



Cobadin Wind Farm, Romania
Non-Technical Summary
Date: February 2013

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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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The Cobadin Wind Farm comprises 13 wind turbines (turbine model VESTAS V90 2.0MW), providing a total power of 26MW. 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 150 m (comprising 105 m tower and 45 m rotor blade above the tower height). The turbines are connected via 33kV underground cables and junction stations which are connected to a transformer station within the wind farm that is in turn connected to the nearest Enel Dobrogea Facilities.

The total area occupied by the wind farm is ~ 200 ha, from which ~ 3,3 ha are affected by wind farm construction (internal roads, foundations, platforms of wind turbines, electrical substation 33/110 kV). 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 Vutcani is shown on Figure 1.

The 13 2MW wind turbines associated with the Cobadin Wind Farm have already been constructed. The wind farm was connected to Enel Distribution Company on 30.01.2013. The wind farm is estimated to become fully operational on May 2013, after finishing mandatory compliance tests. The procedure for obtaining the environmental authorization (EA) was started. Estimative issuance date of EA: Mid of April 2013.

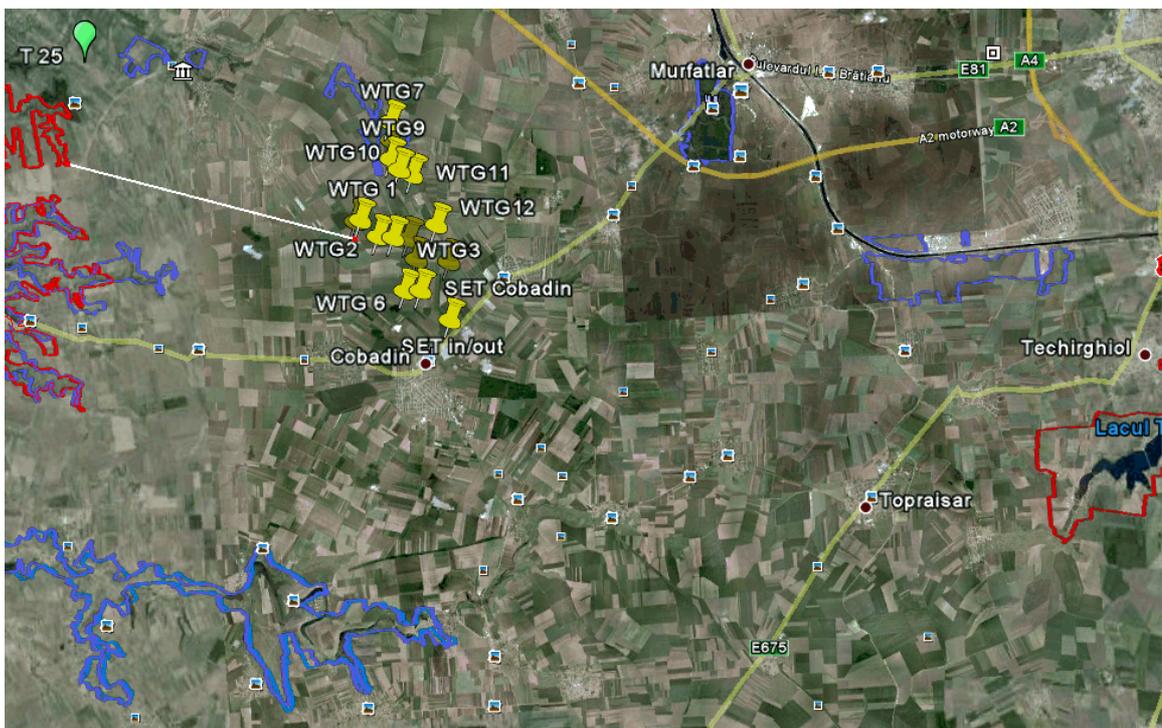


Figure 1 – Layout of Cobadin Wind Farm

2. SETTING AND LOCATION OF WIND FARM

The Cobadin wind farm is located within Dobrogea area, and is approximately 3 km from Ciocarlia and Cobadin localities, as shown on Figure 2. These localities are rural in character and are situated along water courses, roads and farmland.

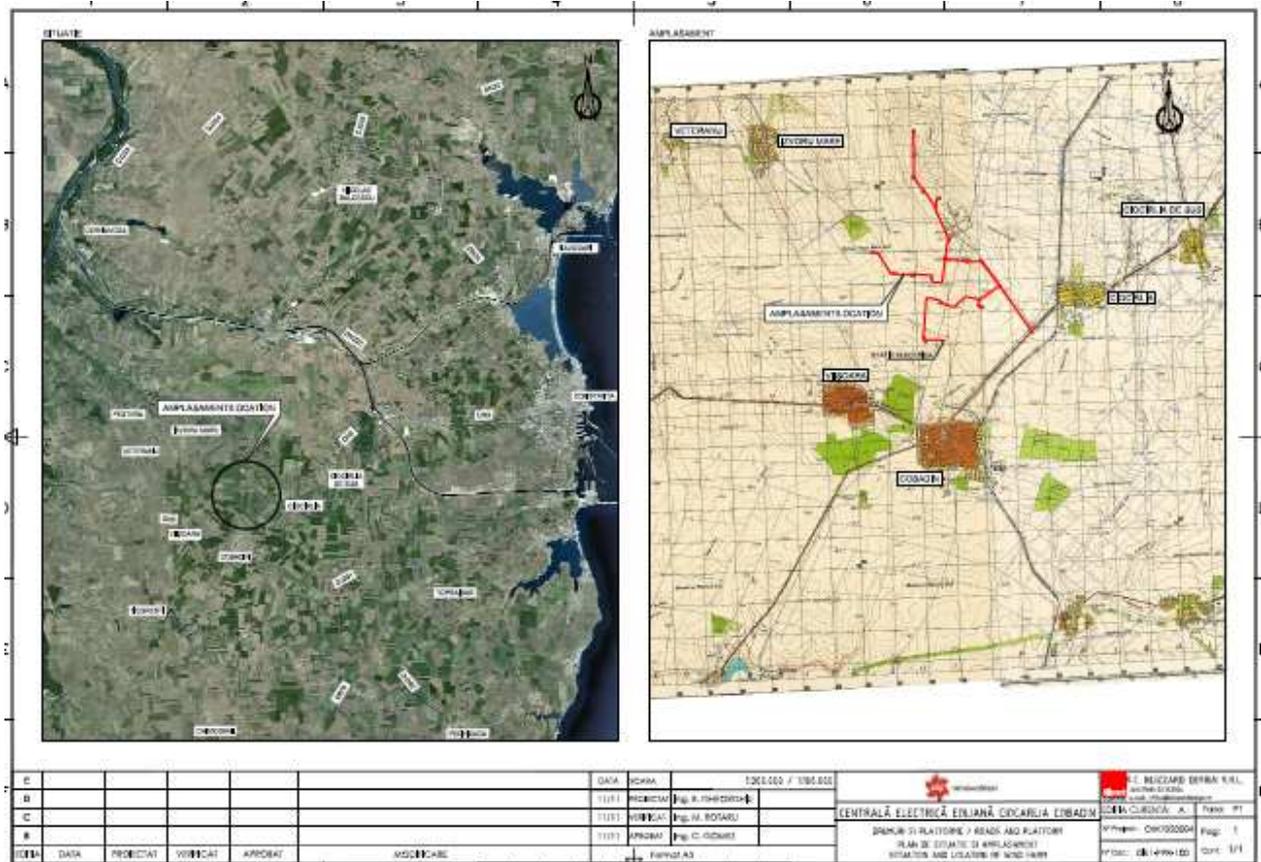


Figure 2 – Location of the Cobadin Wind Farm

The Site covers an area of ~200 ha and is on land which is privately owned by EDPR. 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 using County Road DJ3.

The Cobadin wind farm is not located within the boundary of any protected areas, including Natura 2000 sites such as Special Protected Areas (SPAs), Sites of Community Importance (SCIs) and International Bird Areas (IBAs).

The distances of Cobadin WF to Natura 2000 areas are:

- ROSCI0071 Dumbraveni-Valea Urluia-Lacul Vederosa: 11 km from WTG 6
- ROSCI0353 Pestera Deleni: 7 km from WTG 1; 0.5 km from WTG 7, 8 and 9
- ROSCI0083 Fantanita Murfatlar 10.79 km from WTG 13
- ROSCI0398 Straja Cumpana 16.7 km from WTG 13
- ROSPA0061 Lacul Techirghiol 26 km from WTG 6
- ROSPA0001 Adamclisi 12 km from WTG 1

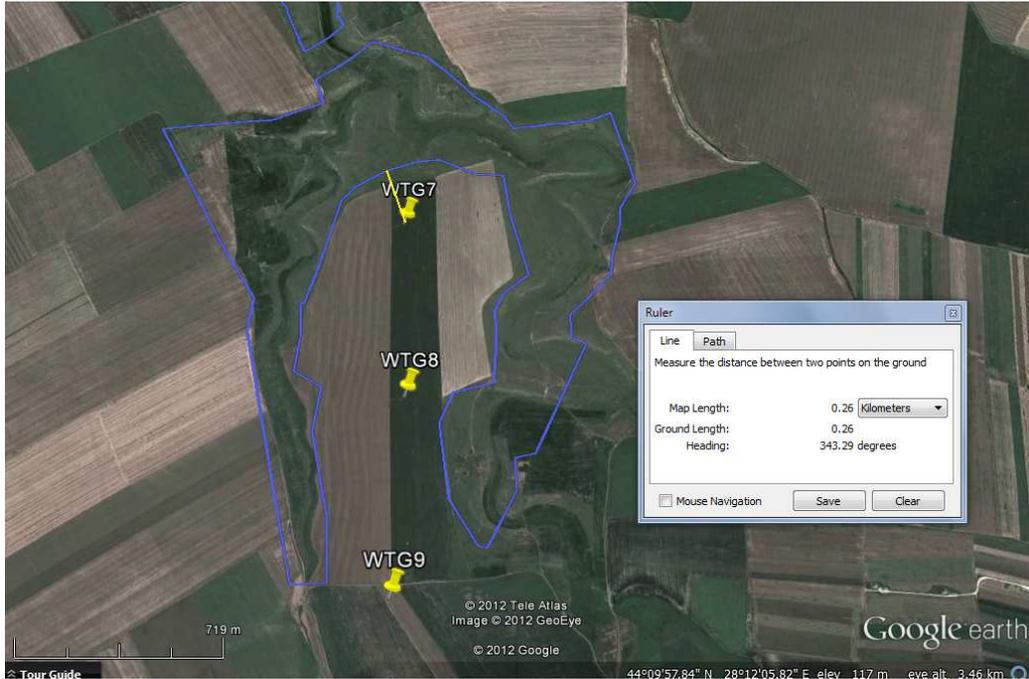


Figure 3 – Cobadin Wind Farm distance from SCI Pestera Deleni

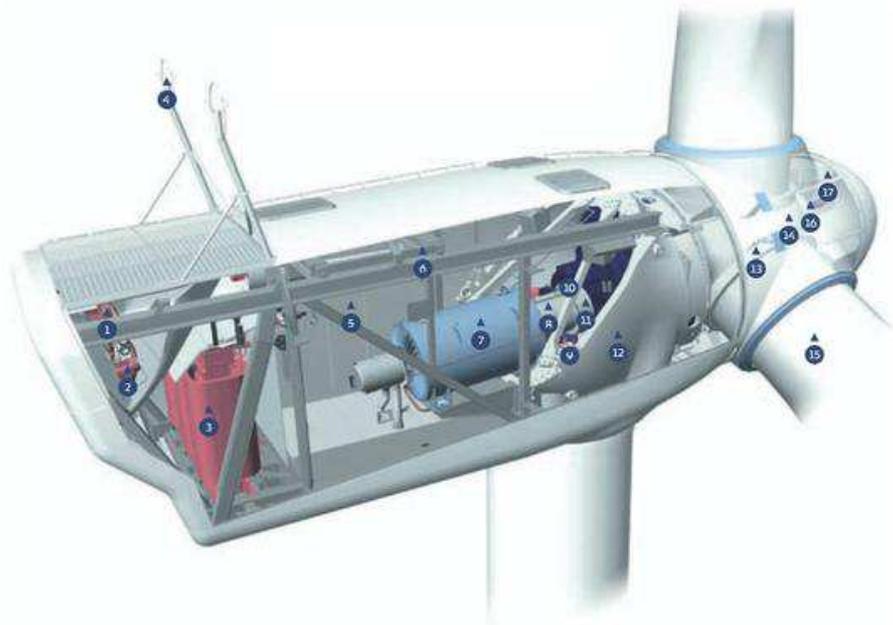
3. DESCRIPTION OF THE WIND FARM

3.1 DESCRIPTION OF EQUIPMENT AND INFRASTRUCTURE

EDP Renewables are using and installing wind turbine model V90 supplied by Vestas of Denmark for the production of clean electricity by converting wind energy. These wind turbines have a capacity of 2.0MW and the maximum height of the turbine including the rotor blade is 150 m. The type of turbine installed is shown in Figure 4 below:

There are underground cables connecting the turbines to the transmission station and overhead cables which follow a line south-west from the station and connect the site with the national grid.

Access roads have also been constructed as part of the wind farm and these are also available for use by local residents and those who lease the land within the area of the site for agricultural purposes.



- | | | | |
|-------------------------------------|---------------------------|--------------------------|-------------------|
| 1 Oil cooler | 6 Service crane | 11 Mechanical disc brake | 16 Pitch cylinder |
| 2 Water cooler for generator | 7 OptiSpeed® generator | 12 Machine foundation | 17 Hub controller |
| 3 High voltage transformer | 8 Composite disc coupling | 13 Blade bearing | |
| 4 Ultrasonic wind sensors | 9 Yaw gears | 14 Blade hub | |
| 5 VMP-Top controller with converter | 10 Gearbox | 15 Blade | |

Figure 4 – Vestas V90 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 13 2MW wind turbines associated with the Cobadin Wind Farm have already been constructed and are currently operational in testing period. Figure 5 shows a view from the wind farm.

The only building on the site is the operational sub-station 33/110 kV. The connection to the Enel Distribuție Dobrogea grid is achieved via an electricity sub-station of 33/110kV.



Figure 5– View from WTG 2

The site land has limited agricultural value and is used for crop production, including wheat. Within the Cobadin 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 rearranged for heavy equipment transport and access roads were built in order to have access to each turbine wind. The access is made using County Road DJ3.

4.3 EIA REVIEW AND GAP ANALYSIS

EDP Renewables consulted with the authorities to determine if an EIA was required for the development of Cobadin Wind Farm. For Cobadin WF it was obtained the Environmental Agreement no 22/08.07.2011 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.

For facilitating the process, one EIA procedure was opened for Cobadin containing following works:

- construction of Wind Farm (civil works, substation and wind turbines installation)
- construction of High Voltage Line and Connection Works to Electrical Distribution Network

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 have been identified, including the potential impacts to resident and migratory bird species.

It is considered that the habitat within the Cobadin wind farm site is generally of limited ecological importance due to the type of species present or other factors. The site is located on an area with various landforms, dry weather, few precipitation and strong wind. The land use is for crops and the hill area is covered with rocky soil and specific steppe vegetation. The construction of the wind turbines is likely to have led to very small amounts of habitat loss, and given the large amount of similar habitat both within the site and in the local area this impact will have been negligible.

On the Cobadin site, plant association consisting of ruderal species are found. There is a small number of flora species and no preserved species were identified. The Cobadin Wind Farm is not located in a protected area.

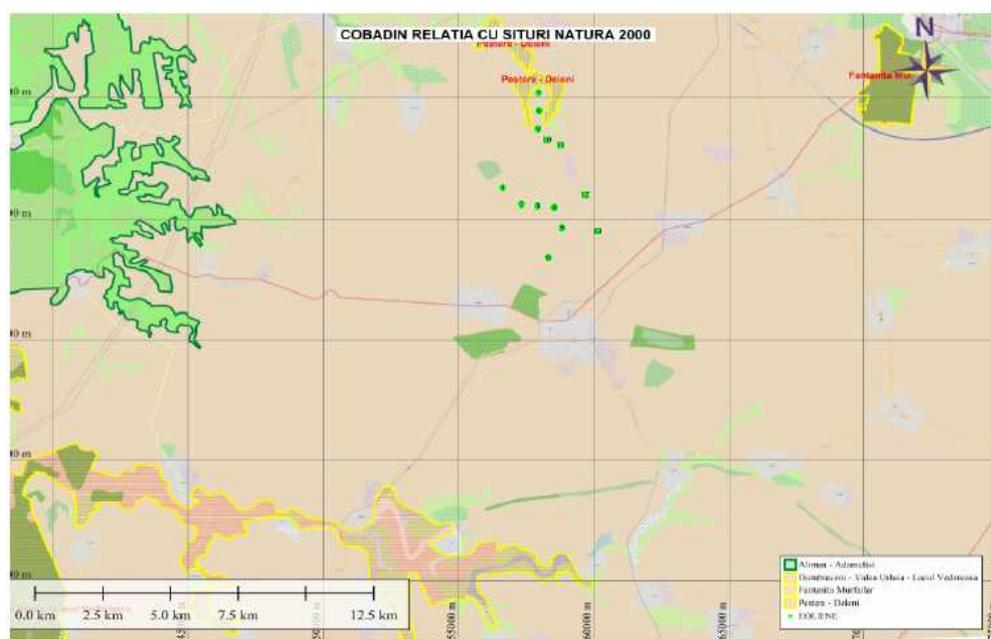


Figura 6-Cobadin WF relation with Natura 2000 Sites

A monitoring programme was developed according with Environmental Agreement no 22/08.07.2011 and the results were the following:

A small number of common bird species was observed at the site of Cobadin wind farm and also a few species with a particular protected status (Annex 3 OUG 57/2007, Annex 4B OUG 57/2007) as: *Aquila pomarina*, *Merops apiaster*, *Melanocorypha calandra* etc. In the monitoring period may-december 2012, the wind farm area represent a hunting area for birds of prey, providing them necessary nourishment. The total number of bird species observed during the monitoring activity was 44 species. From Annex 1 Council Directive 2009/147/EC were observed 6 species of birds, but in general they appear accidentally and do not represent a constant on site. From Annex Annex 3 OUG 57/2007 were identified also 6 species of birds and from Annex 4B OUG 57/2007, 11 species.

The monitoring programme included also studies on mammals species presence and there were identified a small number of species as: *Microtus arvalis*, *Spermophilus citellus*, *Lepus europaeus*, *Vulpes vulpes*, *Capreolus capreolus* etc.

Regarding amphibians and reptiles species, at Cobadin site were identified species as: *Lacerta viridis*, *Podarcis taurica* - included in Habitats Directive Annex 4, and *Testudo graeca* included in Habitats Directive 92/43/EEC, Annex II, IV found in the northern part of the site.

The monitoring data shows that construction works didn't affect in a negative way birds population neither for migration or nesting, also the site is not a good place for migratory birds, because on long-term it can not provide food and resting.

It is suitable that for the wind farm operational period, the monitoring activity be continued at least 2 years, mainly for avifauna, in order to have an overview of the wind turbines influence on biodiversity.

5.2 LANDSCAPE AND VISUAL IMPACT

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

The landscape was analysed 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 more than 2,6 km from Cobadin Wind Farm and it is found in Cobadin village. The distances from the nearest localities are:

1. Viisoara ~2.9 km
2. Cobadin ~2.26 km
3. Ciocarlia ~2.96 km.
4. Izvoru Mare ~4.65 km.

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 Cobadin 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.

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 is developed to ensure the disposal of any hazardous substances in accordance with Romanian Legislation.

5.5 CUMULATIVE EFFECTS

An assessment has been undertaken of the potential cumulative ecological, landscape and visual effects from the Cobadin wind farm together with other wind farms in the area. The nearest other operational wind farm is Pestera Wind Farm, located approximately at 37 km distance.

As there are currently no other operational wind farms associated with the area surrounding the Cobadin site, potential cumulative effects on birds are not considered to be significant. The other wind farms are at least 50 km distance from the Cobadin 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 13 2MW wind turbines in constant use with a possible annual generation of 75320 MWh, the Cobadin wind farm will provide CO₂ emissions savings in the order of 41,57 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 EDP R Romania projects (ESAP Corporate) has been developed in July 2012 to set out specific environmental and social actions required to minimise 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 programme to assess the impacts to birds and bats that may be occurring during the operational phase of the wind farm;
- 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 minimising impacts during decommissioning.

8. STAKEHOLDER ENGAGEMENT PLAN (SEP)

A SEP has been developed in February 2013 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 programme including methods of engagement and resources; and
- A grievance mechanism.

Stakeholders could be individuals and organisations 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 recognised if the work is to be successful'.