INITIAL ENVIRONMENTAL EXAMINATION

50 MW WIND PROJECT AT JHIMPIR, SINDH

PROJECT SPONSORS:

CHINA INTERNATIONAL WATER AND ELECTRIC CORP.

PROJECT CONSULTANT:

RENEWABLE RESOURCES (Pvt) Ltd

APPROVAL SHEET

TITLE	:	Initial Environment Examination Report of 50MW Wind Power Project in Jhimpir
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SYNOPSIS	:	This document is a report on Initial Environment Examination (IEE) of 50MW Wind Power Project being setup in Jhimpir by China International Water and Electric Corp (CWE). The report has been prepared by Renewable Resources (Pvt) Ltd.

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LIST OF ABBREVIATIONS

CWE	China Water and Electric Corporation
DISCO	Distribution Companies
EIA	Environmental Impact Assessment
EMP	Environment Management Plan
IEE	Initial Environmental Examination
LOI	Letter of Intent
NCS	National Conservation Strategy
NEQS	National Environmental Quality Standards
NGO	Non Governmental Organization
NREL	National Renewable Energy Laboratories
PEPA	Pakistan Environment Protection Act
RE2	Renewable Resources (Pvt) Ltd
WTG	Wind Turbine Generator

SECTION 1

EXECUTIVE SUMMARY

1 EXECUTIVE SUMMARY

This document is an Initial Environment Examination (IEE) of ***50 MW Wind Power Project*** at Jhimipir, Sindh of China International Water and Electric Corporation (CWE).

China International Water & Electric Corp. (CWE in abbreviation) is a state-owned large scale enterprise under the direct jurisdiction of the central government of the People's Republic of China, engaging in contracting overseas engineering projects, implementing overseas economic aid projects provide by Chinese government, providing manpower services and handling import and export trading etc.

CWE is a global entrepreneur with having significant experience of construction and power projects. CWE has been working on various power projects in Pakistan for the last thirty (30) years, which shows the commitment and seriousness to perform in Pakistan. Keeping on the same lines, CWE entered into a 50 WM Wind Power Project and got Letter of Intent (LOI) from Alternative Energy Development Board (AEDB), Government of Pakistan in 2005. The project land has been secured through AEDB in 2010. The project is now in the development stages and different elements of feasibility study are underway.

As per requirement of Pakistan Environment Protection Act, 1997, an IEE is required for wind power projects upto 50MW. This study is based on the guidelines provided by PEPA and as per the international standards of wind power projects followed all over the world. The working is supported by the social surveys conducted within the local community.

The study has been carried out by Renewable Resources (Pvt) Ltd, a private consultant specialized in Renewable Energy (RE), Energy Efficiency (EE) and Environment (Env) projects. The company is owned by group of professionals who have remained involved in the renewable energy program of Pakistan and a solid grip on project development, feasibility studies, policy negotiations, requisite approvals, security documents etc.

RE2 is capable of conducting full feasibility package mainly featuring power production estimates, grid interconnection and tariff model. RE2 also has the expertise to deal with the legal documents of power projects. The professional team of RE2 is well acquainted with the policies, regulations, methodologies and standards of RE power projects and work output meets international standards. RE2 is presently a consultant for various power projects in Pakistan sponsored by local and international investors.

The IEE report stands on following strings:

- Relevant Project Information
- Baseline Environmental Conditions
- Possible Impacts
- Mitigation Measures.

A data collection survey that included geology, meteorology, hydrology, ambient air quality, water quality, soil characteristics, noise levels, shadow forecasting, flora and fauna, land use pattern, and socioeconomic conditions was undertaken, based on available secondary information or data collected in the field. Primary data was collected to establish baseline conditions for the soil, water (surface and ground) quality, flora and fauna, and noise. Secondary data was collected for land, ecology, climate, and socioeconomic factors.

As per the physical survey done by Mr. Salman Ahmed of Pakistan Alternative Energy Engineering Services, there are only 03 houses on the project land. The land is flat and barren. CWE has no plan to shift the people living on the land. CWE has a plan to give them jobs as per their skill level or employ them as labors / security guards if totally unskilled. The nearby village is within 5 kms of the project land.

It was observed that the area is highly underdeveloped and there is no industrialization in the area thus the baseline emissions are very low. There are no well developed drainage systems in the area. The conventional source of fuel is wood or kerosene oil. Nearest settlements of human habitats are located 5-8 Km away from the land. There is very sparse vegetation in the forms of herbs and shrubs. There is no reserved forest site or sanctuary located within the project land area that needs to be demolished.

There are very negligible impacts on the noise, air and water quality; that too would diminish as the project shall come online. The project site is located in remote areas with very little social and commercial activity. That minimizes the long term impacts on the social side.

Wind Power Project is a green energy project and, therefore, there is not major impact of the project on the environment of the site. Air quality of the area may be disturbed only during construction phase of the project. There is no damage foreseen to the surface water and ground water conditions of the area. No resettlement of human habitat is required. There is no archeological site present in the location of project. There is no direct impact on the fauna and flora of the area. It is observed from the international practices around the world that birds get used to such heighted structures like any other electrical tower, aviation towers e.tc and ratio of bird hit with turbines is very low. WinPro software has been used for the calculation of noise and shadow impact. Noise impacts will be less than 70 DB(A) which are within the range as per National Environmental Quality Standards (NEQs) of Pakistan. There are no exceeds of shadow from the permissible limits calculated for all WTG type scenarios. The environmental disturbance normally associated with construction activities will be minimized through an Environment Management Plan (EMP), implementation of which will continue during project operation and which includes monitoring arrangements. The project has no carbon, sulfur, nitrogen emissions; nor their oxides, thus not a threat to the environment.

It is concluded that the project will be a positive development in the area and improve the socio economic conditions of area through generation of employment opportunities and opening of ways for the development of this area. There are no negative environmental impacts of the project, rather it is a green energy project and contribute in environmental sustainability of the area. The project will also help to promote renewable energy in Pakistan and meting energy supply demand of the country.

SECTION 2

PROJECT BACKGROUND AND JUSTIFICATION

2 PROJECT BACKGROUND AND JUSTIFICATION

2.1 Project Proponent

China Water Investment Group Corporation and **China International Water & Electric Corp.** constitute one group Company, who is the major stockholder of Xinjiang Goldwind Science & Technology Co. Ltd. China Water Investment Group Corporation supports that China International Water & Electrical Corporation and Xinjiang Goldwind Science & Technology Co. Ltd to jointly undertake this wind power project. In the project, Xinjiang Goldwind Science & Technology Co. Ltd will provide equipment, technology and training; China International Water & Electric Corp. will be the general contractor responsible for financing and construction.

China International Water & Electric Corp. (CWE in abbreviation) is a state-owned large scale enterprise under the direct jurisdiction of the central government of the People's Republic of China, engaging in contracting overseas engineering projects, implementing overseas economic aid projects provide by Chinese government, providing manpower services and handling import and export trading etc. and is under the sectional and professional guidance of the Ministry of Foreign Trade and Economic Cooperation and the Ministry of Water Resources of China. Now it has a registered capital of RMB 500 million Yuan and general assets worth about RMB 3.5billion Yuan up to date.

By the end of 2004, CWE had accomplished more than 600 engineering projects and provided consultancy and manpower services for more than 150 projects in over 40 countries and regions, representing an accumulated contract value of US$2.8 billion. CWE had undertaken 130-plus government economic aid projects with an accumulated contract volume worth US$1.5 billion, of which US$130 million were attributed to export of domestic products. CWE had, either independently or in partnership, introduced large sum of equipment and technology with an accumulated contract value of US$ 7 billion. Through export of their products, CWE's solely and jointly owned enterprises had generated foreign exchange up to US$150 million.

Since1989, CWE has been listed as one of the top 225 international contractors (97th. place in 2004) for 16 years running by the American"Engineering News Record", a globally authoritative periodical in the field of engineering. At home CWE has since long ranked among the top 500 large service enterprises and been authorized by the Chinese government as one of the enterprises qualified to undertake "Class 1 Government Overseas Economic Aid Projects". CWE has been awarded ISO9002 certifications respectively by the HKQAA of Hong Kong since1996 and by Beijing 9000 Certification Center for Quality System since 1998. Among the 50 top enterprises engaging in foreign economic cooperation throughout China, CWE was rated the 10th place according to the accomplishment of turnover in 2004.

CWE has accumulated wealthy experiences in contracting overseas projects, provision of technical consultation and manpower services, economic and technical cooperation and management of import and export business. And at the same time, CWE has brought up a group of experienced professionals who have intimate knowledge and practice of modern business operation and management and good command of advanced engineering technologies. These advantages enable CWE to be fairly competitive and hold considerably extensive and steady international market shares. CWE has built up a good reputation in the countries where it has projects and in the World Bank, Asian Development Bank and other international monetary organizations.

2.1.1 International Projects by CWE

- Kozjak Hydropower Plant in Macedonia (2002-04); USD 89 Million
- Nam Mang Hydropower Development Project in Laos (2002-05); USD 50 Million
- Nam Mang Hydropower Development Project in Laos (2004-07), USD90 Million
- New Amri Agriculture Scheme in Sudan (2004-05); USD 39 Million
- EI Makabra Agriculture Scheme in Sudan (2004-06); USD 39 Million
- Electrification of Volta Lake Resettlement Townships in Ghana (2000-03); USD 32 Million
- The Supply and Installation of Equipment for Street Lighting in All Regional Capitals in Ghana (2006-08); USD 34 Million
- Merowe Dam Project Contract 2A/2B/2C Civil Engineering Works in Sudan(2003-08); USD 650 Million
- Merowe Dam Project Contract 3D Hydro-Mechanical Works in Sudan (2004-08), USD 60 Million

2.1.2 Major Project completed by CWE in Pakistan

- Tarbela-Mardan transmission line project (1979-81)
- Extension work of 210MW Guddu Thermal Power Plant Unit 4 (1983-85)
- Greater Karachi bulk supply scheme Phase-4, Stage-1, Contract 2A, Main Syphon Project (1984-85)
- Supply Scheme Phase-4, Rehabilitation of Korangi trunk main & north university block, Contract No 9D and 9E (1986-87)
- Remodeling Project of Kadhan Pateji outfall (kpod) and Dhoro Puran outfall drain (dpod) (1987-1991)
- Building construction for the consulate-general of P.R. China in Karachi (1987-89)
- Installation of No. 4 and No. 3 Units of Bin Qasim Thermal Power Plant (1988-89)
- Remodeling of Jamrao Irrigation Canal Project (1989-94); USD 17 Million
- Jamshoro - Guddu 500KV Transmission Line Project (1990-95); USD 20 Million
- Remodeling of Jamrao Irrigation System Project, Sanghar USD 23 Million (1990-93)
- Remodeling of KPOD/DPOD (1990-94); USD89 million.
- Kotri Barrage Rehabilitation Project, Contract K2D1 (1994-96); USD 1.7 Million
- Kotri Barrage Rehabilitation Project, Contract K3 (1997-99); USD 4.45 Million
- Remodeling of nara canal dredging at Jamrao head project (Contract No W70 wbig) (1998-2000); USD 7.2 Million
- Provincial Highways Project Contract Package No. 2 (1995-2000); USD38million
- Rehabilitation / Remodeling of Karo Naro surface Drainage System (2003-04); USD 1.61 Million
- Malakand-III Hydropower Project in Pakistan (2003-06); USD 38 Million
- Mangla Dam Raising Project-Construction of Main Work in Pakistan (2004-07); USD 240 Million.
- Mangla Dam Raising Project in Pakistan (2004.06.20-2007.09), Contract value USD240million
- Malakand-III Hydropower Project in Pakistan (2003.01-2006.01); USD38 Million

2.2 Objective of the Project

The project is being setup with the following objectives:

i. Contribute to meeting the electricity supply deficit in south west of Pakistan in particular; and country in general.
ii. By using indigenous renewable resources of power generation, avoid depletion of natural resources for future generation and environmental stability.
iii. Contribute to improved electricity supply service delivery to a limited extent specifically having a wide rural outreach.
iv. Improve microeconomic efficiency of the power sector by reducing fossil fuel usage.
v. Reduce greenhouse gas emissions from power generation and contribute to negligible emission, effluent, and solid waste intensity of power generation in the system.
vi. Conserve natural resources including land, forests, minerals, water, and ecosystems.
vii. Develop the local economy and create employment, particularly in rural areas and in a district that is designated a backward area, a priority concern of the Government of Pakistan.

2.3 Purpose and Scope of IEE

The purpose of Initial Environmental Examination (IEE) is to identify the reasonably foreseeable environmental effects of the activities that will be conducted under CWE wind farm project.

This IEE meets the following purpose:

- Identifies activity components that may have environmental consequences;
- Describes the illustrative interventions and applicable categorical exclusions;
- Recommends additional environmental review and mitigation for certain interventions;
- Based on the extent of the intervention and impacts, recommends the applicable level of environmental review.

2.4 Approach and Methodology

The IEE was performed in four main phases, which are described below.

2.4.1 Scoping

The key activities of this phase included:

Project Data Compilation: A generic description of the proposed activities relevant to environmental assessment was compiled with the help of the proponent.

Published Literature Review: Secondary data on weather, soil, water resources, wildlife, and vegetation were reviewed and compiled.

Legislative Review: Information on relevant legislation, regulations, guidelines, and standards was reviewed and compiled.

***Identification of Potential Impacts*:** The information collected in the previous steps was reviewed and potential environmental issues identified.

Baseline Data Collection: A considerable amount of baseline information on the project area was available from existing literature and other studies conducted close to the project area. A field visit was conducted to verify and collect primary data on the site alternatives. A questionnaire was developed and views of local inhabitants were taken about the wind power project.

2.4.2 Impact Assessment

The environmental, socioeconomic, and project information collected was used to assess the potential impacts of the proposed activities. The issues studied included potential project impacts on:

- Geomorphology
- Groundwater and surface water quality, with particular reference to the coast
- Ambient air quality and ambient noise levels
- Ecology of area, including flora and fauna especially with reference of migratory birds
- Local communities
- Noise impact
- Shadow impact

Wherever possible and applicable, the discussion covers the following aspects:

- The present baseline conditions
- The potential change in environmental parameters likely to be effected by project related activities
- The identification of potential impacts
- The evaluation of the likelihood and significance of potential impacts
- The defining of mitigation measures to reduce impacts to as low as practicable
- The prediction of any residual impacts, including all long-term and short-term; direct and indirect; beneficial and adverse impacts
- The monitoring of residual impacts

2.4.3 Documentation

This report documenting the IEE process and results is prepared according to the relevant guidelines set by the Pakistan Environment Protection Agency (Pak-EPA).

SECTION 3

STATUARY REQUIREMENTS OF IEE

3 STATUARY REQUIREMENTS OF IEE

A number of laws exist in Pakistan containing a number of clauses concerning protection of the environment. However, the first legislation on environmental protection was issued in 1983.

The Pakistan Environment Protection Ordinance, 1983 was the first legislation promulgated for the protection of environment. Pakistan Environment Protection Agency was established in 1984. No significant environmental policy, guidelines and regulations were made till early 1990s. The National Conservation Strategy was developed and approved by the federal cabinet in 1992. Provincial Environment Protection Agencies were also established in 1992-93. National Environmental Quality Standards (NEQS) were established in 1993. Detailed environmental guidelines were issued in 1996. The National Assembly and the Senate conferred Pakistan Environment Protection Act in 1997.

3.1 Policy Guidelines (www.epa.gov.pk)

The National Conservation Strategy (NCS) is the primary document addressing environmental issues of the country. NCS is duly recognized as the National Environmental Action Plan. The document identifies 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural environment. The areas include restoration of rangelands, pollution prevention and abatement, and preservation of cultural heritage etc.

The Pakistan Environment Protection Act, 1997 is the key legislation empowering the government to frame regulations for the protection of the environment. Detailed rules, regulations and guidelines required to enforce the Environment Protection Act are still in various stages of development.

3.2 Environment Institutions and Administration

The Constitution of Pakistan distributes the legislative powers between the federal and the provincial governments through Federal and Concurrent Lists. The Federal list depicts the areas and subjects on which the Federal government has exclusive powers. The second, concurrent list contains areas and subjects on which both Federal and Provincial governments can enact laws.

The Ministry of Environment, Local Government and Rural Development is responsible for environmental issues at federal level. The NCS unit within the Ministry ensures implementation of the National Conservation Strategy.

The Pakistan Environment Protection Agency at the federal level is responsible for administering the provisions of the Environment Protection Act. It is responsible to ensure compliance with the NEQS, develop monitoring and evaluation systems and initiate legislation when necessary.

The provincial Environment Protection Agencies (Environment Protection Department in Sindh) are responsible for environmental planning and development, approval of Initial Environmental Examination (IEE) and Environmental Impact Assessments (EIA) of new projects at provincial level.

3.3 Laws, Regulations and Guidelines

Pakistan Environment Protection Act, 1997 is the basic law that empowers the Government of Pakistan to develop policies and guidelines for the protection of natural environment. Brief description of the laws is given below.

3.4 Pakistan Environment Protection Agency Review of IEE and EIA Regulation, 2000

The Pakistan Environment Protection Agency Review of IEE and EIA Regulations provide the necessary details on preparation, submission and review of the IEE and EIA. Categorization of projects of IEE and EIA is one of the main components of the Regulations.

The IEE-EIA Regulations, 2000 also provide the necessary details on the preparation, submission, and review of IEEs and EIAs. The following is a brief step-wise description of the approval process:

- A project is categorized as requiring an IEE or EIA using the two schedules attached to the Regulations.
- An EIA or IEE is conducted as per the requirement and following the Pak-EPA guidelines.
- The EIA or IEE is submitted to the concerned EPA—provincial EPAs if the project is located in the provinces or the Pak-EPA if it is located in Islamabad.
- A fee, depending on the cost of the project and the type of the report, is submitted along with the document.
- The submittal is also accompanied by an application in the format prescribed in Schedule IV of the Regulations.
- The EPA conducts a preliminary scrutiny and replies within 10 days of the submittal of a report, a) confirming completeness, or b) asking for additional information, if needed, or c) returning the report requiring additional studies, if necessary.
- The EPA is required to make every effort to complete the IEE and EIA review process within 45 and 90 days, respectively, of the issue of confirmation of completeness.
- When the EPAs accord their approval subject to certain conditions:
- Before commencing construction of the project, the proponent is required to submit an undertaking accepting the conditions.
- Before commencing operation of the project, the proponent is required to obtain from the EPA a written confirmation of compliance with the approval conditions and requirements of the EIA.
- An Environment Management Plan (EMP) is to be submitted with a request for obtaining confirmation of compliance.
- The EPAs are required to issue confirmation of compliance within 15 days of the receipt of request and complete documentation.
- The EIA approval is valid for three years from the date of accord.

A monitoring report is to be submitted to the EPA after completion of construction, followed by annual monitoring reports during operation.

Complete guidelines of Preparation of EIA/IEE along with details of other concerned laws and regulations given in Pakistan Environment Protection Act are given in Annexure-IV for reference

SECTION 4

DESCRIPTION OF PROJECT

4 DESCRIPTION OF PROJECT

The electricity mix of Pakistan it is heavily tilted towards imported oil. Oil price hike in the international market will impacts our electricity generation creating the circular debt issue. At this juncture, we are encountering the worst electricity crises of the history of Pakistan resulting in extended load shedding to an extent which virtually suspends social life. The situation has further forced Government of Pakistan to decisions like early market shutdown, power cutoff to industry, and two holidays per week thus affecting all business activities.

AEDB launched a wind power program under Ministry of Water and Power for which, Letter of Intent (LOI) was issued to potential sponsors. One such LOI was obtained by CWE for setting up a 50MW Wind Power Project in Sindh where significant wind potential is forecasted by Government of Pakistan

The site has been allocated by AEDB through Government of Sindh under a lease agreement. Following parameters were considered for site selection:

- Location in the wind corridor
- Topographic conditions
- Wind conditions at site
- Location of the grid

4.1 Wind Corridor of Pakistan

Pakistan has 1046 km long coastal line with very encouraging wind regime. According to a study carried out by NREL and the wind masts installed in the Gharo and Keti Bandar wind corridor, the average wind speed in the region is 7.4 m/s making a regional potential of more than 50,000 MW.

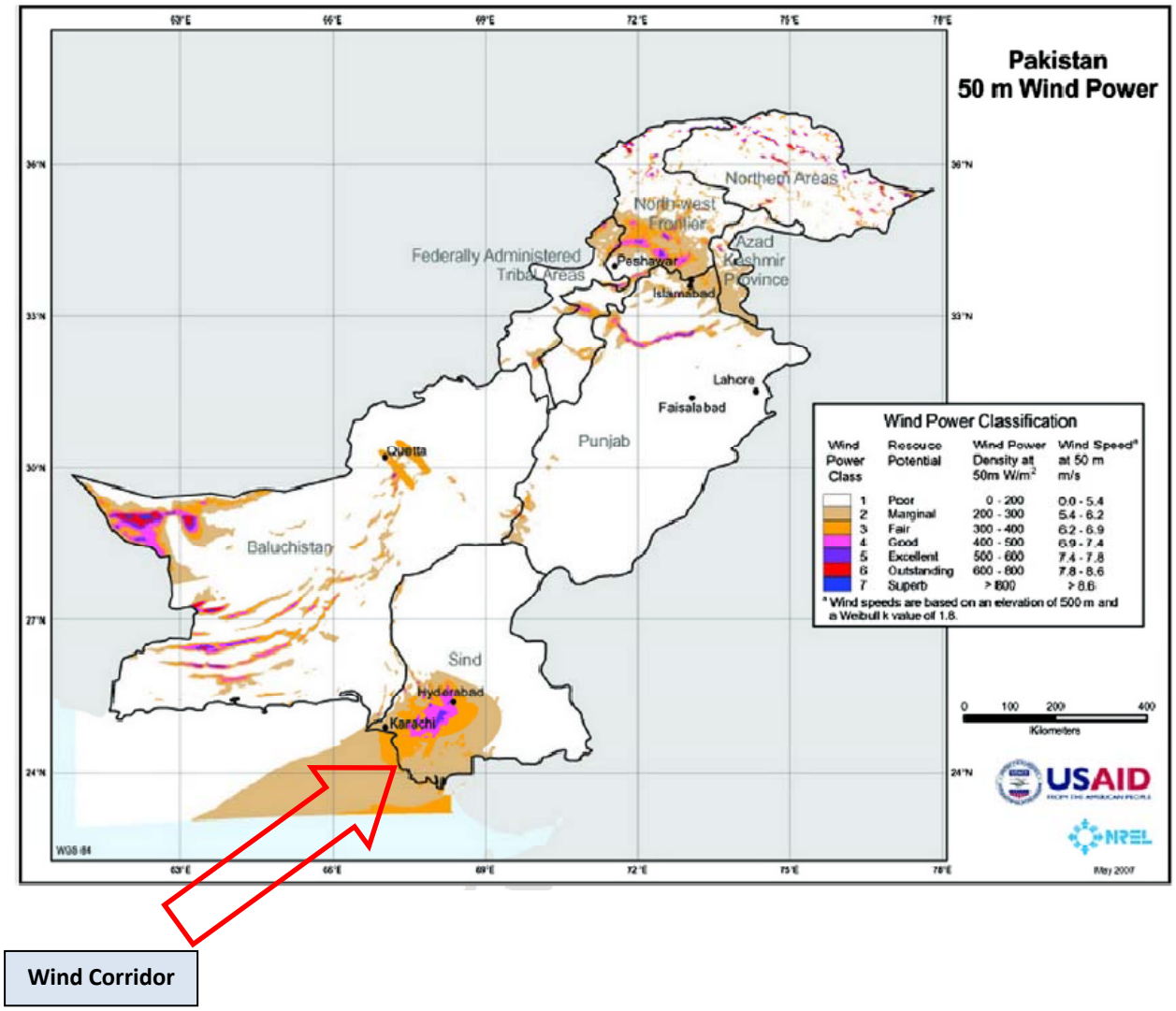


Figure 1: Wind Map of Pakistan by NREL

Based on the wind potential, Government of Pakistan initiated the wind power projects and facilitated land to the potential investors. The lands were allocated in Gharo, Bhambore and Jhimpir, where different wind power developers are making progress. CWE has been allocated land in the Jhimpir block.

An overview of project sites allocated in Jhimpir region are given below:

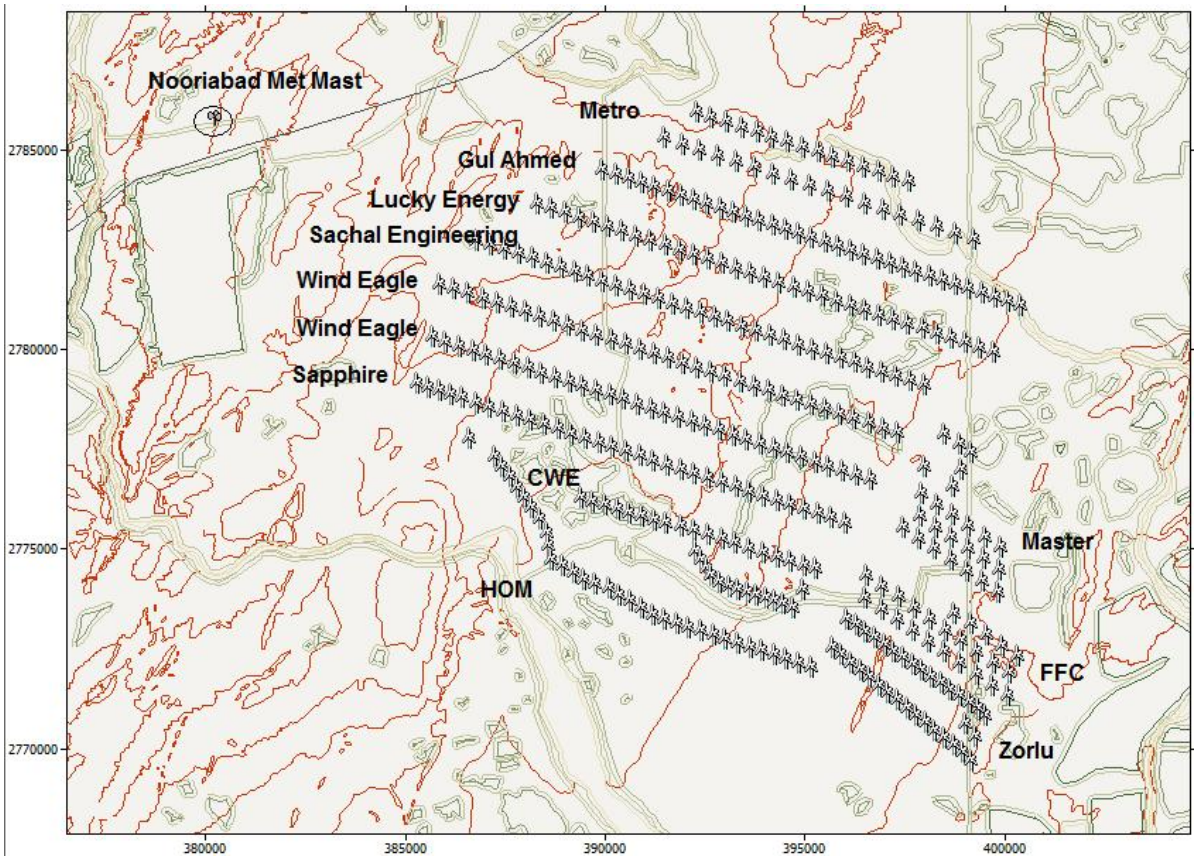


Figure 2: Wind Project Sites in Jhimpir - Sindh

4.2 Project Site

The selected site for the 50 MW project is located at Jimphir which is 20.81 miles north of district Thatta and 31.49 miles from Hyderabad, Karachi. Pakistan largest fresh water "Kalri lake"is located at 7-8 miles from the wind farm site. The site lies between the National Highway and the Super Highway which runs from Karachi to Hyderabad.

Figure 3: CWE Wind Project Site Overview

Figure 4: CWE Wind Project Site Description

Border Point	UTM-X	UTM-Y	Longitude	Latitude
D1	395422	2774379	67°57'46.81"	25°04'53.57"
D2	394716	2773159	67°57'21.92"	25°04'13.75"
D3	392723	2773807	67°56'10.62"	25°04'34.32"
D4	391848	2775229	67°55'39.00"	25°05'20.29"
D5	389209	2776041	67°54'04.57"	25°05'46.00"
D6	389384	2776226	67°54'10.75"	25°05'52.08"

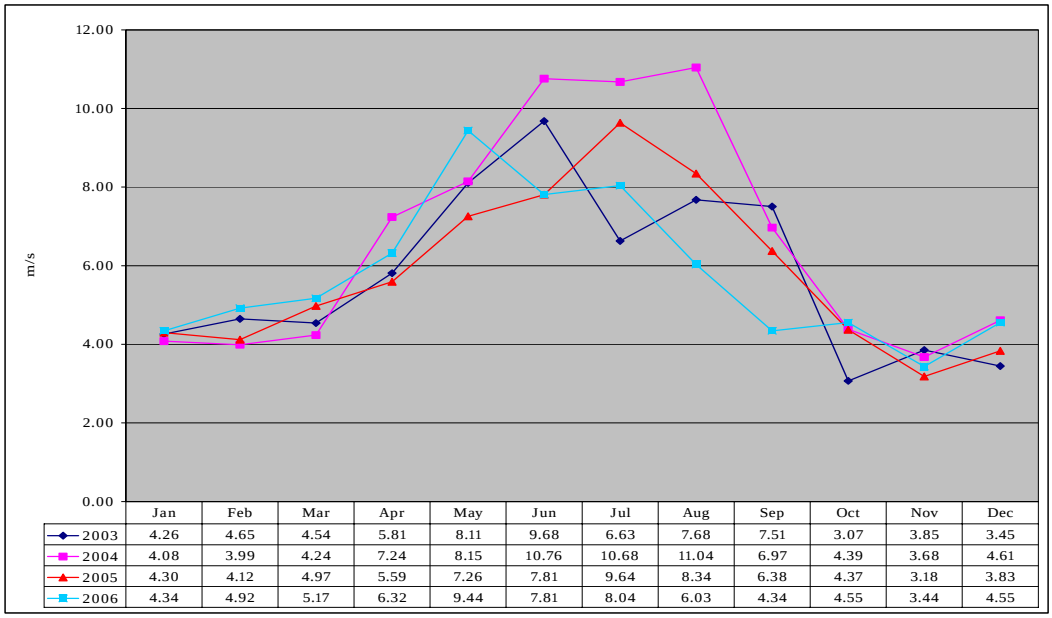
Table 1: Land Coordinates

The general area of Jhimpir including the site is a semi desert area and its surroundings consist of flat and hard rocky terrain with an elevation of approximately 40m to 50m above sea level. The site has very sparse little ground cover consisting of small shrubby bushes as shown in figure below:

Figure 5: Topographic View of Project Site

4.3 Wind Regime

The wind data recorded at 30 m height from Nooriabad met mast during the period of four years, i.e. Jan 2003 to Dec. 2006, has been analyzed to determine the monthly mean wind speeds as shown in Figure 6.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003	4.26	4.65	4.54	5.81	8.11	9.68	6.63	7.68	7.51	3.07	3.85	3.45
2004	4.08	3.99	4.24	7.24	8.15	10.76	10.68	11.04	6.97	4.39	3.68	4.61
2005	4.30	4.12	4.97	5.59	7.26	7.81	9.64	8.34	6.38	4.37	3.18	3.83
2006	4.34	4.92	5.17	6.32	9.44	7.81	8.04	6.03	4.34	4.55	3.44	4.55

Figure 6: Monthly Mean Wind Speed at Nooriabad (2003-06 at 30m Height)

The mean of monthly mean wind speeds for the duration of Jan 2003 to Dec 2006 is shown in Table 2.

Month	Monthly Mean Wind Speed (m/s)
January	4.25
February	4.42
March	4.73
April	6.24
May	8.24
June	9.01
July	8.74
August	8.27
September	6.30
October	4.10
November	3.54
December	4.11
Annual Mean wind speed	**6.0**

Table 2: Mean of Monthly Mean Wind Speed at Nooriabad (2003-06 at 30m Height)

4.4 Location of Grid

Pakistan's has a vast transmission and distribution system ranging from Northern areas to the farthest corner of Balochistan and Sindh. National Transmission and Dispatch Company (NTDC) is the main authority which manages all the transmission facilities and the National Grid with the help of 08 distribution companies, the DISCOs. The major hydel generating stations lie in the north and the load centers are in the south or in the middle of the country.

The project site is located close to the Jhimpir Grid Station. A separate electrical and grid interconnection study is being conducted for the project including Power Quality, Load Flow, Short Circuit and Power Evacuation.

4.5 Turbine Selection & Micrositing

The WTG selected for this project shall be type IEC IIC windward 3-blade unit with a single capacity of 1500kW, a high single unit utilization rate and a full farm utilization rate. The permanent magnetic exciting turbine is preferential in the same conditions.

The basic features of turbine are given below:

Make	Gold Wind / Vensys
Rated Power	1.5 MW
Hub Height	75 m
Blade Dia	77 m
No of Turbines	33

The total area of this wind farm is 4.69km^2. Due to the site area and special shape, the WTG layout is restricted and the form of layout is relatively simple. After meeting the requirement of capacity, the minimum wake losses should be main principle. After general consideration, the linear layout should be considered as the main WTG layout in this project. The picture of the land at site area is shown in Figure 7 and the layout of WTG is shown in Figure 8. Perpendicular to the prevailing wind direction, the minimum distance between wind turbines is 230m, and the maximum distance is 336m. Perpendicular to the prevailing wind direction, the minimum distance is 860m, and the maximum distance is 1350m.

Figure 7: Picture of the land at site area

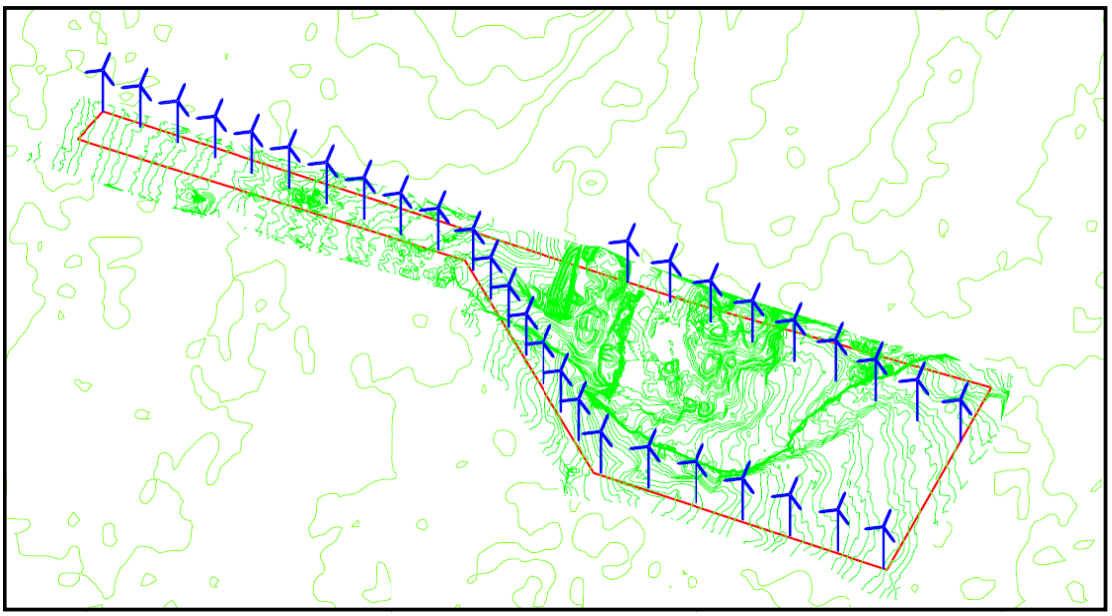


Figure 8: Layout of WTG

SECTION 5

BASELINE ENVIRONMENTAL CONDITIONS

5 BASELINE ENVIRONMENTAL CONDITIONS

The project site is located some 30 km from Nooriabad Grid Station on Super Highway near Hyderabad. The nearest grid station to the Site is the Jhimpir Grid Station which is located at a distance of approximately 6-7 km from the site, bearing Coordinates 25 01.882 N, 68 00.413 E. The energy generated by the wind farm would be injected on the 132 kV distribution systems.

A data collection survey that included geology, meteorology, hydrology, ambient air quality, water quality, soil characteristics, noise levels, flora and fauna, land use pattern, and socioeconomic conditions was undertaken, based on available secondary information or data collected in the field. Primary data was collected to establish baseline conditions for the soil, water (surface and ground) quality, flora and fauna, and noise. Secondary data was collected for land, ecology, climate, and socioeconomic factors.

5.1 Climatic Conditions

The climate of the project area can be broadly classified as arid, moderate, hot and humid. The mild winter is restricted to the November-February period. The summer extends from May to September, which overlaps the short spells of the main rainy season during July-August. The weather tends to be very humid during June, July and September and is pleasant during March April.

The climate of this area is characterized by fluctuating temperatures and sparse rainfall. The summers are hot and humid with average temperature ranging between 33 ºC to 37 ºC. The temperature in summers may reach up to 45 ºC. The winters are pleasant with average temperature in the range of 15ºC to 25 ºC. The months of July and August generally observe

the annual monsoon rainfalls. The climatological information of Karachi, which lies near to the site, is shown in Table 3:

Month	Average Temperature (ºC)		Relative Humidity (%)		Total Rainfall (mm)
	Min	Max	am	pm	Mean
Jan	13	25	63	45	3.6
Feb	14	26	72	49	6.4
Mar	19	29	79	57	8.3
Apr	23	32	87	62	4.9
May	26	34	88	68	0
Jun	28	34	86	69	3.9
Jul	27	33	28	73	64.4
Aug	26	31	90	74	44.8
Sep	25	31	89	71	22.8
Oct	22	33	83	57	0.3
Nov	18	31	68	49	1.7
Dec	14	27	64	45	4.5

Table 3: Climatology of Karachi

5.2 Surface Water and Drainage

Major water reserve of the area is Keenjhar Lake also known as Kalri Lake. It is about 10 km from the wind farm site. It is 24 km long and 6 km wide and has an area of 14000 ha (35,583 acres). The lake is fed by the Kalri Bagar feeder canal from the north-west as well as by small seasonal streams entering it from the north and the west. The feeder is also the conduit for the industrial wastes of Kotri town. The only outlet is the Jam branch canal in the south-east end of the lake. Keenjhar is a wild life sanctuary and a Ramsar site.

Jhimpir is located in the north west of the lake with its 15 neighboring Goths. People of Jhimpir and their neighborhood Goths are largely dependent on this freshwater lake.

The area is very poor in terms of the indicator of piped water, which is available to only about 14% of the housing units. About 13% of rural households have hand pumps inside the housing units, while 16% use outside ponds for fetching water and 6% of housing units use dug wells. The ground water level of the site is 115 meter.

Drainage system of the area is very poor and very critical issue. Poor drainage and health were identified as inter-linked issues, particularly as most of the sewerage of Jhimpir town is collected through open drains into a big pond and then drained into the lake, only 1000 feet away from one of the neighboring Abbas Mir Goth of Jhimpir.

5.3 Air Quality

The area in and around the project site is highly underdeveloped with no industrial development nearby. The primary sources of air pollution include minor traffic near Jhimpir link road and use of low quality fuels by rural households in the vicinity, and wind-blown particulates.

5.4 Noise Quality

The project site is located in a rural setting, about 8 km from the nearest villages. Traffic near the project site is consequently very low, industrialization is also very less, thus baseline noise levels are low.

5.5 Seismic Hazards

According to the seismic zoning map of Pakistan, the jhimpir region falls in **ZONE II-B** shown in the figure 4 with moderate to severe damage area probability. Earthquake records indicate that this region has experienced several earthquake tremors in the past, as well as in recent times. The region has some major tectonic features, including Runn Kutch-Karachi fault, Pab fault, Ornach-Nal fault, Surjan fault, and Jhimpir fault.

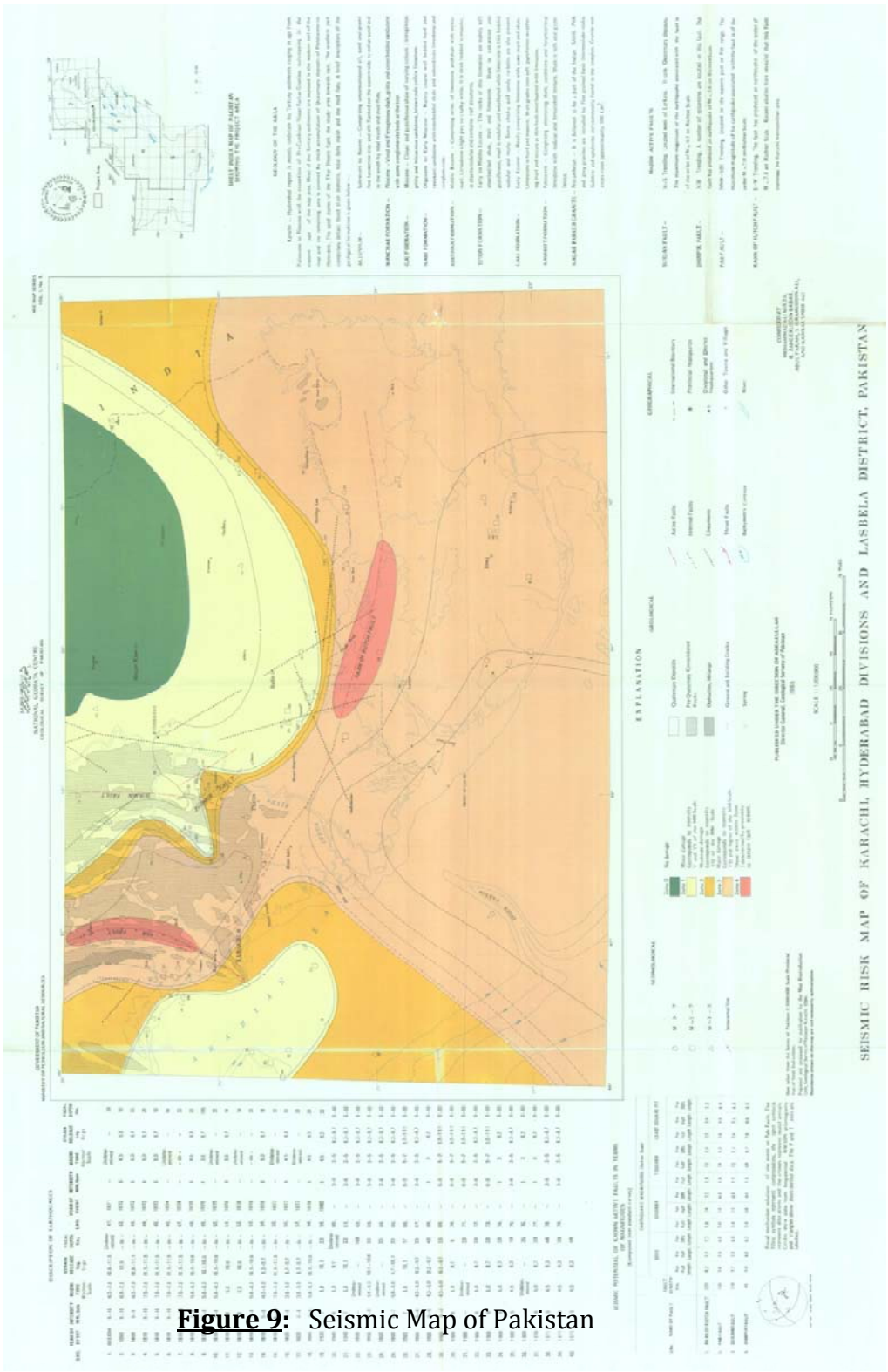


Figure 9: Seismic Map of Pakistan

5.6 Geology and Soil

The Thatta District has a wide range of soil types due to its diverse land forms which include sandy, deltaic, alluvial, gravel, coastal and mountainous.

5.7 Socio Economic Features

5.7.1 Local Settlement Pattern and Population

People of Jhimpir defined it as an old town of historical significance, rich in minerals and natural resources and a population of about 35,000 – 40,000 scattered in several *goths/paras*.

5.7.2 Health and Education Facilities

The health infrastructure in Thatta is scant. Three out of the six coastal Talukas do not have any Rural Health Centre or any Veterinary Dispensary. A particular problem of access to health services is the scattered nature of the population. Thus many of the people have no access to health services within a convenient location from their homes.

The literacy rate in Thatta District was reported to be 22% in 1998. The male literacy rate was three times higher at 32% compared with the female literacy rate of only 11%. The literacy rate in urban areas was much higher at 46% compared to only about 19% in rural areas.

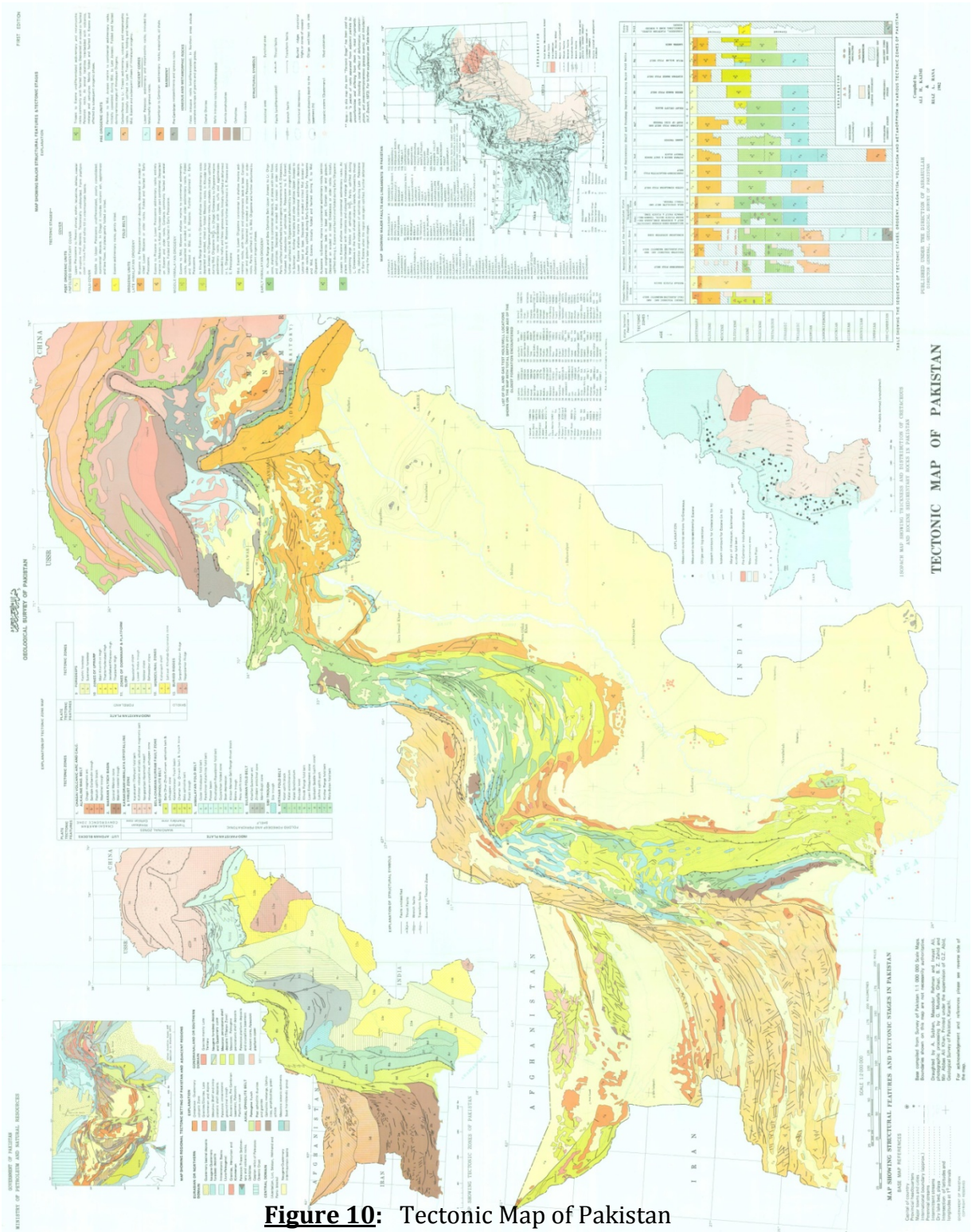


Figure 10: Tectonic Map of Pakistan

5.8 Ecology

5.8.1 Vegetation

The dominant trees and shrubs are *hubul* (acacia arabica), *kaneli* (prosopis spicegra) *Pi* (salvadora olioides), *Karil* (capparis aphylla), *rhazya stricta*, *daemia extensa* and many others. The dominant trees, shrubs and under shrubs of sand dunes are represented by ak (calotropis procerra), *lai* (tamerix diocia) besides babul, *kand*i and *karil*, etc. The plants found cultivated or wild near villages in the alluvial tracts are *neem* (azadirachta indica), *ber* (zizyphus jujube), *serrel* (albizzia lebbeck) etc.

5.8.2 Wild Life

Animals: The wildlife in the area has been affected by colonization of the area and many wild life species have either diminished or vanished. At present hyenas and wolves are hardly ever seen. Jackals are fairly common and foxes are seen in the rapidly contracting area of dry waste. Hog deer which were once seen along the bank of River Indus are uncommon and pigs though diminished are still found in small numbers. Hare and deer are fairly common. Wild animals' inventory of Sindh region is given in **Annexure III.**

Birds: Among birds both grey and black partridges are very common in the forest plantation. Most of the common kind of wild duck and water fowl are seen in the cold season. Geese are found penetrating the fields of gram and wheat. Kunj are regular winter visitors. Sand grouse of various kinds visit the district in the cold weather, but the expansion of the cultivated area has driven them away. This also applies to the houbara which was quite common in former times. Quails are also common. The other birds found in the district are Indian cursor, small Indian swallow plover, Asian open bill stork, black and glossy ibris, sirkeer malikoha or cuckoo, Indian scoops owl, dusky horned owl, etc. Birds that visit the Keenjhar Lake include badak, ari, dhanore, seeklo, hong, pen, san, jonghlo, blue bet etc. They remain on the lake for 4-5 months.

The water fowl census revealed the biggest concentration in the whole of Pakistan on Keenjhar Lake. Inventory of birds of Sindh region made by Siondh wildlife Department is given in **Annexure II**

5.8.3 Infrastructure and Industry

The district is linked by road with other districts. National Highway from Karachi to Peshawar passes through Thatta for a length of 200 kilometers.

The main railway line from Karachi to Peshawar also connects the district. The principal railway stations are Jangshahi, Dhabeji and Jhimpir.

Electricity is available in 21% rural housing units while kerosene oil is still used in 77% of the rural dwellings. Firewood is used as the main cooking fuel in about 91% of rural households and 77% of urban households.

The district is also equipped with digital and non-digital telecommunication system besides postage and telegraph.

From the industrial point of view, Thatta District has progressed considerably. There are about 30 industrial units established in the district.

5.8.4 Archaeological Sites

No archaeological sites are present near the project site.

5.8.5 Occupational Pattern

The principal means of livelihood in all villages is fishing. Other activities are undertaken when fishing stops or to supplement earning. That fish stock has drastically declined and people have been forced to out-migrate from the area was stated by residents of the villages. Fish that is caught is taken by middlemen (veparis) to sell in the market in Thatta.

5.9 Natural Mineral Resources

The project site area is very rich in natural resources. Coal reserves of about 28 million tones cover an area of 350 sq. miles are present in the area of Jhimpir. Haji Jafer Hillaya (a nearby goth) has a big range of small mountains, which contain natural minerals like limestone, gypsum, and marble. The range is also a source of stones, which are used in road construction.

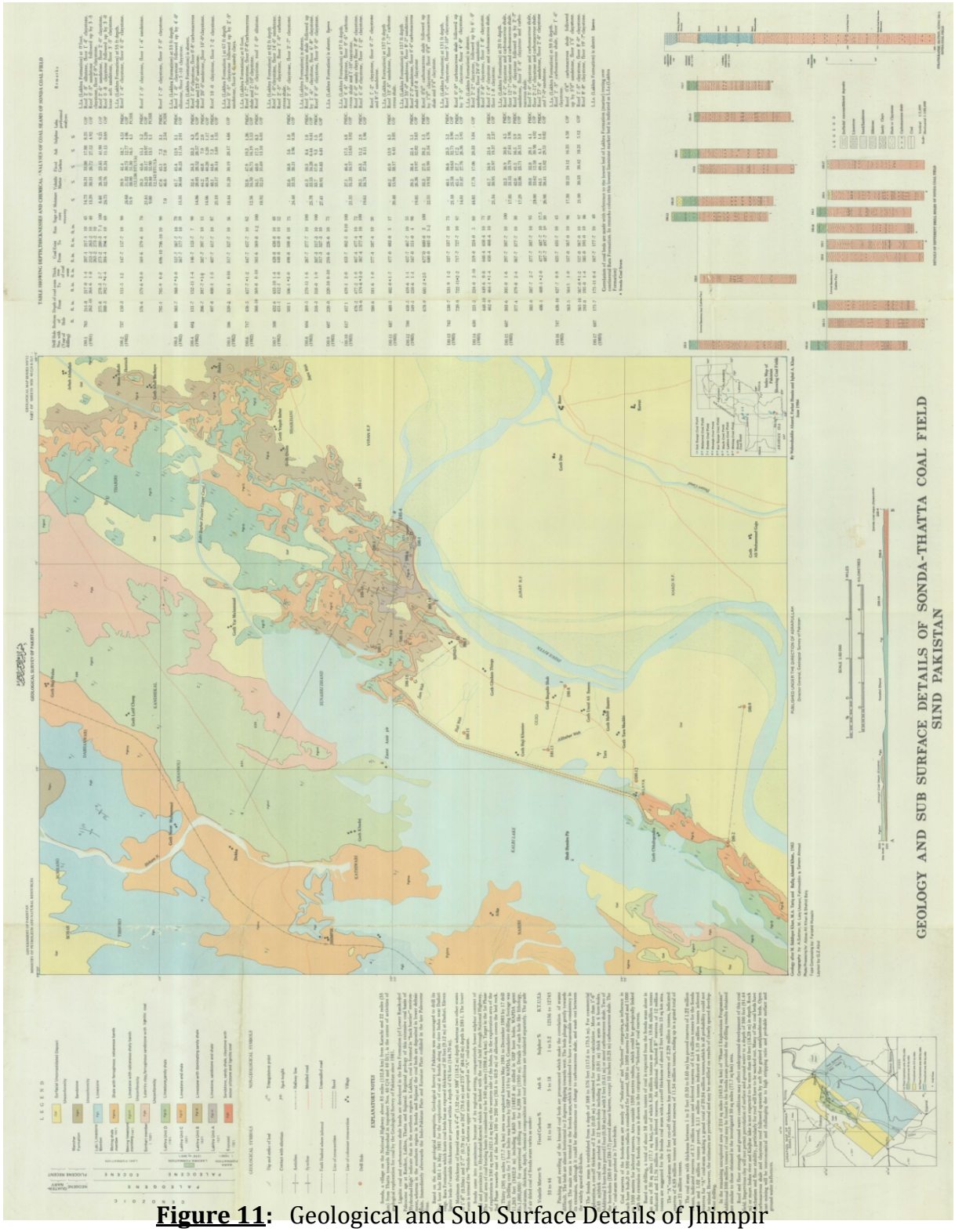


Figure 11: Geological and Sub Surface Details of Jhimpir

Document Title:	Consultant Name:	Document No	Date of Approval
Initial Environment Examination Report of 50 MW Wind Power Project in Jhimpir	Renewable Resources (Pvt) Ltd	RE2-131-104-001	July, 10
	Project Sponsor: CWE – China	Document Issue Draft	Page 39

SECTION 6

POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6 POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.1 Air Quality

The Project involves power generation using wind energy — a clean source of energy (i.e., no fuels are used). Air pollution will increase during construction (due to truck/vehicle traffic to the project site, minor construction required to erect the WTG, earthwork, development of access roads, vehicle traffic on un metaled road, etc. Also, use of construction vehicles and equipment and idling of vehicles carrying construction raw materials add to the emissions.

However, the increase in air pollution is temporary. Also, the nearest human habitat is about 8 km away from the project site. Thus the impact of the construction activity on air pollution will be minor and temporary. Construction emissions will be substantially greater than emissions from project operation activities, but still limited in volume.

6.2 Noise Quality

Project construction involves a variety of noise generating activities that include the use of grading, excavating/drilling/minor blasting of tower foundations, concrete batching, tower erection, the construction of ancillary structures / concreting, material movement, site cleanup etc

Noise levels generated by construction equipment vary significantly depending on the type and condition of equipment, the operation method and schedule and the site of the activity.

Construction activities at site are expected to produce noise levels in the range of 75–90 dB(A), with most works carried out during daytime.

The noise levels produced during construction will not have a significant impact on existing ambient noise levels at receiving sites as noise generating activities are dispersed and most construction activities will occur during the day when higher noise levels are tolerated due to higher background noise levels. In addition, the constructions phase will only be few month's duration therefore the intermittent impact from construction noise is deemed to be negligible.

During Project operation, noise will be generated from rotor movement through the air, from turbine operation and from vehicle movements and machinery operation around the site for maintenance and repair purposes. Blades moving through the air produce an aerodynamic noise. This noise is detectable when it is greater than the background noise, generally at wind speeds between the turbine cut-in wind speed (when the turbine starts to generate power) and up to 8-9 m/s (before the background noise starts to mask the noise from the lades and turbine). In addition, the operating turbine may produce a tonal noise.

The modern tubular towers contribute towards minimizing the noise emissions.

6.3 Noise from Wind Turbines

No landscape is ever completely quiet. Birds and human activities emit sound, and at winds speeds around 4-7 m/s and up to the noise from the wind in leaves, shrubs, trees, masts etc. will gradually mask (drown out) any potential sound e.g. from wind turbines. This makes it extremely difficult to measure sound from wind turbines accurately. At wind speeds around 8 m/s and above, it generally becomes a quite abstruse issue to discuss sound emissions from modern wind turbines, since background noise will generally mask any turbine noise completely.

The sound power level from a single wind turbine is usually between 90 and 105 dB(A). This creates a sound pressure level of 50-60 dB(A) at a distance of 40 meters from the turbine, i.e. about the same level as conversational speech[1].

Modern wind turbine models including Gold Wind used in this project have improved technology by introducing upwind rotors, sound proof nacelles to reduce mechanical noise,

[1] Wind Course, Module 5.2, Noise from Wind Turbines by Riso DTU National Laboratory for Sustainable Energy

design amendments in gear boxes and blades. The sound levels less than 70 dba which is the permissible noise limit as per PEPA, 1997.

Thus there will be no expected harmful effects from the sound of wind turbines to the nearby residential areas as the nearest village or settlement is located about 8 Km from the Project area.

6.4 Shadow Forecasting

Wind turbines, like other tall structures will cast a shadow on the neighboring area when the sun is visible. For a community living very close to the wind turbine, it may be annoying if the rotor blades chop the sunlight, causing a flickering (blinking) effect while the rotor is in motion.

It is predicted quite accurately the probability of when and for how long there may be a flicker effect. It might not be known in advance whether there is wind, or what the wind direction is, but using astronomy and trigonometry a likely, or a "worst case" scenario can be predicted, i.e. a situation where there is always sunshine, when the wind is blowing all the time, and when the wind and the turbine rotor keep tracking the sun by yawing the turbine exactly as the sun moves.

The spatial relationships between a wind turbine and receptor, as well as wind direction are key factors related to shadow flicker duration. At distances of greater than 1,000 feet between wind turbines and receptors, shadow flicker usually only occurs at sunrise or sunset when the cast shadows are sufficiently long. In terms of health and safety, such low frequencies are harmless.

As there are no resettlements in the vicinity of 05 Km from the project area, therefore the shadow impact on human life is negligible at this stage. Moreover, there is a common trend of the people is to build homes at shady places in Pakistan.

6.5 Water Use and Quality

The volume of water used during project construction and operation is low. Water is required for plant civil works, currently being sourced from Kalri Lake.

Once the wind farm is operational, water is only required for the domestic use of project staff at the site.

6.6 Groundwater Contamination

Groundwater contamination can occur if chemicals or any other waste materials are not properly handled or are incorrectly disposed of and leach into the water table or if wastewater from plant activities is not properly disposed of.

All the waste material will be handled and disposed of in accordance with accepted safe practices, with no harmful substances released by the Project. Therefore, there will be no effect on surface water quality or ground water contamination.

6.7 Land Use

The entire project site is on Government reserve wind farm land**.** There is already very less vegetation in the area. Therefore, there will be no major effects on the land use. No major deforestation or vegetation clearing activity is required for the project.

6.8 Biological Environment

6.8.1 Bird Life

Birds can be affected by wind farm development through loss of habitat, disturbance to their breeding and foraging areas and by collisions caused by the rotating turbine blades. Compared to other causes of mortality among birds, the effect of wind power is relatively minor. As a general rule, birds notice that new structures have arrived in their area, learn to avoid them in movements, and are able to continue feeding and breeding in the location. The project site is also not a migratory route thus there will be no affect on birds of the area.

6.8.2 Flora and Vegetation

As there is no dense vegetation or forestation in the project site area, therefore, there will be no damage to any kind of vegetation or forests. There will be no need for vegetation clearing or deforestation during the project.

6.9 Socio Economic Environment

6.9.1 Archeological Sites

No archaeological sites are present near the project site.

6.9.2 Re-Settlement

No resettlement is required as the Project is located on un-utilized Government-owned land. Settlements and individual dwellings in the local area are located at least 8 km away on private land, thus the development will not require any rehabilitation or resettlement.

6.9.3 Visual Impact on Landscape

The addition of the Project to the local landscape will have a significant visual impact, as it would be first time in Pakistan. In European countries wind turbines are considered to give insignificant visual impact due to the fact that wind power technology is very common there and large numbers of wind turbines are installed. But as far as Pakistan is concerned, wind power is an emerging technology for local peoples and it would give a noteworthy positive visual impact.

6.9.4 Aviation Hazard

No aviation hazard will be created by the Project as it is located 300 km from the nearest airport at Hyderabad. In addition, the blades are marked with red bands to make the structure more visible.

6.9.5 Traffic Management

The impact on traffic will be minimal and due to trucks carrying construction material and WTG components as well as vehicles to carry personnel. Traffic will need to be planned and managed effectively to avoid inconvenience for the local populace and/or endanger public safety.

6.9.6 Labor Welfare and Safety

Large amounts of labor will be deployed during construction. The labor camps need to provide proper water supply / sanitation facilities (toilets with septic tanks), otherwise insects may proliferate and lead to public health hazard. The safety aspects to be covered include proper handling of electrical devices, tools, equipment, and construction materials to prevent accidents to personnel.

6.9.7 Seismic Hazards

The damage zone classification of the Thatta region where the site is located is ZONE II-B (moderate to severe damage). The foundation design of the wind turbine generator (WTG) will take account of this seismic factor.

SECTION 7

INSTITUTIONAL REQUIREMENTS AND ENVIRONMENTAL MONITORING PLAN

7 INSTITUTIONAL REQUIREMENTS AND ENVIRONMENTAL MONITORING PLAN

The institutional requirements and environmental monitoring plan for project implementation are provided in the Environment Management Plan (EMP) in **Annexure-I**

The EMP covers the following phases of the Project site development, construction, and operation. It identifies:

(i) Specific actions to be taken in relation to site-specific issues
(ii) Responsible agencies for implementation and supervision
(iii) Time frame for implementing mitigation actions
(v) Environment monitoring plan
(vi) Environmental status reporting frequency
(vii) Institutional arrangements, strengthening of capability and role.

7.1 Development and Pre-Construction Phase

The EMP requires the following actions during the development and preconstruction phase:

7.1.1 Land Environment

Actions to be taken for minimizing disturbance to land change of land use etc.

7.1.2 Biological Environment

Actions to be taken for minimizing impacts on ecology / natural habitats; if any

7.1.3 Socioeconomic Environment

Actions to be taken for local traffic management, safety of local pedestrians, etc. to ensure minimum disturbance to nearby populace

7.2 Construction Phase

The EMP requires the following actions during the construction phase:

7.2.1 Land Environment

Actions to be taken for minimizing disturbance to land and contamination by soil erosion, quarrying, material spill, debris disposal, change of land use, etc.

7.2.2 Air Environment

Actions to be taken for management of emissions during construction such as earthwork, plying of vehicles on unmetaled roads, foundation excavation, drilling, idling of vehicles and emissions from construction equipments; and noise from diesel generator sets, construction equipment, blasting etc.

7.2.3 Water Environment

Actions to be taken for minimizing the impact on water quality due to soil erosion flow of water over debris, construction raw materials, wastes, and / or construction near water bodies.

7.2.4 Biological Environment

Actions to be taken to minimize impacts on ecology/natural habitats08

7.2.5 Socioeconomic Environment

Actions to be taken to minimize impacts on public health and safety (e.g., vehicle and truck traffic carrying materials) and prevent hazards due to unauthorized entry into the wind farm, occupational health and safety due to electrical hazards, construction equipment and tools, tackles, protection from noise.

7.3 Operation Phase

The EMP requires the following actions during the operation phase:

7.3.1 Land Environment

Actions to be taken to minimize disturbance to land and contamination by soil erosion, debris disposal etc and plan for maintaining visual appeal

7.3.2 Air Environment

Actions to be taken to minimize emissions due to vehicle traffic and noise from diesel generator sets etc

7.3.3 Water Environment

Actions to be taken to minimize the impact due to disposal of sewage and canteen effluents

7.3.4 Biological Environment

Actions to be taken to maintain ecology and natural habitats

7.3.5 Socioeconomic Environment

Actions to be taken to minimize impact on public health and safety (e.g., speed control and traffic management)

7.4 Environment Monitoring

The EMP provides a monitoring program giving frequency of monitoring, parameters to be monitored and surveys to be done during various stages of the Project, such as preconstruction, construction and operation. These include air, water, soil quality, ecological survey, and traffic volume. The environmental reporting requirements and performance indicators are also specified.

SECTION 8

PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

8 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

As per the physical survey done by Mr. Salman Ahmed of Pakistan Alternative Energy Engineering Services, there are only 03 houses on the project land. The land is flat and barren. CWE has no plan to shift the people living on the land. CWE has a plan to give them jobs as per their skill level or as labors / security guards if totally unskilled. The nearby village is within 5 kms of the project land.

A questionnaire was developed to assess the general concerns of the local resident of nearby villages about this project. A survey was conducted by Mr. Salman Ahmed of Alternative Energy Engineering Services. He himself filled the questionnaires after asking the questions to the native people. Filled questionnaires are attached in Annexure-V and snapshots of consultative meeting are also attached in Annexure VI.

During construction phase, Residents of the local; area, elected representatives, local councilors and informal community leaders including members of NGO's will be asked to state their current perceptions of priorities for improvements to the urban environmental infrastructure in their areas and about the likely impacts of the Project during construction and operation phases. Frequent field surveys, interviews and Consultative Workshops may held in this connection.

It is evident that there will be some bad impact on different environmental parameters (dust, noise, traffic problems, etc.) during implementation of the Project; however, a positive outlook about the overall impact of the Project is anticipated after it enters in the operation phase.

SECTION 9

FINDING AND RECOMMENDATION

9 FINDING AND RECOMMENDATION

The main benefit of the Project will be the replacement of conventional power generation with renewable energy. Wind energy will replace fossil fuel powered generation; therefore reduce suspended particulate matter and greenhouse gas emissions into the atmosphere.

The Project will not cause any significant lasting environmental and social impacts. The perceptible environmental impacts are noise and visual impacts, but both are considered to be moderate at most given the considerable setback of turbines to the nearest settlements and the landscape values of the site. The environmental disturbance normally associated with construction activities will be minimized through an EMP, implementation of which will continue during project operation and which includes monitoring arrangements.

ANNEXURE

ANNEX – I

Environment Management Plan

Annexure – I

Environment Management Plan

ENVIRONMENTAL ISSUE	MITIGATION MEASURE	TIME FRAME	RESPONSIBILITY
LAND ENVIRONMENT			
Impact on land use on project site	Limit activities within the project area	Construction	Sponsor
Soil contamination by construction waste and fuel	Minimize oil and fuel spills from construction equipment by appropriate operation and maintenance practices.	Construction and Maintenance	Sponsor
Sourcing quarry material	Sand, aggregates, and other quarry material from licensed quarries.	Construction	Sponsor
Material spill	Use close cabin delivery vehicles or use an appropriate cover.	Construction	Sponsor
Debris disposal	Make SOPs recommended by relevant agencies/authorities	Construction	Sponsor
BIOLOGICAL ENVIRONMENT			
Ecological impact	Identify and approve shrubs and trees to be fell and removed if any within the wind farm area	Pre-Construction and Construction	Sponsor
Natural habitat	Limited movements of construction vehicles within the project area. Avoid temporary disposal of demolition debris and excavated material Labor camps and stockyards beyond the project construction area	Pre-Construction and Construction	Sponsor
SOCIO-ECONOMIC ENVIRONMENT			
Local traffic management	Plan temporary traffic arrangements during construction within the construction area. Review the plan periodically with respect to site conditions.	Construction	Sponsor
Traffic control and safety	Give special consideration to local traffic management for the safety of pedestrians, especially near villages.	Construction	Sponsor

Providing labor camps and facilities	Abide by the contract conditions and directions with respect to siting of labor camps, providing temporary sanitation facilities, addressing labor welfare issues etc.	Construction and Operation	Sponsor
Occupational health	All the precautionary measures as required for the safety of workers are applicable	Construction and Operation	Sponsor
Safety precautions	Take adequate precautions to prevent danger from electrical equipment	Construction and Operation	Sponsor
Providing first aid kit	Provide a readily available first aid unit including an adequate supply of sterilized dressing material and appliances.	Construction and Operation	Sponsor
Exposure to loud noise	Ensure workers exposed to loud noise wear Ear plugs/ear muffs.	Construction and Operation	Sponsor
AIR POLLUTION			
Air quality impact	No major impact on air quality. Dust generated by movement of vehicles is temporary and will be minimize after the completion of project construction activities.	NA	NA
Dust emission due to vehicles on un-metaled roads	Sprinkle unpaved roads used by the contractor with water at least once a day to control fugitive dust emissions—at least near habitations and vegetative cover (considering availability of water).	Construction	Sponsor
Dust emission during foundation civil works	Water the construction site periodically to minimize fugitive dust generation while laying foundations.	Construction	Sponsor
Dust emission during earthwork	Store all earthwork and construction materials in a manner to minimize generation of dust and spillage on roads.	Construction	Sponsor
Noise and dust Emissions from drilling operations	Employ all possible and practical measures to control noise emission during drilling operations.	Construction	Sponsor
Construction equipment emissions	Manage construction activity induced noise to within daytime hours. The contractor can employ	Construction	Sponsor

	mitigation measures such as restricted and/or intermittent activity.		
WATER ENVIRONMENT			
Water contamination due to improper storage of construction material	Store construction material containing fine particles in an enclosure so that sediment laden water does not drain into nearby water drains.	Construction	Sponsor
Blockage and change in drainage pattern	If the channel or drains get blocked due to negligence, ensure that they are cleaned. Once the work is completed in all respects, the contractor will clean up the drains along the project road to the extent possible.	Construction	Sponsor
Water contamination due to improper debris disposal	Conduct daily inspections at the construction site to ensure removal of construction debris.	Construction	Sponsor
Disposal of sewerage water	Provide an adequate treatment facility to treat the sewage generated from toilets before discharge.	Construction	Sponsor

ANNEX – II

Inventory of Birds in Sindh

Annexure – II

Inventory of Birds in Sindh

NO	ENGLISH NAME	SCIENTIFIC NAME	LOCAL NAME
1	Omdoam Great Bustard	Ardeotis nigricps	Barri Tiloor, Hukna
2	Houbara /Macqueen's Bustard	Chlamydotis macqueeni	Tiloor, Houbara
3	Common / Blue Peafowl	Paro cristatus	Neela More, Mor
4	Black Francolin / Partridge	Francolinus francolinus	Kala Titer, Karo Tittar
5	Grey Francolin / Partridge	Francolinus pondicerianus	Bhura Titer, Achho Tittar
6	Yellow Legged Green Pigeon	Treron phocnicoptera	Harrial Kabutar
7	Red Turtle Dove	Streptopclia tranquebarica	Surkh Fakhta
8	Dalmatian Pelican	Pelecanus crispus	Hawasal, Painn Pakhhi
9	Lesser Flamingo	Phoenicopterus minor	Lum Dheeng/ Laakho Jani
10	Oriental Darter/ Anhinga / Snake Bird	Anhinga melanogaster	Jall Kawwa
11	White Stork	Ciconia ciconia	Safaid Laqlaq/ Achhhi Toor
12	Painted Stork	Mycteria leucocephala	Rangeen Laqlaq, Chit rod toor
13	Greater Painted Snipe	Rostratula benghalensis	Rangeen Isnif
14	Sociable Lapwing	Vanellus gregarius	Tattihri, Sehkari teeto
15	Pheasant tailed Jacana	Hydrophasianus	Peehoo, Peehoorri
16	Spot Billed Duck	Anas poecilorhyncha	Hanjar Batakh, Khanjar
17	Marbled Teal	Marmaronetta angustirostris	Mar Marin Batakh
18	Mallard	Anas platyrhynchos	Neel Sar, Neergi
19	Brahminy / Ruddy Shelduck	Tadorna ferruginea	Surkhab, Lallo Hanj
20	Brown Headed Gull	Larus brunaicephalus	Bhori Sar Kina
21	Caspian Tern	Sterna caspia	Caspian Dhumrah, Kekrah

22	Indian Skimmer / Scissors-Bill	Rynchops albilcullis	Qainchi Chounch/Pann Cheer
23	Sarus Crane	Grus antigone	Sarus Koonj
24	Imperial Eagle	Aquila heliaca	Shahi Oqab
25	Pallas's Fish Eagle	Haliacctus leucorhyplus	Palasi Oqab, Machh manga
26	Peregrine Falcon	Falco peregrinus	Behri/Kala Shaheen
27	Saker Falcon	Falco cherrug	Charagh/Saker Baaz
29	Eurasian Eagle Owl/Great-Horned Owl	Babo bubo	Oqabi Ullu
30	Lesser GoldenBacked Woodpecker	Dinopium benghalense	Sunheri Khatkhat
32	Sindh Pied Wood Pecker	Picoides assimilis	Sindhi Khatkhat
33	Blue Cheecked Bee Eater	Merops persicus	Barra Mugs khor/Traklo
34	Golden Oriole	Oriolus oriolus	Sunheri Peelak,Peelkio
35	Indian Treepie / Rufous Treepie	Dendrocitta vagabunda	Nabatati Zagh/Katar Khaan
36	Common / Punjab Raven / Desert Raven	Corvus corax subcorax	Doodh kaag/Paharri Kawwa
37	Pied Crested /Jacobin Cuckoo	Clamator jacobinus	Choti Dar Koel/Tarro
38	Rosy Starling / Rosy Pastor	Sturnus roseus	Tillear, Gulabi Myna
39	Jordan's Babbler	Chrysomma altirostre	Jorden Ki Ghoghai, Doomni, Pinjhrro
40	Sindh Jungle Sparrow	Passer pyrrhonotus	Sindhi Gorria, Jungli Chirria
41	Red Avadavat / Red Munia	Amandara formosa	Surkh Piddi, Garrho Cheeho
42	Baya Weaver	Ploceus philippinus	Baya, Borrhi.

ANNEX - III

Important Wildlife Species in Sindh

Annexure – III

Important Wild Life Species in Sindh

NO.	NAME OF SPECIES	COUNT	CENSUS YEAR	DISTRIBUTION
1	Sindh Ibex	10,695	2000	KNP & Game Reserve
2	Urial (Wild sheep)	9,750	2000	KNP & Game Reserve
3	Chinkara Gazzelle	480	2000	KNP & Game Reserve
4	Indus Dolphin	60,218	2001	Guddu to Sukkur Barrage Sukkur to Kotri Barrage
5	Blue Peafowl	-		Tharparker
6	Falcons	-		Throughout Sindh
7	Houbara bustard	3,500	1999	Throughout Sindh
8	Water fowl			Throughout Sindh
9	Blue Bull	220	2000	Tharparker
10	Crocodile	750	1999	Deh Akro, Nara Canal and Haleji Lake
11	Wild Ass	10		Runn of Kutch

Annexure – IV

IEE / EIA Guidelines by Government of Pakistan

PAKISTAN ENVIRONMENTAL PROTECTION AGENCY (REVIEW OF IEE AND EIA) REGULATIONS, 2000

S.R.O. 339 (1)/2001. - In exercise of the powers referred by section 33 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), Pakistan Environmental Protection Agency, with the approval of the Federal Government is pleased to make the following Rules, namely : -

1. Short title and commencement

(1) These regulations may be called the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.

(2) They shall come into force at once.

2. Definitions

(1) In these regulations, unless there is anything repugnant in the subject or context –

(a) "Act" means the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997);

(b) "Director-General" means the Director-General of the Federal Agency;

(c) "EIA" means an environmental impact assessment as defined in section 2(xi);

(d) "IEE" means an initial environmental examination as defined in section 2(xxiv); and

(e) "section" means a section of the Act.

(2) All other words and expressions used in these regulations but not defined shall have the same meanings as are assigned to them in the Act.

3. Projects requiring an IEE

A proponent of a project falling in any category listed in Schedule I shall file an IEE with the Federal Agency, and the provisions of section 12 shall apply to such project.

4. Projects requiring an EIA

A proponent of a project falling in any category listed in Schedule II shall file an EIA with the Federal Agency, and the provisions of section 12 shall apply to such project.

5. Projects not requiring an IEE or EIA

(1) A proponent of a project not falling in any category listed in Schedules I and II shall not be required to file an IEE or EIA:

Provided that the proponent shall file –

(a) an EIA, if the project is likely to cause an adverse environmental effect;

(b) for projects not listed in Schedules I and II in respect of which the Federal Agency has issued guidelines for construction and operation, an application for approval accompanied by an undertaking and an affidavit that the aforesaid guidelines shall be fully complied with.

(2) Notwithstanding anything contained in sub-regulation (1), the Federal Agency may direct the proponent of a project, whether or not listed in Schedule I or II, to file an IEE or EIA, for reasons to be recorded in such direction:

Provided that no such direction shall be issued without the recommendation in writing of the Environmental Assessment Advisory Committee constituted under Regulation 23.

(3) The provisions of section 12 shall apply to a project in respect of which an IEE or EIA is filed under sub-regulation (1) or (2).

6. Preparation of IEE and EIA

(1) The Federal Agency may issue guidelines for preparation of an IEE or an EIA, including guidelines of general applicability, and sectoral guidelines indicating specific assessment requirements for planning, construction and operation of projects relating to particular sector.

(2) Where guidelines have been issued under sub-regulation (1), an IEE or EIA shall be prepared, to the extent practicable, in accordance therewith and the proponent shall justify in the IEE or EIA any departure therefrom.

7. Review Fees

The proponent shall pay, at the time of submission of an IEE or EIA, a non-refundable Review Fee to the Federal Agency, as per rates shown in Schedule III.

8. Filing of IEE and EIA

(1) Ten paper copies and two electronic copies of an IEE or EIA shall be filed with the Federal Agency.

(2) Every IEE and EIA shall be accompanied by –

(a) an application, in the form prescribed in Schedule IV; and

(b) copy of receipt showing payment of the Review Fee.

9. Preliminary scrutiny

(1) Within 10 working days of filing of the IEE or EIA, the Federal Agency shall –

(a) confirm that the IEE or EIA is complete for purposes of initiation of the review process; or

(b) require the proponent to submit such additional information as may be specified; or

(c) return the IEE or EIA to the proponent for revision, clearly listing the points requiring further study and discussion.

(2) Nothing in sub-regulation (1) shall prohibit the Federal Agency from requiring the proponent to submit additional information at any stage during the review process.

10. Public participation

(1) In the case of an EIA, the Federal Agency shall, simultaneously with issue of confirmation of completeness under clause (a) of sub-regulation (1) of Regulation 9, cause to be published in any English or Urdu national newspaper and in a local newspaper of general circulation in the area affected by the project, a public notice mentioning the type of project, its exact location, the name and address of the proponent and the places at which the EIA of the project can, subject to the restrictions in sub-section (3) of section 12, be accessed.

(2) The notice issued under sub-regulation (1) shall fix a date, time and place for public hearing of any comments on the project or its EIA.

(3) The date fixed under sub-regulation (2) shall not be earlier than 30 days from the date of publication of the notice.

(4) The Federal Agency shall also ensure the circulation of the EIA to the concerned Government Agencies and solicit their comments thereon.

(5) All comments received by the Federal Agency from the public or any Government Agency shall be collated, tabulated and duly considered by it before decision on the EIA.

(6) The Federal Agency may issue guidelines indicating the basic techniques and measures to be adopted to ensure effective public consultation, involvement and participation in EIA assessment.

11. Review

(1) The Federal Agency shall make every effort to carry out its review of the IEE within 45 days, and of the EIA within 90 days, of issue of confirmation of completeness under Regulation 9.

(2) In reviewing the IEE or EIA, the Federal Agency shall consult such Committee of Experts as may be constituted for the purpose by the Director-General, and may also solicit views of the sectoral Advisory Committee, if any, constituted by the Federal Government under sub-section (6) of section 5.

(3) The Director-General may, where he considers it necessary, constitute a committee to inspect the site of the project and submit its report on such matters as may be specified.

(4) The review of the IEE or EIA by the Federal Agency shall be based on quantitative and qualitative assessment of the documents and data furnished by the proponent, comments from the public and Government Agencies received under Regulation 10, and views of the committees mentioned in sub-regulations (2) and (3) above.

12. Decision

On completion of the review, the decision of the Federal Agency shall be communicated to the proponent in the form prescribed in Schedule V in the case of an IEE, and in the form prescribed in Schedule VI in the case of an EIA.

13. Conditions of approval

(1) Every approval of an IEE or EIA shall, in addition to such conditions as may be imposed by the Federal Agency, be subject to the condition that the project shall be designed and constructed, and mitigatory and other measures adopted, strictly in accordance with the IEE/EIA, unless any variation thereto have been specified in the approval by the Federal Agency.

(2) Where the Federal Agency accords its approval subject to certain conditions, the proponent shall –

(a) before commencing construction of the project, acknowledge acceptance of the stipulated conditions by executing an undertaking in the form prescribed in Schedule VII;

(b) before commencing operation of the project, obtain from the Federal Agency written confirmation that the conditions of approval, and the requirements in the IEE/EIA relating to design and construction, adoption of mitigatory and other measures and other relevant matters, have been duly complied with.

14. Confirmation of compliance

(1) The request for confirmation of compliance under clause (b) of sub-regulation (2) of Regulation 13 shall be accompanied by an Environmental Management Plan indicating the measures and procedures proposed to be taken to manage or mitigate the environmental impacts for the life of the project, including provisions for monitoring, reporting and auditing.

(2) Where a request for confirmation of compliance is received from a proponent, the Federal Agency may carry out such inspection of the site and plant and machinery and seek such additional information from the proponent as it may deem fit:

Provided that every effort shall be made by the Federal Agency to provide the requisite confirmation or otherwise within 15 days of receipt of the request, with complete information, from the proponent.

(3) The Federal Agency may, while issuing the requisite confirmation of compliance, impose such other conditions as the Environmental Management Plan, and the operation, maintenance and monitoring of the project as it may deem fit, and such conditions shall be deemed to be included in the conditions to which approval of the project is subject.

15. Deemed approval

The four-month period for communication of decision stipulated in sub-section (4) of section 12 shall commence from the date of filing of an IEE or EIA in respect of which confirmation of completeness is issued by the Federal Agency under clause (a) of sub-regulation (1) of Regulation 9.

16. Extension in review period

Where the Federal Government in a particular case extends the four-month period for communication of approval prescribed in sub-section (5) of section 12, it shall, in consultation with the Federal Agency, indicate the various steps of the review process to be taken during the extended period, and the estimated time required for each step.

17. Validity period of approval

(1) The approval accorded by a Federal Agency under section 12 read with Regulation 12 shall be valid, for commencement of construction, for a period of three years from the date of issue.

(2) If construction is commenced during the initial three year validity period, the validity of the approval shall stand extended for a further period of three years from the date of issue.

(3) After issue of confirmation of compliance, the approval shall be valid for a period of three years from the date thereof.

(4) The proponent may apply to the Federal Agency for extension in the validity periods mentioned in sub-regulations (1), (2) and (3), which may be granted by the Federal Agency in its discretion for such period not exceeding three years at a time, if the conditions of the approval do not require significant change:

Provided that the Federal Agency may require the proponent to submit a fresh IEE or EIA, if in its opinion changes in location, design, construction and operation of the project so warrant.

18. Entry and inspection

(1) For purposes of verification of any matter relating to the review or to the conditions of approval of an IEE or EIA prior to, during or after commencement of construction or operation of a project, duly authorized staff of the Federal Agency shall be entitled to enter and inspect the project site, factory building and plant and equipment installed therein.

(2) The proponent shall ensure full cooperation of the project staff at site to facilitate the inspection, and shall provide such information as may be required by the Federal Agency for this purpose and pursuant thereto.

19. Monitoring

(1) After issue of approval, the proponent shall submit a report to the Federal Agency on completion of construction of the project.

(2) After issue of confirmation of compliance, the proponent shall submit an annual report summarizing operational performance of the project, with reference to the conditions of approval and maintenance and mitigatory measures adopted by the project.

(3) To enable the Federal Agency to effectively monitor compliance with the conditions of approval, the proponent shall furnish such additional information as the Federal Agency may require.

20. Cancellation of approval

(1) Notwithstanding anything contained in these Regulations, if, at any time, on the basis of information or report received or inspection carried out, the Federal Agency is of the opinion that the conditions of an approval have not been complied with, or that the information supplied by a proponent in the approved IEE or EIA is incorrect, it

shall issue notice to the proponent to show cause, within two weeks of receipt thereof, why the approval should not be cancelled.

(2) If no reply is received or if the reply is considered unsatisfactory, the Federal Agency may, after giving the proponent an opportunity of being heard:

(i) require the proponent to take such measures and to comply with such conditions within such period as it may specify, failing which the approval shall stand cancelled; or

(ii) cancel the approval.

(3) On cancellation of the approval, the proponent shall cease construction or operation of the project forthwith.

(4) Action taken under this Regulation shall be without prejudice to any other action that may be taken against the proponent under the Act or rules or regulations or any other law for the time being in force.

21. Registers of IEE and EIA projects

Separate Registers to be maintained by the Federal Agency for IEE and EIA projects under sub-section (7) of section 12 shall be in the form prescribed in Schedule VIII.

22. Environmentally sensitive areas

(1) The Federal Agency may, by notification in the official Gazette, designate an area to be an environmentally sensitive area.

(2) Notwithstanding anything contained in Regulations 3, 4 and 5, the proponent of a project situated in an environmentally sensitive area shall be required to file an EIA with the Federal Agency.

(3) The Federal Agency may from time to time issue guidelines to assist proponents and other persons involved in the environmental assessment process to plan and prepare projects located in environmentally sensitive areas.

(4) Where guidelines have been issued under sub-regulation (3), the projects shall be planned and prepared, to the extent practicable, in accordance therewith and any departure therefrom justified in the EIA pertaining to the project.

23. Environmental Assessment Advisory Committee

For purposes of rendering advice on all aspects of environmental assessment, including guidelines, procedures and categorization of projects, the Director-General shall constitute an Environmental Assessment Advisory Committee comprising –

(a) Director EIA, Federal Agency … Chairman

(b)	One representative each of the Provincial Agencies	…	Members
(c)	One representative each of the Federal Planning Commission and the Provincial Planning and Development Departments	…	Members
(d)	Representatives of industry and non-Governmental organizations, and legal and other experts	…	Members

24. Other approvals

Issue of an approval under section 12 read with Regulation 12 shall not absolve the proponent of the duty to obtain any other approval or consent that may be required under any law for the time being in force.

SCHEDULE I
(*See* Regulation 3)

List of projects requiring an IEE

A. Agriculture, Livestock and Fisheries

1. Poultry, livestock, stud and fish farms with total cost more than Rs.10 million

2. Projects involving repacking, formulation or warehousing of agricultural products

B. Energy

1. Hydroelectric power generation less than 50 MW

2. Thermal power generation less than 200 KW

3. Transmission lines less than 11 KV, and large distribution projects

4. Oil and gas transmission systems

5. Oil and gas extraction projects including exploration, production, gathering systems, separation and storage

6. Waste-to-energy generation projects

C. Manufacturing and processing

1. Ceramics and glass units with total cost more than Rs.50 million

2. Food processing industries including sugar mills, beverages, milk and dairy products, with total cost less than Rs.100 million

3. Man-made fibers and resin projects with total cost less than Rs.100 million

4. Manufacturing of apparel, including dyeing and printing, with total cost more than Rs.25 million

5. Wood products with total cost more than Rs.25 million

D. Mining and mineral processing

1. Commercial extraction of sand, gravel, limestone, clay, sulphur and other minerals not included in Schedule II with total cost less than Rs.100 million

2. Crushing, grinding and separation processes

3. Smelting plants with total cost less than Rs.50 million

E. Transport

1. Federal or Provincial highways (except maintenance, rebuilding or reconstruction of existing metalled roads) with total cost less than Rs.50 million

2. Ports and harbor development for ships less than 500 gross tons

F. Water management, dams, irrigation and flood protection

1. Dams and reservoirs with storage volume less than 50 million cubic meters of surface area less than 8 square kilometers

2. Irrigation and drainage projects serving less than 15,000 hectares

3. Small-scale irrigation systems with total cost less than Rs.50 million

G. Water supply and treatment

Water supply schemes and treatment plants with total cost less than Rs.25 million

H. Waste disposal

Waste disposal facility for domestic or industrial wastes, with annual capacity less than 10,000 cubic meters

I. Urban development and tourism

1. Housing schemes

2. Public facilities with significant off-site impacts (e.g. hospital wastes)

3. Urban development projects

J. Other projects

Any other project for which filing of an IEE is required by the Federal Agency under sub-regulation (2) of Regulation 5

SCHEDULE II

(*See* Regulation 4)

List of projects requiring an EIA

A. Energy

1. Hydroelectric power generation over 50 MW
2. Thermal power generation over 200 MW
3. Transmission lines (11 KV and above) and grid stations
4. Nuclear power plans
5. Petroleum refineries

B. Manufacturing and processing

1. Cement plants
2. Chemicals projects
3. Fertilizer plants
4. Food processing industries including sugar mills, beverages, milk and dairy products, with total cost of Rs.100 million and above
5. Industrial estates (including export processing zones)
6. Man-made fibers and resin projects with total cost of Rs.100 M and above
7. Pesticides (manufacture or formulation)
8. Petrochemicals complex
9. Synthetic resins, plastics and man-made fibers, paper and paperboard, paper pulping, plastic products, textiles (except apparel),printing and publishing, paints and dyes, oils and fats and vegetable ghee projects, with total cost more than Rs.10 million
10. Tanning and leather finishing projects

C. Mining and mineral processing

1. Mining and processing of coal, gold, copper, sulphur and precious stones
2. Mining and processing of major non-ferrous metals, iron and steel rolling
3. Smelting plants with total cost of Rs.50 million and above

D. Transport

1. Airports

2. Federal or Provincial highways or major roads (except maintenance, rebuilding or reconstruction of existing roads) with total cost of Rs.50 million and above

3. Ports and harbor development for ships of 500 gross tons and above

4. Railway works

E. Water management, dams, irrigation and flood protection

1. Dams and reservoirs with storage volume of 50 million cubic meters and above or surface area of 8 square kilometers and above

2. Irrigation and drainage projects serving 15,000 hectares and above

F. Water supply and treatment

Water supply schemes and treatment plants with total cost of Rs.25 million and above

G. Waste Disposal

1. Waste disposal and/or storage of hazardous or toxic wastes (including landfill sites, incineration of hospital toxic waste)

2. Waste disposal facilities for domestic or industrial wastes, with annual capacity more than 10,000 cubic meters

H. Urban development and tourism

1. Land use studies and urban plans (large cities)

2. Large-scale tourism development projects with total cost more than Rs.50 million

I. Environmentally Sensitive Areas

All projects situated in environmentally sensitive areas

J. Other projects

1. Any other project for which filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5.

2. Any other project likely to cause an adverse environmental effect

SCHEDULE III
(See Regulation 7)

IEE/EIA Review Fees

Total Project Cost	IEE	EIA
Upto Rs.5,000,000	NIL	NIL
Rs.5,000,001 to 10,000,000	Rs.10,000	Rs.15,000
Greater than Rs.10,000,000	Rs.15,000	Rs.30,000

SCHEDULE IV

[*See* Regulation 8(2)(a)]

Application Form

1.	Name and address of proponent		Phone: Fax: Telex:	
2.	Description of project			
3.	Location of project			
4.	Objectives of project			
5.	IEE/EIA attached?	IEE/EIA :	Yes/No	
6.	Have alternative sites been considered and reported in IEE/EIA?		Yes/No	
7.	Existing land use		Land requirement	
8.	Is basic site data available, or has it been measured?	(only tick yes if the data is reported in the IEE/EIA) Meterology (including rainfall) Ambient air quality Ambient water quality Ground water quality	<u>Available</u> Yes/No Yes/No Yes/No Yes/No	<u>Measured</u> Yes/No Yes/No Yes/No Yes/No
9.	Have estimates of the following been reported?	 Water balance Solid waste disposal Liquid waste treatment	<u>Estimated</u> Yes/No Yes/No Yes/No	<u>Reported</u> Yes/No Yes/No Yes/No
10.	Source of power		Power requirement	
11.	Labour force (number)	Construction: Operation:		

<u>Verification.</u> I do solemnly affirm and declare that the information given above and contained in the attached IEE/EIA is true and correct to the best of my knowledge and belief.

Date _____

Signature, name and _____
designation of proponent
(with official stamp/seal)

SCHEDULE V

[*See* Regulation 12]

Decision on IEE

1. Name and address of proponent _____

   _____

2. Description of project _____

3. Location of project _____

4. Date of filing of IEE _____

5. After careful review of the IEE, the Federation Agency has decided –

   (a) to accord its approval, subject to the following conditions:

   _____
   _____

   or (b) that the proponent should submit an EIA of the project, for the following reasons –

   _____
   _____

   [Delete (a) or (b), whichever is inapplicable]

Dated _____

Tracking no.___

Director-General
Federal Agency
(with official stamp/seal)

SCHEDULE VI
[*See* Regulation 12]

Decision on EIA

1. Name and address of proponent _____

   _____

2. Description of project _____

3. Location of project _____

4. Date of filing of EIA _____

5. After careful review of the EIA, and all comments thereon, the Federation Agency has decided –

   (a) to accord its approval, subject to the following conditions:

   _____
   _____

   or (b) that the proponent should submit an EIA with the following modifications-

   _____
   _____

   or (c) to reject the project, being contrary to environmental objectives, for the following reasons:

   _____
   _____

   [Delete (a)/(b)/(c), whichever is inapplicable]

Dated _____

Tracking no.___

Director-General
Federal Agency
(with official stamp/seal)

SCHEDULE VII

[*See* Regulation 13(2)]

Undertaking

I, (full name and address) as proponent for (name, description and location of project) do hereby solemnly affirm and declare that I fully understand and accept the conditions contained in the approval accorded by the Federal Agency bearing tracking no._____ dated _____, and undertake to design, construct and operate the project strictly in accordance with the said conditions and the IEE/EIA.

Date _____

Signature, name and _____
designation of proponent
(with official stamp/seal)

Witnesses
(full names and addresses)

(1) _____

(2) _____

SCHEDULE VIII
(*See* Regulation 21)
Form of Registers for IEE and EIA projects

S. No.	Description	Relevant Provisions
1	2	3
1.	Tracking number	
2.	Category type (as per Schedules I and II)	
3.	Name of proponent	
4.	Name and designation of contact person	
5.	Name of consultant	
6.	Description of project	
7.	Location of project	
8.	Project capital cost	
9.	Date of receipt of IEE/EIA	
10.	Date of confirmation of completeness	
11.	Approval granted (Yes/No)	
12.	Date of approval granted or refused	
13.	Conditions of approval/reasons for refusal	
14.	Date of Undertaking	
15.	Date of extension of approval validity	
16.	Period of extension	
17.	Date of commencement of construction	
18.	Date of issue of confirmation of compliance	
19.	Date of commencement of operations	
20.	Dates of filing of monitoring reports	
21.	Date of cancellation, if applicable	

Annexure – V

Social Survey Form

Annexure – VI

Snapshots during Social Survey

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Ghulam Qadir
Residence: Thimpir
ID No: 41409-5103602-3
Occupation: Shop keeper

1): What is the conventional source of power in your area?

Furnace oil.

2) Which of your wishes fulfilled if the power plant installed?

No more loadshedding.

3) What may the effects of this power plant to the residents of this area?

Improve socio economic situation of residents

4) What is your opinion about the effect of this power plant on the surrounding environment?

effect positively.

5) What is your opinion about installation of wind power plant in your area?

Salman Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Lal Bux
Residence: Jhimpir
ID No: 41409-8056011-7
Occupation: Nil

1): What is the conventional source of power in your area?

wood

2) Which of your wishes fulfilled if the power plant installed?

It will reduce electricity breakdown.

3) What may the effects of this power plant to the residents of this area?

Improve living Standard.

4) What is your opinion about the effect of this power plant on the surrounding environment?

Socio economic development of area.

5) What is your opinion about installation of wind power plant in your area?

Salman Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Rahmat ullah

Residence: Thimpir

ID No: 41409-0883938-7

Occupation: Nil

1): What is the conventional source of power in your area?

Furnace oil

2) Which of your wishes fulfilled if the power plant installed?

Employment opportunities

3) What may the effects of this power plant to the residents of this area?

Life Standard of nearby Ghots will be improved

4) What is your opinion about the effect of this power plant on the surrounding environment?

Land use patterns may damaged

5) What is your opinion about installation of wind power plant in your area?

Salman Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Muhammad Hussain
Residence: Jhimpir
ID No: 41409-6441189-3
Occupation: Car Mechanic

1): What is the conventional source of power in your area?

furnace oil.

2) Which of your wishes fulfilled if the power plant installed?

less power breakdown.

3) What may the effects of this power plant to the residents of this area?

working hours will be increased

4) What is your opinion about the effect of this power plant on the surrounding environment?

effect environment positively.

5) What is your opinion about installation of wind power plant in your area?

Salman Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Ghulam Mustafa
Residence: Jhimpir
ID No: 41409-8353136-7
Occupation: Shop keeper

1): What is the conventional source of power in your area?

wood.

2) Which of your wishes fulfilled if the power plant installed?

electricity will be available

3) What may the effects of this power plant to the residents of this area?

living standard will be improved

4) What is your opinion about the effect of this power plant on the surrounding environment?

positive effect.

5) What is your opinion about installation of wind power plant in your area?

Salman Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Sultan Brohi
Residence: Thimpir
ID No: 41409-4106773-5
Occupation: Farmer

1): What is the conventional source of power in your area?

wood.

2) Which of your wishes fulfilled if the power plant installed?

Increase livelihoods.

3) What may the effects of this power plant to the residents of this area?

Improve living standard of people.

4) What is your opinion about the effect of this power plant on the surrounding environment?

Less damage to (forests) environment.

5) What is your opinion about installation of wind power plant in your area?

Salman Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Rehman Jakhro
Residence: Thimpir
ID No: 41409 - 1468391-9
Occupation: Business (Milk)

1): What is the conventional source of power in your area?

Wood

2) Which of your wishes fulfilled if the power plant installed?

Electricity Provision

3) What may the effects of this power plant to the residents of this area?

No answer

4) What is your opinion about the effect of this power plant on the surrounding environment?

Noise Pollution

5) What is your opinion about installation of wind power plant in your area?

Salman Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Sher Mohammad

Residence: Jhimpir

ID No: 41409-9476385-9

Occupation: Labor

1): What is the conventional source of power in your area?

Kerosene oil

2) Which of your wishes fulfilled if the power plant installed?

Employment opportunities

3) What may the effects of this power plant to the residents of this area?

People will get electricity, and employment

4) What is your opinion about the effect of this power plant on the surrounding environment?

No Idea

5) What is your opinion about installation of wind power plant in your area?

Salman Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Mashook

Residence: Jhimpir

ID No: 41409-9199324-5

Occupation: Shop keeper

1): What is the conventional source of power in your area?

Wood

2) Which of your wishes fulfilled if the power plant installed?

Development of village,

3) What may the effects of this power plant to the residents of this area?

Improvement of life quality

4) What is your opinion about the effect of this power plant on the surrounding environment?

Damage to soil, damage to nearby shrubs

5) What is your opinion about installation of wind power plant in your area?

SALMAN Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Abdul Majeed
Residence: Jhimpir
ID No: 41409-1835907-9
Occupation: Shop keeper

1): What is the conventional source of power in your area?

Kerosene oil

2) Which of your wishes fulfilled if the power plant installed?

Electricity

3) What may the effects of this power plant to the residents of this area?

Electricity, Employment opportunities

4) What is your opinion about the effect of this power plant on the surrounding environment?

Kalri lake may contaminated during Project activities

5) What is your opinion about installation of wind power plant in your area?

SALMAN Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Sawan
Residence: Thimpir
ID No: 41409-1486734-9
Occupation: Student

1): What is the conventional source of power in your area?

Wood and Furnace oil

2) Which of your wishes fulfilled if the power plant installed?

Electricity

3) What may the effects of this power plant to the residents of this area?

Improvent of life standards.

4) What is your opinion about the effect of this power plant on the surrounding environment?

No idea

5) What is your opinion about installation of wind power plant in your area?

It will improve the life standards of villagers. There will be more chances of employment opportunities

SALMAN Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Gul Hassan

Residence: Thimpir

ID No: 4140-3995421-7

Occupation: NiL

1): What is the conventional source of power in your area?

Wood

2) Which of your wishes fulfilled if the power plant installed?

Electricity

3) What may the effects of this power plant to the residents of this area?

Development of area

4) What is your opinion about the effect of this power plant on the surrounding environment?

No major affected

5) What is your opinion about installation of wind power plant in your area?

Development of area,

Salman Ahmed

Name and Signatures of Surveyor

Site Survey Form

50 MW Wind Farm of CWE & MASTER

Name: Hafeez Brohi
Residence: Jhimpir
ID No: 41409-6732319-5
Occupation: Student

1): What is the conventional source of power in your area?

Furnace oil

2) Which of your wishes fulfilled if the power plant installed?

Our area will be developed

3) What may the effects of this power plant to the residents of this area?

Employment opportunities will enhance the quality of life in the area.

4) What is your opinion about the effect of this power plant on the surrounding environment?

No negative effect.

5) What is your opinion about installation of wind power plant in your area?

Salman Ahmed

Name and Signatures of Surveyor

Annexure – VI

Snapshots during Social Survey

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