



# **CENTER FOR WIND POWER [CWP]**

Overview, Strengths, Service, Key Projects & Clients

# Brief Overview

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- Pioneering cause of wind power in India **since 2004**
- Only holistic center in India having all-round expertise in wind power development
- In-house expertise and software for wind resource assessment, micro siting of wind farms and concept to commissioning support: pre-feasibility, feasibility, bankable detailed project report
- Documentation of global best practices in wind power policy and technology deployment and assessment of suitability to India conditions
- Provide **consultancy services, policy advisory, strategic market studies, training & capacity development, research studies and facilitate technology assessment and tie-ups**
- Supporting corporates, PSUs, government agencies, international agencies and investors

# CWP's Strengths

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- Facilitated development of more than **260 MW** of wind power in India
- Concept to commissioning support to a **100 MW** wind power project scalable to 500 MW
- Facilitated technology transfer and licensing agreement worth **7.5 million euros** for wind turbine manufacturing in India
- More than **25 key research studies, surveys and papers** on market assessment, sizing, technology road-map, incentive structure, model tariff and policy interventions

# CWP's Strengths

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- Successfully pioneered the first-ever exclusive wind power conference and exhibition in the country - **WIND INDIA 2006**
- Now the largest biennial event in wind power sector in India titled '**Wind Power India**', with successful organization in **2008, 2011 and 2012**
- Conducted **1450 man-days** training programmes for more than **425 wind power sector professionals** on various aspects of wind power development: resource assessment, wind farm design, optimization, supply chain and financing

# Services

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Core  
Consultancy

Lender's  
Engineer

Owner's  
Engineer

Policy &  
Regulation  
Advisory

Research &  
Market Studies

Peer Review

Training &  
Development



# Core Consultancy - Services

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Core Consultancy

Lender's Engineers

Owner's Engineers

Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Wind resource assessment, energy generation estimation and validation using advance software and in-house expertise
- Site surveys, wind measurements and analysis
- GIS assisted land and site analysis for wind power project
- Assessing monthly mean wind speed, wind power density, power law index and annual variations
- Selection of appropriate wind turbine technology and technology configuration/s

# Core Consultancy - Services

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Core Consultancy

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Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Suggestion on possible tariff structure and economic feasibility of wind power project
- Project cost estimation, financial modeling and sensitivity analysis as per prevailing market condition
- Renewable Energy Certificates (RECs):
  - Assessment of incentives and benefits, cash flow analysis, profitability and ROI analysis
- Preparation of enquiry/tender document for inviting quotes for planning, design, supply, construction, development, operation and maintenance of wind turbines and project
- Evaluate offers from vendors on the basis of technical and financial criteria and participate in negotiation in selection of vendor and EPC contractor

# Core Consultancy - Services

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Core Consultancy

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Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Preparation of Letter of Intent, Contract Agreement and Work Order
- Preparation/review of project implementation schedule
- Visits to the site for inspection during various stages of the project
- Technical assistance for performance guarantee test
- Assistance for performance monitoring and evaluation
- **Small Wind Turbine and Hybrid Systems (< 100 kW):**
  - Market assessment, techno-economic analysis and technology assessment
  - Facilitation of technology tie-up and assistance in product testing and certification



# Lender's Engineers - Services

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Core Consultancy

Lender's Engineers

Owner's Engineers

Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Due Diligence (Pre Financial Closure) - Critical review of project system design and agreements:
  - Conceptual design, generation estimates, system design and arrangements, performance calculation
  - Infrastructure availability, construction schedule, adequacy of power evacuations and arrangements
  - Project cost breakup, drawdown schedule
  - PPA, turnkey /package / sub package contracts including non-EPC items for engineering, procurement, construction, startup
  - Permits, approvals, clearances, insurance
  - Market intelligence on wind turbine product and the vendor
- Review and acceptance of disbursement schedule

# Lender's Engineers - Services

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Core Consultancy

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Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Implementation (Post Financial Closure)
  - Monitoring of physical progress of project, identification of hurdles and suggestions
  - Scrutinizing of Efficiency Test Certificate
  - Issue drawdown certificates
  - Witness site performance and efficiency tests and certify their compliance with the guaranteed parameters
  - Review of O&M plans

# Lender's Engineers - Services

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Core Consultancy

Lender's Engineers

Owner's Engineers

Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Post Commissioning

- Issue Project Completion Certificate
- Performance assessment report of the project till 2nd year of operation
- Monitoring of punch list rectification and warranty defects
- Monitoring of physical condition of wind farm at project site during operation on annual basis

# Owner's Engineers - Services

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Core Consultancy

Lender's Engineers

Owner's Engineers

Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Prepare detailed tender document for setting up wind power project
- Attend pre-bid meeting with bidders for providing clarifications to bidders and modifying the tender conditions
- Energy estimation and validation of the data proposed by the bidder
- Bid evaluation of the techno-commercial offers and provide recommendation for award of tender
- Assist developer in finalizing the site
- Finalizing the contract agreement between the successful bidder and developer
- Review DPR submitted by the successful bidder

# Owner's Engineers - Services

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Core Consultancy

Lender's Engineers

Owner's Engineers

Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Scrutiny of electromechanical, electrical machinery and equipment and clearance thereon for implementation
- Inspection of material and equipment during manufacturing and acceptance tests at vendor's site of various equipment and supply items
- Visit to site during construction stage for overall checks on implementation, construction, supervision, quality checks and suggestions for corrective measures
- Progress monitoring as per construction bar chart/PERT; follow up with vendors/suppliers and co-ordination with different agencies during execution, checking, measurements, billing and regulating contract payments

# Policy & Regulation Advisory Areas

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Core Consultancy

Lender's Engineers

Owner's Engineers

Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Advisory support to Ministries, state nodal agencies, regulatory commissions and other entities on:
  - Preparation of State wind plans and road-maps
  - Formulation of Central and State level policies
  - Support regulators in finalizing wind tariff and Wind Purchase Obligations
  - Amendment in green energy Acts and formulation of new Acts
  - Strengthening and capacity building of State Nodal Agencies
  - Assessment of various policies and regulations on sector development



# Peer Review

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Core Consultancy

Lender's Engineers

Owner's Engineers

Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Review of the reports prepared by other consultants to provide second opinion to

Developers

Investors

Financial  
Institutions

Banks

# Market Study Areas

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Core Consultancy

Lender's Engineers

Owner's Engineers

Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Conduct market studies and research report on:
  - Long term performance analysis support
  - Techno-economic assessment of various WTG technologies
  - Medium and long term market size assessment
  - Market development strategy for WTG technologies
  - Market entry strategy
  - Technology due diligence for investors
  - Assistance in technology tie-ups

# Training & Development

Core Consultancy

Lender's Engineers

Owner's Engineers

Policy & Regulation Advisory

Peer Review

Research & Market Studies

Training & Development

- Short term and long term training programs in wind power management for technicians, professionals, academicians, policy makers, regulators, investors and lenders



# Past Projects - DPR & Feasibility Report

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<b>Project</b>	<b>Client</b>
100 MW wind power project – business plan	Anurav Power Private Ltd
51.25 MW wind power project in Orissa - DPR	Suzlon Energy Ltd
18 MW wind power project - feasibility study and DPR	BEML Limited
Feasibility study for wind power project (including tariff structure and land lease rent) in West Bengal	Suzlon Energy Ltd
3.7 MW wind power project - concept-to-commissioning advisory support	Self Owned Project

# Past Projects - Energy Validation

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## Project

## Client

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Third Party Vetting & Validation of Energy Estimation of **33.0**  
**MW** Wind Power Project (April 2009)

Super Wind Power Project  
Pvt. Ltd,

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Third Party Vetting & Validation of Energy Estimation of **52.2**  
**MW** Wind Power Project (April 2009)

Simran Wind Power Project  
Pvt Ltd.

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# Brief overview of Research Reports and Studies

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- Re-powering of Old Wind Power Projects in India
- Small Wind Turbines in India: Market Study
- National Survey on HRD Needs of the Wind Power Sector in India
- Wind Turbine Blade Market in India
- India Wind Power Market Survey
- Wind Power Market in India 2010-2015: A market survey report
- Wind Power in India: Towards 5000 MW Annual Market by 2015 (A comprehensive Survey on Market Potential, Industry Growth & Policy Development)
- Validation report on Market Outlook: Wind Power sector in India & project cost estimates
- Comprehensive RE Master Plan for Tamil Nadu



# Major Clients

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*Ministry of New and Renewable Energy*



*Suzlon*



*Vestas India*



*Sojitz Corporation*



*LM Wind Power*



*BEML Ltd*



*Ghodawat Energy*



*NREDCAP*



*Pioneer Wincon Pvt. Ltd*



*Gujarat Power Corporation Ltd*



*Pioneer Wincon Pvt. Ltd*



*Centre for Wind Energy Technology*

# **ABOUT WISE**

Overview, Key Initiatives, Clients and Partners

# Overview

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- Promoting sustainable energy and sustainable development since 2004
- Have facilitated the development of more than 404 MW of solar and 260 MW of wind power projects
- Seven Centers of Excellence to cater to different needs of the sector

Center for Solar Energy

Center for Wind Power

Center for Renewable  
Regulation and Policy

Center for Climate and  
Sustainable Policy

Center for Training and  
Conference

Center for Coordination  
and Communications

WISE Press

# Key Initiatives

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- Draft model Renewable Energy Law for India and its advocacy
- Nation-wise research projects/papers on:
  - Achieving 15% Green Electricity by 2020
  - State-Level Action Plans for Clean Energy Technologies for Climate Mitigation for Rajasthan, Maharashtra and Karnataka
  - Comparative Public Cost of Conventional Electricity Generation in India
  - Future of Coal Electricity in India and Sustainable Alternatives
  - Comparative Evaluation of Incentives to RE-based Grid and Off-grid Systems and Evolving Normative Guidelines for Revised Incentives for Off-grid Systems
  - Human Resource Needs of the Renewable Energy Sector up-to 2015'
  - Comparative Assessment of Crystalline and Thin Film PV Technologies in India
  - Transition to Clean Energy System Using Conventional Fuels As Bridge Technologies [Ongoing]

# Key Initiatives

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- Major public policy initiatives:
  - Introduction of Renewable Energy Certificates (REC)
  - Development of an innovative Solar Energy Policy for India
  - Preparation of long-term RE vision documents for various state governments
  - Research into repowering of old wind farms in India
- Sensitizing and training for media, financial institutions and academia
- Organizing international conferences and exhibitions:
  - Wind Power India: Largest biennial conference on wind power sector in India
  - Solar India: First ever widely organized conference on solar power in India in 2007
  - RE Regulation India: First ever conference on RE regulations in India conducted in 2010

# Major InterNational Partners

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*Global Wind Energy Council*



*Sierra Club, USA*



*UN-ESCAP*



*GL-Garrad Hassan*



*Baker and Mackenzie, Australia*



*New Energy Foundation, Japan*



*UNDP*



# Major National Partners



*Ministry of New and Renewable Energy*



*Greenpeace*



*Shakti Sustainable Energy Foundation*



*USAID, India*



*World Bank*



*ICF International*



*Indian Wind Energy Association*



*Maharashtra Energy Regulatory Commission*



*Gujarat Energy Regulatory Commission*



*Centre for Wind Energy Technology*



*IWTAM*



*Vasudha Foundation*



*WWF*



*UKFCO*



*Orissa Energy Regulatory Commission*



*Indian Wind Power Association*

# Steps Ahead

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# THANK YOU FOR YOUR TIME

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