



SACHAL ENERGY DEVELOPMENT (PRIVATE) LIMITED
ARIF HABIB GROUP COMPANY

PROJECT OVERVIEW



Presented by Mr. Kashif Mateen Ansari

"Don't let me frighten you into a hasty decision. Sleep on it tonight. If you wake up in the morning, give me a call then and let me know."

- Obviously my answer was “yes”...

- Q : What's the difference between an insurance company CEO and the mafia don?

A : The insurance company CEO can tell you how many people will die this year. The mafia don can tell you the names of all of them.

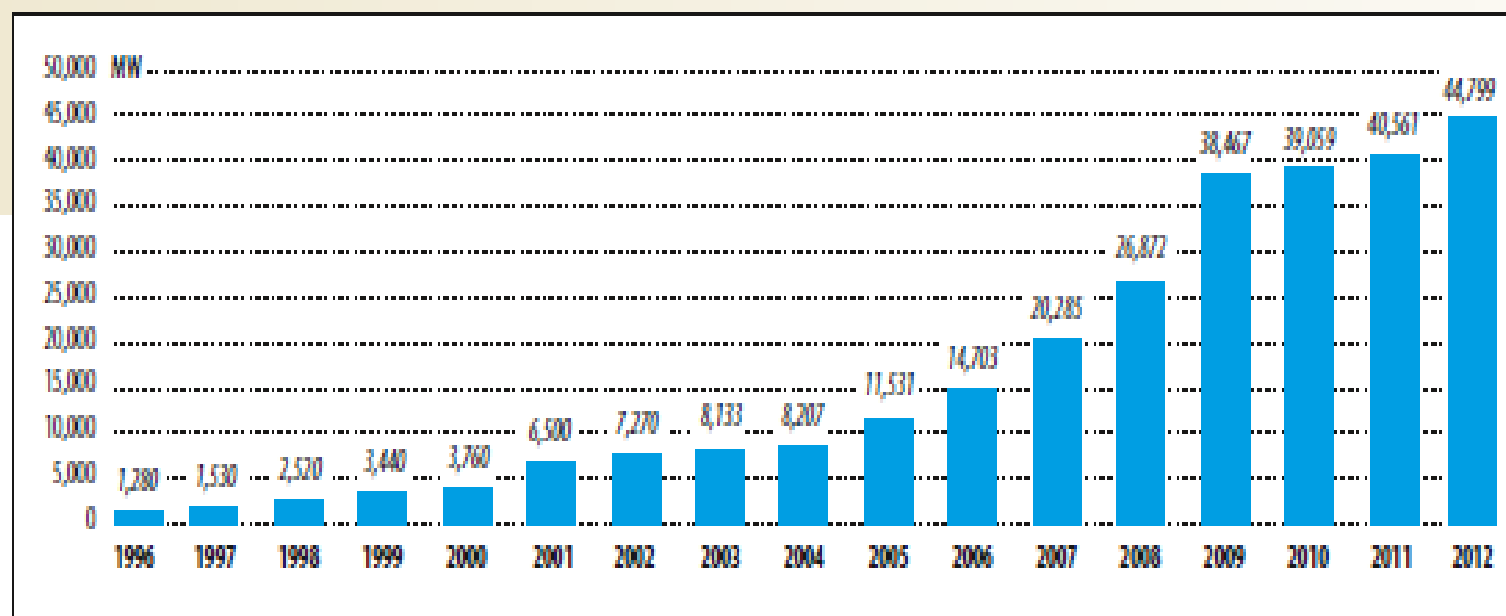


Presentation Road Map

1. Global Wind Energy Outlook
2. Pakistan Wind Energy Potential
3. Pakistan Renewable Energy Policy
4. Arif Habib Group Profile
5. Sachal at a Glance
6. The Project
7. Project Technology
8. EPC Contractor
9. Project Cost and Financing Arrangements
10. Challenges in seeking financing of projects
11. Way Forward



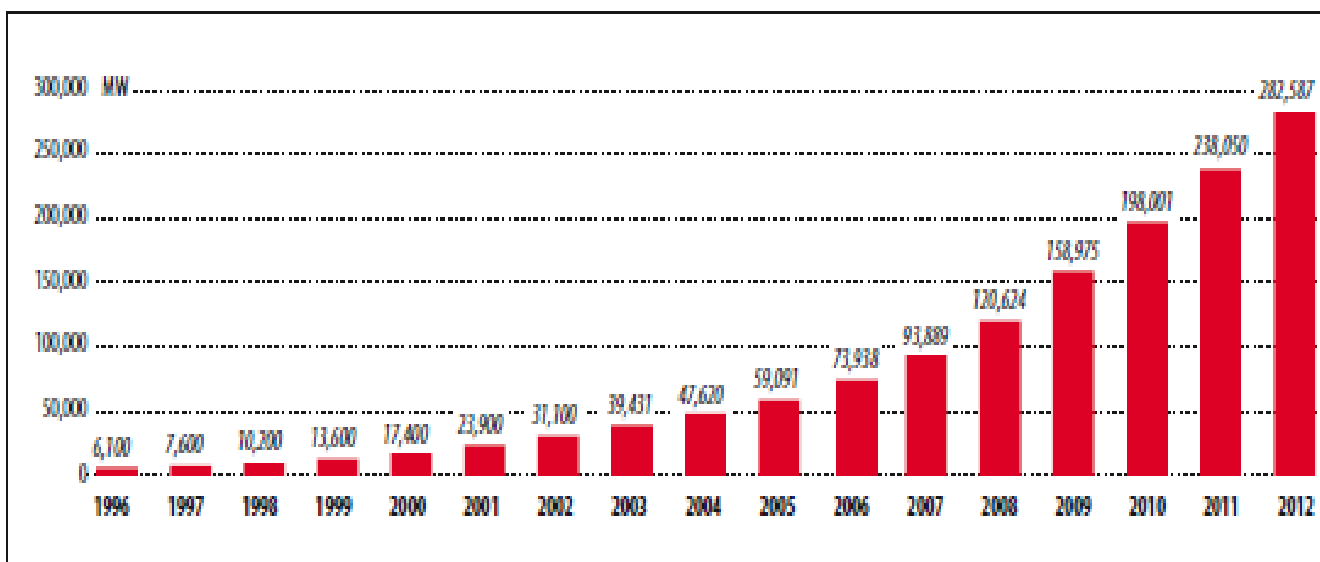
Global Annual Installed Wind Capacity 1996-2012



Source: GWEC



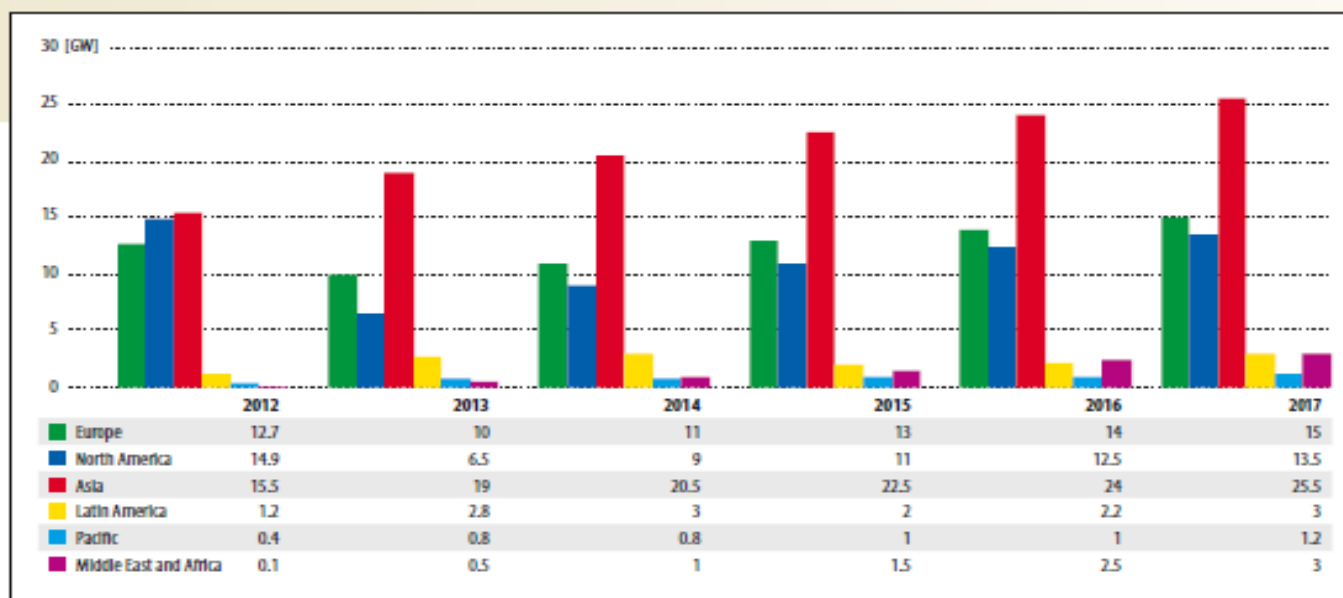
Global Cumulative Installed Wind Capacity 1996-2012



Source: GWEC



Annual Market Forecast by Region 2012-2017



Source: GWEC



Top 10 countries by wind power capacity (end of 2012)

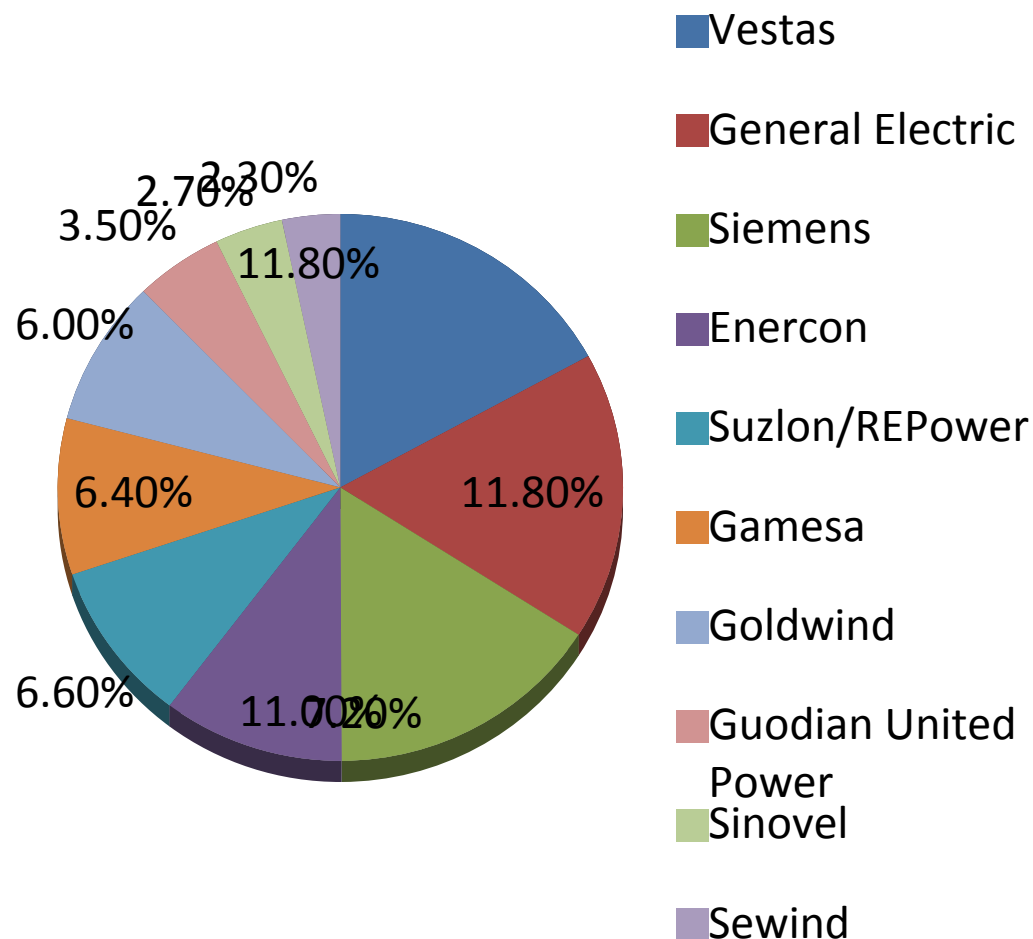
Country	New 2012 Capacity (MW)	Wind power Total capacity (MW)	% world total
China	12,960	75,324	26.7
United States	13,124	60,007	21.2
Germany	2,145	31,308	11.1
Spain	1,122	22,796	8.1
India	2,336	18,421	6.5
UK	1,897	8,845	3.0
Italy	1,273	8,144	2.9
France	757	7,564	2.7
Canada	935	6,200	2.2
Portugal	145	4,525	1.6
Rest of world	6,737	39,853	14.1
World Total	44,799Mw	282,587Mw	100



Top manufacturers in 2012

S.No	Manufacturer	Market Share
1	Vestas	11.8%
2	General Electric	11.8%
3	Siemens	11.0%
4	Enercon	7.2%
5	Suzlon/REPower	6.6%
6	Gamesa	6.4%
7	Goldwind	6.0%
8	Guodian United Power	3.5%
9	Sinovel	2.7%
10	Sewind	2.3%

Market Share





Denmark – a case in point

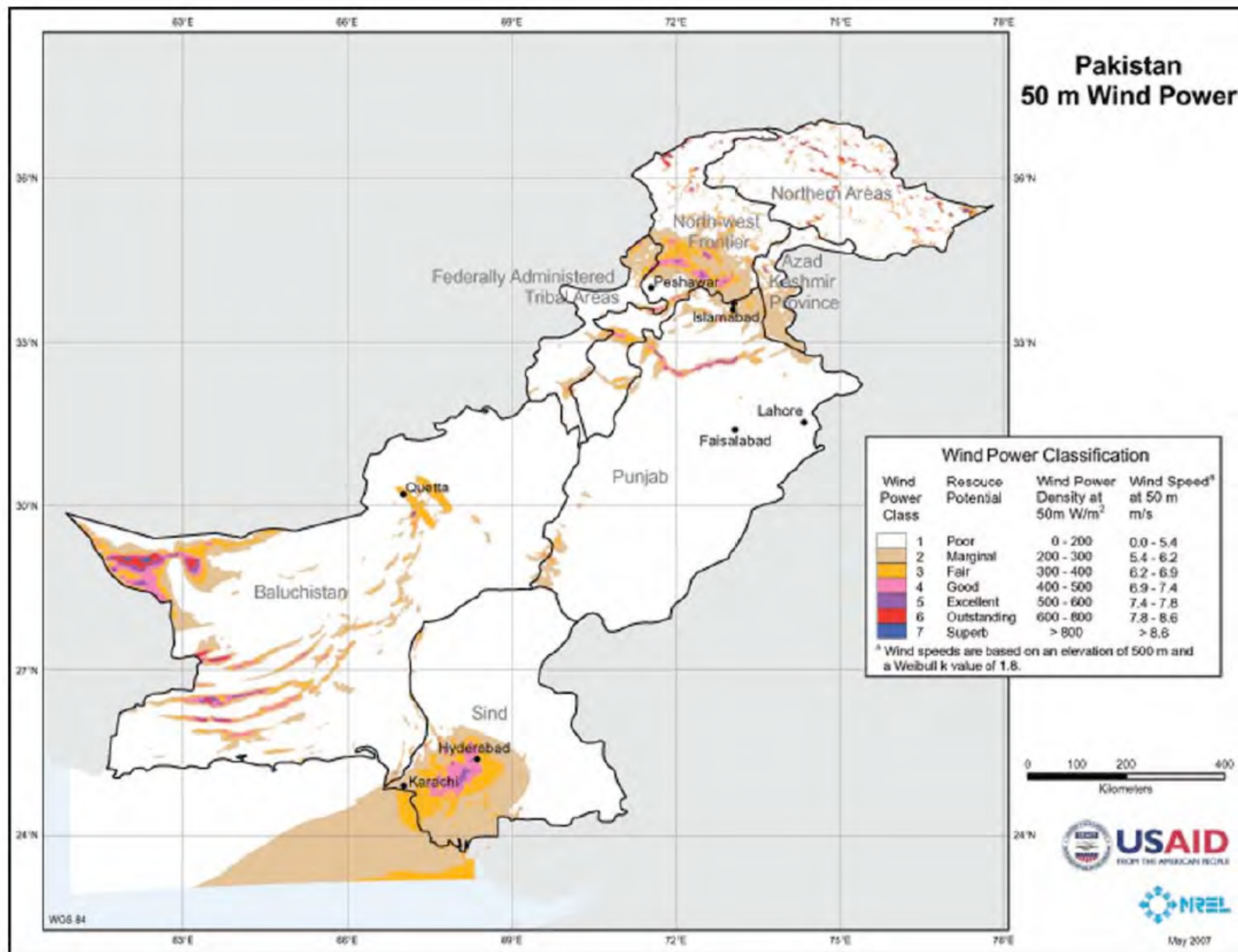
- 30% power is generated through Wind.
- Plans to take it up to 50% by 2020.



Wind Energy Outlook Globally

According to Global Wind Energy Council

- Global Wind Power Market Could Triple by 2020
- Wind power could supply up to **12%** of global electricity by 2020
- Create 1.4 million new jobs
- Reduce CO₂ emissions by more than 1.5 billion tons per year
- Wind power could generate up to 18% of world's electricity by 2050 compared with 2.6% today
- At the end of 2012, the total installed capacity has risen to 282 GW as compared to 240GW by end of 2011



PAKISTAN - WIND ELECTRIC POTENTIAL

Good-to-Excellent Wind Resource at 50 m (Utility Scale)

Wind Resource Utility Scale	Wind Class	Wind Power W/m^2	Wind Speed m/s	Land Area km^2	Percent Windy Land	Total Capacity Installed MW
Good	4	400 - 500	6.9 – 7.4	18,106	2.1	90,530
Excellent	5	500 - 600	7.4 – 7.8	5,218	0.6	26,090
Excellent	6	600 - 800	7.8 – 8.6	2,495	0.3	12,480
Excellent	7	> 800	> 8.6	543	0.1	2,720
Total				26,362	3.0	131,800

Assumptions

Installed capacity per $\text{km}^2 = 5 \text{ MW}$

Total land area of Pakistan = 877,525 km^2

Only land area included in calculations

NREL's SARI-Energy Activities



PAKISTAN RENEWABLE ENERGY POLICY

Strategic Objectives of Policy

Economic Benefits

Social Equity

Environmental Protection

Energy Security



Incentives under policy

Financial

- No customs duty or sale tax
- Exemption from income tax, including turnover rate tax and withholding tax on imports
- Repatriation of equity along with dividends freely allowed
- Non-Muslims and non-residents shall be exempted from payment of Zakat on dividends paid by the company.

Government policy support

- Implementation Agreement signed by Government of Pakistan
- Government support for project applications for Carbon Credits
- Land lease for 25 years through Land Sub-Lease Agreement

Power Purchaser

- Mandatory Purchase of Electricity for 20 years
- Bonus payment for power production above benchmark energy
- Provision for Wheeling the generated energy
- RE Resource Variability Risk borne by power purchaser



ARIF HABIB GROUP PROFILE

Group & Associated Companies

With diversified range of integral manufacturing goods coupled with flavor of financial services, ARIF HABIB GROUP holds notable status in Pakistan's emerging economy



Arif Habib Group Companies

Financial Sector



Arif Habib
Investments



Pakistan Private Equity
Management



Arif Habib Limited



SKM Lanka Holdings



Arif Habib DMCC



Rozgar Microfinance
Bank



Takaful Pakistan

Fertilizer, Steel and Power



Pakarab Fertilizer



Fatima Fertilizer



Aisha Steel Mill



Sachal Energy
Development

Cement, Real State, Dairies



Thatta Cement



Al Abbas Cement



Javedan Corporation



Arif Habib REIT
Management



Sweetwater Dairies
Pakistan



Corporate Social Responsibility

Arif Habib Group (AHG) has been active in discharging its Corporate Social Responsibilities in the areas of education, healthcare and community welfare. Apart from the Group's own charitable foundation i.e. **Arif Habib Foundation**, Arif Habib Group also contributes to the welfare of the people and society at large. Arif Habib Group has supported several noble causes and some of them are mentioned below:

Health Sector



AHG has made significant contribution in Development & Operations of Memon Medical Institute (MMI) Hospital.

Flood Relief Activities



AHG launched an effective rescue and rehabilitation program for the flood affected people.

Education



AHG has approved a generous allocation of Rs.100 million for the construction of Karachi School for Business and Leadership (KSBL).



SACHAL AT A GLANCE

Sachal Energy Development (Pvt) Ltd. SEDL is a special-purpose company to commission and operate a 50 MW wind farm at Jhimpir, Sind on a build, own & operate basis. SEDL is owned 100% by Arif Habib Group through its flagship listed holding company, Arif Habib Corporation (AHC).

OUR VISION

We strive to create a more sustainable, cleaner and safer world by making wiser energy choices. Our aim is to become the leading and most forward looking Clean Energy Producer in Pakistan, providing the vital backbone of infrastructure and professional expertise in this nascent sector.



SACHAL ENERGY DEVELOPMENT (PRIVATE) LIMITED – AN ARIF HABIB GROUP COMPANY



ARIF HABIB GROUP

THE PROJECT





Project Overview

Project Company	Sachal Energy Development (Private) Limited
Main Sponsors	Arif Habib Group through Arif Habib Corporation Limited (AHCL)
Project	49.5 MW Wind Power Project
Project Area	680 Acres
Project Location	Jhimpir, District Thatta, Sindh, Pakistan
Concession Period	20 years from COD on Build Own & Operate basis
Power Purchaser	NTDC through Central Power Purchase Agency (CPPA)
Benchmark Energy	136.5 GWh – P50 on Benchmark wind speed, verified by Risø & approved by AEDB
EPC and O&M Contractors	Hydrochina Corporation
Wind Turbine Models	Goldwind 77/1.5 MW IIA
Total Project Cost	USD 133.918 Million
Debt to Equity ratio	80:20
Levelized Tariff	Rs 13.37/US¢ 14.861 per KWh for 20 Years



Project Team

Technical Consultant	Sgurr Energy UK
Grid & Electrical Advisors	Power Planner International
Financial Advisor	Grant Thornton – Pakistan
Legal Advisor	Orr Dignam & Co.
Environmental Advisors	Arch Associate
Geo Tech Advisor	Soilmat Engineers
Topographic Advisor	ME Consult (Private) Limited
Auditors	HLB - Ijaz Tabussum & Co.



Project Key Strengths





Project Technology





Technology & EPC Contractor-Selection Criteria

In order to get the right companies involved, we ran a pre-qualification exercise and set up a list of attributes that a potential vendor had to qualify in order for us to send them Tender Documents. The List was:

- **Top five WTG vendors in world as on 31st December 2009**
- **Vendor should be active in Pakistan**
- **Machines should be available in hot climate version**
- **Vendors should have local presence as well as local commitment**
- **Should not be in litigation over completion liability issues in the region**
- **Should have been viable financial entity for at least last three years**
- **Should have successfully completed works of similar sizes in last three years**
- **Suitable population of the proposed machine installed and working in the market.**



Service Delivery

Three Insurance salesman were sitting in a restaurant boasting about each companies service.

The first one said, "When one of our insured died suddenly on Monday, we got the news that evening and were able to process the claim for the wife and had mailed a check on Wednesday evening.

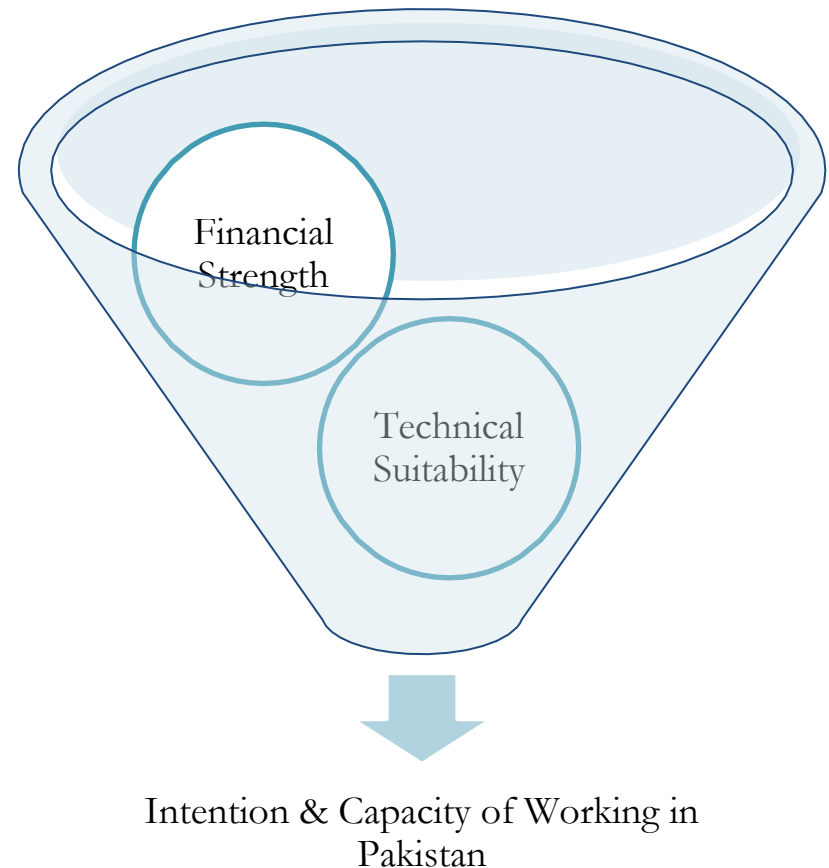
The second one said, "When one of our insured died without warning on Monday, we learned of it in 2 hours and were able to hand-deliver a check the same evening.

The last salesman said, "That's nothing. Our office is on the 20th floor of a tall building. One of our insured who was washing a window on the 85th floor, slipped and fell. We handed him his check as passed our floor.



Technology & EPC Contractor-Selection Criteria

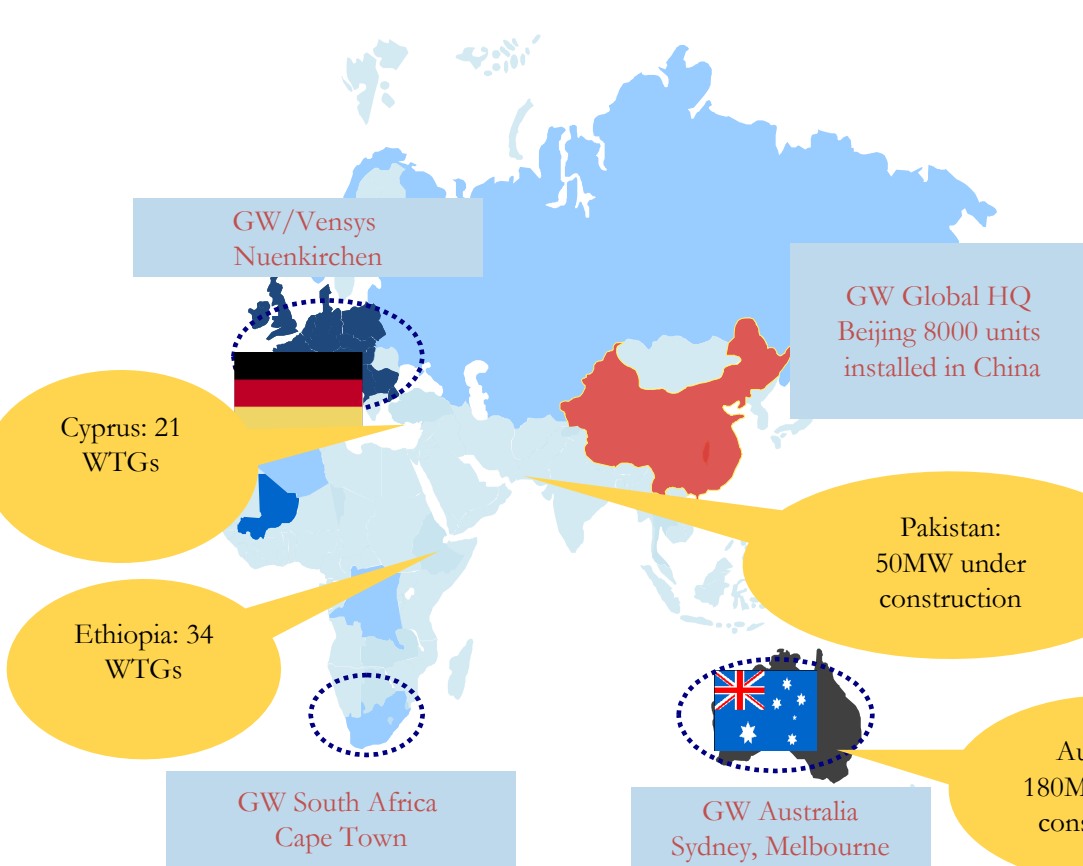
Based on the selection criteria, thorough due diligence and following an intense negotiations process with the various suppliers and contractors, SEDL selected **Hydrochina Corporation** as EPC Contractor of the project with a fixed price and fixed Commercial Operation Date (the COD), and GW 77/1.5 IIA as the technology for its wind farm manufactured by **Xinjiang Goldwind Science and Technology Co. Ltd.**



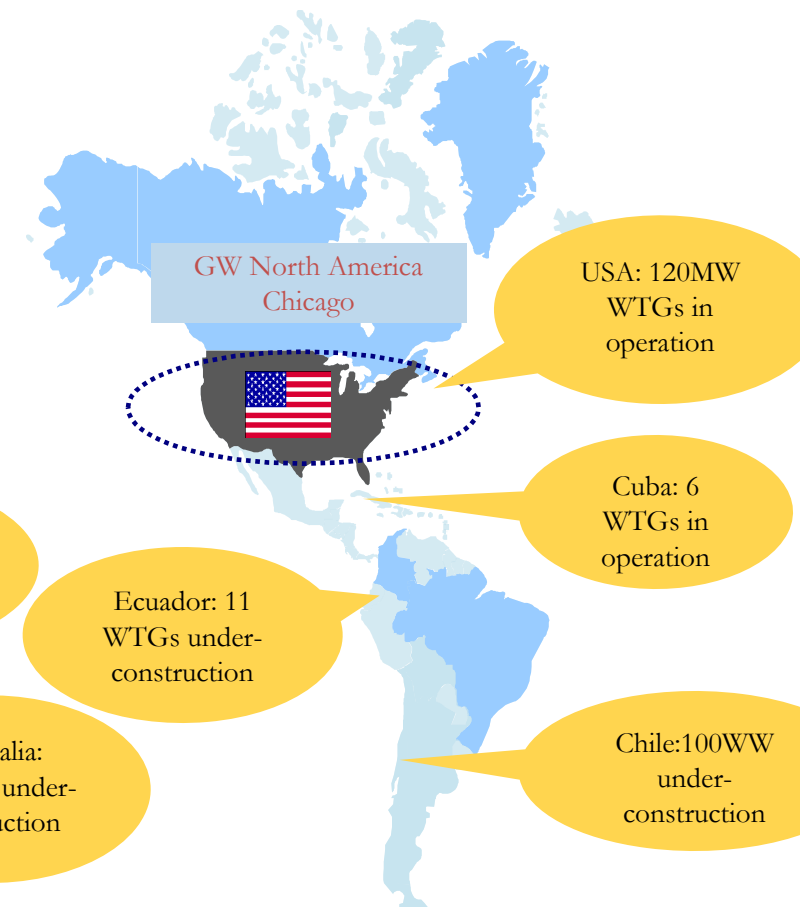


Goldwind – International Coverage

Worldwide Market Development



Global Capital Investment



Over 20 years History

Total installations of over 9000 wind turbines and 12.0 GW

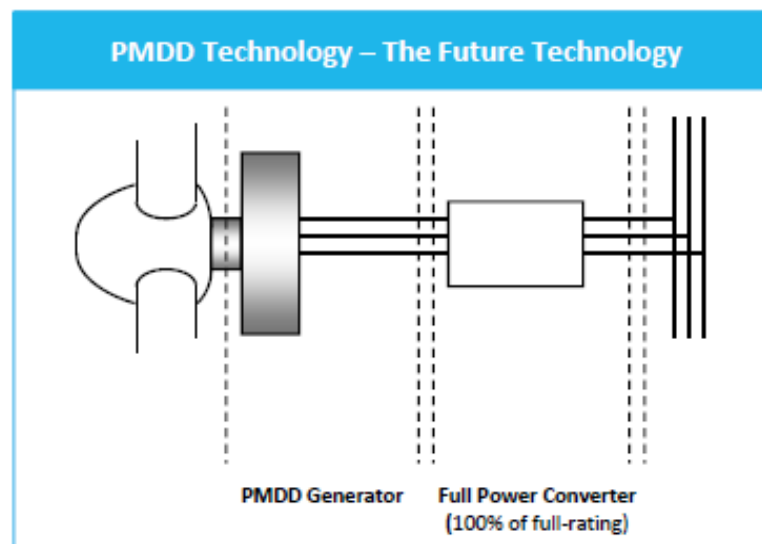
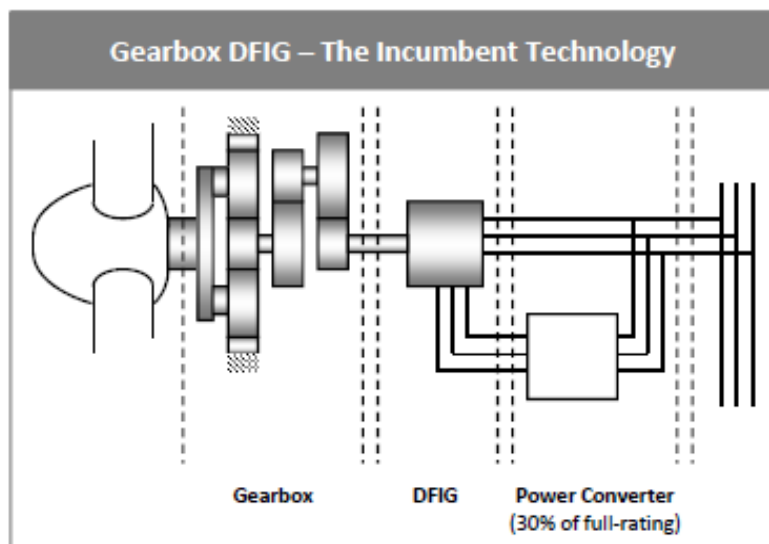
Goldwind – Selected Turbine

- Goldwind 1.5 / 77 1.5 MW / 77 m Rotor diameter
- Goldwind installed in total more than 5,000 units of 1.5MW
- PMDD machines in different climate conditions.
- Production in 2012: > 2,000 unit
- Site conditions: high temperature, high humidity, salty coastal area, extreme wind, cold climate;
- The Goldwind 1.5 is one of the most experienced and economic machine in the market



PMDD provides essential technological benefits

The simplicity of the Permanent Magnet Direct Drive technology improves reliability, enhances power output and minimizes maintenance cost.

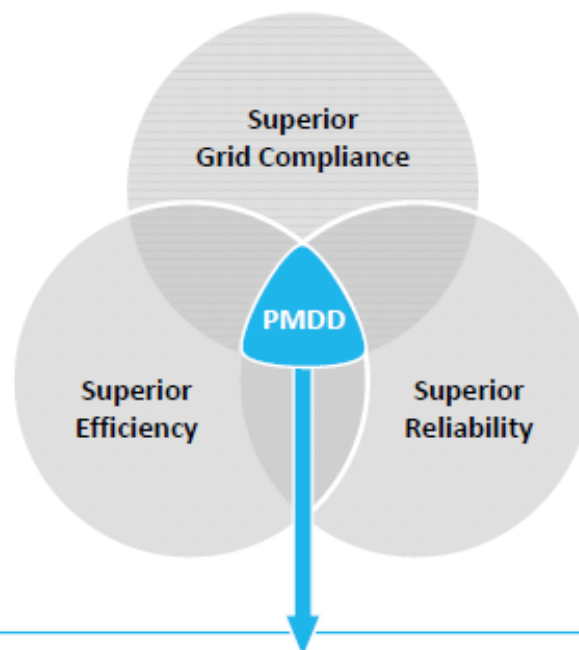


Direct Drive	+	Permanent Magnet Generator	+	Full Power Converter
<ul style="list-style-type: none">• Eliminates failure of gearboxes• Eliminates gearbox energy losses• Reduces number of parts required		<ul style="list-style-type: none">• Better fault ride through/zero power requirement to energize• Eliminate secondary winding losses• Eliminate slip rings & associated maintenance		<ul style="list-style-type: none">• Grid friendly• More control and operational flexibility• Meet Future Grid Codes and Requirements



PMDD: The superior generator for strong wind energy economics

Goldwind has optimized its direct-drive permanent magnet design and enhanced its essential benefits to ultimately lower cost of energy for the customer.



3–5 %

Higher Power Output

**Higher Top-Line &
Lower Bottom-Line**

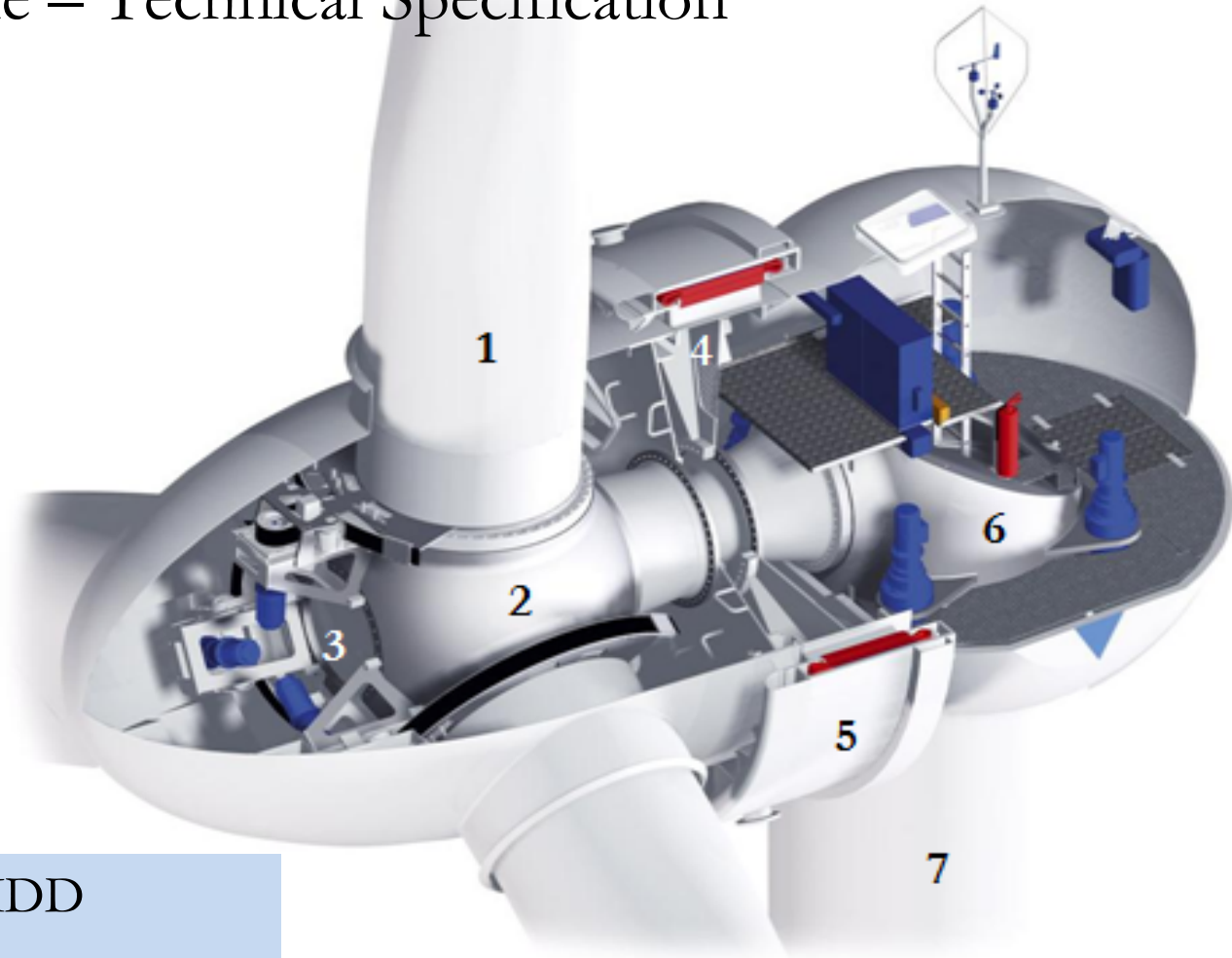
20 %

Lower Maintenance Cost



Goldwind Turbine – Technical Specification

- 1 Rotor blade
- 2 Cast hub
- 3 Pitch drives
- 4 Generator stator
- 5 Generator PM rotor
- 6 Base frame
- 7 Tower



Key Design Features of PMDD

- High generating efficiency
- High reliability
- Best grid connectivity



Xinjiang Goldwind Science and Technology Co. Ltd.

- Goldwind is an international, multi-faceted wind power company based in China. The company was founded in 1998.
- Goldwind is the largest manufacturer of wind turbines in China. With strong, international R&D capabilities, Goldwind has become the world's largest manufacturer of Permanent Magnet Direct Drive wind turbines.
- As of December 31, 2012, Goldwind's accumulated installation capacity of wind turbine reached over 12 GW.





EPC Contractor

HYDROCHINA is the chief institution for preparation of technical specifications, codes and standards for China's hydropower and wind power development



Huitengxile wind power farm in Inner Mongolia Autonomous Region

Nan'ao wind power farm in Guangdong Province



Hydrochina Corporation – Brief Overview

- State-owned enterprise
- 50-years of history
- 11 wholly-owned subsidiaries and 1 holding company
- Strong technical team with
 - 8 national design masters and investigation masters
 - 3,423 senior engineers
 - 2,112 engineers
 - 11,000 full time staff



Hydrochina Corporation – General Operations

- Conducting general survey of national hydropower resources - Nation wide, three times
- Making river basin planning in China - most of Chinese river basin planning
- Issuing technical standards, code & specification for construction
- Conducted detailed design for 94,250MW, about 65% of constructed HPPs in China
- Conducting detailed design for 77,350MW, about 85% of under-construction HPPs in China
- Conducting investigation, pre-feasibility and feasibility for 143,700MW, about 90% of HPPs in China
- Conducting construction supervision for about 80% HPPs in China
- Conducting safety appraisal for 70% HPPs in China





Hydrochina Corporation – International Ranking

- Hydrochina develop, finance and manage hydropower, wind, solar power and other renewable energy projects. Hydrochina is the largest enterprise to provide comprehensive technical services in hydropower and wind power construction in China.
- Hydrochina has been ranked
 - 38th in Top 150 Global Design Firms according to achievement of year 2008 by USA ENR in 2009
 - 156th in Top 200 International Design Firm
 - 161st in Top 225 Global Contractors
 - 214th in Top 225 International Contractors
 - 1st in “Top 60 Engineering & Contractor Firms in China



Hydrochina Corporation – Wind Power Highlights

- Conducted national wind power survey and planning of China
- Worked out ‘The National Wind Power Development Plan
- Issued standards for wind power development
- Approved hundreds of pre-feasibility & feasibility studies of wind power projects
- Developed and managed China Wind Power Database
- Conducted up to 60% engineering services for wind farms in China
- Carried out safety appraisal and acceptance of wind farms



HydroChina Corporation: Off-shore Wind Power Projects



Xiang shui offshore wind power project (150MW)





HydroChina Corporation: On-Shore Wind Power Projects



Lizijing wind power project – China
Capacity: 201 MW



ADAMA/ Nazret wind Power Project - Ethiopia
Capacity: 51 MW



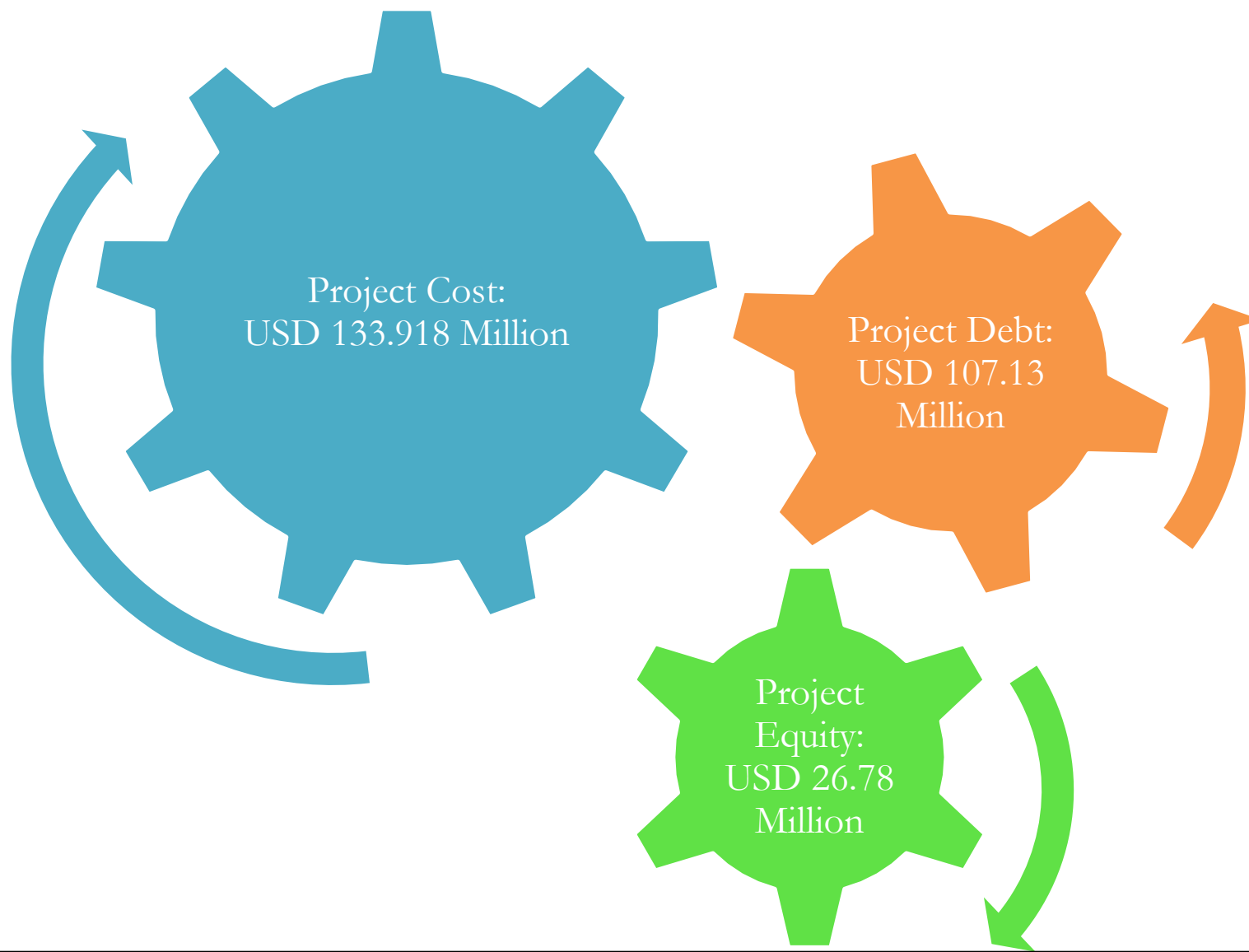
Lizijing wind power project - China
Capacity: 168 MW



Batou (Phase I) wind power Project - China
Capacity: 99 MW



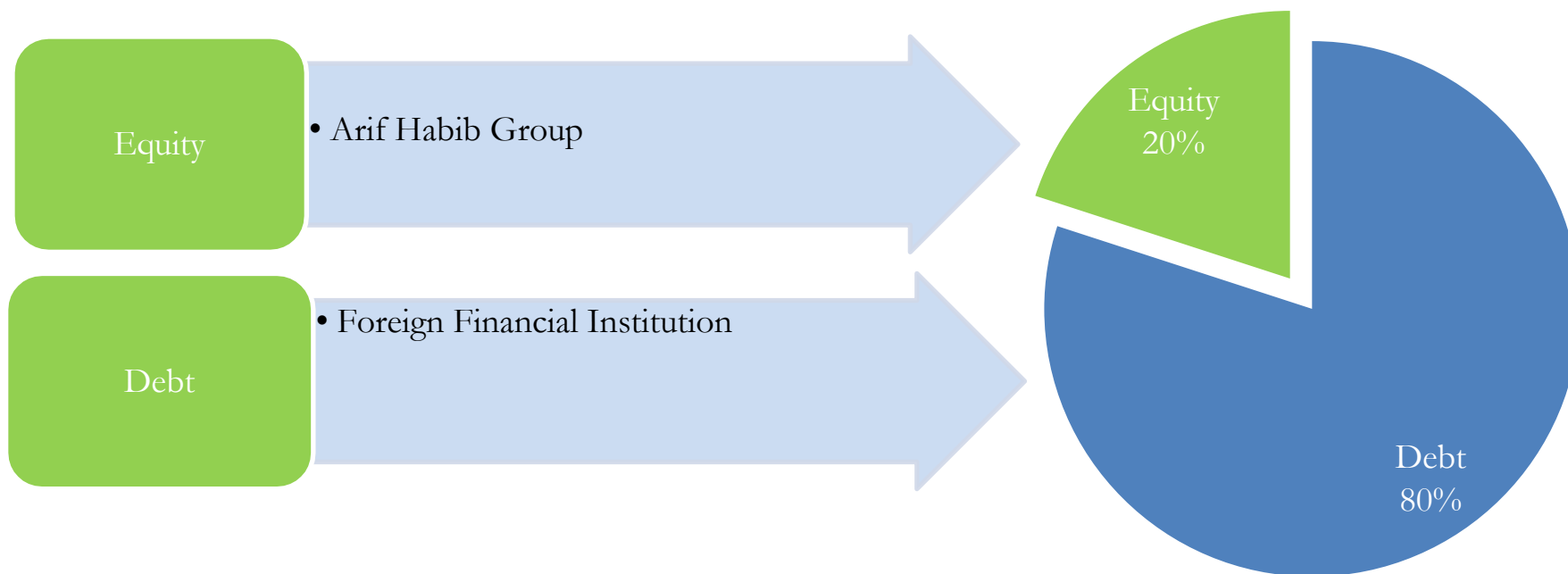
Financing Arrangements





Financing Arrangements

Project Financing	Million USD
Equity	26.78
Debt	107.13
Total Project Cost	133.91





Country Risk Profile

Political instability, law and order situation and perception of international investors.

**STANDARD
& POOR'S**

Pakistan Credit Rating

B Negative

MOODY'S

Pakistan Credit Rating

CAA1



EULER HERMES

as per 11/2011



Low Risk



Medium Risk



Sensitive Risk



High Risk



Country Risk Level:

Country Grade: D

Very high external transfer & convertibility risk and weak business environment.



Current Market Financing Constraints

- Global Financial Situation

Slow growth in Europe and America coupled with financial crisis in debt crisis in Europe has resulted in fewer options for financing.

- Crowding out effect

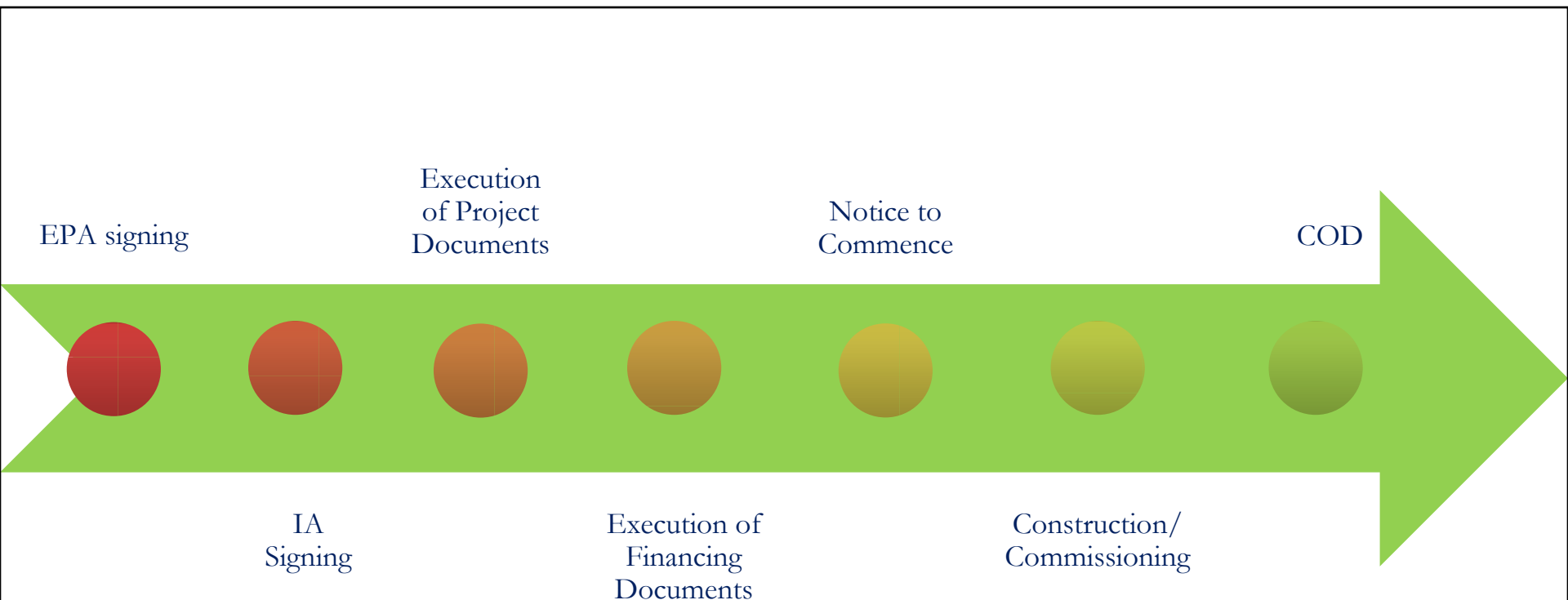
Government is borrowing excessively from commercial banks resulting lesser appetite of banks for project financing.

- Circular Debt

This had been a serious concern for local and foreign banks for lending to IPPs in Pakistan.



7. Way Forward





Thank you