



Dnepro Bugsky ESIA

Non-technical summary

21 November 2018

EBRD
One Exchange Square,
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1 Introduction

1.1 Overview

This non-technical summary presents the main findings and conclusions of the environmental and social impact assessment (ESIA) completed for the proposed Dnepro-Bugsky wind power plant (the project). The project will involve the construction, grid connection, commissioning and operation of a wind farm, located near the village of Olexandrivka, Bilozersk district, Kherson Oblast in southern Ukraine.

1.2 Who is developing the Project?

The project will be constructed, owned and operated by a special purpose company 'Dnepro-Bugsky Wind Power Project LLC (DBWPP)'. DBWPP will be owned by Akuo Energy, a private French company that develops, finances, constructs, and operates renewable energy power plants. The contractor for the Project construction had not been selected at the time of writing.

1.3 Who is financing the project?

The European Bank for Reconstruction and Development (EBRD) is considering financing the project. As such the project will be completed in compliance with the policy requirements of the EBRD. The project has been categorised as Category A in accordance with the EBRD's Environmental and Social Policy 2014, which means that it could result in potentially significant adverse future environmental and social impacts. Therefore, the project has completed a formal and participatory environmental and social impact assessment process which is summarised in this document.

The project may be financed by the European Bank for Reconstruction and Development. The EBRD is owned by 67 countries, as well as the European Union and the European Investment Bank. The EBRD provides financial support for various types of projects, including agribusiness, infrastructure, and transport.

1.4 Is there an opportunity to comment on the project?

In addition to the consultation activities that have already occurred, community members and other stakeholders can provide comment on the project or request further information. If you would like to comment you can contact the project company using the details shown in Table 1. In addition, there is a grievance form at the end of this document which can be used to raise an issue.

Table 1: Project company contact details

Project Proponent	Information
Name of Company	Dnepro-Bugsky Wind Power Station LLC (DBWPP)
Address	140, av. Champs Elysées, 75008 Paris, France
Telephone	+33 (0)1 47 66 09 90
E-mail	akuoenergy@akuoenergy.com
Website	http://www.akuoenergy.com/en

1.5 Stakeholder engagement

A stakeholder engagement plan (SEP) has been developed by Mott MacDonald to assist the project company in communicating the stakeholder engagement program to all interested and affected parties. The SEP contains details of the grievance mechanism which will be used to allow any comments or concerns to be brought to the attention of the project company either verbally or in writing by filling in the grievance form. Grievances may also be submitted anonymously or without the use of the form if preferred. The grievance form is attached to this document as Annex A.

The project company will make all reasonable efforts to address any issues upon the acknowledgement of grievance. If it is not able to address the issues with immediate corrective action, a long-term corrective action will be identified. The complainant will be informed about the proposed corrective action and follow-up of corrective action within 25 calendar days upon the acknowledgement of grievance. Preventive actions will be identified and implemented with the aim of preventing recurrence of the same issue in the future; these will also be communicated to the complainant.

2 The project

2.1 Where will the Project be located?

The project will be located within Bilozersk district, Kherson Oblast in southern Ukraine as shown in Figure 1 and Figure 2. It is within the territory of Oleksandrivka Village Council and Oleksandrivka is the closest village to the site, with the closest wind turbine approximately 2.5 km from the nearest dwelling. Construction of the transmission line will run through land which sits within three village councils - Oleksandrivska, Pravdinska, and Posad-Pokrovska.

Figure 1: Project location within Ukraine



Source: Dnepro Bugsky ESIA 2018

Figure 2: Configuration of project area



Source: ESIA

2.2 What is the project?

The project will consist of 25 wind turbines located on the coast of the Dnipro-Bug Estuary. Each wind turbine will generate electricity to be fed into the national grid system. The project will also comprise a transmission line, site substation and access roads. In addition, a temporary construction compound and equipment laydown areas will be required during the construction phase.

A wind farm generates electricity by the following stages:

- Wind turbine blades are turned by the wind
- Blades rotating turns a generator which converts this energy to electricity
- Each wind turbine houses a transformer, which increases the voltage to allow transmission to the substation through a network of underground cables
- At the substation the electricity voltage will be increased to allow for long distance transmission
- Electricity is delivered via the transmission line to the national grid, from where it is distributed to energy customers

The wind turbines will be supplied by Nordex and spaced between 500 and 1500 meters apart. A photograph of these turbines used on an existing project is shown in Figure 3. The blade diameter is 149 meters and hub height of 105 meters. The individual wind turbines have an generation capacity of 4.4 megawatts (MW) with a with a total combined capacity of 110MW. The turbines will be located in two clusters to the east and west of the site. Foundations for each

wind turbine will occupy approximately three hectares of land in total although this will not be visible above ground.

A 150kV transmission line will run between the project site substation and the existing Posad-Pokrovska grid substation which is 27.3 km to the north east. It will consist of 196 pylons, spaced between 100 and 150 meters apart, requiring approximately 10 hectares of land in total.

A central transformer substation and control point will be sited in the middle of the site with open 150kV switchgear. Both the substation and the control point require 1.8 hectares of land.

There will also be an internal electricity network made up of underground cables to connect individual wind turbines with the site substation. The underground cables will be buried in trenches and will follow the route of the site access roads wherever possible, requiring approximately 15 hectares of land.

There will be a temporary site compound established during the construction period. The construction compound will predominantly be used for storage of construction materials and office facilities.

Figure 3: Photograph of the proposed wind turbines



Nordex promotional material, 2018

2.3 I live near the project, will I need to relocate?

No one will need to relocate during the construction or operation of this project. The location of the project was chosen as it is fairly remote with local villages at sufficient distance from the site. The area proposed for the project is suitable for the siting and design of this project as it is large and flat and will not require the displacement of communities. The land is mainly agricultural so construction will not disturb or displace people. The majority of project components will be located within forest belts bordering agricultural fields so as to minimise impacts on farming.

2.4 Are there other proposed developments in the area?

2.4.1 Power projects

To our knowledge there is a plan to refurbish one of the South-Ukraine Nuclear Power Plant's 1000 MW nuclear reactors. There is also a proposed solar power station of 10 MW which may be located east of the village Oleksandrivka. Neither of these projects is expected to be developed soon.

2.4.2 Industry

There are two future projects planned in the Oleksandrivka village council territory. A cargo port NIBULON and the Kherson railway line. Neither of these projects is expected to be developed soon.

2.5 When will construction start?

Construction of the project will last approximately 12 months. The dates of the construction phase are yet to be finalised, however it is expected to commence during 2019.

2.6 What will happen during the construction phase?

During construction, key activities will include:

- Arrangement and construction of entrance roads to construction and assembly sites
- Development of construction facilities including waste treatment facilities, temporary offices, storage areas and a water supply network
- Construction of a central transformer substation, control point and associated access roads
- Installation of the wind turbines and the associated underground cables
- Construction on the overhead transmission line connecting the new site substation to the existing Posad-Pokrovska substation

2.7 What will happen during operation?

During operation of the project, wind will drive the turbines and generate electricity. The landscape of the area will be changed by the presence of the wind turbines and the pylons of the transmission line. Whilst operational, the project is not expected to result in any air pollution or vibration impacts and due to the distance from the nearest village it will not generate significant noise or shadow flicker.

2.8 What will happen at the end of the project?

The operational phase of the scheme is likely to be at least 25 years. At this point the project may be refurbished or decommissioned. During the decommissioning of the project the impacts would be similar to that experienced during construction and include impacts associated with:

- Removal of project components
- Restoring areas to a natural habitat
- Disposal of hazardous materials
- Retrenchment planning in the unlikely situation that a significant number of jobs are affected
- Utilization/recycling of waste
- Reclamation of land plots

3 Project need and analysis of alternatives

The project is compatible with the Energy Strategy of Ukraine and the National Action Plan for Renewable Energy until 2020. It will contribute to the national goal of creating 16,000MW of wind power capacity. It will also contribute to the national goal to reduce the average annual emission of carbon dioxide to 32 million tons.

Currently, almost all of the electricity consumed in the Kherson Oblast is generated by the South-Ukraine Energy Complex that consists of nuclear and hydroelectric power plants. The South-Ukraine Nuclear Power Plant provides around 95% of the electricity for three Oblasts, including the Kherson, so it would be beneficial for the area to diversify its source of electricity to increase the security of supply.

Alternatives to the project include a plan to commission another nuclear reactor in the South-Ukraine Nuclear Power Plant. However, there are several obstacles to the development of this nuclear reactor including the length of time required, funding availability, and the resistance of environmental NGO's and a significant portion of the population of the region. There are also a number of solar and wind projects planned for the region.

For the reasons outlined above, the project company believes that the development of the Dnepro Bugsky wind farm is the most beneficial electricity supply project for the region at the present time.

4 Managing environmental and social impacts

4.1 How was the Project assessed?

An environmental and social impact assessment was carried out to:

- Establish the existing environmental and social conditions in the project area
- Predict the impacts which will occur as a result of the project in the construction and operational phases
- Identify any measures required to avoid, minimise, mitigate or compensate predicted impacts

The significance of an impact is a function of the sensitivity of each receptor (this may be people or aspects of the environment) to a change in conditions, and the magnitude of the change created (scale, nature, duration). The assessment process was supported by consultation with local members of the public and organisations to ensure that their views and local knowledge was considered. The ESIA assessed the impacts of the project on the following aspects:

- Climate
- Geology and water resources
- Land use
- Biodiversity
- Ecosystems
- Landscapes and visual
- Air quality
- Noise and vibration
- Electromagnetic radiation
- Social impact
- Cultural heritage
- Cumulative impacts

Where the ESIA found that the project could cause significant impacts then actions or procedures (referred to as mitigation measures) have been developed to avoid, reduce or otherwise mitigate the effects. Most potential impacts will be avoided or minimised through these measures which are set out in an environmental and social monitoring and management plan.

A summary of the key findings and the main mitigation measures identified for the social and environmental impact is set out in the following section.

4.2 How will people and the environment be affected?

Whilst environmental and social issues interact, the findings of the ESIA broadly cover the following themes:

- Effects on people
- Effects on the natural environment and resources

4.2.1 Effects on people

There are three villages located in proximity to the project site. There is no industrial activity in the area and agriculture is the main source of income within the local communities. Key crops are cereals and sunflower. Unemployment in the villages is approximately 20%, which has reportedly led to migration of men from the area to bigger cities and abroad. Local men engage in cultivation of land and seasonal work at agricultural producers. Women are primarily engaged in housekeeping duties or selling produce, while a smaller portion of women also work in private agricultural enterprises.

The project components will be located on private and state-owned land not currently in use for agriculture. Most of the pylons and wind turbines are located in field margins which allows easy access for construction and maintenance, avoids land disturbance from the internal underground cables and maintains productive agricultural land. Any disturbance to the land during construction will be restored by the project.

Between 2017 and 2018, around 200 consultation meetings were held with the owners and users of land involved for Project construction within the territory of Oleksandrivska, Pravdynska and Posad-Pokrovska village councils. This informed the development of a detailed territory plan, environmental impact assessment and inventory of land plots. Consultations were held with all land owners and users covering:

- land use during construction and operation
- rights and obligations with regard to the Project
- information on compensation and entitlements for losses
- the details of signing servitude agreements

The total area of land required for the Project is 113 hectares, of these 92 hectares are private land and 21 hectares state land. There are no residential tenants affected by the project and no structures are affected. A total of 279 land parcels and 295 households will be affected by the project, none of which are considered vulnerable households. Of the land parcels, 138 are registered and the remaining can be registered. All private land which will be affected is currently used for the cultivation of cereal crops, and no trees on private land will be affected. There are no households that will lose more than 10% of their productive assets due to land related impacts from the Project. There will be no significant impact on people in the project area due to noise, vibration, or shadow flicker. The wind turbines are located at sufficient distance to avoid negative impacts on the surrounding communities. In order to account for any potential negative impacts associated with emissions from diesel fuelled construction machinery and equipment, measures in accordance with Ukrainian regulations, international standards, and best practices will be implemented. This will ensure that the emissions released during the construction will be insignificant.

The visual impact of the project on the horizon and landscape will be unavoidable and no measures are available to prevent this. The project site is located on low, flat, arable lands. Forest belts appear between agricultural fields, varying in width from 15m-40m, made up of scrub and natural seeding of native species. Dwellings are mostly located in small villages and town settlements rather than isolated properties. The people most affected will be residents in the close villages Oleksandrivka and Luparevo, as well as travellers on nearby roads.

There are several recorded archaeological monuments and a historical grave site nearby that the State Enterprise NDC (Archaeological conservation service of Ukraine of the Institute of Archaeology of the National Academy of Sciences of Ukraine) identified. These include ancient settlements and burial mounds. The final placement of the wind turbines has considered a

setback distance of all archaeological sites. In order to avoid damage to these objects, personnel will be informed of the exact coordinates, the area will be fenced off, and transport access will be limited.

The "O 220225" highway crosses the middle of the project site from north to south. The project design has included spacing between this road and wind turbines. State owned agricultural roads located adjacent to 'wind breaks' will be rented for transportation of parts and for construction purposes and will remain in public ownership after construction has been completed. Many internal roads will be upgraded to be appropriate for construction.

The project will present some positive impacts on the surrounding communities. The project will provide several job opportunities and will involve local firms in the supply of materials and services. The positive impact for jobs and local businesses is likely to be limited to the construction period as few jobs will be available in the operation phase.

4.2.2 Effects on the natural environment

The project is not anticipated to create significant adverse impacts on the natural environment.

4.2.2.1 Land

The site is located within the Black Sea Lowlands, an area which is susceptible to erosion and subsidence. There is a risk that land clearance and construction of the project will increase the risk of erosion. To manage this, project components will be carefully located, and soil and vegetation will be restored when construction is complete.

4.2.2.1 Water

The surface water bodies bordering the project are the Dnipro-Bug Estuary and the Lake Solonets. The surface waters are not suitable for drinking water use and are not expected to be impacted by the project.

Groundwater present at the site is potentially suitable for household and municipal use but is not protected from surface contamination. By following international best practice all hazardous materials and wastes will be correctly stored to avoid the release of contaminants into the soil preventing the contamination of the groundwater.

4.2.2.2 Biodiversity

Protected areas: The project site is not located within any protected areas for biodiversity; however, it is directly adjacent to the Alexander Landscape Reserve which is designated at national level. The site is also located within 20km of two important bird areas/Ramsar sites (Kinburns'kyj Peninsula/Yagorlytska Bay and Dnipro Delta). These areas are designated for migratory birds and are situated on the Dnipov'ska Gulf which is also adjacent to the project. The site is also near the Dniprovsko-Buzkyi Lyman Emerald Site, part of the Emerald Network of nature conservation areas across Europe. No significant impacts to protected areas are anticipated in the construction or operation phases.

Habitats and plants: The project site is located predominantly within agricultural land with the wind turbines being situated along wind breaks between fields. The latter areas are considered degraded habitats supporting grassland, scrub and small trees. No plant species of conservation importance were found within the footprint of the site. *Armeniaca vulgaris* - Wild apricot – was identified, but does not naturally occur in Ukraine, with the trees recorded being planted cultivars. Therefore, it is not considered a priority biodiversity feature and scoped out

from further assessment despite its endangered status. No significant impacts to habitats and plants are anticipated in the construction or operation phases.

Terrestrial mammals: Twenty-two species of mammals are known to occur in the wider area. This includes nine species which are believed to be common in the project site. One species, grey wolf (*Canis lupus*) is protected by European legislation. However, given the nature of the project, no significant impacts to terrestrial mammals are anticipated in the construction or operation phases.

Herpetofauna: Five species of amphibians and eight species of reptiles are known to occur in the wider area of the project. These include European fire-bellied toad (*Bombina orientalis*) which is protected by European legislation and Ursini's viper (*Vipera ursinii*) which is listed in the Red Book of Ukraine (2009). Potential impacts from construction on herpetofauna are habitat loss and degradation, killing and injuries. However all impacts are avoidable or mitigatable and range of management measures will be implemented during the construction and operation period to ensure that there are no significant impacts to Herpetofauna.

Bats: Five species of bat may be found at the site: Daubenton's bat, Serotine bat, Common noctule, Kuhl's pipistrelle and Brown long-eared. However, roosting opportunities are limited due to the lack of mature trees and buildings. All species of bats listed are protected by European legislation.

During construction, bat species in the study area may be affected by loss or degradation of foraging and commuting habitat. During operation bat species in the study area may be affected by collision with wind turbines which will also act as a barrier to movement. Considering the relatively low number of bats observed in the study area compared to their populations and the fact that the majority were recorded in urban areas, the significance of the impact is considered minor and will be mitigated by the biodiversity management plans.

Birds: Over fifty species of birds were recorded in the wider survey area across different seasons of the year. One Endangered IUCN Red List Species, Saker falcon (*Falco cherrug*), was recorded regularly as well as twelve species listed in the Red Book of Ukraine (2009). Migratory species were observed in relatively low numbers across the site in spring with birds of prey only recorded occasionally. Higher numbers of birds were recorded during the autumn migration (approximately 30,000) with species including geese and common crane (*Grus grus*); however, these were generally at altitudes of between 300 and 350 meters (significantly higher than the wind turbines). The project area is considered to support relatively poor habitat for nesting birds.

During construction, bird species in the study area may be affected by: loss or degradation of breeding and feeding habitat; disturbance and displacement; hunting and poaching by construction staff; and killing or injury by construction processes. Construction impacts will be confined to the project components and 500m around them and will be temporary in nature, lasting the duration of construction activity. During operation, bird species in the study area may be affected by disturbance and displacement and collision with wind turbines and the overhead line. The most severely affected species groups are expected to be Anseriforms (swans, ducks and geese) and Charadriiform (shorebirds and gulls). The magnitude of impact decreases with distance from the wind farm and varies between species. Considering the location of habitats supporting these species within the study area, which is beyond the proposed turbine locations, the magnitude of effect on species of waders and water birds is considered minor, mitigatable with no significant residual impact.

4.2.3 How might the impacts combine with other projects?

Additional developments proposed for the project area are outlined in Section 2.4. It is possible that if these projects were developed at the same time the impacts experienced by people and the environment would be greater than estimated in the ESIA. Of particular interest is the plan to construct a 10 MW solar power plant east of Oleksandrivka village. If that project were to go ahead then good inter-project communication between developers would be required along with a flexible approach to managing cumulative impacts. However, at present no significant cumulative impacts are anticipated due to interaction with the Dnepro-Bugsky project and other existing or planned projects.

4.3 Summary

No significant negative impacts to either the environment or society are predicted as a result of the Dnepro-Bugsky project. Any negative impacts are expected to be temporary in nature and will be avoided or minimised through measures which are set out in an environmental and social monitoring and management plan.

5 Annex A: Grievance form

Full Name	
Contact Information Please identify how you wish to be contacted (mail, telephone, e-mail)	By Post: Please provide mailing address By telephone: By e-mail:
Preferred language of communication?	English Ukrainian.....
Description of incident or grievance (What happened? Where did it happen? Who did it happen to? What is the result of the problem?):	
Date of incident/grievance	One time incident/grievance (date _____) Happened more than once (how many times? _____) On-going (currently experiencing problem)
What would you like to see to resolve this problem?	
Internal Use Only Grievance received by: Date: Reference number:	

