



ZORLU ENERJI PAKISTAN 56.4MW WIND POWER PLANT

First GS CDM Project in Pakistan (Sindh Province) Zorlu 56.4 MW Wind Farm

Background

The Zorlu Enerji Wind Project belongs to a group of first of its kind wind park activities in Pakistan. By adopting foreign manufacturer wind turbines, the project promotes an important transfer of technical know-how to Pakistan, and can act as a pioneer in disseminating this technology to other wind power projects. The Zorlu Pakistan Wind Power Plant won the “2011 Best Renewable Energy Financing of the Middle East” award which was given by the Project Finance Magazine in March 2012.

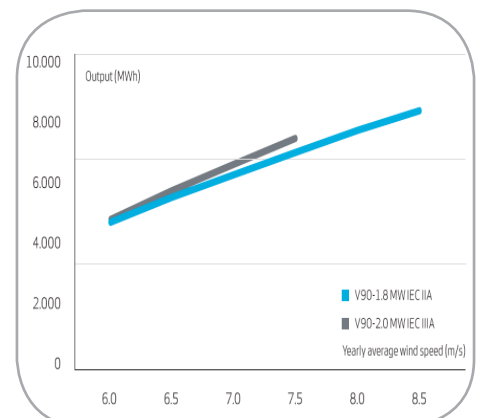
Project Description

The project owner is Zorlu Enerji Pakistan Limited which is part of well-known Turkish business conglomerate Zorlu Group.

The purpose of the Zorlu 56.4 MW Wind Farm Project is to utilize wind resources for electricity generation through the construction of a wind farm with a total capacity of 56.4 MW and to deliver the electricity generated from the project to the Water and Power Development Authority (WAPDA) grid.

By replacing the electricity supplied by the WAPDA grid, which is heavily dominated by fossil fuel fired power plants, with electricity generated from wind power the proposed project activity will achieve considerable greenhouse gas (GHG) emission reductions.

The project; which started operation in July 2013, is the first project in Pakistan, with double certification CDM and GS. It foresees the installation and operations of 1.8 MW wind turbines generators from Vensys and Vestas companies, which will supply an average annual generation of 159,010 MWh to the WAPDA grid thereby reducing the baseline grid emissions by an annual 98,172 t CO₂e.



Vestas' powerful 1.8 MW wind turbine are designed to allow production of energy from low- to medium-wind sites at a low cost
Source: Vestas website, V90 1.8/2 MW WTG

Key Facts

Project Type	Windpower
Project Owner	Zorlu Enerji Pakistan Limited
Project Developer	UPM Umwelt-Projekt-Management GmbH
Location	Pakistan, Sindh Province, Thatta District, Jhampir
Methodology	Consolidated Baseline Methodology for grid-connected electricity generation from renewable sources - ACM0002
Carbon Credit Standard	CDM Certified Emission Reductions (CDM CERs), CDM Ref. 9849 Gold Standard (GS), GS 3946
Validator Verificator (DOE)	Bureau Veritas Certification Holding SAS TÜV NORD CERT GmbH
Registration Date	06/01/2014 (CDM) 16/02/2016 (GS)
Date of First Credit Issuance	CER: issued 26.05.2016 GS CER: 02.01.2017
Annual Credit Volume	approximately 98,200 GS CERs (PDD)
Crediting Period	10 years



Sustainability Benefits

The Zorlu 56.4 MW Wind Farm Project will contribute to a local sustainable development in the project area by exerting the following effects:

- **Economic benefits:** Pakistan is currently facing acute energy supply bottlenecks. The project activity is expected to generate an estimated amount of 159,010 MWh per year and thereby contributing to a reduction in the number of black-outs and brown-outs experienced by other grid users. This can help to improve the economic performance of other businesses connected to the grid.
- **Social benefits:** The project will offer job opportunities for local people both during the construction phase and the operational period, thus achieving economic growth and a higher living standard in the region.
- **Environmental benefits:** By reducing greenhouse gas emissions significantly, the project is expected to bring about positive environmental effects in the area and to improve Pakistan's climatic balance.
- **Technological benefits:** The project activity is the first of its kind in Pakistan. By adopting foreign manufactured wind turbines, the project will initiate an important transfer of technical know-how to Pakistan, and can act as a pioneer in promoting the spread of this technology to other wind power projects in the country. It can also serve as a working example of the potential to improve energy efficiency in other ways, both in the power industry and in other sectors.

Technical Specifications

OPERATIONAL DATA	
Rated power	1,800 kW/2,000 kW
Cut-in wind speed	4 m/s
Cut-out wind speed	25 m/s
Re cut-in wind speed	23 m/s
Wind class	IEC IIA; IEC IIIA
Operating temperature range standard turbine	-20 °C to 40 °C
Operating temperature range low temperature turbine	-30 °C to 40 °C
SOUND POWER	
Maximum	104 dB ^A
<small>*Noise modes available</small>	
ROTOR	
Rotor diameter	90 m
Swept area	6,362 m ²
Air brake	full blade feathering with 3 pitch cylinders
ELECTRICAL	
Frequency	50/60 Hz
Generator type	4-pole (50 Hz)/6-pole (60 Hz) doubly fed generator, slip rings

Vestas' 1.8 MW wind turbine provides proven performance and reliability.
Source: Vestas website, V90 1.8/2 MW WTG

Project Location

The project is located in Pakistan, Sindh Province, northeast of Jhimpir City, Thatta District.

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Location of the GS CDM Project, Zorlu 56.4 MW Wind Farm, in southern Pakistan.

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