collision risk (for the transmission lines and for the wind project).

Specific mitigation measures required for implementation during construction and operation phases, vary per cluster but overall can be summarised as follows:

- Prevention and mitigation measures during construction, in particular for dust and noise emissions, protection of soil and groundwater and conservation of protected trees and vegetation;
- In relation to the risk of collision for the transmission lines, the mitigation measures are based on the Royal Decree 1432/2008²;
- In relation to the risk of collision for the wind turbines, the mitigation measures are specific rules to be applied are included in the environmental permits, including under which circumstances a wind turbine shall be shut off ("protocolo de parada");
- Use of specific fences to guarantee fauna permeability, mitigating barrier effects;
- Habitat conditioning (e.g. nesting aids) of certain bird and bat species;
- Implementation of fauna monitoring programmes;
- Reuse of soil layers for restoration activities;
- Implementation of restoration and revegetation plans; and
- Landscape integration plans.

The environmental impact studies covers the entire lifecycle of the facilities, including the decommissioning, foreseeing restoration activities to reinstate the sites in their original states after the operational phase. Waste produced during decommissioning is classified following

² These include i.a. ensuring that the design of pylons and insulating elements minimize the electrocution risk, and that the lines include elements to enhance the visibility of conductors to reduce collision risk.



Luxembourg, 4th April 2022

the European List of Waste. Waste electrical and electronic equipment Directive ((Directive 2018/849 amending Directive 2012/19/EU) is transposed by national law RD 110/2015. PV panels contains a complex mixture of materials, some of which are hazardous, that need to undergo waste management operations. RD 110/2015 describes the treatment this type of waste needs at the end of the life, including preparation prior to recovery (such are recycling) or disposal. Despite the lack of legislation regarding the recycling of wind turbine blades, the European wind industry is increasingly developing strategies and tangible commitments to face end-of-life issues of the sector³. The promoter will have to present a decommissioning plan to the competent authority in advance of the planned end of the activities.

The main physical climate change risks of the PV clusters relate to floods and solar irradiation change, and to a lesser extent, to temperature increase, precipitation increase and wind speed increase. The related mitigation measures foresee enhanced drainage systems, the use of equipment suitable for high temperatures and the consideration of local wind conditions as per industry practice. The respective risks of the wind farm relate to floods and wind speed increase, and to a lesser extent, temperature increase, precipitation increase and solar radiation change. The related mitigation measures include enhanced drainage systems, design of WTG suitable for site locations, location of WTG at least 1.5 times its height from transmission lines and buildings and the use turbines certified for high temperatures.

The project is fully aligned to the goals and principles of the Paris Agreement as set out in the Bank's Climate Bank Roadmap and the Energy Lending Policy.

A detailed description of the specific issues regarding each cluster is included below:

BROVALES

This cluster occupies a total area of ca. 703 ha, and has a total capacity of c. 249 MWp. It is located in the province of Badajoz in the municipalities of Fregenal de la Sierra, Burguillos del Cerro, Jerez de los Caballeros y Bodonal de la Sierra. It is composed of five PV plants located within a radius of ca. 13 km. Ardila PV plant includes a 30 kV switching substation from where a ca. 1.6 km underground line in 30 kV will connect to Beturia 30/132 kV substation. Cincinato PV plant comprises Cincinato 30/132 kV substation from where a ca. 5.4 km 132 kV line will connect to the aforementioned Beturia 30/132 kV substation. Similarly, the respective 30/132 kV substations of Beturia and Nertobriga PV plants will evacuate the electricity produced by each PV plant through overhead lines of ca. 5.2 km and 4 km respectively until Apicio 30/132/400 kV substation, part of the PV plant of the same name. A 400 kV overhead line of ca. 21.4 km will evacuate the energy from this last substation to the existing Brovales 400 kV substation, owned by the Transfer system Operator (TSO).

The schemes entail limited negative impacts mainly on landscape, soil and fauna, with the presence in some cases of species like Mehely's Horseshoe Bat (*Rhinolophus mehelyi* – Vulnerable as per the IUCN Red List) and Bonelli's Eagle (*Aquila fasciata* – Near Threatened).

The environmental permits were issued between August 2020 and February 2021 and cover the PV plant, the substations of the PV plants and the transmission lines. The EIS include a cumulative study of the cluster along with four additional neighbouring PV plants and associated ancillary infrastructure. The EIS includes an Appropriate Assessment of the impact on Natura 2000 sites concluding that, although the transmission line for "Apicio" PV plant runs across SAC ES4310019 "Río Ardila Alto", no negative impacts are expected. The transmission line will be parallel to other existing HV lines and its layout is the furthest to the Special Protection Area compared to the alternatives considered. The competent authority

³ [Wind industry calls for Europe-wide ban on landfilling turbine blades | WindEurope](#)



Luxembourg, 4th April 2022

confirmed in the environmental permits the absence of significant impact on Natura 2000 sites and included additional measures. These include habitats improvement of the SAC ES4310019 "Río Ardila Alto" within the area affected by the crossing of the line.

The main impacts of the PV plants relate to soil, groundwater, loss or fragmentation of habitats, landscape integration, and collision risk (for the transmission lines). The related **mitigation measures** include reuse of soil layers for restoration activities, planting a two-metre wide perimeter tree barrier using autochthonous species⁴ and equipping the transmission lines with markers. In addition, the competent authority requested environmental monitoring plans, compensation measures including conservation plan agreements with NGOs⁵, reforestation⁶, R&D project to increase biodiversity in PV plants⁷, restoration and reconstruction of ecologically equivalent ecosystems⁸.

VERACRUZ

This cluster occupies a total area of ca. 370 ha and has a total capacity of 142.1 MW_p. It is located in Badajoz, in the municipalities of Almendralejo y Mérida. It is composed of three PV plants located within a radius of ca. 14 km. Puerto Palmas PV plant includes a 30 kV switching substation from where a ca. 4.1 km underground line in 30 kV will connect to El Doblón 30/220 kV substation. Similarly, Veracruz 30/220 kV substation will evacuate the electricity produced by the PV plant of the same name through a ca. 5.6 km overhead line in 220 kV to El Doblón 30/220 kV substation. This substation is connected through a 220 kV overhead line of ca. 5.4 km to Infraestructuras San Serván 220 substation from where a ca. 0.6 km overheadline in 220 kV will connect to the existing San Serván 220 substation, owned by the TSO. The ancillary infrastructure to connect El Doblón 30/220 kV substation to the substation owned by the TSO is not included in the scope.

The schemes entail limited negative impacts mainly on landscape, soil and fauna, with the presence in some cases of species like Little Bustard (*Tetrax tetrax* – Vulnerable) and Great Bustard (*Otis tarda* – Vulnerable).

The environmental permits were issued between October and December 2020 and cover the PV plant, the substations of the PV plants and the transmission lines. The EIS include a cumulative study of the cluster along with five additional neighbouring PV plants and associated ancillary infrastructure. The EIS consider that Natura 2000 sites will not be affected, and conclude that there is no need for an Appropriate Assessment. . The competent authority confirmed in the environmental permits the absence of significant impact on Natura 2000 sites.

The main impacts of the PV plants relate to soil, groundwater, loss or fragmentation of habitats, landscape integration, collision risk (for the transmission lines) and cultural heritage. The related **mitigation measures** include reuse of soil layers for restoration activities, planting a two-metre wide perimeter tree barrier using autochthonous species⁹, equipping the transmission lines with markers and enhanced monitoring for potential remains and antiquities. In addition, the competent authority requested environmental monitoring plans, a 10-year specific avifauna study, soil studies on a yearly basis for 10 years, increased restoration measures and habitat improvement areas to be rented and maintained.

⁴ *Pistacia lenticus* as a basis along with other plants unevenly distributed for a better visual integration. For Cincinato PV plant, this tree barrier will also include transplanted olive trees that were located within the PV plant perimeter.

⁵ Beturia PV plant

⁶ Mediterranean dwarf palm (*Chamaerops humilis*)

⁷ Beturia PV plant

⁸ A pool will be constructed in Ardila PV plant to enhance the habitat of reptiles and the Black Stork

⁹ *Pistacia lenticus*, *quercus coccifera*, *Crataegus monogyna*, *Pyrus*, *Bourgaeana*, *Rosmarinus Officinalis*, *Myrtus Communis*, *Rosa Canina*, *Cytisus Multiflorus* and *Lonicera Etrusca* among others.



Luxembourg, 4th April 2022

TICO SOLAR

This cluster occupies a total area of ca. 135 ha, and has a total capacity of c. 77 MWp. Tico Solar 1 and 2 will connect through 30 kV underground lines of ca. 1.8 km and 3.7 km respectively to Villar de los Navarros 30/220 kV substation. This substation will be connected through a ca. 3 km overhead line in 220 kV (under the scope of Tico Wind project below) to the Muniesa Promotores 400/220 kV substation (shared with other promoters), which is connected through a 0.05 km line to Muniesa 400 kV substation, owned by the TSO.

The schemes entail limited negative impacts mainly on landscape, soil and fauna, with the presence in some cases of species like the Little Bustard (*Tetrax tetrax* – Vulnerable) and Black-bellied sandgrouse (*Pterocles orientalis* – Endangered).

The environmental permits were issued between February and March 2021 and cover the PV plant, the respective substations of the PV plants and the underground transmission lines. The EIS include a cumulative study of the cluster along with four existing wind farms, 26 wind farm under development and associated ancillary infrastructure. The cumulative impact study concludes that landscape integration will be the largest impact, which is due mainly to the numerous wind farms present in the area. The EIS consider unlikely that Natura 2000 sites will be affected, and conclude that there is no need for an Appropriate Assessment. The competent authority issued the permit on this basis.

The main impacts of the PV plants relate to soil, groundwater, loss or fragmentation of habitats and landscape integration. The related **mitigation measures** include reusing of soil layers for restoration activities, planting an eight-metre wide perimeter tree barrier using autochthonous species and installing porous fencing to allow passage of fauna. In addition, the competent authority requested environmental monitoring plans, increased restoration measures and habitat improvement areas to be maintained.

TICO WIND

Tico wind farm occupies a total area of ca. 76 ha, and has 43 Wind Turbine Generators (WTG) for a total capacity of ca. 180 MWp. The wind farm will be connected to Villar de los Navarros 30/220 kV substation mentioned above, sharing infrastructure with Tico solar and other promoters.

The wind farm entails limited negative impacts mainly on landscape, loss of habitats and specially on avifauna and bats. The avifauna and bats studies included in the EIS was based on bibliography and annual field surveys. The sensitive species observed in the area of the project are, Black-bellied sandgrouse (*Pterocles orientalis* – Endangered) and Dartford Warbler (*Sylvia undata* – Near Threatened). Additionally, the avifauna studies identified the following species that could be affected by the project: Lesser Horseshoe Bat (*Rhinolophus hipposideros* – Near Threatened), Western Barbastelle (*Barbastella barbastellus* - Vulnerable), and Gray Big-eared Bat (*Plecotus austriacus* – Near Threatened). Eventually, the main impact of the project will be the barrier effect and the risk of collision. With the adequate measures in place as foreseen in the Environmental Management Plans (EMPs), and the permits, no significant impact on those species is expected.

As a result of the EIA process, the environmental studies were updated to minimise the impact on habitats and on protected species such as the Black-bellied sandgrouse. Further to the issue of the environmental permits in December 2019, the project design was modified accommodating for a smaller number of turbines of smaller size, decreasing its negative impacts on regional protected areas and neighbouring towns. The competent authority approved the proposed modifications:

Luxembourg, 4th April 2022

	Environmental permit	Revised design
Number of WTG	50	43
Total Swept area (m2)	737 057	588 446
Hub height (m)	110	106.5-108
Rotor diameter (m)	137	132

The EISs include a cumulative study of the wind farm along with four existing wind farms, 26 wind farm under development and associated ancillary infrastructure. The cumulative impact study concludes that landscape integration will be the largest impact, which is due mainly to the numerous wind farms and transmission lines present in the area. The EIS includes an Appropriate Assessment of the impact on Natura 2000 sites concluding that no negative impacts are expected. The competent authority confirmed the absence of significant impact on Natura 2000 sites.

The main impacts of the project relate to loss or fragmentation of habitats, landscape integration and fauna (collision risk, barrier effect). The related **mitigation measures** include rigorous surveillance of the real mortality rates during the technical life of the wind farm and taking the necessary actions accordingly (from stopping the WTG concerned up to relocation or removal as described in the rules provided in the environmental permits “protocolo de parada”) and equipping the transmission lines with markers. In addition, the competent authority requested environmental monitoring plans, restoration plans for the Habitat Thermo-Mediterranean and pre-desert scrub (code 5330 as per the Habitats Directive), installation of anti-collision equipment and habitat improvement areas for the Black-bellied sandgrouse.

EIB Carbon Footprint Exercise

In accordance with the Bank’s current Carbon Footprint methodology it is calculated that based on the avoidance of electricity generation from a combination of existing and new power plants in Spain (combined margin for intermittent generation), the total relative effect of the project is a net reduction in CO₂ equivalent emissions by ca. 476 kt CO₂e/yr.

For the annual accounting purposes, if the project is included in EIB Carbon Footprint, the project emissions will be prorated according to the EIB lending amount signed in that year, as a proportion of project cost.

Social Assessment

Brovales cluster (ca. 703 ha) is located in land used for raising cattle and sheep and for agricultural uses whereas the transmission lines run across agroforestry land in limited areas. In Veracruz cluster (ca. 370 ha) the PV plants are located in agricultural land (mainly olives and vineyards to a lesser extent) whereas the transmission lines run across olives and vineyards indistinctively. Tico Solar (ca. 135 ha) and the associated transmission lines are located in agricultural land. Tico Wind (ca. 76 ha) will be mainly located in non-irrigated agricultural land some of which is abandoned. There are also some land plots of oak and almond groves and pre-desert scrub habitats.

The promoter has engaged with the land owners in order to secure voluntary agreements for the lands required by all project infrastructures, in the form of leases with annual payments. Some plots of land been secured through bilateral agreements. If voluntary agreements cannot be reached, the promoter intends to require expropriation, in line with Spanish legislation. In Spain, all projects required for the implementation of the different activities within the electricity sector, including generation, promoted by public or private companies, are considered public utility, and are subject to urgent forced expropriation to be carried out by the authority in the interest of the promoters.



Luxembourg, 4th April 2022

Public Consultation and Stakeholder Engagement

The public consultation process was carried out under the EIA process for all project components, as required by EU law and as transposed by national and regional law. The promoter has channels of contact on sustainability and environmental matters (sostenibilidad@endesa.es, medioambienteiberia@endesa.es). The promoter has a program of “Creating Shared Value - CSV”, aimed at engaging with local stakeholders of its projects to define and put in place sustainability initiatives and plans that will have a positive impact on the communities¹⁰. Specifically, the promoter has developed capacity-building programs on PV installation skills targeted for local unemployed population. Besides, CSV also foresees energy efficiency partnerships with public and private stakeholders and is currently considering the deployment of agri-PV.

Other Environmental and Social Aspects

The promoter is known to the Bank from previous operations and has sufficient E&S capacity to implement the project. The promoter has a solid organisational structure and has certified its management systems (ISO 9001, ISO 14001, ISO 45001).

Recent reports are pointing out the possibility of use of forced labour in the supply chain of solar PV panels. The promoter has a Human Rights Policy and a Code of Ethics in place, rejecting the use of any form of forced or compulsory labour, which are also applicable to their PV module suppliers. The promoter confirmed that each PV module supply contract contains a specific undertaking for the relevant supplier to comply with the principles this Code of Ethics. The promoter reserves the right to carry out verifications and monitoring activities aimed at checking compliance with this obligation by the supplier and also, to the extent feasible, on any of its subcontractors. The promoter has performed a supply chain mapping exercise with its suppliers, concluding that it did not find evidence that any of the factories involved in this project are using forced labour. The promoter is committed to continue its engagement with the PV module manufacturers and their sub-suppliers, and review their practices to avoid the use of forced labour in the supply chain. The project will have to comply with the EIB E&S Standards, which foresees to avoid the use of forced labour, and envisages additional due diligence further down the supply chain in case of concerns.

The promoter has set a goal to reach a total decarbonisation of its generation mix by 2050, and a target to reduce by 80% its GHG direct emissions by 2030, to reach less than 95 gCO₂eq/kWh – compared to 2017 levels that were about 439 gCO₂eq/kWh. The promoter is also disclosing actively its climate strategy and policies¹¹.

Conclusions and Recommendations

As a project undertaking:

- The promoter will have to demonstrate that the measures foreseen in the EISs and the permits, including measures to avoid, reduce and mitigate the impact, as well as monitoring indicators, were put in place during the construction and operational phases.

Under these conditions, the operation is acceptable in E&S terms.

¹⁰ [Social projects for the development of communities - Endesa](#)

¹¹ Scoring A under the Carbon Disclosure Project (CDP) in 2020 – Leadership level