Proposed Wind Farms, Pestera and Cernavoda, Dobrogea Region, Romania
Environmental Management and Monitoring Plan

EDP Renewables

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QM

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Prepared by	Andrew Malcomson Jessamy Funnell	Andrew Malcomson Jessamy Funnell		
Signature				
Checked by	Ian Williams	Ian Williams		
Signature				
Authorised by	Isabel Boira-Segarra	Isabel Boira-Segarra		
Signature				
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WSP Environmental UK
Mountbatten House
Basing View
Basingstoke
RG21 4HJ

Tel: +44 (0)1256 318800
Fax: +44 (0)1256 318700
http://www.wspgroup.com

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1 Introduction

1.1 BACKGROUND AND CONTEXT

1.1.1 This Environmental Management and Monitoring Plan (EMMP) has been produced to identify the needs and priorities for the future environmental mitigation measures and improvements in respect of two new wind farm developments at Pestera and Cernavoda, in the Drobogea Region of Romania. Implementation of the EMMP will ensure compliance with Romanian National legislation, EU environmental legislation and good international industry practice as embodied in the European Bank for Reconstruction and Development (EBRD) and the International Finance Corporation (IFC) performance requirements and guidelines.

1.1.2 This EMMP has been developed based on the understanding of the Projects to date, including present and future operations. This EMMP will be reviewed and updated as appropriate during construction and operation of the wind farms to take account of additional information relating to the schemes as well as the results of environmental monitoring and other relevant data.

1.1.3 The baseline environmental information relating to the two wind farm sites can be found in the EIA reports which have been prepared for each site (2008, Cabinet Expert Mediu Petrescu Traian), along with the environmental impacts which have been evaluated and the proposed mitigation measures.

1.2 OVERVIEW OF THE WIND FARM PROJECTS

1.2.1 The sites for the proposed wind farm projects are located in rural areas, a minimum of 550m from existing residential properties. The two sites are similar in character, being used for agricultural purposes (pasture and arable), and are located approximately 7km apart at the closest point.

1.2.2 The proposed wind farm at Pestera will contain 30 wind turbines (turbine model VESTAS V90 3.0 MW), providing a total installed capacity of 90MW. The wind farm at Cernavoda will comprise 46 wind turbines (also VESTAS V90 3.0 MW), providing a total installed capacity of 138 MW.

1.2.3 The wind farm developments at Pestera and Cernavoda are classified as a Category A projects in terms of environmental and social criteria (EBRD, 2003) due to their size and location which could result in potentially significant adverse environmental and/or social impacts. Therefore, the Projects have been subject to an Environmental and Social Impact Assessment (ESIA) in line with EBRD and IFC requirements in order to assess the environmental and social impacts of the Projects and consider appropriate mitigation measures.

1.3 THE AIM OF THIS EMMP

1.3.1 The aim of this EMMP is to determine the programme of mitigation and performance improvement measures and actions that address the identified environmental issues and opportunities associated with the Pestera and Cernavoda wind farm projects. This is to ensure that all stages of the Projects (including construction, operation and decommissioning) are undertaken in accordance with the requirements of applicable legislation, EBRD Performance Requirements / IFC Performance Standards and good international industry practice.

1.3.2 This EMMP have been prepared in accordance with ERBD Performance Requirement 1 and IFC Performance Standard 1.

1.4 IMPLEMENTATION AND MONITORING OF THE EMMP

1.4.1 The mitigation and enhancement measures detailed within this EMMP represent commitments which EDPR will implement during various stages within the lifetime of the two wind farms. In addition, EDPR will ensure that all contractors understand and comply fully with the provisions of this EMMP.

1.4.2 EDPR will ensure that all contractors are managed effectively, including through assessing environmental and social risks associated with contracts, including relevant PRs / EMMP provisions within tender documents and requiring contractors to apply these standards as a condition of their contract.

1.4.3 Implementation of this EMMP and contractor compliance will be monitored over time to allow performance to be tracked and action to be taken where required to ensure that mitigation and enhancement measures are effective.

1.4.4 Since the Projects are classified as Category A projects, EDPR will retain specialists to perform periodic monitoring and audits during the lifetime of the EBRD / IFC involvement with the Projects. EDPR will provide the EBRD / IFC with updates on progress in implementing this EMMP.

1.5 STRUCTURE OF THE PROGRAMME

1.5.1 The programme of actions provided below is divided into the following sections:

- Actions required to achieve compliance with National Romanian environmental, health and safety legal requirements and EU environmental standards; and
- Procedures for environmental and social assessment of the wind farms in line with best international practice;
- Actions required to contain/remediate past environmental damage and assessment of costs and/or further investigations; and
- Actions to improve environmental, social and health and safety management, monitoring and performance of the wind farms in accordance with good international industry practice.

1.5.2 The EMMP focuses on avoiding environmental and social impacts and where this is not possible appropriate mitigation measures are identified to minimise or reduce potential impacts to acceptable levels.

1.5.3 Opportunities to achieve additional environmental benefits from the Projects have been identified where practicable.

2 Pestera and Cernavoda Wind Farm Projects – Environmental Management and Monitoring Plan

No	Action	Environmental Risks / Benefits	Reference Standard (i.e. legislation / best practice)	Investment needs / Resources / Responsibility	Target Date	Key Performance Indicator	Comment
1) Actions Required to Achieve Compliance with National Romanian EHS Legal Requirements and EU Environmental Standards							
1.1	Undertake site specific bird and bat surveys during and after construction	Full consideration of impacts on avifauna. Supplement baseline conditions information to inform assessment of the environmental impact of the investment	IFC Performance Standard / EBRD PR 6 Best practice Requirement of Environmental Agreement (including environmental monitoring programme)	Independent Ornithological Expert External resources, use of experienced ornithologists and bat experts	April 2010 (to be undertaken during construction and operational phases	Assess actual impact of the Project on birds and bats Identify areas for improvement Report to Lenders Information available to SOR and general public (Via EDPR company website)	
1.2	Establish a protocol / approach for monitoring of ecological impacts during construction and operation	Avoidance of adverse impacts and adoption of consistent approach to ecological surveys / impact assessment	IFC Performance Standard / EBRD PR 6 Best practice Requirement of Environmental Agreement (including environmental	Internal resources / external resources	April 2010	Effective and consistent monitoring and data gathering to allow comparison of data over time	

No	Action	Environmental Risks / Benefits	Reference Standard (i.e. legislation / best practice)	Investment needs / Resources / Responsibility	Target Date	Key Performance Indicator	Comment
			monitoring programme)				
1.3	Undertake monitoring of effectiveness of ecological off-setting measures (these may include financial contributions towards long-term ecological management of a protected area, funding initiatives to enhance ecological awareness, funding research into the ecological impacts of wind farms)– if applicable, dependent on the results of ecological monitoring (see 1.1 above)	Identify effectiveness of off-setting measures	Best practice EBRD PR9	External resources. Use appropriately qualified ecologists	Within a year after project completion	Effectiveness of ecological off-setting in terms of improving the ecological value of the area in question or increasing understanding and awareness of ecological issues and biodiversity conservation	
1.4	Undertake noise monitoring at the site perimeter during operation	Evaluate the noise levels against predicted levels and noise target of 45dB(A). Provide understanding of the baseline conditions to inform assessment of the environmental impact of the investment	Best practice Government Decision no. 321/2005 (requirement of Environmental Permit)	External resources. Use of accredited noise specialists	Within a year after project completion (noise monitoring to be undertaken over a 3 month period)	Number of exceedences of noise limits at boundary Number of grievances relating to noise disturbance. Report to Lenders	
1.5	Develop a construction waste management plan	Waste minimisation, resource efficiency and	Romanian Legislation and	External resources	April 2010	Amount of waste generated,	

No	Action	Environmental Risks / Benefits	Reference Standard (i.e. legislation / best practice)	Investment needs / Resources / Responsibility	Target Date	Key Performance Indicator	Comment
	identifying methods to reduce waste generation and re-use and recycle wastes in preference to disposal.	maximising recycling opportunities. Effective waste management	EU Directives Environmental Permit			recycled and disposed of Waste disposal costs	
1.6	Implement the construction waste management plan and maintain records for annual environmental audits	Waste minimisation, resource efficiency and maximising recycling opportunities. Effective waste management	Romanian Legislation and EU Directives Environmental Permit	External resources	April 2010	Amount of waste generated, recycled and disposed of Waste disposal costs	
1.7	Continue the Ecological monitoring during the entire construction works and for at least one year following commissioning to provide a more complete baseline of the sites conditions and to verify the conclusions of the EIA Reports	Supplement baseline information to inform assessment of the environmental impact of the investment Quantify impacts on flora, habitats and avifauna Opportunity to monitor effectiveness of mitigation measures during construction and operation and to implement changes if required.	Environmental Permit	External resource. Use of reputable environmental consultants	April 2010	Assess actual impact of the Project on flora, habitats and avifauna and effectiveness of mitigation measures Report to Environmental Protection Agency Constanta	

No	Action	Environmental Risks / Benefits	Reference Standard (i.e. legislation / best practice)	Investment needs / Resources / Responsibility	Target Date	Key Performance Indicator	Comment
1.8	Review and monitor implementation of Contractors' health and safety plans, health and safety risk assessments and associated procedures during construction and operation (e.g. maintenance activities). Ensure effective control and management of all health and safety risks by contractors, such as through the adoption of safe working practices and use of personal protective equipment where required.	To ensure effective health and safety management during construction and operation	Romanian Legislation (e.g. Law 319/2006 on Health and Safety at Work) and EU Directives	Internal resources	April 2010 and prior to commencement of any works by contractors during operation	Number of accidents Number of near misses Report to Lenders	
1.9	Monitor provision of temporary accommodation for construction workers to ensure it complies with the requirements of EBRD PR2 and legal requirements. These should include (but not be limited to), accommodation that is appropriate for its location, clean, safe and meets the basic needs of workers	Improvement of the conditions for construction workers and promotion of the health of workers Protection of the environmental conditions at the site	Romanian Legislation (e.g. Law 319/2006 on Health and Safety at Work) and EU Directives EBRD PR2 Environmental Permit	Internal resources	April 2010	Lost time due to construction worker illness Report to Lenders	

No	Action	Environmental Risks / Benefits	Reference Standard (i.e. legislation / best practice)	Investment needs / Resources / Responsibility	Target Date	Key Performance Indicator	Comment
	(including provision of potable water supply and welfare facilities)						
2) Procedures for environmental and social assessment of the wind farms in line with best international practice							
2.1	Provide information on public access and agree any diversions/closures of footpaths with the appropriate authorities	To clarify public access to the wind farm	Best practice	Internal resources	Prior to operation	Number of grievances relating to access	
2.2	Undertake vocational education / training where practicable during construction	To enhance local incomes	Best practice	Internal resources	April 2010	Number of local residents employed during construction	
2.3	Undertake preparation and implementation of a Construction Environmental Management Plan – to cover construction material storage, site security arrangements, wheel washing, dust control measures, landscaping etc.	Integration of mitigation and avoidance measures during construction	Best practice Would provide a mechanism to assist in implementation of conditions of the Environmental Permit	Internal resources / external resources	April 2010	Assess performance of contractors in avoiding environmental impacts, e.g. spills	
3) Actions required to contain/remediate past environmental damage and assessment of costs and/or further investigations							
	Not applicable						
4) Actions to improve environmental, social and health and safety management, monitoring and performance in accordance with good international industry							

No	Action	Environmental Risks / Benefits	Reference Standard (i.e. legislation / best practice)	Investment needs / Resources / Responsibility	Target Date	Key Performance Indicator	Comment
practice							
4.1	Implement a management system to address the environmental and health and safety issues related to the Project. Integrate the management systems with the rest of the EDP Group. All health and safety hazards and risks must be identified in advance and suitable control measures put in place for all risks, including (but not limited to) use of plant, electrical safety, use of lifting equipment and working at height	Improvement of the management of the project, including in respect of environmental, social and health and safety considerations.	Best practice	Internal resources / external support	Prior to commissioning of the wind farm (July 2010)	Develop an environmental management system (EMS) Attain ISO 14001 or equivalent Report to the Lenders	
4.2	Develop a corporate annual EHS report and disclose on the internet. Disclose information to the Lenders to show compliance with the EMMP and current status of EHS issues	Reporting to Lenders	EBRD PR10	Internal resources	From 2011	Report to Lenders	
4.3	Establish formalised procedures to monitor and review the Project in	Improvement of Project development control	Best practice EBRD PR 1	Internal resources	April 2010	Compliance with PR1. Report to	

No	Action	Environmental Risks / Benefits	Reference Standard (i.e. legislation / best practice)	Investment needs / Resources / Responsibility	Target Date	Key Performance Indicator	Comment
	accordance with PR1. Monitoring and review to be undertaken in respect of all environmental and social issues and impacts, including (but not limited to) the area of influence of the project, potential ecological impacts, noise levels at the perimeter of the site, implementation of the EMMP and activities of contractors. Assign people responsible for Project monitoring and reporting to the Lenders according to the requirements of PR1					the Lenders	
4.4	Undertake further consultation with local community during construction and operation	Avoidance of complaints and increase public understanding. Identify future commitments	Principle 6 of the Equator Principles and IFC Standard / EBRD PR1 European Best Practice Guidelines for Wind Energy Development	Internal resources	April 2010 and once a year during operation	Number of complaints received and timing of response / remedial action implemented	
4.5	Implement SEP that includes annual social and environmental reporting during construction and	Improvement of communications with the local community	Best practice EBRD PR10	Internal resources	April 2010	Compliance with PR10. Publish SEP and NTS on website	

No	Action	Environmental Risks / Benefits	Reference Standard (i.e. legislation / best practice)	Investment needs / Resources / Responsibility	Target Date	Key Performance Indicator	Comment
	operation of the Project.					Report to the Lenders Publish monitoring results on website	
4.6	Creation of a stakeholder register and register of external communications (including with the public and regulatory authorities)	Systematic identification of all stakeholders involved and collection and analysis of communications with external stakeholders. Provide a more effective response to all enquiries	Best practice EBRD PR10	Internal resources	April 2010	Updated stakeholders and external communications registers available	
4.7	Implement and publicise EDPR's grievance management system in accordance with EBRD PR10	Grievance system can be monitored to prevent possible problems with internal and external stakeholders	Best practice EBRD PR10	Internal resources	April 2010	Total number of community and labour grievances and number of unresolved grievances	
4.8	Undertake a regular environmental audit (every year) of the wind farm	Improvement of the environmental and project management	Best practice	Internal resources / external consultants	Every year following commissioning	Reduce environmental and social risk Report to the Lenders	
4.9	Monitor subcontractors'	Verify subcontractors'	Best practice	Internal resources	From April	Number of	

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	compliance with EDPR and EBRD health and safety policies and procedures (see also item 1.8 above)	compliance with EDPR / EBRD Health and Safety policy and procedures	EBRD PR2		2010 and during construction and operation	inspections performed Number of non-compliances detected Report to Lenders	
4.10	Creation of a register of near-misses and accidents (including by subcontractors)	Monitoring of accidents and of critical situations / events that could lead to accidents	Best practice EBRD PR2	Internal resources	April 2010	Number of accidents Number of near misses Report to Lenders	
4.11	Monitor the removal temporary construction access roads, construction compounds and other areas following completion of construction and their restoration to encourage re-vegetation over time (such as. top soil reinstatement, ground modelling to original conditions)	Restoration of site and encouragement of re-vegetation and regeneration of habitats	Best practice EBRD PR6	Internal resources	Following completion of construction	Re-vegetation of disturbed areas Reduced landscape and visual impact	