



Facaeni Wind Farm – Phase I, Romania

Non-Technical Summary

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1. INTRODUCTION

This Non-Technical Summary (NTS) provides a summary of the project description, the benefits of the project, the mitigation of potentially significant adverse environmental and social impacts and public consultation activities. Contact information for this project is provided below.

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Facaeni Wind Farm – Phase I comprises 44 wind turbines (turbine model VESTAS V112 - 3 MW), providing a total power of 132 MW. Each wind turbine consists of a hollow steel tower with a generator nacelle which houses and protects the main components of the rotor blades, gear box, transformer and control systems. The turbines each have a total height of 175 m (comprising 119 m tower and 56 m rotor blade above the tower height), fitted with an integral transformer station (at 690V to 33,000V) within the turbine nacelle.

The wind farm is connected to Gura Ialomitei electric station 400/110/20 kV through an overhead wired section 400 kV, followed by an underground wired section of 400 kV. The evacuation of power from the two transformer stations: Movila 33/110 kV and Facaeni 33/110/400 kV is done by means of an underground electric line of 110 kV.

The total area occupied by the wind farm, related with the two phases of the project, is ~539,72 ha, from which ~32,27 ha are affected by wind farm construction (access roads, foundations, platforms of wind turbines, 2 electrical substations). The remaining land will be used for agricultural use. The land which was temporarily disturbed during the construction works has been restored. The proposed layout of the wind farm at Facaeni Wind Farm – Phase I is shown in the Figure 1.

The Environmental Authorization for the first phase of Facaeni Wind Farm was issued by Environmental Protection Agency (EPA) Ialomita on 11.08.2014. First phase of 132 MW was energized on 25.09.2014. Currently Facaeni wind farm is in testing period and it will become fully operational in December 2014.

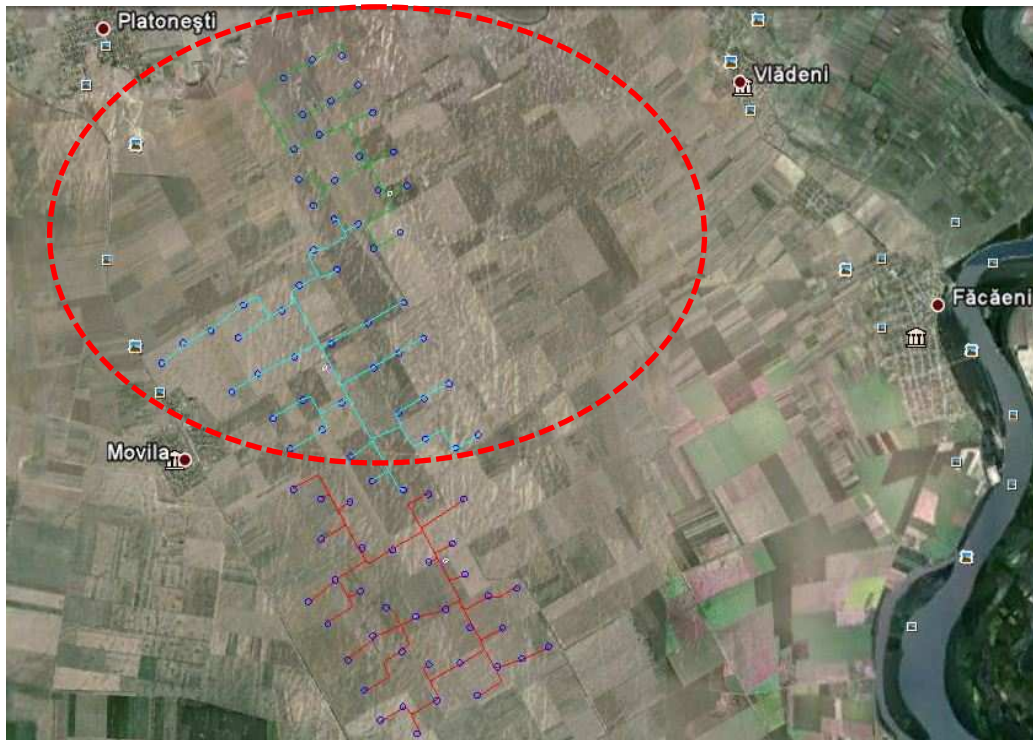


Figure 1. Făcăeni Wind Farm Phase I - Turbine Layout Plan

2. SETTING AND LOCATION OF WIND FARM

Făcăeni Wind Farm is located within Ialomita area, near the villages: Giurgeni, Făcăeni, Vlădeni and Mihail Kogălniceanu as shown in Figure 2. These localities are rural in character and are situated along water courses, roads and farmland.

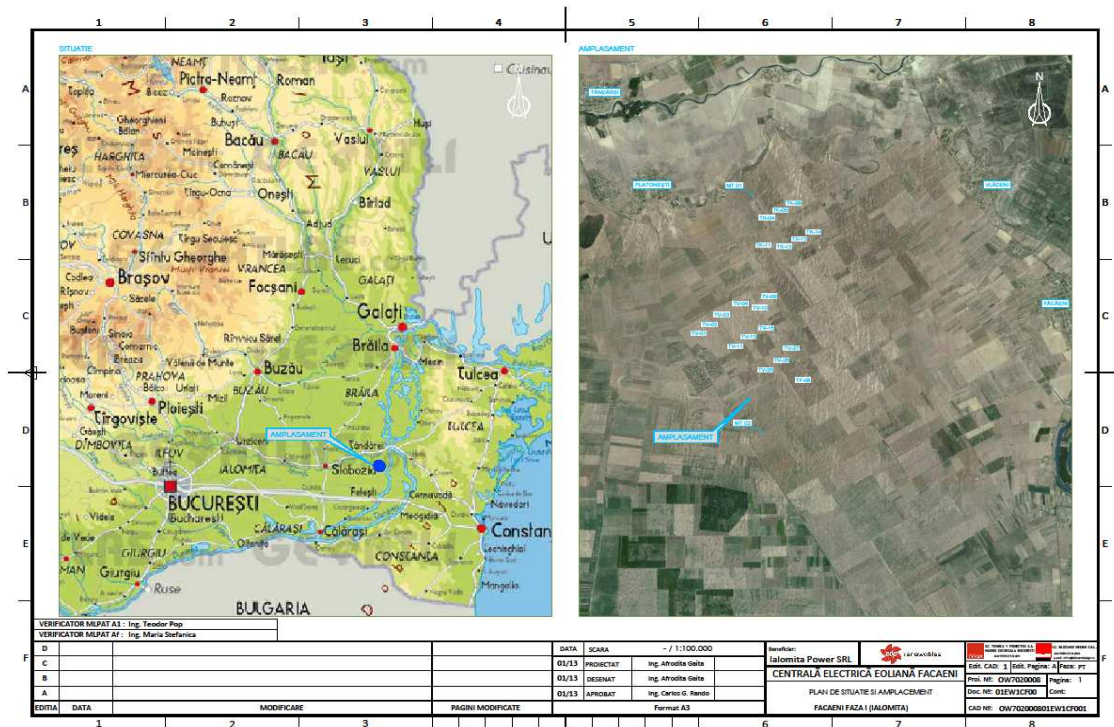


Figure 2. Location of the Făcăeni Wind Farm

The Site covers an area of ~539,72 ha and is on land on which Ialomita Power SRL has rights of use, easement, superficies and also private lands. The land has limited agricultural value and is used for crop production, including wheat. Within the Site there are no forested areas or rare/sensitive plant species. Agricultural land use is not colonised other than by grasses and plants which are fast growing and tolerant to the environmental conditions. Water resources are limited, with no irrigation systems in place.

The access is made from Bucharest, on A2 Highway to Fetesti city, then on DN3B national road to Vladeni locality.

3. DESCRIPTION OF THE WIND FARM

3.1. DESCRIPTION OF EQUIPMENT AND INFRASTRUCTURE

EDP Renewables through Ialomita Power SRL have installed in Facaeni WF – Phase I 44 wind turbines model V112 supplied by Vestas of Denmark for the production of clean electricity by converting wind energy. These wind turbines have a capacity of 3.0 MW and the maximum height of the turbine including the rotor blade is 175 m. The type of turbine installed is shown in Figure 4 below:

Facaeni Wind Farm is connected to the electric station Gura Ialomitei 400/110/20 kV using an overhead section of 400 kV, followed by an underground cable section 400 kV within Gura Ialomitei electrical station.

The evacuation of power from Movila 33/110 kV and Facaeni 33/110/400 kV transformer stations is done by means of an underground electric line of 110 kV.

The access roads have been rehabilitated in order to transport heavy equipments and also new access roads have been constructed from the existing ones to each wind turbine.

These roads are also available for use by local residents and those who lease the land within the area of the site for agricultural purposes.



Figure 3. Vestas V112 Wind Turbine

4. ENVIRONMENTAL, HEALTH, SAFETY AND SOCIAL REVIEW OF PROJECT

4.1. SCOPE OF WORK

Analysis of the Environmental, Health and Safety and Social (EHSS) impacts and benefits of the project were assessed Non-Technical Summary (NTS) and Stakeholder Engagement Plan (SEP).

4.2. SITE OBSERVATIONS

The 44 - 3 MW wind turbines associated with Facaeni Wind Farm – Phase I have already been constructed and are currently in testing period. The wind farm will become fully operational in December 2014.

The buildings from the site are the two operational substations: Movila 33/110 kV and Facaeni 33/110/400 kV.

Figure 5 shows a view from Facaeni wind farm.



Figure 4. View from Facaeni WF

The site land has limited agricultural value and is used for crop production, including wheat. Within Facaeni WF there are no forested areas or rare/sensitive plant species. Agricultural land use is not colonised other than by grasses and plants which are fast growing and tolerant to the environmental conditions. Water resources are limited, with no irrigation systems in place.

Also operational roads were rehabilitated for heavy equipment transport and access roads were built to each wind turbine. The access to Facaeni WF is made using national road DN3B to Vladeni locality.

4.3. EIA REVIEW AND GAP ANALYSIS

EDP Renewables through Ialomita Power SRL consulted with the authorities to determine if an EIA was required for the development of Facaeni Wind Farm. For Facaeni WF it was obtained the Environmental Agreement no 1/14.01.2013 following full procedure according with EIA legislation in force:

- Governmental Decision GD 445/2009 regarding the EIA framework procedure, projects can be classified as category A with significant environmental impact (Annex 1 of GD 445/2009) and B insignificant environmental impact (Annex 2 of GD 445/2009).

For the projects listed in Annex 1 (full procedure), in order to obtain the Environmental Agreement it is mandatory to elaborate an EIA report and conduct public debates with local community and other relevant stakeholders (EPA, Environmental Guard, NGOs, etc). After this step, it is mandatory to assure a disclosure period of EIA report for public comments. If no complains are registered, the competent EPA will issue the Environmental Agreement.

Also, the legal procedure in order to obtain the Environmental Authorization for the project was followed, according with Order no. 1798/19.11.2007 modified by Order no. 1298/28.04.2011 and Order no. 3839/2012.

The required documentation was prepared and submitted to EPA Ialomita and also to the Local Councils from the area where Facaeni WF is located. The Environmental Authorization for Facaeni WF - Phase I was obtained on 11.08.2014.

5. PLANNING AND ENVIRONMENTAL IMPACTS

Overall this project should have positive socio-economic impacts from the generation of clean wind power energy. The key benefit of this project is the use of reliable renewable wind power technology which will achieve significant greenhouse gas emissions (GHG) savings as opposed to the use of conventional power generation plant using fossil fuels, as well providing jobs to the local community and generating revenue for the local budget.

From a review of the available information and following stakeholder consultations no agricultural use and no persons or businesses have been or will be displaced as a result of the proposed wind farm scheme.

The key findings in terms of impacts and mitigation measures are summarized below:

5.1. ECOLOGY

The key potential impacts upon biodiversity as a result from the wind farm development and construction have been identified, including the potential impacts to resident and migratory bird species.

Regarding the natural protected areas, including Natura 2000 sites, only the Overhead and the Underground section 400 kV is crossing 4 Sites of Community Importance (SCIs) and Special Protected Areas (SPAs) as follows:

- ROSCI0278 Bordusani-Borcea (crossed by the overhead line on a distance of about 1,82 km),
- ROSCI0290 Coridorul Ialomitei (crossed by the 400 kV overhead line on a distance of about 1,14 km),
- ROSPA0017 Canaralele de la Harsova (crossed by the 400 kV overhead line on a distance of about 1,1 km),
- ROSPA0120 Kogalniceanu-Gura Ialomitei (crossed by the 400 kV overhead line on a distance of about 4,80 km and continued with the Underground line 400 kV on a distance of 1,61 km).

Also the Underground line 400 kV is located near other two protected areas: ROSPA0111 Bertestii de Sus-Gura Ialomitei at ~1 km north distance and ROSCI0389 Saraturile de la Gura Ialomitei – Mihai Bravu at a distance of about 0,40 km north.



Figure 5. Facaeni Wind Farm location in relation with the natural protected areas

The site is located on an area with various landforms, dry weather, few precipitation and strong wind. The land is dominated by large fields followed by meadows with ponds and terraces. The soils in the area are loam chernozem and reddish-brown on small surfaces, formed on loess.

Regarding the vegetation, characteristic for the area is the steppe vegetation and also azonale and intrazonal vegetation where the crops and the secondary grasslands are prevailing.

The land surfaces are also used by the locals for agriculture and for the animal grazing.

On Facaeni site, plant associations consisting of ruderal species are found and during field observations no preserved species were identified.

The list of taxa identified contains a number of 98 species and subspecies.

The monitoring activities performed during construction works of the Overhead line 400 kV (July – December 2013) show that the implementation of Facaeni project didn't generate changes regarding the structure and integrity of Natura 2000 sites.

The impact on lands and vegetation is insignificant and mostly reversible, except the areas permanently occupied by the wind turbines foundations.

Regarding avifauna monitoring, a number of 66 birds species was identified in the period analyzed: July – December 2013 (the construction of the Overhead line 400 kV) representing sedentary species, summer guests, species of passage and winter visitors (for example: *Acanthis cannabina*, *Alauda arvensis*, *Buteo buteo*, *Corvus frugilegu*, *Falco tinunculus*, etc).

During the Overhead line construction no dead birds were identified, the conservation status of avifauna was generally good and the number of species present in the area studied was not influenced by the line construction.

According with the Environmental Authorization obtained for Facaeni WF – Phase I, the monitoring activity will continue after the wind farm will be fully operational for a period of minimum 5 years.

Also during construction works, in order to respect the condition imposed in the Environmental Agreement issued for Facaeni WF, several measures were implemented to reduce the impact on avifauna:

- Artificial nests were installed on the high voltage poles
- Flagpoles were mounted on the conductors
- "Anti-Storks" devices were installed (groups of spikes mounted on the console above the isolators)



Figure 6. Artificial nests installed on the high voltage poles

5.2. LANDSCAPE AND VISUAL IMPACT

The general topography in the area of Facaeni site comprises of a various landforms with large areas of agricultural land (typically arable farming).

The landscape was analyzed by characteristics (land, value, area conditions) and visibility (the areas where wind turbines are visible and people's perception).

The nearest residential locality to the site is located at ~700 m from Facaeni Wind Farm and it is found in Movila village.

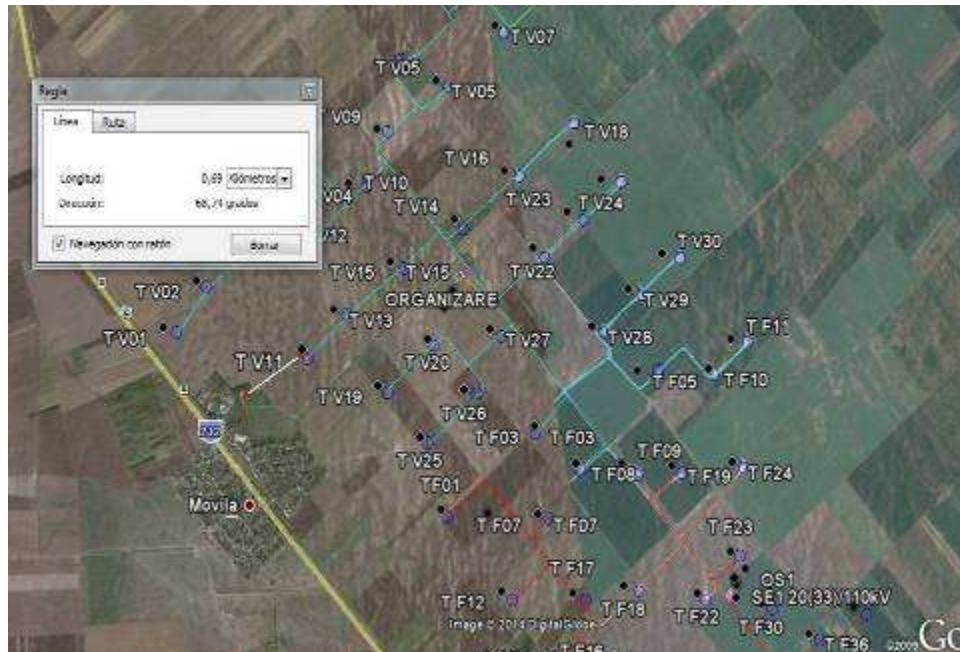


Figure 7. Distance of Facaeni WF to nearest residential localities

Due to the orientation of some of the houses to the wind turbines, some properties will have oblique views only and/or blocked by topography, vegetation or intervening built form. Even so, there will be many open views of the wind turbines, which will be seen as slim silhouettes on the skyline.

The introduction of wind turbines would therefore have an impact on the existing landscape character of the site and surrounding visual amenity. This impact would last for the operational period of the wind farm and be reversed on decommissioning.. As the distance from the site is increased, the effect of the Facaeni WF wind farm on visual amenity would be reduced. Also the turbines color and orientation limit the visual air impact.

5.3. NOISE & VIBRATION

Given the limited noise associated with operation of the wind farm and the distances to the nearest residential areas, noise and vibration impacts are considered unlikely to be a significant concern.

During construction works of Facaeni WF monthly noise measurements were performed in 3 points (P1: Valdeni village entrance, road DJ3B – limit 2m from the fence of the first residence; P2: Progresu village entrance, Grausorv Street; P3: Facaeni village entrance) from September 2013 until December 2013.

According with STAS 6161/3-82 and SR ISO 1996/1,2-2008 the measurements are made at 3 meters distance from the building and 1,30 meters height from the ground.

All measurements done show that Facaeni WF is complaint with the maximum allowable limit of 50 dB(A). In case the future measurements will show a non-compliance, the wind turbines are endowed with a Noise Rediction System that can be used.

5.4. WASTE MANAGEMENT

Waste materials generated as part of the project are likely to be minimal. Any wastes generated by routine maintenance activities are removed from site by the contractor and disposed of in an appropriate manner in accordance with applicable legislation. It has been recommended a waste management strategy which is developed in order to ensure the disposal of any hazardous substances in accordance with Romanian Legislation.

Facaeni WF was endowed with necessary containers for non-hazardous and hazardous waste, metallic containers, retention tanks and biodegradable absorbent material in case of accidental leakages.

5.5. CUMULATIVE EFFECTS

An assessment has been undertaken of the potential cumulative ecological, landscape and visual effects from Facaeni wind farm together with other wind farms in the area. The nearest other operational wind farms with lower capacity are: Luciu Pogoanele WF - 8 MW, Dudesti WF - 8 MW and Insuratei WF -10 MW, located approximately at 30-35 km distance from Facaeni WF.

As there are currently no other operational wind farms associated with the area surrounding Facaeni site, potential cumulative effects on birds are not considered to be significant. The other wind farms are at least 30-35 km distance from Facaeni site and therefore the effect of disturbance and barrier effects for birds is expected to be negligible, and potential cumulative effects on bats are not considered to be a significant issue.

The mitigation and monitoring measures implemented will assist in confirming that there are no significant cumulative effects on birds.

5.6. DECOMMISSIONING

A decommissioning plan will be prepared to ensure potential impacts associated with the removal of the turbines and associated infrastructure at the end of their operational life are adequately considered.

5.7. OTHER ENVIRONMENTAL DISCIPLINES

Based on the available information no significant environmental impacts or cumulative effects are considered likely on the following environmental topics and as such no mitigation measures have been proposed in relation to these:

- ground conditions and water resources;
- air quality;
- cultural heritage;
- electromagnetic interference;
- access; and
- shadow flicker.

6. GREENHOUSE GAS ASSESSMENT

An estimate of greenhouse gas savings potential for this project has been calculated using EBRD's Greenhouse Gas Assessment Methodology, where renewable energy power generation projects are assumed to displace the emissions associated with the national average grid electricity generation.

Based on 44 - 3MW wind turbines in constant use with a possible annual generation of 362478 MWh, Facaeni wind farm will provide CO₂ emissions savings in the order of 289,982 kt CO₂-e/yr.

The above total does not take into account emissions associated with the construction phase and other life cycle impacts, and that wind turbines will not be in constant operation throughout a year.

7. ENVIRONMENTAL AND SOCIAL ACTION PLAN

An Environmental and Social Action Plan for EDPR Romania projects (ESAP Corporate) has been developed in July 2012 to set out specific environmental and social actions required to minimize impacts associated with the wind farm scheme. It is a 'live' document and will be updated on a regular basis.

The key considerations relevant to the wind farm include the following:

- Prepare and submit annual reports on status of ESAP Corporate implementation and environmental, health, safety and social performance, including resolution of grievances associated with the project;
- Develop and implement an Environmental Management System (EMS);
- Implement a monitoring program to assess the impacts to birds and bats that may be occurring during the operational phase of the wind farm;

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- Develop comprehensive waste management plans;
 - Undertake a health and safety risk assessment of all staff job functions and activities and implement health and safety action plan covering control measures and work instructions as required; and
 - Develop and implement a decommissioning plan that includes a plan for minimizing impacts during decommissioning.

8. STAKEHOLDER ENGAGEMENT PLAN (SEP)

A SEP has been developed in October 2014 with the objective of identifying key stakeholders and ensuring that, where relevant, they are informed in a timely manner of the potential impacts of the project. The plan also identifies a formal grievance mechanism to be used by stakeholders for dealing with complaints, concerns, queries and comments. It will be reviewed and updated on a regular basis. If activities change or new activities relating to stakeholder engagement commence, the SEP will be brought up to date. The SEP will also be reviewed periodically during project implementation and updated as necessary. The SEP includes the following:

- Public consultations and information disclosure requirements;
- Identification of stakeholders and other affected parties;
- Overview of previous engagement activities;
- Stakeholder engagement program including methods of engagement and resources; and
- A grievance mechanism.

Stakeholders could be individuals and organizations that may be directly or indirectly affected by the project either in a positive or negative way, who wish to express their views. The definition applied to identify the key stakeholders is:

‘any stakeholders with significant influence on or significantly impacted by, the work and where these interests and influence must be recognized if the work is to be successful’.