English translation of

Environmental Impact Assessment for Xinyang Windfarm, Henan Province, China

Basic Information of the Construction Project

Project Name	Xinyang Wind Power Generation Project (hereinafter referred to as "the Project") The Project is composed of the following 4 sub-projects： Dabie Mountain Wind Power Project Tianmu Mountain Wind Power Project Huangbai Mountain Wind Power Project Jigong Mountain Wind Power Project				
Construction Unit	Henan Weite Wind Power Generation Co. Ltd				
Corporation Representative	Li Jinhai				
Address	№188, Jingshen Road, Shi-he District, Xinyang, Henan				
Telephone	0376-6818155	Fax	0376-6818152	Zip code	464000
Construction Sites	Dabie Mountain Wind Power Plant is to be built on the ridges of the high mountains around the villages such as Huang Maojian, Da Linggang in Tianpu Township of Xinxian County in Xinyang. Tianmu Mountain Wind Power Plant is to be built on Zhu Shiding and the montain ridges nearby, and to the west of Songzhuang Village, Xingji Township, Pingqiao District, Xinyang. Huangbai Mountain Wind Power Plant is to be built on Huangbai Mountain and the mountains ridges around Chang ZhuYuan Township of Shangcheng County in Xinyang. Jigong Mountain Wind Power Plant is to be built on the ridges of the high mountains around villages such as Nan-tian in Jigong Mountain Administration Area in the city of Xinyang.				
Project Construction Approved by	Henan Provincial Development and Reform Commission		Authentication Code	Henan Energy Development and Reform【2006】1383 Henan Energy Development and Reform【2007】294	
Construction Nature	New		Category and Code	Wind Power Generation D4419	
Permanent Area 10^4m^2	115.67		Green Coverage（m^2）	3990	
Gross Investment (Million Yuan)	1290.1899		Environmental protection investment (Million Yuan)	28.698	
Assessment Funds (Million Yuan)			Construction Date		

Details and Scale of the Project：

Ⅰ. Origin of the Project

Established in June, 2006, Henan Weite Wind Power Generation Co. Ltd, with a registered capital of 60 million Yuan, mainly engages in wind power generation development and management

and operation and sale of electric appliances, equipment and machinery. The shareholders of the Corporation are : Xinyang Hongchang Pipeline Gas Project Company Limited (51%) , Xinyang Development Investment Company (20%), Xinyang Huaxiang Group of the Power Construction Company Limited (20%), Shangcheng County Finance Investment Guarantee Company Limited (9%)

Chinese government takes great efforts to promote economic development in the middle and western regions and employ the strategy of utilizing renewable energy. In answer to this strategy, Henan provincial government explicitly proposed in the “11th Five-Year Plan”: to improve the energy structure of Henan province, and actively promote new forms of power generation, such as bio-power, wind power, solar energy generation, etc. According to this plan and the request of the second National Wind Power Conference, Henan provincial government requested that the wind power capacity shall amount to 200,000 kilowatts during the "11th Five-Year Plan" period.

In September, 2003, Henan Government, according to the national wind-powered electricity development plan, entrusted China Electric Construction Project Advisory Company, to select sites for the wind power generation plants within the territory of Henan Province. Through examining the wind resources of the 18 wind power generation sites, related data, including the average wind speed, wind power density, the frequency of wind direction, wind energy per hour and theoretical generating capacity and so on, was collected. On the basis of the above data, 7 wind power generation sites were selected for the wind power development plan in the "11th Five-Year" period of Henan Province, namely: Xinyang Dabie Mountain wind power generation site, Tianmu Mountain wind power generation site, Huangbai Mountain wind power generation site, Jigong Mountain wind power generation site; Nanyang City Wangfengting wind power generation site; Sanmenxia Yellow River wind power generation site and Shaoshan wind power generation site.

On February 3, 2004, Xinyang City Development and Reform Commission issued a document to confirm the legal person who will construct the Project, identified its working tasks and mandate, and mobilized manpower, material and financial resources to set up the wind power project construction company. Thereafter, the company has started to select the sites, towered to examine the wind, appraised wind resource, completed wind power projects pre- feasibility study report of Xinyang and invited experts to evaluate the study report.

In April, 2005, Henan Provincial Development and Reform Commission held an experts evaluation conference on "Long-term Planning of Wind Power in Henan Province" in Beijing. The planning comprehensively assessed the wind resources in Henan province and selected 7 wind power

generation sites in Henan Province, namely: Xinyang Dabie Mountain wind power generation site, Tianmu Mountain wind power generation site, Huangbai Mountain wind power generation site, Jigong Mountain wind power generation site; Nanyang Wangfengting wind power generation site; Sanmenxia Yellow River wind power generation site and Shaoshan wind power generation site.

From September 2006 to March 2007, Henan Provincial Development and Reform Commission issued the "Notice on Xinyang Dabie Mountain and Tianmu Mountain wind power generation development and construction work " and the "Notice On Xinyang Jigong Mountain and Huangbai Mountain wind power generation development and construction work". In view of the above, Henan Weite Wind Power Generation Co., Ltd. entrusted Henan Project Advisory Company to carry out research to final the feasibility report of the Project.

According to the relevant regulations of the “Environmental Effects Assessment Law of the People's Republic of China ", entrusted by Henan Weite Wind Power generation Co. Ltd., Xingyang Environmental Protection Research Institute has undertaken the work of assessing environmental effects of the Project.

Ⅱ. Analysis of Wind Energy Resources

Analysis of wind energy resources in Henan Province shows that wind resource is rich in the northern part of Taihang Mountains, the western part of Funiu Mountain, central and southern part of Dabie Mountains, and Sanmenxia area along the coastal areas of the Yellow River. Such regions are located in higher ground of mountainous areas. The wind energy resource distribution is shown in Table 1.

Table 1 Distribution of Wind Energy Resources in Henan Province

Region	Wind energy division	Wind power density（W/m^2）
Taihang Mountains in the north	□	230 ~ 380
Central and Southern Dabie Mountains	□	120 ~ 520
Eastern part of Hebi and Yellow River cross-strait floodplain in Kaifeng	□	100 ~ 200
The river valley from Sanmenxia to the north of Luoyang	□	50 ~ 150
Plains in eastern part	□	100

Xinyang, located in the south of Henan Province, between the north foothill of Dabie Mountain and the upper reaches of the Yellow River, is in the region where the wind power falls into class□. The north of Xinyang is open plain, having a sub-humid subtropical North-continental monsoon climate, comparatively abundant in wind energy resources because it is in the transitional area

between subtropical and temperate zone.

To obtain the actual information of wind energy resources of the proposed wind power generation sites, construction unit established respectively three (4 × 3) wind measurement towers to measure wind in each of the wind power generation sites. The wind farm were measured at the heights of 10 m, 30m, 50m, 60m, 70m, in terms of wind speed, wind power density, wind frequency, wind direction and other parameters. On the basis of obtaining a large number of wind energy materials, data (see the chapter " Wind Energy Resource "of each wind power generation site), they combined the local meteorological materials in years and carried out comprehensive analysis on energy resources of every wind power generation site; they investigated and compared the technical parameters of the advanced wind-powered electricity unit with both at home and abroad; they finally identified the proposed height of blower wheel in the wind power generation site：55 m, calculated and then got the data of the wind resource at the height of 55 m of Dabie Mountain, Tianmu Mountain, Huangbai Mountain, Jigong Mountain wind power generation sites (see table 2)。

Table 2 Wind Resource Data at the Height of 55 m in Xinyang Wind Power Generation Sites

Wind Power Plant	Average Wind Speed	Average Wind Power Density	The Highest Wind Speed in Years	Air Density	Main Wind Direction	Sub Wind direction	Wind class
Dabie Mountain	6.33m/s	260.5w/m²	30.4m/s	1.105Kg/m³	N	NNE	3
Tianmu Mountain	6.08m/s	245w/m²	29.4m/s	1.123Kg/m³	N	NNE	3
Huangbai Mountain	6.15m/s	301.8w/m²	29.9m/s	1.073Kg/m³	SSW	S	3
Jigong Mountain	6.77m/s	344.8w/m²	29.9m/s	1.109Kg/m³	NNE	SSW	3

Analyzing from the density of wind energy in Table 2, wind energy resources of the four wind power generation sites are relatively abundant, there is no destructive wind speed, and the quality of wind energy is good. Therefore, these places are suitable for the construction of large-scale wind power generation plant.

Ⅲ. Project content and construction scale

1. Construction scale：

According to the Construction Plan of wind power projects in Henan Province and optimized construction projects, 124 wind turbines of WTG2-850 will be installed in Xinyang wind power

generation project, with a total installed capacity of 105.4 MW. Meanwhile, 3 new 110 kV substations (Dabie Mountain wind power generation site, Huangbai Mountain wind power generation site, and Jigong Mountain wind power generation site has one substation respectively) and a 35 kV switching station (in Tianmu Mountain wind power generation site) will be built. The wind power plant will access to Xinyang power grid system at 110 kV/35kV voltage, with the feed-in power voltage of 192.325 million Kw.h. The total load is equivalent to 7250h, and the annual average utilization hours of load are equivalent to 1812 h. The total investment of the Project is 1290189900 Yuan (see Table 3, construction and total investment of Xinyang Wind Power Generation Project). After the completion of wind farm capacity by the supply of power grids in Xinyang. After the completion and starting operation of the wind power plant, it will supply electricity to the Xinyang power grid.

The project requires the construction of 92.7 Km inner roads (construction and maintenance roads connecting all wind turbine to the wind power plant); a total of 61.3 Km roads construction outside the station (transportation corridor connecting the wind power plant to the nearest rural roads). It also requires the erection of collective electric wire line (57.2 Km 35 Kv) in the wind power plant to connect all the wind turbine units. Transmission line (165 Km) between each wind power plant substation (switching station) and the common grid (110 Kv, 35Kv) will be extended.

Table 3 Construction and Total Investment of Xinyang Wind Power Generation Project

Proposed Wind Power Plant	Proposed Wind Turbine Units	Capacity (MW)	New Substation (Switching Station)	Average Feed in Power Voltage (10,000 KW.h)	Equivalent Load Operation (H)	Total Project Investment (million)
Dabie Mountain	35×850Kw	29.75	1×110Kv	5320.9	1789	34538.38
Tianmu Mountain	24×850Kw	20.4	1×35Kv	3599.8	1765	24810.35
Huangbai Mountain	24×850Kw	20.4	1×110Kv	3627.5	1778	26500.51
Jigong Mountain	41×850Kw	34.85	1×110Kv	6684.3	1918	43169.75
Total	124×850Kw	105.4	3×110Kv 1×35Kv	19232.5	7250 or 1812h/y	129018.99

2. Main Project Content：

Principal part of the Project：124 WTG2-850 wind- turbine units；three 110 kV substations; one 35 kV switching station.

Auxiliary project：92.7 Km road construction inside the station；61.3 Km road construction outside the station；134 power cable trenches； 124 variation areas (38.5/0.69kV); 285 station towers with 35kV collective power lines；57.2 Km 35 Kv collective power lines；165 Km transmission line to the Substation of the common grid (110 Kv, 35Kv)。

Temporary project：gravel yard, field soil, concrete mixing stations, equipment yard, field operations, spoil field, hoisting venues

Public project: Deep well, water pump, water supply, power supply, communication.

Environmental protection projects: water and soil conservation projects, vegetation restoration, remote compensation, field green, debris retaining walls, drains, slope maintenance, septic tanks, seepage pits, set oil pool, accident pool.

Overview of the Project

Serial Number	Name	Item		Unit	Quantity
1	Project Plan and Scale	Feed in Power Voltage		10,000 kwh / a	19232.5
2	Operation Days/ Year	Day		d	76
3	Equipment	Substation		kv	1×35；3×110
		Wind Turbines		kw	124×850kw
		Rotor diameter		m	58
		Wheel height		m	55
4	"Three Wastes" Emissions	Waste Water	Construction Period	m^3/ d	7
			Operational period	m^3/a	4×175.2
		Noise	Construction Period	dB（A）	>55
			Operational Period	dB（A）	>45
		Solid waste	Waste in Construction Period	10^4m^3	59.5
			Household Rubbish in Operational Period	t/a	4×1.75
5	Staff	Operational Period		person	4×12
6	Area	Permanent Occupied Area		10^4m^2	115.67
		Temporary Occupied Area		10^4m^2	43.48
7	Investment Budget	Static Investment （Establishment Year）		Million Yuan	125339.07

		Total Investment of the Project	Million Yuan	129018.99
		KW Units Static Investment	Yuan/kW	11892
		kW Units Dynamic Investment	Yuan/kW	12241

Primary pollution related to the Project and major environmental issues:

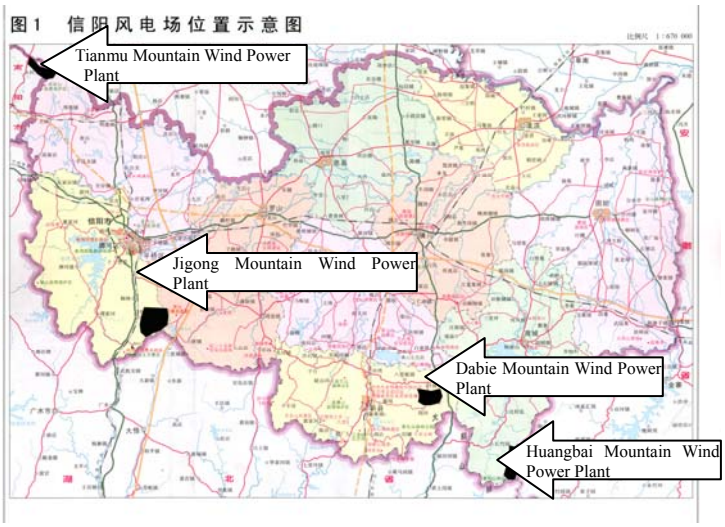
The Project is newly constructed, and the construction sites of its 4 sub-projects are located on the ridges of big mountains neighboring the boundary of Xinyang. Thus, there are no sources of industrial pollution and no primary pollution.

Natural and social environment of the Projects

Natural environment (topography, geomorphology, geology, climate, meteorology, hydrology, vegetation, biodiversity, etc.)：

Ⅰ. Geographical Location：

Xinyang lies near the boundary of southern Henan, adjoins with Luoshan in the east, Yingshan County, Dawu County of Hubei in the south, Sui County of Hubei in the west, and Tongbai county of Henan Province in the northwest, and is adjacent to Queshan County in the north, Zhenyang County in the northeast. It is at a east longitude 114 º 07 '~ 114 º 11', and a north latitude 32 º 05'~ 32 º 08'.



The construction of the Project locates in the city of Xinyang, Henan Province (Fig. 1)

Xinyang Dabie Mountain Wind Power Plant is to be located on the ridges of the high mountains around Huang Maojian of Xin County in Xinyang. It is located between 115 º 00 '~ 115 ° 07' east longitude, and between 31 ° 30 'to 31 ° 35' north latitude. About 6 km length between east and west, 3 km width between north and south, the total area of this plant is approximately 11 km^2. The altitude is 400m ~ 1100m above sea level. In this area, there are no tall shrubs or mineral deposits.

Tianmu Mountain Wind Power Plant is to be located on the stone roof and the ridges to the west of Songzhuang Village, Xingji Township, Pingqiao District, Xinyang. It is located between 113°45′ ~ 113°49′east longitude , and between 32°36′ ~ 32°37′ north latitude. About 8 km length between east and west, 1 km width between north and south, the total area of this plant is approximately 8 km^2. The altitude is 570m ~ 820m above sea level. At the east hill foot of wind power plant is Luolou reservoir and Song's Village. South, west, north of the plant are steep mountain peaks.

Huangbai Mountain Wind Power Plant is to be located in the hinterland of Dabie

Mountain in the north of Shangcheng County in Xinyang. Geographic coordinates are 115°18′—115°22′east longitude and 31°22′—31°25′north latitude. The total area of this plant is approximately 8 km^2. The altitude is 990m ~ 1230m above sea level. The plant is surrounded by the mountain ridges.

Jigong Mountain Wind Power Plant, 174km to Wuhan, 340km to Zhen Zhou, is to be located on the ridges of the high mountains around Libazai and Guangtou Mountain, at the junction of Hubei Province and Henan Province. Geographic coordinates are 114°03′—114°08′east longitude，31°48′—31°52′north latitude. The total area of this plant is approximately 10km^2, and the altitude is 630m～830m above sea level。

Ⅱ. Topography and geomorphology

In the hinterland of Dabie Mountain, Dabie Mountain Wind Power Plant is amid the low mountains, which is 400 meters - 1100 meters above sea level in general, on the elevation of 700 meters, and on the slope between 35 ° ~ 55 °. Most sites of the Plant are on ridges with exposed rocks and weathered surface layer 1 ~ 2 m in thickness. The terrain is cut strongly. The gullies are vertical-horizontal, different in the width and in "V" shape. The depth of the gullies varies between 50m-100m so that the topography rises and falls to form staggered valleys and the vertical stratum trend on the whole, with platforms between the mountaintops.

Tianmu Mountain Wind Power Plant is on ridges along Waitoushan -Zhushiding - Tianmu Mountain. The landscape is amid the low mountains, which is 570 - 820m above see level. The terrain is cut strongly. The gullies are vertical-horizontal, differ in the width and take the form of "V" or "U". The depth of the gullies varies between 20m-50m with general vertical direction. Overall topography features of the region: staggered valley hills, larger fluctuations, peak platforms.

Huangbai Mountain Wind Power Plant is amid the low mountains of Dabie Mountain hinterland. The terrain rises and falls and the surface is cut strongly to be vertical-horizontal and form the shape of "V", with a slope of 35 ° to 55 °. Elevation of peak platforms normally varies between 700 ~ 1350 m. The sites of the Plant are on the ridges.

The Jigong Wind Power Plant is located on low mountains, east of the Tongbai Mountain and west of Dabie Mountain. The terrain rises and falls and the surface cut

strongly. The mountain range is clearly demarcated through the latitude, the valleys gather vertically and horizontally in the ditch and cuts deep in the ditch to form the slope of more than 30°. Location elevation of the sites between 400 ~ 830m. Except the 110 kV substations being put up in the gully, the remaining buildings of the wind power plant will be built on the ridgelines.

Ⅲ. Climate and weather

Four wind power plants of Xinyang are all located amid the hinterland of Dabie Mountain of Huainan and low mountains of the west end, in the transitional zone between subtropical zone and the temperate zone. Due to monsoon climate of east Asia, the climate shares the characteristics of monsoon and mountain climate in the transitional area between subtropical and temperate climate, with four distinct seasons. According to the statistics in the years between 1972 and 2006 of Xinyang meteorological station, the average temperature of the whole year is 15.1 □, the annual average atmospheric pressure is 1001.4hPa, highest temperature 41.1 □, lowest temperature - 17 □, maximum wind speed 20m/s (wind direction NNE). The deepest frozen soil is 70 mm, annual sunshine hours are 2027, 203-215 days of frost-free period. The annual average precipitation is between 939-1300 mm, mainly in June, July, August, the largest rainfall in August. The leading wind direction is N, sub- leading wind direction is NNE.

Ⅳ. Geology

Dabie Mountain Wind Power Plant：The geologic structure is subject to Qinling fold belt (Orogen), Tongbai-Dabie ancient metamorphic core complex uplift in the tectonic belongs to the Dome of Qinhuai. The north part is on North China Craton, south on the Yangtze block, east confined by the famous Tan - Lu fracture. The geological structure of this region is complex because it has undergone a long and complicated process of evolution, that is the four cycles evolution stage, namely Dabie cycle, Jinning – Caledonian cycle, West - Indo cycle and Yanshan - Himalayan cycle. According to the regional geological data, we can see exposed lithologies around the wind power plant are major Neoproterozoic gneiss. Analyzing from the geological condition of the Project, the wind power field is covered with relatively thin earth, with petrous gneiss underneath. There is no adverse effect of the geological movement on the stability of the wind power field, and project performance is good. The on spot survey does not find landslides,

collapses, mined-out area, underground caves and other natural geological adverse effect. The slope is relatively stable.

The stratum of Dabie Mountain wind power plant is divided three layers: all-weathered gneiss, strong morals and mid- weathered gneiss.

Tianmu Mountain Wind Power Plant：The geologic structure is subject to Qinling fold belt (Orogen), the Dome of the Qinhuai. The north part is on North China Craton, south on the Yangtze block, east confined by the famous Tan - Lu fracture. The geological structure of this region is complex. The fold belt appears in the west, northwestern part and middle part. The fault zone appears in central and southern part. Tong (Bai) – Shang (Cheng) fault zone lies to the south of the wind field, Que (Shan) - Gu (shi) fault zone lies to the north of the wind field.

Around Waitou Mountain, two faults developed. Due to thrust faults and thrust of a strong erosion cutting, the external blocks were stripped and exposed the underlying rocks. A small block of foreign films by exposing a small fault of younger strata formed a large tectonic window.

The stratum of the Plant is mainly divides into Proterozoic sector, Mesoproterozoic, Neoproterozoic sector and Mesozoic strata.

The stratum of Tianmu Mountain Wind Power Plant is devided into tow tiers: the fourth fluffy stratum as the surface layer, gabbro and granite as bedrock.

Huangbai Mountain Wind Power Plant：The geological structure is subject to Qinling zonal complex extension belt of the East zone. Tectonic unit is subject to Tongbai -Dabie belt of the Qinling fold. The region has experienced a number of long-term tectonic movements, particularly in Yanshan period, accompanied by a large-scale magmata intrusions and volcanic eruptions. Stratum within the area, being incomplete exposed, is the transitional type between the north and south China. Only Dabie Mountains in Archean Erathem, the fourth aquifer and among others can be seen. In the long geological history, rocks of the region suffered from various degrees of mixed metamorphic and lithification effect. The dominant structure of the region is Northwest - Eastwest and latitudinal tectonics, followed by the "∈" type structure of Huaiyan.

The fold zone near the construction sites is the anticline of Fotang Ao – Swallow River, the north wing is cut by Yuepu - Qingshan fracture zone, and the middle is

separated by the northeast of Xinhua Xiaxi fracture zone in numerous parts. The anticline is mainly composed by the mixed rocks in the Archean Erathem, the intensity of such rocks is strengthened from the wing to the central part. The anticline covers 80 km from Shangcheng - Macheng fracture in the west to Fotang'ao, Wangjia Riverand Yanzi River in the east. The anticline leans to the east, and the tendency of the north wing is 10-20 °, with a 30-50 ° obliquity. The south wing leans to the southeast, with a 30-55 ° obliquity. The Plant is to be located in the south wing of the folds.

The exposed stratum of the Plant is considered mainly as the mottled bamboo garden group Dabie Mountains in the Archean Erathem, spreading out from northwest to southeast. The major lithology of the mottled bamboo garden group in the Archean Erathem (or "Arb") is composed of homogeneous mixed rocks, mixed-biotite gneiss, Baiyun plagioclase mixed gneiss. They are light grey or light red. The mineral composition of such gneiss is oblique stripes feldspar, acid ramps feldspar, and quartz. They are subject to porphyroblastic texture and gneissose texture.

The Jigong wind power plant: The geological structure is subject to Tongbai -Dabie belt in the east part of the Qinling fold. The region has experienced numerous times and long-term tectonic movements, particularly in Yanshan period, accompanied by large-scale magmatic intrusions and volcanic eruptions. In the long geological history, rocks of the region suffered from various degrees of mixed metamorphic and lithification effect. The dominant structure is fault based, followed by the fold structure. Influenced by the "∈" type structure of Huaiyan, the main structure within region extends northwest, turning aside from its extending direction. It is characterized the faults texture as multi-phase, inheritance, complex and equidistant etc.

Exposed strata in the Plant are mainly sedimentary complex clay or sand and gravel of the Fourth layer in the Cenozoic, as well as mixed granite formed in Yanshan Period by the intrusion of acid magma.

Ⅴ. Earthquake

The fault texture of Xingyang's four wind power sites is relatively mature, nevertheless exposed fault texture around the area is subject to structural sub-division of deep-fault. Since the 20th century, the seismic activity has rarely been seen, and the earth's crust has maintained stable. It has not been found harmful fault activities near the four

sites, where the seismic activity is rare. According the relevant regulations of the "*Code for Seismic Design of Buildings*" (GB18306-2001) and " *Zonation Map of Earthquake Ground Motion Parameters in China"* (GB18306 - 2001), the seismic peak ground acceleration exceeding rate in Project Area is 0.05g, and seismic fortification intensity for the site is Grade VI.

Ⅵ. Hydrology

The four sites of Xinyang Wind Power Generation Station are located on mountain ridges of Tongbai and Dabie Mountains, among which Jigong, Dabie and Huangbai wind power plants are Jianghuai watershed and Henan-Hubei demarcation line, and the origin of tributaries of Huaihe and Yangtze River. Tianmu Mountain locates in Huaihe River valley, which is at the demarcation line between Zhumadian Xinyang and the three cities of Nanyang. This area has a lot of rain, rich forest vegetation, complicated topographyand physiognomy, and dotted with numerous lakes, ponds, pools, streams, and rivers, all following together to Yangtze and Huaihe River.

Ⅶ. Ground water

According to local storage conditions of groundwater water, the physical characteristics of water, and hydraulic characteristics, the aquifers within the power plant can be divided into three categories, i.e. porous aquifer, fractured aquifer and fractured porous aquifer. Porous aquifer stores in the loose soil of the Fourth layer, a few meters thick, distributed in residual mountain slopes and the bottom of the valley. Fractured porous aquifers are mainly distributed in all-weathered bedrock, a few meters or 10 meters thick. Bedrock fractured water stores in the bedrocks except the above-mentioned all-weathered bedrock at large. The groundwater relevant to the buildings of the wind power plant is mainly fractured water in the bedrock, and precipitation is the major source of supplementary supply.

Ⅷ. Soil

The regional soil in Dabie Power Plant is yellow brown earth, mainly distributed on the forestry land that is 400 meters above sea level, and over 25 ° slope. The rice soil is mainly distributed in valleys and plains, 400 meters below sea level. The humid soil is mainly distributed on the river terraces.

The parent-rocks in Tianmu Power Plant mostly are granite, quartzite, sandstone, and

gneiss. The soil, basically is subject to yellow brown earth soil, with a pH value ranges from 5.0 to 6.0. The texture of the soil is regarded as sandsoil, containing about 35-65 percent of gravel. The thickness of the soil is 15 to 40 cm, with a relatively thin layer of defoliation and organic synthesis, and thus a lower degree of fertility.

Huangbai Mountain pertains to earth-rock mountain, with a thin layer of soil around 0.2 to 1.0 meters thick on the slope. Soil is single in type, which includes brown soil, yellow brown soil, skeletal yellow brown soil and paddy soil. Silt soil at the bottom of valleys, around 1.0 to 3.0 meters thick, mainly is pluvial deposits sand soil. Parts of slope surface cover a large number of weathered rock granular particles. Yellow brown soil and skeletal yellow brown soil account for 61.37% of the total Assessment area. The paddy soil is composed of alluvial soil and clayey, mainly distributed in Dishui River, Niushan River and on both sides of mountain gully. Other soil types are considered as composite-type.

Under the biological and climate conditions of north subtropical regions, the Jigong Wind Power Plant, has formed the typical yellow brown soil, with a PH value ranges from 5.0 to 6.5, and a thickness of 30cm soil layer. Due to sound protection, the forest vegetation has a high coverage rate, and the humic layer prevails to 5-10cm. Affected by the geological conditions and the climate of mountain regions, soil in Jigong Mountain has formed into different types and arranged in vertical spectrum. The major soil in vertical spectrum of Jigong Mountain (744 meters above sea level) is yellow brown soil (156-259 meters above sea level); The soil above major soil in vertical spectrum at the west slope is hardened soil (250-620 meters above sea level) - yellow brown soil (620 meters above sea level); such soil at the east slope is skeletal soil (250-460 meters above sea level) - yellow brown soil (460 meters above sea level).

Social environment (social economic structure, education, culture, traffic, and protection of historical relic, etc.):

(1) Economic and social development of Xinyang : Xinyang City lies in the most southern part of Henan Province, adjacent to Anhui in the east, Hubei in the southwest. The two district of Shihe and Pingqiao, and eight counties including Luoshan, Xixian, Guangshan, Xinxian, Hengchuan, Huaibing, Gushi and Shangcheng are under the jurisdiction of Xinyang, which has an area of 19,000 Km2, and a population of 7.93 million in the year of 2006.

Since the reform and opening up, governments of Xinyang city had been striving

efforts to promote development whole-heartedly, with the principle of putting people first and the earnest desire of revitalizing economy and eliminating poverty. The governments have formulated plans and strategies to promote the social and economic development in Xinyang, advancing all measures to promote economic development. Agriculture with unique characteristics and tourism industry in mountain areas have shown their advantages. Pharmaceutical, chemical, steel and other emerging industries are booming consecutively. Xinyang's GDP in the year 2006 was 58.835 billion Yuan, 125.3% increase than that of the year 2006 (26.11 billion Yuan).

With the development of regional economy and the improvement of people's livelihood, Xinyang's electricity supply and demand have increased dramatically. In 2006, power supply of Xinyang Grid Corp. had reached 4.008 billion Kw.h, whereas the figure for power load had reached 3.799 billion Kw.h, increased 94.6% and 94.8% than the year of 2000 respectively. During 2004 to 2006, power load of Xinyang Grid Corp. had a sequential growth of over 16.5%, 1.65 percentage points higher than the growth rate of power supply in the same period.

Located in Huaihe River Valley and Dabie Mountain areas, Xinyang has a sound natural environment. Agriculture and tourism industry in mountain areas dominate the regional economy. Since the local energy resources of coal, oil and gas are limited, such energy to sustain the economic and social development is imported in large quantities from other places to generate coal- fired power. In recent years, power load in Xinyang had been increasing continuously, thereafter power supply in some summer and winter times were limited. Due to the upsurge prices of coal, oil, gas and other mineral resources, expanding coal-fired power plants will on one hand increase energy costs, and on the other hand pollute more the environment. Coal-fired power plants dischage large amount of smoke and dust, SO2, carbon dioxide and other pollutants, which exacerbates climate change and endangers natural environment and Xinyang's environmental-friendly agriculture industry and tourism industry with unique characteristics of mountain areas. Structural problems of power generation have caused huge pressure on the local environment, as well as social and economic development within the region.

Xinyang, an old evolutionary basis and a less-developed region, is listed as the "Development assistance most needed regions" by the state and Henan Province. The government of Xinyang city has realized profoundly – If only promotes the sustainable development of the regional economy, should it eliminate poverty completely. In order to

build an environmental-friendly society, it is necessary to change the traditional economic development modality, actively promote the development of clean and renewable energy, being less dependent on coal-fired energy, so as to alleviate the burden of environment, protect the coexistence of green agriculture and tourism in mountain areas, and ensure the realization of harmonious development between the economy, society and environment.

Xinyang, as a model city of eco-environment construction, has Jigong Mountain as one of the four prestigious places for summer vacations. Xinyang has "the peal of Henan" - Nanwan Lake, Ling Shan Temple, which was built thousands of years ago, Jing Ju Buddhist Temple, the origin of Tiantai Zong, and Tangquan the famous warm spring. The construction of the Project will use fully the clean energy of wind in Dabie Mountain areas, so as to protect the environment, add more colors to the local tourist sites, and promote the development of green agriculture and tourism industry, which will be a sound plan to promote Xinyang's social and economic development and in the meanwhile being suitable for the local conditions.

(2) transportation：Located in the middle of China, Xinyang connects the east, west, north, and south, having the advantage of sound geological conditions. Lying in between the two economic development belts of Yangtze and Longhai, it will become the core hub connecting north-south transportation. "Four folds double junctures", namely Jingguang, Jingjiu, and Xining railways, No. 106, 107, and 312 state roads, Jingzhu, Jingjiu highways, and the highway which is parallel to No. 312 state road, are formed the "Three folds double junctures". Optical fiber cables that are parallel to Jingguang, Jingjiu railways, together with the cable, which is parallel to No. 312 state road are formed the "Fourth double juncture". There are 11 provincial roads, 250 country roads within the territory. Thus the total length of road ways reaches 6,136 kilometers, and the length of navigable inland waterways is 123 kilometers, as a result a pattern of traffic extending in all direction has come into being.

Nearby the four construction sites, there are railways, highways, state roads, and provincial roads. Furthermore, country roads between villages connect the construction and maintenance road in the wind power station. Provincial roads, with asphalt surface, are categorized as roads above Level 2, whereas country roads between villages are regarded as Level 4 roads. Such roads can be used as the major road entering into the wind power station. By moderate alterations, the country roads can meet the requirement of

transporting equipments.

(3) Introductions of eco-plan, forest park and other eco-sensitive regions

Eco-plan: Pursuant to "Eco-Functional in Xinyang", "Eco-Environmental Protection Plan in Xinyang ", five eco-functional areas are categorized in the city of Xinyang : (1) Bio-diversity maintenance area; (2) Water resources capture area; (3) Water and land conversation area; (4) Nutrition material recycle area; (5) Mineral resources exploration; (6) Bio-tourism development area. In the meanwhile, in accordance with "Technical Plan for Division and Establishment of Eco-Functional Areas", the government integrates the above mentioned 6 Eco-functional areas into three kinds of areas, namely, Special Eco-Functional Area, Crucial Resources Development area, and Eco-Sound Area, so as to meet the requirement of "Three Incorporates". The Special Eco-Functional Area includes 64 townships, with the total population of 1.7173 million and total land of 6846.52 km2, accounting for 35% of the City area. It also has 83878 hectares of arable land, or 49% of the City's total. The Crucial Resources Development Area has a population of 987,000 people and total land area of 2468.17 km2, accounting for 12.7% of the City's total. The Eco-Sound Area, a classic bio-agricultural area, contains 126 townships, with a population of 4.59 million and total land area of 10,124.27 km2, accounting for 52.1% of the City's total.

The proposed sites of the four wind power plants belong to the Middle Range Soil Erosion and Water Loss area. The figure of soil erosion is between 1500-4500t/akm2.

The environmental protection plan of this Bio-Functional Area shall be – (1) Under the pre-condition of protecting the natural environment, it is needed to establish forestry industry system and production and processing base for local products, producing and processing forestry products, so as to advance the all-round development of diversified economy including the development of forest, livestock, tea, fruit, medicine and among others; (2) In the meanwhile, as far as method and measures are concerned, it is necessary to encourage and attract the residents in protected regions to walk out of the deep mountains, to develop bio-tourism and mineral resources exploration in some parts of the regions with abundant resources, so as to import major materials from other places that are needed for residents in protected areas; (3) Explore and develop mineral resources in an appropriate manner. We should strictly implement the Examining and Approving Measures on Exploration of Mineral Resources, and the Measures for Evaluating Effect of Mineral Resources Exploration on Bio-Environment, facilitate technological support,

reinforce the capacity of mineral resources to process deeply, extend production chain, and restrict exploration amount so as to ensure sustainable utilization.

Sensitive environmental regions associated with Dabie Wind Power Plant

Overall plan of Huang Maojian forest park：31 out of 35 wind turbines in the plant will be installed in Huang Maojian provincial level forest park（See Attached Figure 1）.

According to the "Overall Plan of Huang Maojian Forest Park", "Scenery spot at the mountain top of Huang Maojian –connected with the east-west arterial road, the transportation road has reached the tip of the dominant peak of Huang Maojian. Vehicles can reach to the top of the mountain through this road. The Plan suggests: Taking the advantage of the convenient transportation and abundant wind resources at the mountain top, the Wind Power Station (to be invested and constructed by Henan Weite Wind Power Corp.) should be built at the mountain top of the forest park, so as to enrich power supply of the scenery spot and make the Station a beautiful scenery in the forest park". Thus it is conceivable that this project has been incorporated into the Overall Plan of Huang Maojian Forest Park, and is accommodated with the construction of the Park.

Huangyuan Bikegui Natural Protection Region: the Project will not be built in but adjacent to the natural protection region of Huangyan Bikegui (within the territory of Xinxian County), being at a distance of 1800 meters to the nearest boundary of the protection region.(See Attached Figure 5 and 6)

The plan of Xinyang Huangyuan Bikegui Natural Protection Region was proposed by the Aquatic Bureau of Xinyang. The protection region includes five townships under the jurisdiction of Xinyang, including Xinxian, Shangcheng, Shihequ, Luoshan, and Gushi, as well as 123 administrative villages, with a total area of 11,850 hectares. The core area of the Protection Region has 40 villages and an area of 36,977 hectares, accounting for 33% of the total area of the Protection Region; The buffer zone of the Protection Region has 38 administrative villages and an area of 37,335 hectares, accounting for 34% of the total area of the Protection Region; The experiment area has 45 administrative villages and an area of 36,538 hectares, accounting for 33% of the total area of the Protection Region. However, the overall plan of the Protection Region has not been approved yet. (See Attached Figure 5)

The Protection Region, with a total area of 26560 hectares, has 6 townships and 26 administrative villages within the territory of Xinxian County.

Sensitive environmental regions associated with Huangbai Mountain Wind Power Plant

Overview of Huangbai Mountain Forest Park : The predecessor of Huangbai Mountain Forest Park was the state-owned Huangbai Mountain Forest Farm, which was established in November, 1956 after being approved by Henan Provincial People's Committee. The forest farm had a planed area of 7,269 hectares, but the operation area was adjusted to 6353.4 hectares now after two reforms in 1962 and 1982 respectively. The Forest Farm has established a Farm-head (with the administrative rank as "leading roles of sections or equivalents") accountability regime, under the leadership of the local Party Committee. In August 2001, Huangbai Mountain Forest Park was established after being approved by Forestry Department of Henan Provincial Government. In November 2007, in order to promote the development of tourism industry in Huangbai Mountain, the People's Government of Shangcheng County put the two villages of Huangbai Mountain and Baizhan Ping under the administration of Changzhu Yuan County to be under the administration of Forest Park. As such, Huangbai Mountain Forest Park was previously called the "State-Owned Huangbai Mountain Forest Farm" and they are administered under the same management regime. (See Attached Figure 2)

The construction of Huangbai Mountain Wind Power Plant will be built in Huangbai Mountain Forest Park. According to the "Overall Plan of Huangbai Mountain Forest Park", the Plant has been incorporated as a scenery spot in Jieba Chong. Pursuant to the comments of "Development Conditions on Forest Tourism Resources" in the Overall Plan –"**The east peak locates in the southern part of the Park, 1,257.3 meters above sea-level. There are horse-running square, horse-drinking pond, Huanghua Tianzi's (the Head of a Peasant Insurgence in North Song Dynasty) army station, horse-bolt stone, and other scenery spots. It is also proposed that the 60-meter wind tower and station will be built at the tip of East Peak. It is conceivable the spectacular view of silver wind turbines, which is lining up and standing against the wind.**" Viewing from the comment, the project construction is in line with the Overall Plan of Huangbai Montain Forest Park. (See Attached Figure 7)

Huangyuan Bikegui Natural Protection Region: the construction of the Power Plant will not be built in but adjacent to Huangyan Bikegui Natual Protection Region (within the territory of Shangcheng County), being at a distance of 2000 meters to the nearest

boundary of the protection region.(See Attached Figure 5)

The Protection Region, with a total area of 22,090 hectares, has 5 townships and 33 administrative villages within the territory of Shangcheng County.

Sensitive environmental regions associated with Jigong Mountain Wind Power Plant

Jigong Mountain Scenery Area: the construction of the Power Plant will not be built in but adjacent to Jigong Mountain Scenery Area, being at a distance of 1,500 meters to the nearest boundary of the Scenery Area.**(See Attached Figure 3 and 8)**

The Scenery Area, with a total area of 350 hectares, has now been expanded to 2,700 hectares, in accordance with the provisions on the "Overall Plan of Jigong Mountain Scenery Area (2007-2025)". The external protection zone has an area of 6,700 hectares, which includes 1,400 hectares of Yingshan County in Hubei Province.

Jigong Mountain Scenery Area is a prestigious place for summer vacations, with historical sites and old famous buildings dotted in the natural scenery. The major function of the Scenery Area is for summer leisure, vacations, as well as cultural and historical display. There are 16 historical sites and old famous buildings are attributed to the "Historical Sites Protection Units at Provincial Level".

As specified by the Committee of Jigong Mountain Administration Area, "Jigong Mountain Wind Power Plant will be located in Guangtou Mountain and the ridges of surrounding mountains in the Administration Area of Jigong Mountain. The project construction is in line with the management requirement of the 'Overall Plan of Jigong Moutain Scenery Area.'"

Therefore, the project construction is in line with the overall plan of Jigong Mountain Scenery Area.

The Overall Plan of Jigong Mountain Natural Protection Area: the construction of the Power Plant will not be built in but adjacent toJigong Mountain Natural Protection Area, being at a distance of 1,500 meters to the nearest boundary of the protection region.**(See Attached Figure 3 and 8)**

The Protection Region, with a total area of 2,927 hectares, was established in June 1987 to protect animals, plants, and forest ecosystem in transitional zones.

The Overall Plan of Jigong Mountain Natural Protection Area was published as the Album of Scientific Survey of Jigong Mountain Natural Protection Area. In accordance with the Album, forest vegetation coverage rate in the Protection Area is 87%, the

predominant trees in the forest are Masson Pines (32% of the forest total), Oaks (24%), Firs (12%), Secondary Broadleaved Forest (31%)

②Sensitive environmental regions associated with Tianmu Mountain Wind Power Plant

Overview of Tianmu Mountain Natural Protection Area: the construction of the Power Plant will not be built in but adjacent to Tianmu Mountain Natural Protection Area, being at a distance of 3,000 meters to the nearest boundary of the protection region.**(See Attached Figure 4)**

The Protection Region, with a total area of 6,750 hectares, was established in December 2001 to protect animals, plants, and forest ecosystem in transitional zones.

Location of the Plant and Tianmu Mountain Natural Protection Area shall be referred to the Attached **Figure 9**.

Environment Quality

Environmental quality and major environmental issues in the Project area (air, surface water, groundwater, sound environment, and ecological environment, etc.):

The Project is located in mountain areas, with forest vegetation coverage of over 85%-95%, sound ecosystem, and no industrial pollutions. This assessment of surface water, groundwater, air and sound quality will not monitor the current situation on the spot, instead it will adopt the comparison method by contrasting the result of current situation in similar areas of Xinyang. The results are as follows:

1. Environmental quality of surface water

Surface water in the assessment region meets the Class II standard specified in the "Surface Water Quality Standards" (GB3838-2002).

2 Environmental quality of groundwater：

According to the distribution of groundwater in Xinyang City, groundwater of the Project area belongs to crevice water in Mountain Areas. Due to the high altitude, the exposed surface spring is scarce. The groundwater of the Project area is in the light of water standard class Ⅲ as specified in the "Groundwater Quality Standards"(GB/T14848-93).

3. Sound Quality:

Quality of sound environment is in line with the Class 1 standard as specified in the "Noise Standards in Urban Regions " (GB3096-93).

4. Air Quality：

Air quality belongs to Class 1 limit specified in the "Air Quality Standards" (GB3095-1996).

Major environmental protection objectives (lists of name and protection level)：

Water：Quality of the surface water shall be in line with Class II standard specified in the "Surface Water Quality Standards" (GB3838-2002).

Air：Air quality around the Power Plant shall be in line with Class 1 standard specified in the "Air Quality Standards" (GB3838-2002).

Sound: Quality of sound environment shall be subject to Class 1 standard specified in the " Noise Standards in Urban Regions " (GB3096-93).

Groundwater：Quality of groundwater shall be subject to class Ⅲ standard specified in the "Groundwater Quality Standards"(GB/T14848-93).

Solid Waste: Solid waste shall be disposed appropriately, and not harm the surrounding environment.

The ecological environment: Protect the ecosystem, scenery spots, and existing ecological functions.

The Application Standards of Assessment

Category	Name	Carrying-out standard
Environmental quality standard	**Surface Water Quality Standards (GB3838-2002).**	Class II
	Air Quality Standards (GB3095-1996).	Class □
	Noise Standards in Urban Regions (GB3096-93)	Class □
	Groundwater Quality Standards (GB/T14848-93).	Class □
Pollutant discharge standard	**Comprehensive Discharge Standard of Air Pollution** (GB16297-1996)	**Chart 2, Concentration limit for monitoring fugitive emission: 1.0mg/m3**
	Noise Standards for Factories of Industrial Enterprises (GB12348-90)	Class □
	" Limits of radio interference from AC high voltage over power transmission lines"(GB15707-1995)	(20 m from the wire projection) 110KV limit 46dB (v/m)
	Designing and Technical Rules and Procedures for 110 ~ 500KV Erecting Wires (DL/T5092-1999)	

Overall control	

Analysis of the Construction Project

Table 1 comprehensive statistical of land occupation for Xinyang wind power plant

Item	Quantity	Area for Each	unit	Total area
Ⅰpermanent land-occupation project				
（1）Wind turbines	124	272.3	m^2	33765.2
（2）Electric cable trench	About 134	100m Long * 1m wide	m^2	13400
（3）Centralize Controlled 110 kV Substation	3		m^2	11766
（4）Centralize Controlled 35 kV switching station	1		m^2	1518
(5) 35kV-Line	285 electricity tower sites	20.25	m^2	5771
（6）38.5/0.69kV variation area	124	100	m^2	12400
（7）roads for construction and maintenance	92.7km	7m wide	m^2	648970
（8）road get into the plant	61.3km	7m wide	m^2	429100
Total permanent occupation land			m^2 (acre)	1156690（1737）
ⅡTemporary land-occupation for the project				
（1）Hoisting and loading field	124	2500	m^2	310000
（2）Temporary construction facilities	4	6400	m^2	25600
（3）extra road width during Hoisting and loading	33.1km	3m extra wide	m^2	99210
Total Temporary occupation land			m^2 （acre）	434810（653）
Total area of the project			m^2 （acre）	1591500（2389）

Table 2 Statistical of Xinyang Wind Power Plant

Serial number	Item	Content	Unit	Dabie Mountain	Tianmu Mountain	Huangbai Mountain	Jigong Mountain	Total
1	Sites for wind turbines and electric pylons	Earth and stone excavation	10^4m^3	2.1	1.6	5.8	9.8	19.3
		Earth and stone backfilling	10^4m^3	1.4	1.3	3.0	5.0	10.7
2	110KV Substation	Excavation	10^4m^3	0.2	0.1	1.6	1.6	3.5
		Backfilling	10^4m^3	0.2	0.1	0.5	0.5	1.3
3	roads for construction and maintenance	Excavation	10^4m^3	47.8	33.1	53.9	65.6	200.4
		Backfilling	10^4m^3	31.9	21.8	30.8	37.2	121.7
4	total	Wasted Soil and Residue	10^4m^3	16.7	11.6	27	34.3	89.6

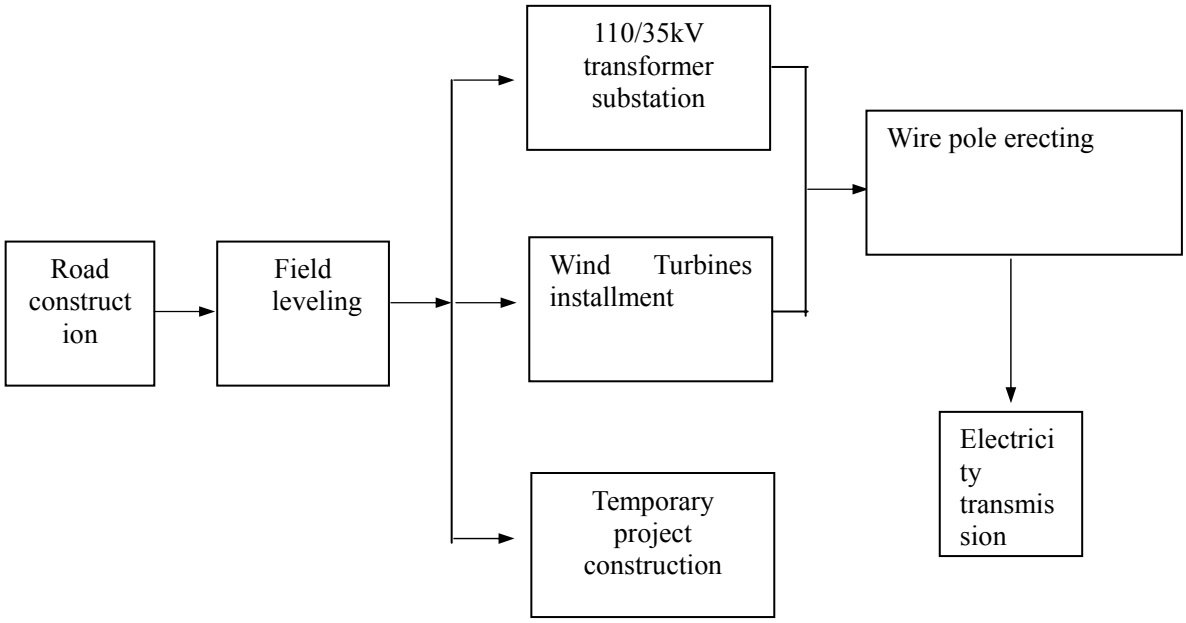
Table 3 Xinyang wind power project environmental protection investment evaluation

Item	Control Measures	Investment evaluation（Million Yuan）
Afforestation, sewage， sanitary sewage disposal	Afforest, collect the skeptical pool, the septic tank and seepage pit	80
Ecological safeguard procedures	Land occupation and forest restoration	1909.8
Soil and water conservation measures	The entire process	880

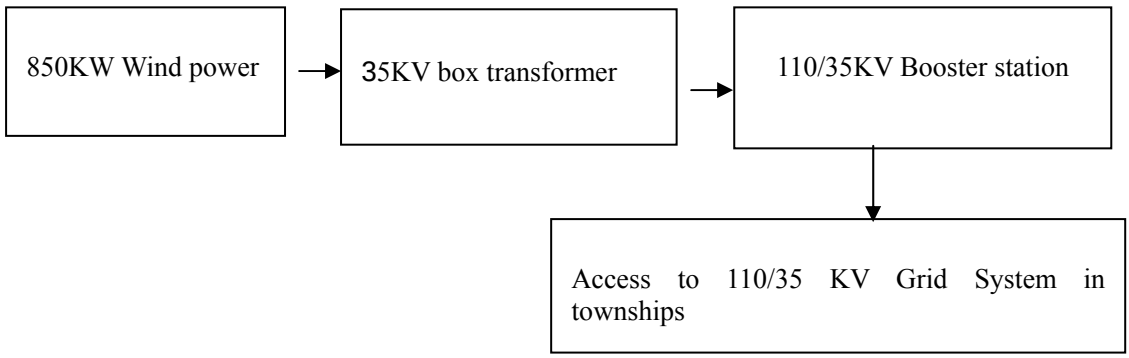
Total		2869.8

Ⅰ. Brief introduction of the construction schedule

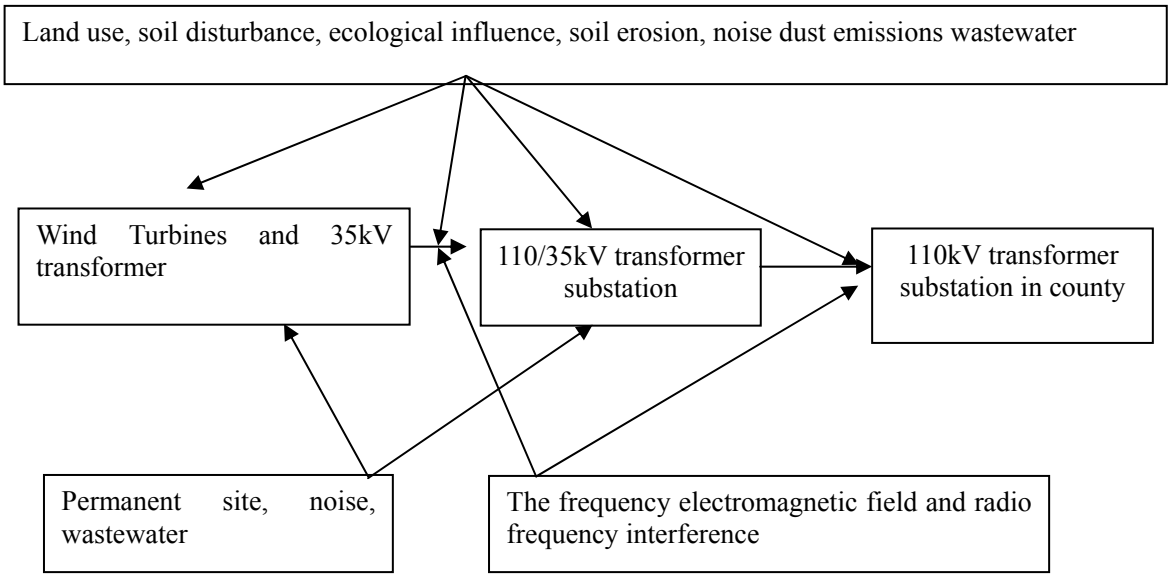
（1） Flow Chart of the Construction Projects:



(2) Process in running period：



(3) Process of sewage production in construction and running period



Ⅱ. Effects of Project Environment and Selection of Evaluation Factors

Examining from the Project and pollution factors, by adopting the matrix method, we differentiate various effects and degree of effects of the Project construction to the environment and select the major pollution factors of the Project.(See the Table below)

Comparing the analysis of pollution factor in construction to that of the operational period, the major pollution factors of the Project are – first, the occupation of land, and the construction of road and other facilities cause the disruption of scenery spots and forestry coverage, soil erosion and water loss, affect the lives of animals, and decrease the amount of storage water; second, construction dusts and noises affect the surrounding areas.

Table 4 Matrix screening of environmental Effects

Items / Environmental resource		Construction Period					Running Period		
		Land covering	Residue	Road construction	Basis	Transportation	Restoration	Solid Waste	Activity
Social Development									
	Economy	2□	1■	2□	3□	2□	3□		1□
	Land use	2■	2■	1■	3■		3□		1■
	Forest	2■	1■	1■	2■	1□	2□		1■
	Transportation			3□	1▲	1▲			1■
	People's health		1▲	1▲	1▲	1▲	3□	1■	1■
Ecological Environment	Soil and water conservation	2▲	3▲	3▲	2▲	2▲	3□	1■	1■
	Vegetation	2■	2■	2■	2▲	1■	3□	1■	1■
	Animal	1▲	1■	1▲	2■	1▲	3□		1■
	Landscape	1■	1■	1■	2■	1■	3□	1■	
	Natural river								
surrounding	Sound Environment			2▲	2▲	2▲	1□		1■
	Air Environment			2▲	2▲	2▲	1□	1■	1■
	Solid Waste								
	Water		1▲	1▲		1▲	2□	1■	1■

Note：■Long-term adverse effects；▲Short-term adverse effects；□Long-term positive effects；□Short-term positive effects；The blanks refer to having no or slight interactions, The Number of 1, 2, 3 means the degree of influence.

Analysis of Environmental Influence

Analysis of Effects on Environment in Construction Period

（1）Analysis of Sound Effects in Construction Period

Major noises in construction period are the noises produced by excavators, loaders, pile-driving machine, concrete mixer, roller and transportation vehicles. Main characteristics of the noises are quick, inconsistent and big. Noise value is 70 - 100 dB (A) 15 meters away from to vehicle and machinery equipment; while the same distance from the excavators is 75 -105 dB (A). Noises produced in the transportation and installment stage of wind power equipment are: noises produced in the installment stage by large-scale transportation cranes, flatbeds, small tool valves, hand pneumatic drills, level creates, electric welding machines, diesel electric engines, steel benders and so on. Such noises are sudden, unstable, volatile and dispersed. Generally, noise value is 75 - 110dB (A) if being at a distance of 15 meters to the sound origin.

Such sudden and unstable noises will have certain adverse effects on the surrounding sound environment.

As the four plants are proposed to build on the ridges of the local high mountains, at least 1 km away from the residential areas, the noise will not disturb the residents.

In addition, in terms of their habitats, birds are not expected to nest around the ridges of mountains, because most of the regions are covered with meadow and dwarf shrub, where it is not suitable for birds to hide. Therefore, birds breeding will not be adversely affected by noises in the construction period.

Construction activities will have certain effects on the mammals living nearby, which will be running away from this region in the construction period. Nevertheless, the mammals are expected to return to the region after the construction period because they are living in open habitats. In a word, noises during construction period will have few adverse effects.

（2）Analysis of Water Effects in Construction Period

Wastewater during construction period is produced by concrete mixing water, sand and gravel washing water, concrete maintenance discharge, oil-bearing wastewater generated from diesel generators and machinery when washed by rain, and daily wastewater. Because the dispersed construction sites and larger scope of construction, the quantity of wastewater will be very little. Since the time of wastewater produced will be inconsistent, it will not form as water-flow. Therefore, wastewater produced in construction period will not have adverse effects.

Four construction sites of the Project are far away from each other. Construction areas are dispersed. The volume of daily wastewater discharge of each construction staff in the construction period is 50 L / d. people × 140 = 7 m^3/ d, if there are 140 construction workers in the busiest time at each site, water consumption is 60 L / d per person, and water discharge is 50 L / d per person. Wastewater discharge can be used for irrigation, disappear by itself, or drained into infiltration pit after septic tanks treatment, therefore it will not affect surface water of the area.

Oil-bearing wastewater will be discharged after separated by oil water separator. Wastewater produced by concrete-mixing machines, from sand and gravel washing and concrete maintenance can be clarified by sedimentation tank, and then added with clear fluid and returned to concrete mixing machines. Through the above-mentioned treatment measures, wastewater in construction period has little influence on the surface water system.

（3）Analysis of Solid Waste Effects in Construction Period

Daily life trash of each construction site is 0.5kg/d. ×140=70 kg/d. After being classified and collected, the irrecyclable part will be sent to rubbish transfer station by construction staff regularly; recyclables can be sold to the nearby waste recycling station. Through the above measures, solid waste does not cause pollution to the environment.

(4) Analysis of Air pollution Effects in Construction Period

Dust and sand: In road base construction such as earth excavation, filling and removal, and the process of loading, transporting, mixing cement, sand and gavel, certain amount of dust scattered in the air around the site. In addition, vehicles transporting the road construction materials and wind blow materials in storage can also produce dust pollution.

In the basic and road construction process, produced dust will have a negative effect on the growth and respiration of plants.

According to the road design of the wind power stations, road surface of mountain ridges will be formed by crushed stones (instead of bitumen) and pursuant to Class IV standard. Therefore no bitumen smoke produces.

The waste gas discharged by construction machines and transportation vehicles will have short-term, slight influence on the air quality.

（5）Soil Erosion and Effects on Ecosystem in Construction Period

Comparing the compensation standard of Xinyang to land and its attachments, environmental protection investment of the Project can be referred to the following table.

Environmental Protection Investment of the Project

Items	Treatment measures	Investment Estimates（10,000 Yuan）
Daily waste water, vegetation of the Station, and treatment	Vegetation, water pool, septic tanks, and infiltration pit	80
Bio-protection measures	Land occupation and forest restoration	1909.8
Water and land conservation measures	Whole process	880
Total		2869.8

Total waste soil and residue of the Project is 896,000 cubic meters, scattered in the construction process of 7 m × 154km road construction, which means the average amount of waste soil and residue is 5.818 cubic meters per meter of the construction road. Thus, large-scale stations for discarded sand and stone is not appropriate for the occasion, whereas it is necessary to do the work of water and soil conservation timely and well in the process of and after road construction.

The volume of accelerated soil erosion is 6,025 t / a in the construction period; the

newly added soil erosion accounts for 2.0% of the assessment region, with a total area of 150.77km2.

The project construction will cause a disruption of soil and forest vegetation with an area of 1.9098 million ㎡, accounting for 1.27% of the assessment region. Therefore, the Project construction will not affect the integrity of the region's ecosystem.

The Project construction will not do harm to the biological diversity and the protection of animals and plants.

Analysis of Effects on Environment in Operational Period

Major pollutants in the Project operational period are as follows: noise, wastewater, solid waste, and pollution to landscape.

（1）Analysis of Noise Effects in the Operational Period

Noises: Noise pollution is produced in the operational period mainly from wind turbines and 35 kV substations. The noise from single wind turbine is 85-100 dB (A). And the noise of 35kV substations produced by the corona discharge from transformers, high-voltage combination circuits, and bus is no more than 65 dB (A).

Comparative analysis believes that noise value will decrease 36 - 46 dB (A) after being absorbed or blocked by increasing distance and natural barriers like topography and plants. Noise during daytime at 150 meters away from a single wind turbine is subject to Class Ⅰstandard specified in GB12348-90 "Noise Standards for Factories of Industrial Enterprises ". Noise in nighttime at 450 meters away from a single wind turbine is subject to Class Ⅰstandard specified in GB12348-90 "Noise Standards for Factories of Industrial Enterprises " Because there are no residents or other noise-sensitive protection objectives exist at a radius of 2 km to the Project areas, the noise will not disturb the residents.

(2) Analysis of Electromagnetic Radiation Effects in Operational Period

Electromagnetic and radio frequency interference, generated by erecting wires and 110 KV substations, will not only do harm to human, plants and animals, but also electrical equipments.

The assessment scope includes Power-frequency Electric Field and Magnetic Fields at a radius of 500 meters to the 110KV substations, and the radio frequency interference at a radius of 2,000 meters to the substations. There are no residents, no radio-sensitive facilities such as satellite stations, radio and television transmitters, or radar stations at

within 2 km of the Project areas. Should the construction units strictly follow the design specified in the “Designing and Technical Rules and Procedures for 110 ~ 500KV Erecting Wires " (DL/T5092-1999), reduce continuous working hours of staff workers, allow them to take shifts, and implement environmental protection procedures, electromagnetic radiation in the operational period will be safe to the environment.

（3）Analysis of Wastewater Effects in Operational Period

Wastewater: since there is no manufacturing wastewater produced during operational period, it is mainly daily life wastewater, oil-bearing wastewater, and fire extinguisher discharged water. Each of the four proposed Project sites has 12 staff members, who work on shifts, 7-8 people at most for each shift. If the volume of daily wastewater discharge of each worker is 60L / d, then the biggest volume of discharge will be 0.48 m3/d, and the annual discharge of daily wastewater will be 175.2 m3/a. The composition of the discharged water is - COD: 260 mg/L, BOD5180 mg/L, NH3-N: 25mg/L. After being treated by of septic tanks, the pollutants density of the wastewater is the following COD respectively: 210mg/L, BOD5120 mg/L, NH3-N: 22mg/L. After being treated by septic tank and drained to, the seepage well, which is 5 m3 or larger, the wastewater can be used to fertilize plants or it evaporates naturally and thus have little effect on surface water.

Oil-bearing wastewater: In the process of normal operation, no waste oil is produced except when the main substation and oil reactance are broken down and cooling oil is emptied, thereafter a small account of oil-bearing wastewater is produced. According to "Designing and Technical Rules and Procedures for High-Voltage Distribution Devices (5-85 SDJ) ", the Project will sep up a voltage transformer oil pool and a 20 m^3 accident oil pool to separate oil from the wastewater. Such oil shall be handed over to the qualified units for recycle.

(4) Analysis of Solid Waste Effects in Operational Period

Solid waste is daily waste mainly produced by working staff of the Wind Power Station. Each of the four proposed Project sites has 12 staff members, who work on shifts, 7-8 people at most for each shift. If the daily waste of each worker is 0.6kg/d, the biggest volume of daily waste will be 4.8kg/d, and the annual discharge will be 175t/a. Daily waste is classified into recyclables (such as food packages, mineral water bottles, waste paper, etc.) and undegradables (such as plastic bags, etc.). After being collected, daily waste will be regularly transported to the nearby recycling stations or rubbish transfer

stations by the working staff. Then it will be sent to Xinyang's garbage disposal station for innocuous landfill. Degradable garbage can be used to fertilize the plants nearby after being composed. The smaller amount of garbage does little harm to the surrounding environment.

(5) Analysis of Landscape Pollution in Operational Period

By applying the method of spatial structure analysis of landscape ecology, the landscape ecological structure of the assessment areas is grounded on mountain forest (including all types of natural and planted forests, shrub forest, open forest, woodland shrub grassland, are the major compositions of the assessment area), intertwined with other landscape factors such as rivers (streams), roads, shrubs, and among others, and dotted with economic forests and animals in the region. The regional plants are dominated by local varieties like black pine trees, Chinese pine, oak tree, whereas in some areas the dominant trees are the tea-oil camellia, Chinese chestnut, etc. The green land and forest vegetation join together in a natural and continuous way.

Plants restoration rate of the first year in the temporary Project site will be about 50 % after the measure is being implemented. Viewing from the overall landscape advantages, the landscape in the assessment area will be mainly occupied by forestland. The occupied forest vegetation in the assessment regions will be effectively restored and compensated after the measures of plants-restoration and off-site ecological compensation. The overall landscape is still forest.

The completed wind turbines will stand on the very top of the mountain ridges like white wind towers dotted in mountains, which will make the 55-meter-high wind turbines spectacular and magnificent. The four proposed sites locate near the forest parks or scenery regions with natural forests and beautiful scenery. The Project is a construction by using green energy, and urban tourists will be attracted by this modern high-tech landscape, which enriches ethnic customs, forest tourism, the overall plan of the tourist sites, brings about fresh new look, and will become a flashpoint and new feature for the local tourism industry.

Preventive and Treatment measures in construction period and expected effects

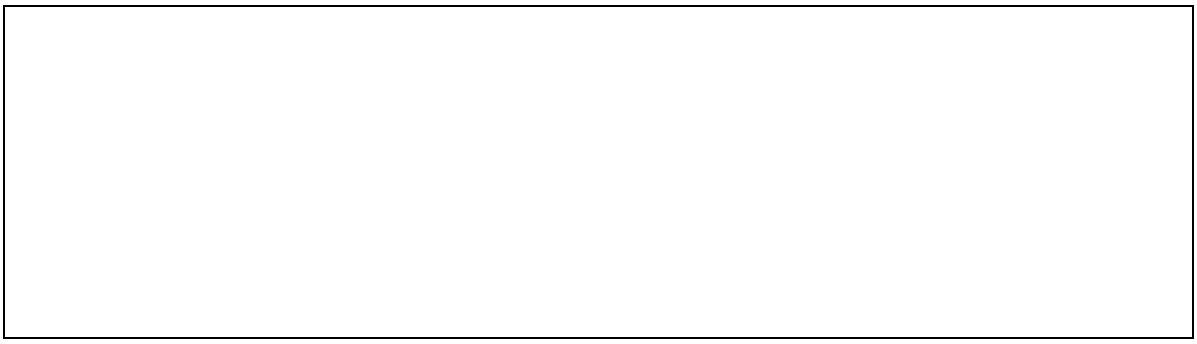
Content item	Discharge source (serial number)	Pollutants	Preventive Measures	Expected Effects
Air Pollutants	Dust	TSP	Covering dustproof cloth, cleaning, and sprinkling water	Reduce to some extent
	Vehicles	CO、NO_X	Speed limits	Reduce to some extent
Waste water	Construction period	Operational machinery oil-bearing wastewater	Oil-bearing wastewater separator, oil recycle	Slight effects on the surface water
		Gravel washing water, concrete mixing water, concrete drainage conservation、	Sedimentation tanks - back for concrete mixing system after clarification	
		Sewage	Septic tanks- do not form the surface runoff, some for vaporization and some others for vegetation fertilizer	
	Operational period	Oil-bearing wastewater in accidents	After treatment in a 20 m^3 accident oil separate pool for oil recovery, waste oil will be transported to the qualified disposal units, a small amount of oil-bearing wastewater will be used for vegetation without emission	Slight effects on the surface water
		Sewage	Sedimentation tanks - do not form the surface runoff, some for vaporization and some others for vegetation fertilizer.	
Solid waste	Construction period	Waste Soil and Residue ($11.6\times10^4m^3$)	Soil-disposal stations will be established; disposed soil will be used for vegetation, building revetment or gutter	Slight soil erosion
		Daily trash	After being classified and collected, daily trash will be regularly transported to the recycling station and trash transfer station	No re-pollution
	Operational Period	Daily trash	After being classified and collected, daily trash will be regularly transported to the recycling station and trash transfer station	No re-pollution
Noise	Construction period	Concrete, mechanical equipment, and transportation vehicles	Low- noise apparatus are used, eliminating noise and vibrations; equipment maintenance; and speed limits	Slight effects on sound environment

	Operational Period	wind turbines, and transformers	Low- noise turbines are used, and walls are set around transformers, so as to eliminate noise by air and vegetation absorption, terrain and distance separation	Noise Standards for Factories of Industrial Enterprises (GB12348-90) class I

Ecosystem Protection Measures and Potential Results：

1. Strengthen environmental supervision and standardize construction in construction period.
2. Strictly follow the guidance of environmental supervision engineers, and the Soil and Water Conservation Plan proposed by the Project, to adopt measures for the prevention and treatment of soil erosion. Take different measures in different places.
3. Strictly supervise the usage of water and soil conservation fund as well as forest vegetation restoration fund, and ensure the specific fund is used for specified purposes.
4. Try to reduce the artificial green zones, so as to alleviate destruction to the Natural Secondary Forest. Due to few working staff in the Project operational period, we regard the spontaneous recovery as the major green measure. In addition, the local dominant trees shall be planted in the substation, so as to ensure the consistency with the natural ecosystem.
5. No fences shall be installed around the wind power tower. Apart from roads and other infrastructure, other Project areas shall restore the original forest vegetation, reduce the area of hardened land, and keep the original appearance. Road construction shall avoid the regions with sound forest vegetation coverage if conditions permit. If road construction has caused severe damage to forest vegetation coverage, the forest vegetation on the surface of should be protected for future forestation in the later period of the Project.
6. The forest destroyed in the permanent occupation area of the Project is subject to off-site ecological compensation.
7. In order to reduce the area of hardened land, the destruction of surface forest vegetation, and the disruption to the ecosystem, we suggest to specifying construction plan and drawing a forbidden line under the instructions of environmental supervision engineers. No construction beyond the forbidden line.

By implementing the above-mentioned measures, the Project construction will not have obvious adverse effects on the regional ecosystem.



Conclusions and suggestions

Ⅰ. Assessment conclusions

1. The Project is in line with the national industrial policy

According to the “Renewable Energy Law of the People's Republic of China", the government enlist the development and utilization of the renewable energy as the priority for energy development. Wind power is a kind of clean energy. The Project construction accords with the development of China's energy industry.

In accordance with the "Catalogue Providing Guidance for Structural Adjustment (2005)," wind power generation is a kind of way of developing and utilizing renewable energy, which is in line with the national industrial policy and encouraged by the state.

2. The Project sites are feasible

The option of the Project sites is pursuant to the requirement of the "Division of Ecological Function Zone in Xinyang", in line with the requirement of land-using plan. The Project sites have abundant wind resources and are appropriate for the construction of Wind Power Stations.

Two out the four Project sites have already been incorporated into the Overall Plan of Forest Parks, i.e., Dabie Mound Wind Power Plant in Xinxian County and Huangbai Mountain Wind Power Plant are included in the “Overall Plan of Huang Maojian Forest Park” and the “Overall Plan of Huangbai Mountain Forest Park” respectively. Therefore, the two Plants are compatible with the plan of the forest parks. Such Plants will not be built in but adjacent to Huangyuan Bikegui Natural Protection Area, being at a distance of 1,800 meters to the nearest boundary of the protection area, and shall not be restricted by the protection area.

Sensitive environmental regions associated with Jigong Mountain Wind Power Plant mainly are Jigong Mountain Natural Protection Area and Jigong Mountain Scenery Region. However the Plant will not be built in the above-mentioned areas, being at a distance of 1,500 meters to the nearest boundary of the Protection Area and the Scenery Region. In accordance with the Notice specified by the Committee of Jigong Mountain Administration Area, the Project construction is compatible with the overall plan of the region, and there is no policy restriction.

Sensitive environmental region associated with Tianmu Mountain Wind Power Plant mainly is Tianmu Mountain Natural Protection Area, but the Plant will not be built in the Protection Area, being at a distance of 3,000 meters to the nearest boundary of the

protection region.

3. The Project areas have sound environment

The Project sites locate on the mountaintop ridges near the border of Xinyang, where it is sparsely populated, and with sound local environment. The sensitive environmental regions mainly are forest parks and scenery regions.

4. The wind power generation Project, by using clean technology, generates fewer pollutants in the operational period.

No production wastewater or waste gas discharged, the main pollution of the Project is the ecological effects in construction period, and waste oil water in accidents during the construction period.

Different requirements are made by the assessment in both construction and operational period. To be specific, measures should be taken to strengthen environmental supervision, and try to avoid construction during the rainy season, as well as restore forest vegetation to prevent soil erosion in the construction period. What's more, emergency plans and detailed procedures for the treatment of waste oil water in accidents during operational period.

If all the above-mentioned pollution-control measures have been taken, the Project construction will have little influence on ecosystem, sound, electromagnetic, air and water environment.

Ecological effects of the Projects:

① Forest vegetation restoration cost of the Project is 19.098 million Yuan, and shall be included in the total investment of the Project.

② Total waste soil and residue of the Project is 896,000 cubic meters, scattered in the construction process of 7 m × 154km road construction, which means the average amount of waste soil and residue is 5.818 cubic meters per meter of the construction road. Thus, large-scale stations for discarded sand and stone is not appropriate for the occasion, whereas it is necessary to do the work of water and soil conservation timely and well in the process of and after road construction.

③The volume of accelerated soil erosion is 6025 t / a in the construction period; the newly added soil erosion accounts for 2.0% of the assessment region, with a total area of 150.77km2.

④The project construction will cause a disruption of soil and forest vegetation with an area of 1.9098 million ㎡, accounting for 1.27% of the assessment region. Therefore, the Project construction will not affect the integrity of the region's ecosystem.

⑤The Project construction will not do harm to the biological diversity and the protection of animals and plants.

5、Environment Efficacy

The Project has a total installed capacity of 105.4 MW and feed-in capacity of 192.325 million Kw.h. Compared with coal-fired power plants of the similar capacity, if calculated on the assumption that coal consumption of coal-fired power plants is 356g / kW·h, the Project can save about 68,000 tons of standard coal every year, remarkably reduce toxic emissions, including 602.3 tons of dust, 121,900 tons of carbon dioxide, 1077 tons of sulfur dioxide, 602.3 tons of nitrogen oxides and 16,000 tons of gray dregs, which would bring about positive effects to ameliorate air quality . In addition, as the wind power does not produce gray dreg, discharge wastewater or consume water resources, it has extraordinary benefits on environment

Ⅱ. Measures and suggestions

1. Maintain the sustainable development of the ecosystem in light of the requirement of the Plan for water and soil conservation.
2. Strengthen environmental supervision and standardize construction in construction period.
3. Strictly follow the guidance of environmental supervision engineers, and the Soil and Water Conservation Plan proposed by the Project, to adopt measures for the prevention and treatment of soil erosion. Take different measures in different places.
4. Strictly supervise the usage of water and soil conservation fund as well as forest vegetation restoration fund, and ensure the specific fund is used for specified purposes.
5. Try to reduce the artificial green zones, so as to alleviate destruction to the Natural Secondary Forest. Due to few working staff in the Project operational period, we regard the spontaneous recovery as the major green measure. In addition, the local dominant trees shall be planted in the substation, so as to ensure the consistency with the natural ecosystem.
6. No fences shall be installed around the wind power tower. Apart from roads and other infrastructure, other Project areas shall restore the original forest vegetation, reduce the area of hardened land, and keep the original

appearance. Road construction shall avoid the regions with sound forest vegetation coverage if conditions permit. If road construction has caused severe damage to forest vegetation coverage, the forest vegetation on the surface of should be protected for future forestation in the later period of the Project.

7. The forest vegetation destroyed in the permanent occupation area of the Project is subject to off-site ecological compensation.
8. In order to reduce the area of hardened land, the destruction of surface forest vegetation, and the disruption to the ecosystem, we suggest to specifying construction plan and drawing a forbidden line under the instructions of environmental supervision engineers. No construction beyond the forbidden line.
9. Formulate rules and procedures for contingency operation and prepare for ancillary contingency equipment when the main transformer leaks oil-bearing wastewater in operational period.
10. Strengthen promulgation and education of water and soil conservation, raise the awareness of construction staff and management staff at all levels in this respect, and formulate scientific plans for the protection of wild animals and plants in the Project area, so as to maintain the complexity of the ecosystem and the diversity of species and keep the sustainable development of the ecosystem.
11. Temporary land occupation such as stations for concrete mixing and stirring, supply in operational period, and large-scale equipment shall be built in the permanent occupation land if it is possible. As such, it will reduce the temporary land occupation, forest vegetation destruction and soil erosion.

III. Summary of Assessment

The Project has reliable power generation technology. Location and design of the Project is in line with the relevant production and the Project construction is pursuant to the state industrial policy, and the sites are chose appropriately. The assessment considers that the construction unit will implement all protection measures for water and soil conservation and the prevention and treatment measures to curb pollution. After examining the compatibility with other local plans, the construction units will minimize the adverse effects of the Project construction on the environment such as forest vegetation destruction, soil erosion and water loss. The social, economic and environment benefits will be brought into full play. Therefore, the Project construction is feasible.