



Indian Wind Power

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windergy
INDIA 2022
WIND POWER FOREVER

Post Event Issue



Windergy India 2022 Inauguration of Conference



Windergy India 2022 Inauguration of Trade Fair



WIND TURBINE

Expertise and Research & Development for Wind and Solar Energy Stakeholders

Resource Assessment

Wind Energy

- ◆ Carry out Nationwide Wind Resource Assessment
- ◆ Estimation of Wind Potential in the country through Wind Atlas preparation
- ◆ Design and implement the comprehensive Resource Assessment Programme
- ◆ Analysis of wind data to identify Wind Farmable locations
- ◆ Verification and vetting of wind data generated by private entrepreneurs
- ◆ Consultancy services for Feasibility Studies, Technical Due Diligence, Micro-siting and preparing DPR for Wind Farming and Repowering assessment

Offshore Wind Energy

- ◆ Nodal Agency for Offshore Wind Energy development in India
- ◆ Met-Ocean Measurement.
- ◆ Demarcation of Offshore Wind Energy Blocks
- ◆ Geophysical and Geotechnical Studies

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- ◆ GIS enabled Indian Solar Atlas
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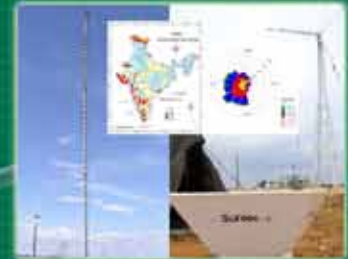
Standards & Certification

- ◆ Preparation of Indian standards on wind turbines
- ◆ Accord Type Certification to Wind Turbines. Type Certification Services are certified as per ISO 9001
- ◆ Issue the recommendation for grid synchronization to facilitate installation of prototype wind turbines
- ◆ Technical Due Diligence for Wind Farm Projects

Training

National, International and Customized Training on:

- ◆ Wind and Solar Resource Measurement & Analysis
- ◆ Wind and Solar Energy Technology
- ◆ Testing and Certification of Wind Turbines
- ◆ Installation, Commissioning and Operation & Maintenance of Wind Turbines
- ◆ Grid Integration of Renewable Energy System
- ◆ Forecasting of Wind and Solar Energy Production
- ◆ Seminar / Workshops on Wind and Solar Energy



नीवे NIWE

NATIONAL INSTITUTE OF WIND ENERGY

An Autonomous Research & Development Institution under the Ministry of New and Renewable Energy, Government of India

Velachery - Tambaram Main Road, Pallikaranai, Chennai - 600 100

Phone : +91-44-2246 3982 / 83 / 84 Fax : +91-44-2246 3980 E-mail : info.niwe@nic.in Website : <http://niwe.res.in>



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Suzlon Group, Pune

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Dr. Rishi Muni Dwivedi, IWTMA

Views expressed in the magazine are those of the authors and do not necessarily reflect those of the Association, Editor, Publisher or Author's Organization.

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Indian Wind Turbine Manufacturers Association

4th Floor, Samson Tower, 403 L, Pantheon Road, Egmore
Chennai - 600 008.

Email : secretarygeneral@indianwindpower.com

associatedirector@indianwindpower.com

Website : www.indianwindpower.com

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From the Desk of the Chairman – IWTMA

Dear Readers,

Greetings from IWTMA!

It is very encouraging that global support for a clean energy transition is greater than ever before. Two years ago, net-zero emissions targets were applied to only 30% of the global economy. Today, over 90% of the global economy is covered by net-zero targets, including India. The UN COP26 climate change conference in Glasgow last year was a testament to collective action by nearly 200 countries, enshrined in the Glasgow Pact. Countries agreed to revisit their emissions targets in 2022, to rapidly scale up climate finance and to double finance for adaptation to climate change by 2025.

In India, as you all are aware, the government has set an ambitious target of increasing non-fossil power capacity to 500 GW by 2030. It wants non-fossil fuel power sources to provide half of its electricity supply by 2030. India will need USD 223 billion of investment to meet its goal of wind and solar capacity installations by 2030. This presents the Wind Energy Sector in India with exciting new opportunities and a long run way for growth, job creation and investments.

The recent increase in power demand to close to the pre-pandemic levels is a positive sign, which signals revival of industrial activity and boost to the Indian economy. The power demand also shot up with the unprecedented heat wave conditions across the country. This resulted in load-shedding in many states coupled with coal shortage at thermal plants and coal stocks down to two days' requirements. During this period, Green Energy output reduced India's dependence on coal despite a 23.5% increase in power demand. The share of renewable energy in power rose to 14.1% in May '22 from 10.2% in April '22. Thus issues such as coal shortages, geopolitical issues, Covid pandemic and climate emergency, further underline the imperative for sustainable energy transition.

In line with this, I am happy to inform that 'Windergy India 2022' was conducted from 27th to 29th April 2022 at Pragati Maidan, New Delhi. It was a great platform to highlight the issues of the wind power industry and their possible solutions directly to the concerned, be it the Ministry of Power, Ministry of New and Renewable Energy, State Governments, Regulators, Grid Operators, Financers, IPPs, International Agencies, or International Associations, etc. The proceedings of the various sessions are uploaded on our website. Also, the 4th edition of the International Trade Fair and Conference was themed 'Power of the Wind: India's Driver to Net Zero'. I, on behalf of the Association, extend my gratitude to all stakeholders associated with the event and to make it a grand success.

Wind industry should collectively work on effective policy advocacy towards meeting the target of 8-10 GW of wind power installations per year, in line with our Prime Minister's announcement at COP26. Suitable regulations, new technology, new skills, and new thoughts have to be brought in to increase the annual installations.

Recently released - Electricity (Promoting Renewable Energy through Green Energy Open Access) Rules- is a step in the right direction, even though certain clarifications are needed. Our Association has always been front ending sectoral issues with the Government along with other stakeholders and some recommendations recently made are:

1. Work towards unlocking potential of wind energy in all the eight windy states (which is at present restricted to only two states under SECI bidding).
2. Move from e-Reverse auction to transparent and closed bidding process where each bidder submits tariff only one time.
3. The urgent need to open and develop alternate markets of sale to C&I customers and sale to exchange with ISTS waiver.
4. Land is a national resource and Government must look at the urgent needs and requirements of a workable repowering program and end of life de-commissioning program inclusive of recycling.

The world celebrated the Global Wind Day on 15th June 2022, to recommit itself to this powerful and green source of power. An accelerated and more ambitious shift to clean energy, provides the most effective route to ensuring climate and energy security and improvements to our everyday lives. This shift will act to reduce emissions, wind down our dependence on fossil fuels and protect consumers and businesses from price volatility. Furthermore, it will provide new local job opportunities, energy access and cut the costs of living.

Our actions today will shape the future our children will inherit and our capacity to adapt to increasing climate risks.

With regards,

Tulsi Tanti

Chairman

Windygy India 2022 International Trade Fair and Conference was organized by Indian Wind Turbine Manufacturers Association (IWTMA) and PDA Trade Fairs Private Limited from 27th to 29th April 2022 at Hall Nos. 12 and 12 A, Pragati Maidan, New Delhi.

The three-day International Trade Fair was formally inaugurated by H.E. Freddy Svane, Ambassador of Denmark on 27th April 2022 morning by cutting the ribbon along with Mr. Tulsi Tanti, Chairman, IWTMA; Mr. G. Kumar Naik, IAS, Additional Chief Secretary, Government of Karnataka and Mr. Ramesh Kymal, Renewable Energy veteran to mark the occasion.

Thereafter Chief Guest accompanied by other dignitaries walked through the various stalls at Trade Fair in Hall Nos. 12 and 12A having the stalls from various companies all over the world.



Mr. Tulsi Tanti, Chairman, IWTMA welcoming Chief Guest H.E. Freddy Svane, Ambassador of Denmark



Inauguration of Exhibition - Ribbon Cutting by H.E. Freddy Svane, Mr. Tulsi Tanti and Mr. Ramesh Kymal



Lighting of the lamp by H.E. Mr. Freddy Svane



Traditional welcome with shawl



Walking around on few stalls



Interacting with participants

Special Plenary Session Conference Inauguration

27th April 2022 | 11.00 am
Wednesday

Conference on 'Power of the Wind: India's Driver to Net-Zero'



Overview of the Conference
'Power of the Wind: India's Driver to Net-Zero'

Mr. Tulsi Tanti
Chairman, Indian Wind Turbine Manufacturers Association (IWTMA) and Chairman and Managing Director, Suzlon Group

Plenary Address

Mr. G. Kumar Naik, IAS,
Additional Chief Secretary,
Energy Department,
Government of Karnataka

Presidential Address

Mr. Indu Shekhar Chaturvedi, IAS,
Secretary, Ministry of New & Renewable Energy, Government of India

Special Address

H. E. Freddy Svane
Danish Ambassador to India

Vote of Thanks

Mr. D.V. Giri
Secretary General, Indian Wind Turbine Manufacturers Association (IWTMA)

Synopsis

- High PLF, 90% localized content and 4000 MSMEs for components is a great opportunity for global players to invest in wind energy manufacturing.
- Green hydrogen and green ammonia are the future of the transition.
- India has to add 100 GW of wind in the next 8 years that needs Rs. 80000 Crores investment per year to achieve 140 GW by 2030.
- So far wind was for low cost replacement of coal, now it is to replace oil also.
- Power produced by the Indian wind industry is the lowest cost fuel in the world.
- With manufacturing capacity of more than 15000 MW, India can be the Global Manufacturing Hub.
- It is the time to bring the new bidding process to unlock market potential.
- Wind solar hybrid with storage needed to stabilize the grid systems.
- On various issues in wind energy a committee has prepared the report. Government will examine it.
- Offshore wind models need assured subsidy initially.
- More exports are needed.





Synopsis

- Changes are needed for off bid access for corporate off take.
- State specific bids to central procurement needed for security to IPPs.
- The problems faced by the IPPs are: (i) Feed-in-Tariff which the 30GW of wind is facing, (ii) Health of Discoms - Receivables beyond 15 months in some states and (iii) DSM is a new issue cropped up impacting 14 paisa to wind.
- Financiers are concerned with wind projects due to solar cost going down and delayed execution.
- More RPO percentage on large power consuming industries needed.
- States have to make the policies in line with the government of India terms.
- Due weightage is given to green component with 15-20 paise more tariff.
- Small investors are to be brought back by some schemes like wind park, etc.
- Repowering of old below MW machines needed with present tariff.
- Market reforms like General Network Access (GNA) should be implemented.
- Banking to be provided by the states.
- Solving of open access issue will open a large RE market.
- Capacity to be divided in various states to solve the problems of execution.
- GST For the RE devices increased from 5 to 12 % is a concern.
- For new technology supply chain is not ready, Import duty exemption needed.
- PLI is needed for India to migrate from 2 to 3, 4, 5 MW platform.
- 5-6 MW offshore turbines needs large preparations by manufacturers.

Moderator



Mr. Shantanu Jaiswal

Head of India-Research, Bloomberg NEF
(Virtual)

Co-Moderator

Mr. Hemkant Limaye

Senior Director
L.M. Wind Power
Bengaluru

Panelists



• Mr. Ashwani Kumar

Group CEO
Suzlon Group

• Mr. Balram Mehta

Chief Operating Officer
ReNew Power

• Mr. Lars Bondo Krogsgaard

CEO-Onshore
Siemens Gamesa Renewable Energy
Spain (Virtual)

• Mr. Amar Variawa

Senior Director
Vestas Wind Technology India P. Ltd.
Mumbai

• Mr. Parag Sharma

Founder & CEO
O2 Power
New Delhi

27th April 2022 | 2.15 pm
Wednesday



Moderator	Mr. Rakesh Nath Former Technical Member Appellate Tribunal of Electricity
Panelists	<ul style="list-style-type: none"> Mr. S.K. Mishra Director (Power System) Solar Energy Corporation of India Mr. Vikas Chandra Agarwal Director-Distribution Uttar Pradesh Electricity Regulatory Commission Mr. Chintan Shah Director-Technical Indian Renewable Energy Development Agency Mr. Kapil Maheshwari Leader - Renewable Energy & Green Hydrogen Ecosystem Reliance Industries Limited

Synopsis

- Zero Emission targets of 2070 will bring in green electricity in transport and other sectors will increase the demand more.
- Electricity is only 17% of total “Energy Demand” and rest is primary fuel.
- Clean hydrogen and ammonia will create more demand.
- 2030 will see 8 fold increases in refrigeration and 9-10% for all discoms for industrial sector.
- Grid management with renewable energy to be done with storage, hydrogen, etc.
- In place of RTC, some states are asking SECI to follow their load curve.
- SECI is working on a state for RTC with thermal blend.
- At the PPA level work is on to tie up 60% with Discoms and 40% to market.
- SECI is doing a study with the energy exchange about the merchant project to see the return for the 15 years 15-min block for the 2039.
- Return are very high in projects not less than 17-18%, in wind, it is more than 25%.
- Wind turbines can give PLF of 40% to 45% and solar 18% is the limit (DC).
- ISTS combined cost of wind would be lesser because of the higher PLF.
- RTC should have a renewable blend.
- Hydrogen technology needs improvement. Electrolyzer to locate with the RE plant.
- Government to stick to policy framework, remove uncertainties, investor-friendly tenders, assured off-take and assured payment needed for investors’ confidence.





Synopsis

Turbine Manufacturing and Make in India

- 15000 MW manufacturing capacity with 90% localisation and robust supply chain of 4000 SME companies giving employment to many thousands in rural areas.
- Production Linked Incentive (PLI) for 4, 5 and 6 MW turbine technology is needed.
- Feed-in-tariff mechanism to be introduced at state for below 50 MW projects.
- Promote state wide bidding on central procurement and bundle the power.
- Currently the reverse bidding process is not sustainable.

Prospective of Deployment of Large Scale Investment for Capacity Addition

- We need 500 bn \$ for renewable infrastructure, grid, transmission and distribution networks.
- High load factor expectations, new technologies, grid stability requires the wind sector, the manufacturers, OEMs and IPPs to step up again.
- Robust discoms are needed.
- Land constraints, grid alignment to bids and local bureaucracy support needed.
- Payment security mechanism is needed.
- Storage and hybrid tenders should be greater priority for round the clock power.
- Right strategy and policy framework needed for wind industry development.

Absorption of Renewable Energy and Role of Discoms

- Discoms serving millions of poor consumers have to see the social, economic and political perspective and to make energy transition successful or otherwise.
- Tariff has to be competitive and viable. The era of feed-in-tariff is over.

Hydrogen produced by wind and solar power will change the energy scenario

Turbine Manufacturing and Make in India	Mr. Tulsi Tanti Chairman, IWTMA and Founder Chairman and Managing Director Suzlon Group, Pune
Prospective of Deployment of Large Scale Investment for Capacity Addition	Mr. A. Nithyanand Business Head Renewables, Sembcorp Energy India Limited
Special Address: Absorption of Renewable Energy and Role of Discoms	Mr. Alok Kumar Secretary, Ministry of Power Government of India
Keynote Address	Dr. Ajay Mathur Director General International Solar Alliance





Moderator	Mr. Srinivas Krishnaswamy CEO, Vasudha Foundation
Panellists	<ul style="list-style-type: none"> • Mr. Pankaj Sindwani Chief Business Officer Tata Cleantech Capital Ltd. • Mr. Ashish Tiwari CEO, Koscher Climate India Private Limited • Mr. Satyaki Bhattacharya Renewable Energy and Infrastructure Expert World Bank • Mr. Saurabh Maggo Actis Fund

Synopsis

- For 500 GW target by 2030 with 75:25 solar and wind, taking Rs. 4 and 7-8 Crores/MW respectively, around US\$ 200-250 million are needed over the next 8 years.
- Large debt pool is needed from domestic lenders/public and private sector banks.
- Domestic/corporate bond market, multilateral lenders are other sources of finance.
- A number of IPPs are approaching international bond markets/funds.
- The problem is with the right policy framework not with the finance.
- Sustainable development goals and 17 parameters are important in carbon finance.
- The World Bank and other financial institutions play role in green finance.
- Companies are looking for 9 or 10 % profit.
- A number of investors want to put the money in renewable energy projects in India.
- Green finance also includes sectors like air pollution, biodiversity, water, etc.
- Environment Impact Assessment standards need to be strengthened.
- Only 5 % of the investment has come from international private investment.
- World Bank and their lateral are the largest custodians of donor funds and grant financing globally for clean energy projects.
- Project appraisal, feasibility and viability are important not government guarantee.
- Challenges of Green Finance are: low tariff, market uncertainties, right of way, land cost and availability, connectivity, projects not commissioning, regulation changes, some IPPs not benefitting from long-term PPAs, GST and other duties, etc.
- Government must explore points for green finance in RE space are: separating RE from power sector, exposure of large private banks to RE, setting up Green Energy Bank, cash flow-based financing by PSUs, Privatization of DISCOMs, etc.
- Stable policy regime of India is attracting international investors to invest in India.
- Cost of capital to be brought down to reduce the cost of power.
- Diversifying climate finance is needed—like the Canada pension funds, REIT, etc.
- World Bank is working on hydrogen, round the clock power, etc.



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a GE Renewable Energy business



Moderator



Mr. Shantanu Jaiswal
Bloomberg NEF (Virtual)

Mr. D.V. Giri
Secretary General, IWTMA

Address by

Ms. Gauri Singh
Deputy Director General
International Renewable
Energy Agency (IRENA)

Synopsis

- 21% electricity as energy carrier to go about more than 50%.
- Green hydrogen coming in to contribute about 12%.
- 90% of the electricity will be coming from RE to reach Net Zero situation.
- Complete overhaul of both energy production and energy consumption.
- Systemic changes in grids and energy systems management needed.
- India should move into offshore wind as investors are showing interest.
- India has to come up with a very strong policy framework to harness about 700GB of wind potential as most of the investment comes from private sector.
- Repowering of the pre 2005 windmills in very high and resource rich areas with higher capacity of wind farms coming in.
- Green hydrogen market development will be path breaking for use of RE.
- India should use the opportunity to become the world leaders in the manufacturing.
- Our excellent EPCs have the capacity to lead in energy transition globally also.
- G20 summit happening in India is a great opportunity to showcase what we have but more importantly to change the narrative around certain areas and areas of work. We should push the envelope on policy and our thinking and introduce the narrative that India wants in the global discussion on climate.
- Circular economy is very strongest streams of work. Green steel is another thing not only in large plants but also in MSME sector with almost 50% production which has to use renewables.



Synopsis

- RTM Operations, Real Time Market, Green Term-Ahead Market (GTAM), Day Ahead Market etc, has been introduced. REC Multiplier Framework revamping, General Network Access Framework, Storage Policies, RTC Tenders and various policies of Ministry of Power has an impact on the investors and various stakeholders.
- Sudden changes in regulations are going against the investors' confidence.
- Despite surplus, India could face a power deficit due to lack of proper plans.
- As marginal cost of renewable energy is zero use them whenever available.
- Prepare transmission system for large-scale integration of wind & solar.
- India can go double the capacity of wind energy; Demand and supply balance to be done by regulatory and state utilities.
- Privatization of utilities to be streamlined.
- States must encourage a plug-and-play model to scale up wind energy.
- Discoms can go for General Network Access to transmit electricity region-wise.
- The real-time market framework will be helpful instead of long-term PPAs.
- Tweaking is needed in the existing bidding and format of reverse e-auction.
- Repowering needs strong support from the government.
- Offshore wind should get incentives or subsidies from the government.
- Green hydrogen and green ammonia can have 2 GW of self-sustaining project with wind, solar and storage.

Moderator

Mr. Ajit Pandit
Director & CEO
Idam Infrastructure Advisory Private Limited

Panelists



- **Mr. Anish De**
Global Sector Head, Power & Utilities, National Leader, Energy Natural Resources and Chemicals, KPMG
- **Mr. Mahesh Vipradas**
Vice President, Sembcorp Energy India Limited
- **Dr. S.K. Chatterjee**
Chief – Regulatory Affairs, CERC (Virtual)
- **Mr. Inder Bhabra**
Country Head, Business Development and Sales
Envision Wind Power Technologies India Private Limited



Moderator

Dr. Chakradhar Byreddy
Director, Renewable Energy
UL-Asia Pacific

Panelists

- **Ms. Dorte Kamper**
Vice President - Sales & Marketing, LM Wind Power
- **Mr. Servet Sert**
CTO, Senvion Wind Technology Private Limited
- **Mr. Shashi Barla**
Global Head, Wind Supply Chain & Technology (Onshore and Offshore), Wood Mackenzie Renewables (Virtual)
- **Mr. Pradip Kumar Dubey**
CEO, Aditya Birla Group
- **Mr. Sreenivas Naidu**
General Manager, R & D ZF Wind Power Coimbatore Limited



Synopsis

- Due to special geographical location wind-solar hybrid projects with battery storage are needed. Can combine wind-solar and hydrogen also.
- Offshore in India will fit with hydrogen technology.
- Material development can be done in 24 months with machine learning.
- 5 million tons/annum green hydrogen production by 2030 will add RE portfolio. Its cost to be brought down from \$5-7 to \$1 per kg.
- Electric vehicles are propelling the drive for green electricity and wind is expected to play a significant role in generating green hydrogen.
- There is shift towards the value of wind not LCoE but cost is an important factor.
- Design blade by putting the right material so that it can be reused after its life. Recycling, use of waste material, repurpose them for houses at high altitude, etc.
- Reducing weight (torque density basically) of gearbox and improving its output.
- Maintaining optimum gearbox ratio is of utmost importance. India is driven by high-capacity factor wind turbines.
- Storing energy green hydrogen, etc. should cost less than producing the energy.
- Improving the productivity of materials and components for better performance is necessary with reduced weight, better efficiency and lower cost.
- Offshore should have all infrastructures ready as the cost of failure is very high.
- Cost of logistics, components, material and technology has to reduce our dependence.
- Modular concept in gearbox is being brought for offshore with same core.
- We have to shift from cost driven approach to value driven approach. Wind, solar and battery storage is a good combination to provide base load.
- Life time extension can also be considered before thinking of repowering.



Synopsis

- “One Sun, One World, One Grid”, is concept of a single grid for the entire world.
- There is no such Zero generation throughout, wind will contribute to maximum.
- Forecasting accuracy on intraday is 94-95%. Wind has high PLF.
- Wind energy is diverse, in Rajasthan and Tamil Nadu it blew in opposition.
- Wind integration with grid needs to be strengthened by interconnecting neighbouring systems.
- Forecasting has improved a lot with REMC and infrastructure.
- Capacity value of wind, its contribution during peak, ELCC to study, not CUF.
- 100:60 wind and solar is easy to integrate than 100:60 solar and wind.
- We can change our Load Curve to fairly large extent and it is happening in India.
- Net demand is demand after removing the RE is treated like negative demand.
- Forecast shared with SLDC are just compiled and demand notice is issued to penalise investors. It should be on a large control area rather than at 5 or 10 MW.
- Intermittency issues of both solar and wind cannot be avoided. However, it is important to work beyond the more commercial intermittency issues.
- Wind contributes more to grid in terms of supporting the demand than solar.
- Repowering is to be done at a farm level, capacity will remain same but generation will go up by 2.5 times.
- It is more efficient and easy to bundle the tariff by LDC than a private entity.
- Concept of RTC bid or peak power bid is not good for a nation.
- Planning is needed for market dynamics with Central Government involvement.
- Wind energy is not responsible for system faults, protection systems needed.
- One time contracting an aggregator can add value to system instead of bundling.
- Grid compliance issue is to be addressed. Do not expect same thing from renewable energy.

Moderator

Dr. Rahul Tongia

Senior Fellow, Center for Social and Economic Progress

Panelists



• **Dr. K. Balaraman**

Director General
National Institute of Wind Energy
Chennai

• **Mr. Sushil Kumar Soonee**

Former Advisor POSOCO
Former and Founder Chief
Executive Officer,
Power System Operation
Corporation Ltd. (Virtual)

• **Dr. Cesar Alejandro Hernandez**

International Energy Agency (Virtual)

• **Mr. U.B. Reddy**

Managing Director
Enerfra Projects India Limited

Session - 7

28th April 2022 | 2.00 pm
Thursday

Testing New Waters - Offshore



Moderator

Mr. Atin Jain
Senior Associate
Bloomberg NEF

Panelists



• **Mr. Alastair Dutton**
Chair - Global Offshore Task
Force, Global Wind Energy
Council (GWEC) (Virtual)

• **Dr. K. Balaraman**
Director General
National Institute of Wind
Energy, Chennai

• **Mr. Markus Kösters**
Head of Business Development
New Markets
RWE Renewables GmbH



• **Mr. Neils Steenberg**
Executive General Manager for
Offshore Asia Pacific
Siemens Gamesa (Virtual)

• **Dr. Prabir Kumar Dash**
Scientist-D, Ministry of New &
Renewable Energy

• **Mr. Bernhard Telgmann**
President Technology
Suzlon Energy Limited

Synopsis

- 500 GW renewable energy target by 2030 will certainly need offshore wind also.
- Offshore wind is costly with more risks like: technology, lease management, access to capital, stakeholder management. Cost will come down later.
- A clear roadmap and break down of 30 GW offshore in each year is needed.
- Tap on experience of others and not copy paste as offshore is a totally different.
- Proper planning, regulations, supply chain, grid and port development needed.
- Ministry of Finance is currently discussing support by viability gap funding.
- Unique challenges for OEM are: different geographies, wind conditions, CUF of equipment for specific place, high temperature, typhoons, cyclones, different class of turbines for west coast and south coast, underwater stuff, etc.
- For 1 GW of Gujarat offshore project two years complete wind data are available.
- NIWE is having a model 1 and model 2 for development. Fixed/floating structure measurement, floating lidars, all are at various stages of study or completed.
- NIWE and MNRE will discuss what additional studies are required.
- Subsidies support, viability gap funding, cutting the import tax for the turbines and other incentives are required from government to build the first projects.
- India should fix a tariff that can be Rs. 3.50/kWh and then have the developers bid on the viability gap funding, concept note for which has been sent to Ministry.
- Existing manufacturing facilities cannot be used fully as such for offshore.
- NIWE is putting the test centre at Dhanushkodi.
- Model 1 and model 2 are proposed. The industry is more used to the model 2.
- First, the financial support will be there for 3 GW.
- OEMs should indicate the additional information they need to enable government to calculate and present before the top people in government.




Innovations for a better tomorrow

Manufacturing wind turbines and
its components in India since 1996

With 14 manufacturing units and wind farms across 8 states, Suzlon creates local jobs at the grass-root level, energizes micro-economies, supports a local supply chain and reduces imports by making India more **'Aatmanirbhar'** in the manufacturing of Wind Turbine Generators and its components. Suzlon is also a flag bearer of the ambitious **'Make in India'** program for Wind Energy and a key partner in the nation's Renewable Energy mission. We are committed to energy security and low-carbon economy for the country by providing sustainable and affordable energy to power a greener tomorrow, today.

SUZLON
POWERING A GREENER TOMORROW

More than 18.8 GW of installations | Footprint across 18 countries | Largest product portfolio | R&D across The Netherlands, India, Germany and Denmark

Leading global renewable energy player offering end-to-end solutions. To know more visit us at: www.suzlon.com | Join us on   



Moderator	Mr. Alok Brara CEO & Publisher India Infrastructure Publishing
Panelists	<ul style="list-style-type: none"> • Mr. Dinesh Jagdale Joint Secretary, Ministry of New & Renewable Energy, Government of India • Mr. Gonzalo-Alfonso Navarro Hernandez Economic and Commercial Counsellor Embassy of Spain in New Delhi • Mr. Martin Hansen Deputy Director-General Danish Energy Agency • Mr. K.P. Rudrappaiah Managing Director Karnataka Renewable Energy Development Limited • Mr. M.A. Pise General Manager, Maharashtra Energy Development Agency

Synopsis

- Last few years wind capacity has not grown. Now in 9 years 100 GW is to be installed. MNRE is open to suggestions and is looking for the business models.
- Danish and Spanish companies are in Indian wind power since long.
- Long-term policy, cooperation among developers, government & TSO is needed.
- States can see for the state specific tenders.
- We have good seabed and need not go for floating offshore wind.
- We already have the domestic base of 13 GW and can add on for offshore.
- Wind sector needs PLI scheme for offshore wind for new technologies.
- PLI and VGF both cannot be given for a particular sector. RPU, REC related benefits are being contemplated.
- Wind is less burden on the storage. As the business models go forward, round the clock dispatchable renewable energy would be critical for us to go forward.
- Service providers are facing various issues, government to get benefits to them.
- Foreign investments with 100 FDI, payment security, risk coverage, etc. will make India to be in the safe zone for the next eight years to achieve the 500 GW targets.



**Conference on
'Power of the Wind:
India's Driver to Net-Zero'**

Valedictory Session

**28th April 2022 | 4.10 pm
Thursday**



Synopsis

Mr. D.V. Giri gave the opening remark at the Valedictory Session and welcomed Mr. Anand Kumar. Mr. Hemkant Limaye summed up the Conference proceedings.

Mr. Anand Kumar in his address stressed on the following points:

To collectively ponder on low installation and how to move forward, bids should be spread to all the windy states, wind should be part of RTC with solar without base power of coal, single window system for all clearances, identify problems faced by OEMs and remove them, support wind energy procurement and wind manufacturing, process and bring in the latest technology to improve the efficiency of the turbines, erecting transmission lines simultaneously and plan to be chalked out for up to 2030, availability of off the shelf bid documents and project financing, try with new experiments, interact and talk about the industry problems constantly.

Mr. D.V. Giri proposed the Vote of Thanks to all associated with the Windergy India 2022 Trade Fair and Conference and informed that this is a biennial event and date for 2024 will be announced soon.

Chief Guest	Mr Anand Kumar Former Secretary, Ministry of New and Renewable Energy and Chairman RERA, Delhi
	Mr. Hemkant Limaye Senior Director Global Marketing, L M Wind Power
	Mr. D.V. Giri Secretary General Indian Wind Turbine Manufacturers Association (IWTMA)



Programmes at the Side-lines of the Trade Fair & Conference

Windergy India 2022 International Trade Fair and Conference was organized by Indian Wind Turbine Manufacturers Association (IWTMA) and PDA Trade Fairs Private Limited from 27th to 29th April 2022 at Hall No. 12 and 12 A, Pragati Maidan, New Delhi. Windergy India 2022 International Trade Fair and Conference was organised with the support from the Ministry of New and Renewable Energy, Government of India, Indian Renewable Energy Development Agency (IREDA), Solar Energy Corporation of India (SECI), India Energy Storage Alliance (IESA), Indian Wind Power Association (IWPA), Independent Power Producers Association of India (IPPAI), National Institute of Wind Energy (NIWE), Solar Energy Corporation of India (SECI), Skill Council for Green Jobs (SCGJ), World Wind Energy Association (WWEA), National Small Industries Corporation (NSIC), REAR –Renewable Energy Association and The Energy and Resources Institute (TERI). Denmark and Government of Karnataka, through Karnataka Renewable Energy Development Limited (KREDL), joined Windergy India as the Partner Country and Partner State respectively. The following programmes were also organised at the side-lines of the Trade Fair and Conference.



Indian Wind Power Magazine: Release of Windergy Special Issue

The Windergy Special issue of Indian Wind Power magazine Volume 7, Issue 6 for February-March 2022 was brought out for the event. The issue was released by Mr. Alok Kumar, Secretary, Ministry of Power, Government of India along with other dignitaries present on the dais.

Exhibitor Directory & Conference Souvenir

An Exhibitors Directory and Conference Souvenir was also brought out during the event giving details of all the companies who have exhibited their products and services at the exhibition. This also contains the bio-data of all the speakers and the profile of the exhibitors besides messages from the sector stalwarts.



Delegates

The conference was attended by over 300 delegates from various fields like OEMs, Component Manufacturers, Government Authorities, IPPs, Regulators, Consultancy Firms, Electricity Transmission Companies, Auditors, Investment Companies, Energy Institute, etc.

Conference, Sessions and Speakers

Besides the Plenary, Special and Valedictory sessions, the Windergy India 2022 arranged 8 sessions with 60 eminent speakers from all over the world in the field of Wind Energy, OEMs, Component Manufacturers, Government Authorities, IPPs, Regulators, Consultancy Firms, Electric Transmission Companies, Auditors and Investment Institutions, etc. The detail of the sessions and speakers is given in the previous pages in this magazine.

Programme at the Side-lines of the Conference and Trade Fair

A number of programs were conducted at the side-lines of the conference and trade fair by various institutions. Karnataka Government conducted a round table for participants to get the first hand information on Karnataka's plan to upgrade the renewable energy generation capacity of the State to 10 GW in the next five years.

Technology Presentation on Digitalisation in Wind Turbine Operations and Maintenance

27 April 2022 14.00 to 14.15 hrs by Mr. Sharad Pipagre, Business Development Manager, Onyx Insight.

Presentation on Site Right tool

28 April 2022 11.5 to 11.15 hrs by Mr. Joe Kiesecker, Lead Scientist, The Nature Conservancy.

Technology Presentation on Bringing Sustainable Efficiency to Wind Power

28 April 2022 12.05 to 12.20 hrs by Mr. Raj Kumar Singh, Director Business Development, Schneider Electric India Private Limited.

Technology Presentation on "Improving Wind Turbine Gearbox Reliability through Offline Filtration"

28 April 2022 15.00 to 15.15 hrs by Mr. Mark Barnes, Senior Vice President, Global Business, Des-Case Corporation.

VIP Networking Dinner

A VIP Networking Dinner was organized in evening at The Oberoi, New Delhi on 27th April 2022 attended by major IPP's, OEM's, Speakers and Government Officials, hosted by ReNew Power.

Exhibitors Networking Evening

An Exhibitor's Networking Evening was celebrated with all the exhibitors on 28th April 2022 at Pragati Maidan, New Delhi hosted by Solar Energy Corporation of India.

The Windery India 2022 International Trade Fair was set up at Hall nos. 12 and 12 A at Pragati Maidan, New Delhi. 150 exhibitors from India, Austria, Denmark, UK, Italy, Germany, France, USA, Malaysia, Papua New Guinea and China exhibited their products and services at the trade fair. Over 3000 wind industry experts besides many thousands enthusiastic public thronged the trade fair on all the three days.

A number of OEMs, component manufacturers and service providers from all over the world were amongst the exhibitors. Large number of IPPs were also part of the event.

Karnataka Renewable Development Agency Ltd signed expression of interest for wind, solar and hybrid projects for generating total capacity of 9218 MW with an investment of INR 61227 crores at Windery India 2022. German Pavilion organised by the Indo German Chamber of Commerce was also part of Windery India 2022.

Media Coverage of Windery India was very wide with 150 newspapers publishing the news and discussions of Windery India 2022.



SG 3.4-145, our next -generation turbine

A large white Siemens Gamesa SG 3.4-145 wind turbine is the central focus, shown from a low angle looking up at its nacelle and blades. The nacelle features the 'SIEMENS Gamesa' logo and 'RENEWABLE ENERGY' text. The background shows a vast, hilly landscape with green and brown vegetation under a cloudy sky. In the distance, a line of smaller wind turbines stretches across the horizon.

Delivering India's positive energy with SG 3.4-145, our next -generation turbine. India's journey to become a sustainable nation is powered by a billion aspirations. We're proud to play a part in empowering India with clean and renewable energy, at affordable costs. Standing tall on a new 3MW platform, the SG 3.4-145 is a key milestone in India's clean energy story. This turbine delivers a remarkable 48% more

www.siemensgamesa.com



annual generation than its predecessor, in Indian low-wind conditions. Backed by smart monitoring system and optimized for all-weather conditions, the SG 3.4-145 is the right fit for the Indian market, delivering high profitability and reduced LCoE. The perfect turbine made for India, made in India. The SG 3.4-145 is indeed geared up to deliver India's positive energy.

SIEMENS Gamesa
RENEWABLE ENERGY



Climate Change Action and Wind Power

Abstract

The crisis of global warming and climate change, rising sea levels, torrential rains, unprecedented heat and cold waves, water shortages have shaken humanity in the 21st century. Climate Actions to reduce greenhouse gas (GHG) emissions, including carbon dioxide, which are the potential global warming threats and accepted physical manifestations of increasing energy use, have led to clean energy transition in the energy sector. The article discusses the scope of wind power in India.

1. Climate Change Actions

International protocols and conventions on climate change namely; the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement on Climate Change are bindings for all signatory countries of the world to make their greenhouse gas inventories. During the Paris Summit (COP21), the 21st meeting of the conference of parties in December 2015, 196 nations had agreed to take climate control actions according to their intended nationally determined commitments (INDCs). The Paris Agreement aimed to keep global warming below 2°C and to make efforts to limit temperature rise to 1.5°C by the end of the century. Countries are taking appropriate actions towards stabilization of CO₂ concentration in the atmosphere through their NDCs.

The 26th meeting of the United Nations Conference of Parties (COP26) was crucial to decide on the future course of action on compliance with the Paris Agreement. It was held from 2nd to 13th



Dr. (Mrs.) Malti Goel

President, Climate Change Research Institute, New Delhi,
Former Senior Advisor and Scientist 'G',
Ministry of Science & Technology, Government of India

November 2021 in Glasgow. In the series of annual meetings of Conference of Parties (COPs) discussions began in 1994 after the United Nations Framework Convention on Climate Change. The COP26 was held after two years. The meeting expressed concern that human activities have already caused a 1.1°C rise in temperature in 2019, and current commitments may result in a rise of temperature up to 2.3°C by the end of the century. The COP26 reiterated the need for peoples' participation and urged the nations to stretch NDCs further and aim to target 2050 as a net-zero emission year.

Glasgow Climate Pact has further stressed 'the urgency of enhancing ambition and action in relation to mitigation, adaptation and finance in this critical decade to address the gaps in the implementation of the goals of the Paris Agreement.' The Pact provides for finance, technology transfer, capacity-building guidelines for mitigation & adaptation, and implementation for the parties. Phase-out of coal and shift to non-fossil based generation to achieve net-zero by 2050 was the critical agenda. Twenty-three countries made new commitments to phase out coal and stop public financing in coal-based projects. More than

Solar Power, Wind Power, the way forward is to collaborate with nature - it's the only way we are going to get to the other end of the 21st century,

- Bjork, an Icelandic Song writer

100 countries agreed to reduce methane emissions and its reduction by 30 percent by 2030.

Keeping in view the need to provide access to electricity to all its people and dominance of coal in electricity sector, India's Panchamrita as a fivefold strategy to achieve net-zero emissions were stated by our Prime Minister Mr. Narendra Modi in Glasgow, as below.

- I. To raise the non-fossil fuel based energy capacity of the country to 500 GW by 2030.
- II. By 2030, 50% of the country's energy requirements would be met using renewable energy sources.
- III. The country will reduce the total projected carbon emissions by one billion tonnes between now and the year 2030.
- IV. The carbon intensity of the economy would be reduced to 45% by 2030.
- V. The country would become carbon neutral and achieve net-zero emissions by the year 2070.

India has taken bold steps to announce "phase down" instead of "phase out" of coal and the target year for net-zero as 2070. Yet there are many sustainability challenges which need to be addressed.

2. Sustainability and Wind Power

Climate change and new energy sustainability policies would affect all coal-consuming sectors and, therefore, go into the core of economic activities. Planners and researchers would have to realign their goals to meet the new commitments and achieve

climate change objectives. At the same time, fossil-free or non-fossil fuel energy technologies, which produce no GHG emissions during their operation, can be harnessed on a large scale and are cost-competitive, becoming potential climate change solutions. The India strategies at I and II above have targeted non-fossil fuel-based energy capacity addition of 500GW and 50% of the country's energy need to be met using renewable energy sources. The total electricity installed capacity is nearing 400GW with renewable energy share, with 155 GW having a significant share from solar, wind and hydropower. How wind power plays a role in climate action is discussed here.

Wind power is extracted from the wind's kinetic energy; the higher the wind speed, the more wind power is. Wind energy is not new; windmills for water pumping and grain milling have existed in India, Europe and many other countries since ancient times. A windmill converted the kinetic energy of wind to mechanical energy. With the advent of electricity, mechanical energy was used to run the turbine and produced electricity. Innovations have continued to occur in the windmills for water pumping and the wind machines for generating power. In the last decades, the size of wind turbines has continuously increased. Because of higher wind velocities in coastal regions, off-shore wind farms have shown great potential for wind power. With climate as a focus, nations are setting the wider goal of pushing to net-zero targets. Wind power would play a significant role in it. The development of floating wind machines has further brightened the prospects. Wind machines of a capacity as large as 15 MW are being tested.

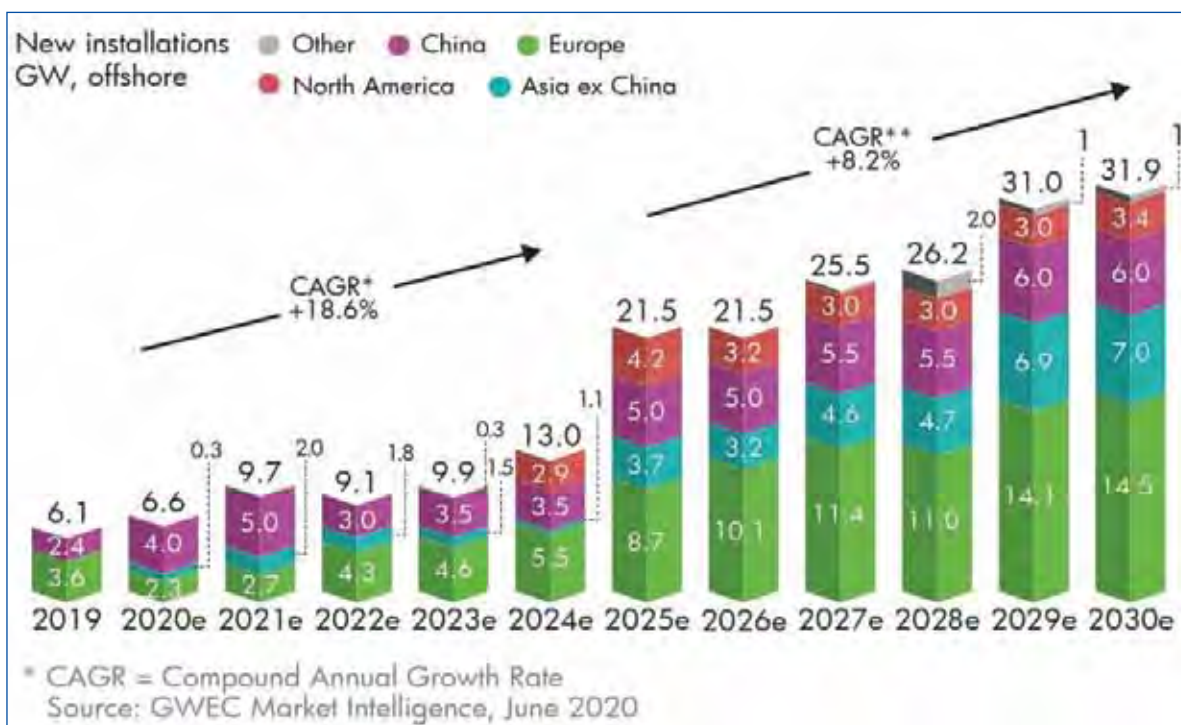


Figure 1: Global off-shore growth up to 2030

Source: <https://www.weforum.org/agenda/2020/08/offshore-wind-energy-growth-energy-transition/>



Figure 2: Four scenario for the growth of global cumulative wind power capacity

(Source: <https://www.windpowermonthly.com/article/1412717/gwec- envisages-58tw-wind-2050>)

3. Global Status of Wind Power

The Global Wind Energy Council (GWEC) has predicted the possibility of achieving 5.8 TW of wind power installed worldwide by 2050, with China on top with 1,789 GW of wind power, OECD Europe as 703 GW, Latin America as 481 GW and India 452 GW. About 733GW global capacity exists in 2020, with 95% met from onshore installations. The share of offshore will rise in the coming years. The overall offshore capacity of Europe could

become 450 GW by 2050. Floating wind power would be a driving force and support green hydrogen production.

Global offshore growth up to 2030 will become 32 GW, as shown in Figure 1. Figure 2 presents GWEC analysis of four scenarios for global cumulative wind power capacity growth of 5.8 TW up to 2050. 2022 will be a record year for global wind and solar energy. It could add 27 GW of wind power besides 44 GW of solar, surpassing the set goals for annual growth.

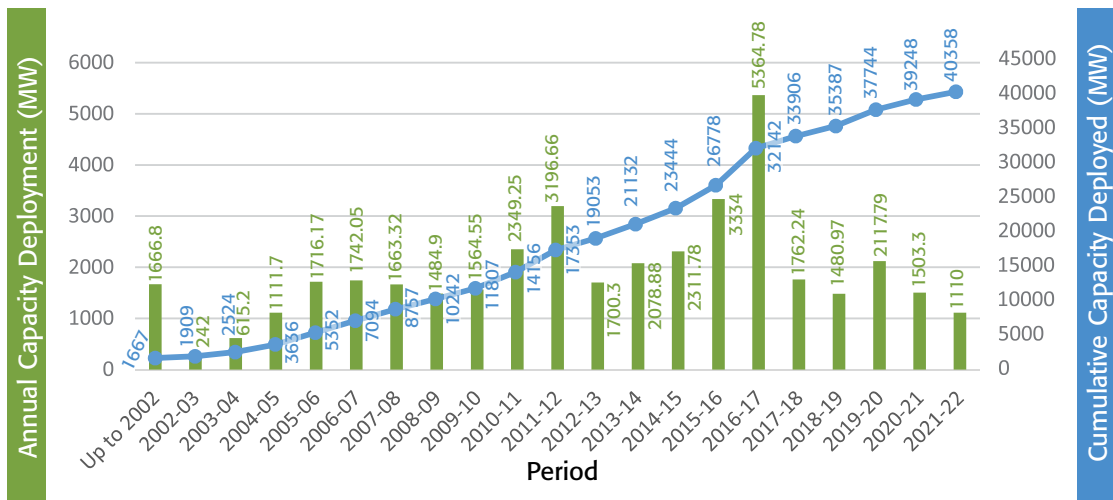


Figure 3: Yearly and cumulative growth of wind power capacities in India

According to the International Energy Agency (IEA), floating wind turbines into deeper waters have the potential to achieve 11 times more wind power by 2040. The GWEC predicted that we need to build 180 GW of wind power per annum to meet the Paris Agreement commitments of limiting the temperature rise to 2°C. It suggested that floating wind power capacity could reach 6.2 GW by 2030 from the 65.7 MW in 2020. In floating installations, the UK, Portugal, and Japan lead the market, but South Korea, France, and Norway are forecast to take over by 2030. The GWEC expects floating wind farms to account for 6% of global new installations by the current decade.

4. India's Wind Power

In the 1990s, wind power started growing, and India was ahead of China. In the 2020s, wind power continued to have the edge over solar power and became cost-effective technology. Kyoto Protocol's Clean Development Mechanism (CDM) provided an opportunity for the growth of wind power through trading of Certified Emission Reductions (CERs). Several new installations came up. In 2010 wind capacity was 16,084 MW. However, there was a slowdown in growth due to various reasons after 2016-17. In March 2022, the wind power in India, after a stagnated growth, reached 40358 MW. Yearly and cumulative capacity addition in the wind sector in India is shown in Figure 3.

The Government has set a target to create 60,000 MW of power from wind by 2022. Though India is the fourth biggest wind power market today after China, the USA and Germany, but is far from the set goal.

The wind energy potential in India is very high. There is scope for India to become an export hub in wind energy. Central Electricity Authority projections for 2029-30 suggest that when India installed capacity becomes 817 GW in 2030; non-fossil resources would meet 525 GW. Wind energy would have a larger share in the renewable energy contribution. India has a coastline of 7517 km. Gujarat and Tamil Nadu have identified high potential for an off-shore generation. Projected off-shore wind turbines in India will reach 30 GW target by 2030.

5. Policies & Regulations

In India, the annual growth of wind power has been waxing and waning, somewhat similar to wind energy fluctuations over a period. The government of India has announced several regulations and incentives for pro-wind power growth in the country. Exemption from income tax on generation income in the first ten years; Accelerated Depreciation advantage; Concessional customs obligation exclusion on specific parts of wind electric generators are introduced as tax-related incentives. Renewable Purchase Obligations (RPOs) and investor-friendly policies, including Partial Risk Guarantee Fund (to provide Banks

guarantee to cover partial risk exposure against loans within the framework of energy-efficient economic development), Viability Gap Funding (to have Public-Private-Partnership) and Development of specific performance parameters have been there to incentivize wind power growth.

The Government has made Generation Based Incentive (GBI) scheme accessible for all the undertakings came into existence before 31st March 2017 and not profiting accelerated depreciation advantage, under which Rs.0.50/unit is being given to qualified wind power generators, with a ceiling of Rs. 1.00 crore per MW. Moreover, the Ministry of New and Renewable Energy (MNRE) announced another wind solar based mixture strategy in May 2018 recommended that a similar real estate package will be utilized to house both wind farms and solar powered units. During 2020, both wind and solar benefitted from the favourable financing made available by the government for economic recovery post COVID-19, as well as loan tenures increasing from 15 to 18 years and a 75% debt ratio instead of 70%. In early 2021 the Reserve Bank of India has joined the Network for Greening the Financial System (NGFS) to define and promote best practices in green finance in India. Due to supply chain disruptions during COVID-19, the MNRE has recently granted additional three months extension in scheduled commissioning of wind projects signed before June 2020. Clean electricity trading market, in the form of the Green Term Ahead Market (GTAM) emerged in 2020. The country being the fourth-largest onshore wind energy market in the world, the new market mechanisms introduced in 2020 offered huge growth prospects for wind energy in India.

6. Conclusion

Wind power installations would increasingly add to low carbon energy growth, achieving India's NDCs targets and helping in meeting Sustainable Development Goal (SDG), 13-Climate Action. Wind generation can give a more consistent daily output in selected areas compared to solar. Wind power machines are economical, can support grid during peak hours and have no water requirements. The wind industry has a higher job creation potential and opportunity exit for greater employment for women in skilled jobs, thereby improving gender balance.

In recent years delayed payments, cash-flow problems in DISCOMs, and low, competitive tariffs have temporarily led to project developers losing interest in investing in wind power. For sustained growth of wind power we need to offer innovative solutions to modern energy infrastructure, especially those related to decentralized systems such as micro-grids and smart grid utilities. In the coming years large floating machines could become a source of electricity in electrolyzers for the production of green hydrogen.



EOI for Manufacturing Zone for Power and RE Equipment

Ministry of Power, Government of India has invited expression of interest for setting up manufacturing zone for power and renewable energy equipment (pilot project) dated 27 May, 2022. MNRE and MoP have jointly proposed a scheme for establishment of three Manufacturing Zones- two Brown-field Manufacturing Zones already having developed land and a Greenfield Manufacturing Zone in a coastal area in the country with total financial outlay of Rs. 1000 crores. This has been kept flexible for supporting CIF and CTF with a ceiling of Rs. 400 crore in any Manufacturing Zone. The duration of the Scheme is 5 years. The Proposer will submit proposals for setting up a Manufacturing Zone in the State. SPV will be responsible for preparation of the DPR and creation of CIF and CTF in selected Manufacturing Zone.

KSEBL Invites Bids for 65 MB Grid Connected Wind Power Projects

The Kerala State Electricity Board Ltd (KSEBL) has invited bids from developers to establish 65 MW of grid-connected wind energy projects in Kerala under tariff-based competitive bidding. Last date for submission is 20 June 2022. Bids will be open on 23 June. A minimum capacity limit of 2 MW and maximum of 65 MW may be bid with a fixed tariff for the 25-year contract. This energy purchased will account for RPO obligation of KSEBL.

Source: WindInsider News, 9th June 2022

NLC India Invites Bids for 50 MW Wind Project in India

NLC India has invited bids for a 50 MW ISTS-connected wind project anywhere in India by June 10, 2022 to be opened on the same day. Operation and maintenance of the project, procurement of land, design, engineering, micro-siting, manufacture, inspection at supplier's works, supply, insurance, transport, storage, erection, testing, commissioning, and provisional takeover are included in the scope of work of the bidder including power evacuation system, grid connectivity approvals from state electricity authorities, and load flow study.

Source: WindInsider News, 9th June 2022

Timken Bearings for 14 MW Haliade-X Offshore Turbine

Timken Company will design and supply main shaft bearings to GE Renewable Energy's Haliade-X, world's largest offshore wind turbine. Each Haliade-X turbine can produce up to 74 GWh per year and has a power output of 14 MW. In 2023, the first Haliade-X installation will be completed.

Source: WindInsider News, 7th June 2022

RE Investment in India Touched a Record \$14.5 Billion in FY2021-22

Investment in renewable energy in India has touched a record US\$14.5 billion in the financial year 2021-22, an increase of 125% compared to FY 2020-21 and 72% over pre-pandemic FY 2019-20. India added 15.5 GW of renewable energy capacity in FY 2021-22. The Indian renewable energy sector needs about US\$30-US\$40 billion annually to meet the 450 GW target.

Source: India Infrahub, 9 June 2022

Ayana Renewable to invest Rs 12000 crore in wind and solar projects in Karnataka

National Investment and Infrastructure Fund (NIIF) backed Ayana Renewable Power Private Limited (Ayana) has signed an expression of interest with the Government of Karnataka to develop wind and solar power projects totalling 2 GW capacity in Karnataka with an investment of around Rs 12000 crore.

Source: ET Bureau, June 10, 2022

Power Exchanges Can Trade Contracts up to 3 Months Now

Power exchanges will be able to trade contracts up to three months following approval from the Central Electricity Regulatory Commission (CERC). The approval is expected to bring a landmark change in the power markets as a major chunk of bilateral trade is expected to shift from bilateral contracts to power exchanges. Of the 660 power tenders between January 2020 and April 2022, 396 tenders (60 per cent) were for monthly procurement of power.

Source: ET Bureau, June 10, 2022

Discoms Can Now Settle Dues through EMI's Within Four Years

The government has allowed electricity distribution companies to settle their dues to power generating companies and transmission companies in equated monthly instalments. As per the Electricity (Late Payment Surcharge and Related Matters) Rules, 2022 notified, total dues including late payment surcharge up to the date of notification of these rules shall be rescheduled and the due dates redetermined for payment by a distribution licensee in equated monthly instalments. Late payment surcharges are payable by a discom to a genco on account of delay in payment of monthly charges beyond the due date.

Source: ET Bureau, June 6, 2022

Power Discoms' Losses Widened to Rs 59,000 crore in 2021-22

The bad performance of Indian power distribution companies or Discoms continued last financial year (2021-22) with their losses widened to around Rs 59,000 crore as compared to Rs 34,500 crore in 2019-20, making tariff hikes critical. The FY22 ACS-ARR gap of the graded discoms is expected to have widened to around Rs 0.57 per unit due to insignificant tariff hikes in 2020-21 and 2021-22 and an increase in average power purchase cost. Substantial tariff revisions are required to control the ACS-ARR gap from further expanding in 2022-23, especially in the light of increasing input prices.

Source: ET Energy World, 1 June 2022

Geared for a Better Future



NGC Professional in Wind Gearbox and Transmission System Solutions

NGC is a global leader in wind gearbox development and production with high performance product which provides complete main gearboxes, yaw and pitch drive product for wind turbine. NGC high reliability products are adapted to various working conditions, low/high temperature, low wind speed, high altitude, offshore and others. By far, over 90,000 NGC main gearboxes have been operating globally with excellence performance, contributing to the continuous power supply for green energy.

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E-mail: WESales@NGCtransmission.com

NGC TRANSMISSION INDIA PVT. LTD.

DG Square, Unit 6A, 127 Pallavaram – Thoraipakkam
200 Feet Radial Road, Kilkattalai, Chennai 600117
Tel : +91 44 6612 3500
Fax: +91 44 6612 3535
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Drone Aerial Infrared (IR) Inspection of Transmission Line



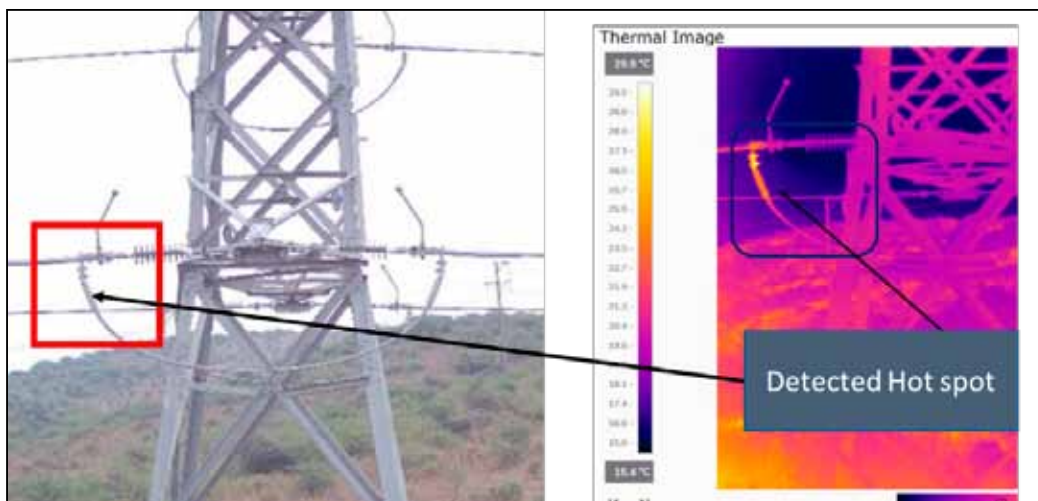
Tejas Sole
Emerging Market Lead
POWERCON, India

Transmission line (Power lines) drone infrared survey is helpful in quickly detecting potential electrical problems. It assists transmission, distribution and substation system utilities, renewable IPP customers and renewable OEMs in eliminating the failures at earlier stage. The Drone aerial thermography provides the fastest and most accurate results. It is a non-contact type survey.

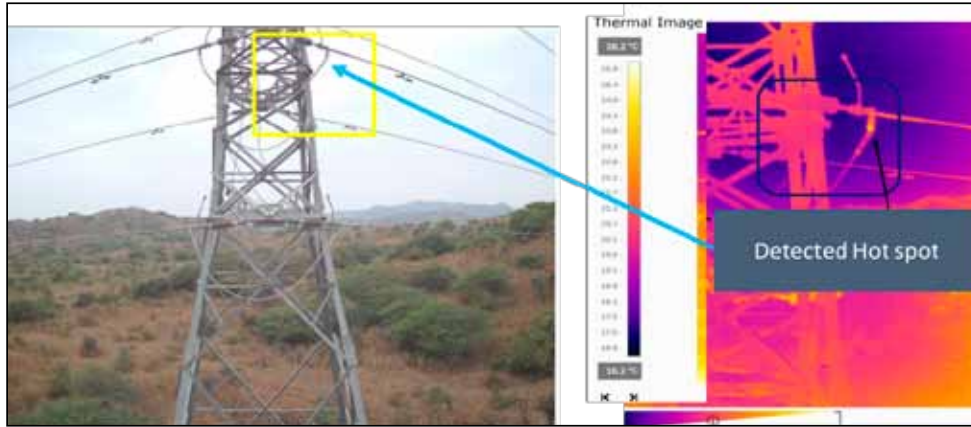
In transmission line many common electrical problem persists such as loose connections, damaged insulators, flash overed conductors PG clamps, melted conductor sleeves, metal structure hardware looseness, conductors snapping, load imbalances, improper grounding and corrosion. These defects cause an increase in temperature which can in turn cause component failure resulting into possible power outages with system losses. The hot spots caused by these defects can be easily located with the help of thermal imager; the hot spot detection assists in formulating the appropriate corrective remedial actions.

Today, IPPs and OEMs are rigorously working on increasing power plant operational efficiency with reducing OpEx costs. There is a vast advancement in instrumentation technology happening, all this factors forcing the industries to abandon the traditional routine maintenance programs and to adopt condition monitoring and predictive maintenance strategies.

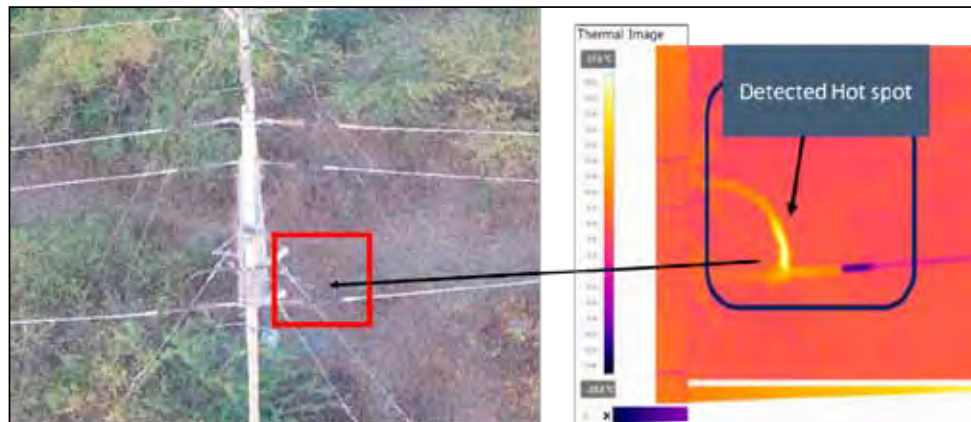
The power lines drone infrared survey is carried out by certified specialized aerial thermographers. These thermographers are trained to interpret the complex data compiled during the survey. The combination of an experienced team with enhanced high resolution IR Cameras and advanced softwares allows locating potential problems quickly and accurately.



Hot Spot area – A bolted clamp connection at the jumper.
Inference of Analysis – Temperature rise of 29°C above the conductor



Hot Spot area – A bolted clamp connection at the jumper.
Inference of Analysis – Temperature rise of 25°C above the conductor



Hot Spot area – A bolted clamp connection at the jumper.
Inference of Analysis – Temperature rise of 26°C above the conductor

Benefits of Drone Aerial Inspection

1. Extremely powerful predictive and preventive maintenance tool.
2. Recommended distance maintained in between power lines and drone, hence achieving high level of safety.
3. Reduction in maintenance cost.
4. Extending the useful life of power lines equipments.
5. Reducing the overall lifecycle costs.
6. Increased reliability.
7. Zero downtime. During survey no need to take shutdown of power lines.
8. Availability of anomaly temperature analysis by using ambient temperature or conductor temperature.
9. Availability of GPS locations of the anomalies.
10. Possibility of high resolution close-up images.

Azadi Ka Amrit Mahotsav: IREDA-NIWE Awards: Global Wind Day 2022 Celebration: Silver Jubilee Celebration of NIWE

Under the aegis of Azadi Ka Amrit Mahotsav, Ministry of New and Renewable Energy (MNRE) in collaboration with National Institute of Wind Energy and Indian Renewable Energy Development Agency (IREDA) organized an event to celebrate Global Wind Day 2022 and the Silver Jubilee year of National Institute of Wind Energy in New Delhi on 15th June 2022. Shri Indu Shekhar Chaturvedi, Secretary MNRE, Shri Dinesh Jagdale, JS, MNRE and Dr. K. Balaraman, DG, NIWE were present. The event was attended by more than 150 participants. Shri Singh delivered the keynote address and congratulated the wind fraternity for their achievement. He appreciated the role of NIWE in the development of wind energy sector. Shri Singh awarded the prizes to the winners of IREDA-NIWE award for the year 2020, 2021 and 2022.

Source: PIB, 15 June 2022



Record Renewables Output Helps India Ease Coal Shortage in May

Record green energy output reduced Indian dependence on coal in May, despite 23.5% growth in power demand, contributing to a rise in utilities coal inventories. The share of renewable energy sources in power output rose 14.1 per cent in May from 10.2 per cent in April.

Source: Reuters June 01, 2022

Renewables Remain 'Cheap' Despite Supply Chain Chaos

High hydrocarbon prices make renewables more attractive for power generation. LCOE report that the wind and PV generation costs remain lower than fossil fuel alternatives. Rising costs of hydrocarbons have outpaced growing material and installation costs for renewables. With the energy transition in full swing, new energy research provider BloombergNEF estimates that the global transition will require ~\$173 trillion in energy supply and infrastructure investment over the next three decades, with renewable energy expected to provide 85% of our energy needs by 2050.

Source: OilPrice.com, May 22, 2022

India Could Have Averted Power Crisis with Renewable Goal on Track

India could have averted the power crisis in April if progress towards the 175 GW.

Renewable energy goal had been on track, a new analysis by think tank Climate Risk Horizons. In April, India witnessed acute power shortage due to unavailability of coal supplies, with more than 100 million units (MU) of energy shortage on eight days over the course of the month forcing discoms in several states to enforce load-shedding or rolling blackouts to ration power.

Source: IANS May 21, 2022

Discoms to Mandatorily Purchase From Imported Coal-Based Plants

Ministry of Power may invoke Section 11 of the Electricity Act, 2003 to make it mandatory for discoms to buy power produced from imported coal. The move follows discoms' reluctance to buy costlier power from imported coal-based (ICB) units, which were earlier directed by the ministry under the same section to run at full capacity. Profitable spot market sales were one of the incentives offered to ICB units apart from the promise of cost pass-through. However, things haven't moved much on the ground as most states refrained from clinching deals with ICBs, due to financial constraints.

Source: Financial Express, 20th May 2022

HERC Approves Power Sale Agreement for 800 MW of Wind Solar Hybrid Power

In a recent order, Haryana Electricity Regulatory Commission (HERC) approved Haryana Power Purchase Center's (HPPC) petition for approval of source as well as approval of the draft Power Supply Agreement (PSA) for procurement of 800 MW ISTS connected Wind Solar Hybrid Power under Tranche IV scheme of SECI at a levelized tariff of Rs. 2.34/kWh for 700 MW and Rs. 2.35/kWh for 100 MW plus a trading margin of Rs. 0.07/kWh for a period of 25 years.

Source: Solar Quarter.com, 16 June 2022

India, Maldives plan transmission interconnection for renewable power transfer

India and Maldives have proposed to establish transmission interconnection for renewable power transfer as part of "One Sun, One World & One Grid" initiative, in order to facilitate Maldives' energy transition programme. The government of Maldives has resolved to achieve net zero emission target by 2030.

Source: DomainB.com, 09 May 2022

Renew Power Signs MoU to Invest Rs 50,000 Cr in Karnataka

Delhi-based ReNew Power has signed up a MoU with Karnataka proposing to invest Rs 50,000 crore in solar, wind and hybrid projects, battery storage and green hydrogen plant over a seven year period.

Source: Deccan Herald, 24 May 2022

Siemens Gamesa to Supply Wind Turbines for 133 MW Project in Karnataka

Siemens Gamesa has signed a deal with Singapore-based Vena Energy to supply wind turbines to a 133 MW Blended wind power project in Koppal District, Karnataka for supply of their 3.6 MW turbines.

Source: ET Energy World June 10, 2022

Tangedco for Separate Power Transmission Lines for Agriculture Services

Tamil Nadu Generation and Distribution Company (Tangedco) is mulling to install separate power transmission lines for agriculture services across the state. The project is to be implemented at a cost of Rs 2,000 crore under the Central government scheme and the Rural Electrification Corporation and Power Finance Corporation will be the nodal agencies to implement the scheme.

Source: IANS June 11, 2022



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SKF products for Wind Industry



Power of the Wind India's Driver to NET ZERO



Manoj Kumar Singh
Founder & CEO



Dr. Kruthika Eswaran
ESG Consultant

Net Zero Think Private Limited

Earth's climate has been changing over many centuries. Any perturbation due to an external change or forcing has resulted in a global temperature change. However, in the past century post the industrial revolution, the world has seen a rapid increase in the global temperature (Figure 1).

The rate at which temperature has increased especially in the past few decades is also unprecedented. This is due to large emissions of greenhouse gases (GHG) due to human activities resulting in global warming due to increase

Better coordination and partnership between the central and state governments around the policies including renewable costs, wind targets, supply chain utilization and a clear market roadmap will help India maximize its wind energy potential and could prove to be the critical link in the transition to clean energy and green economy both locally and globally.

in the greenhouse gas effect. The effects of climate change are already observed across the globe including rising temperatures, sea-level rise, melting of glaciers and an increase in the frequency of extreme events. The irreversible nature of climate change and the potential increase in damage in the coming years has therefore resulted in a threat to survival and a potential sustainable future. India

in particular is susceptible to rising sea-levels, extreme precipitation changes and long drawn intensive heat waves. However, while the damage cannot be completely reversed, solutions to adapt and mitigate against climate change exists. Currently, nations have agreed to prevent the rise of global temperature beyond 2°C and ideally limit it to 1.5°C by 2100. This is possible only if the global GHG emissions are halved by 2030 and reach net-zero by the second half of the century.

Energy Sector – India Scenario

Globally energy sector contributes to 73% of the global GHG emissions which has further increased in recent times. In India GHG emission from energy sector is more than 67%.

Since 1990, more than 80% of the total energy demand has been met by three fuels – coal, oil and biomass with coal as the major energy source. In 2020 coal met 44% of

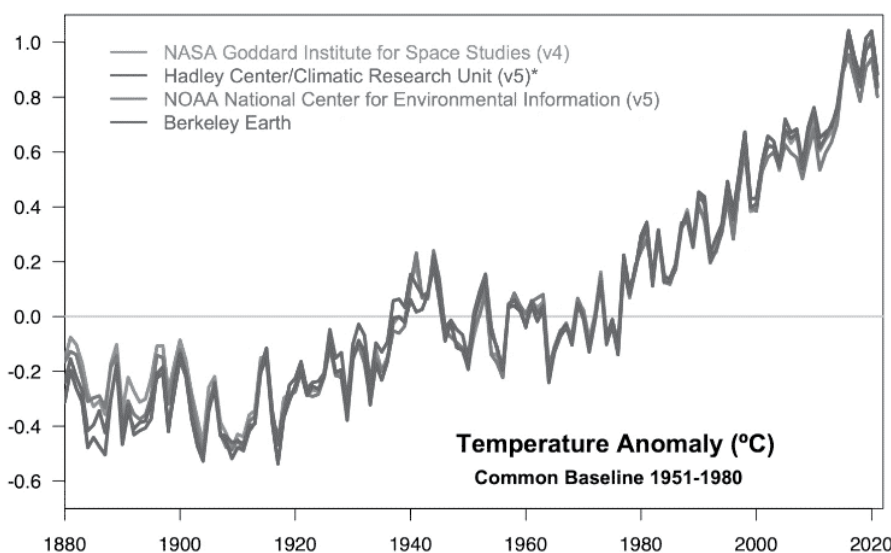


Figure 1: Global Temperature Anomaly Data Showing Rapid Warming in Past Few Decades.
(Source: NASA's Goddard Institute for Space Studies)

Table 1: Power Breakup of Installed Capacity in MW (Source: CEA)

Year	Thermal	Nuclear	Hydro	RES	Total	Wind	Wind power share (%)
March 2016	210,675.04	5780	42,783.42	45,924.04	305,162.5	26,777.4	8.77
March 2017	218,329.88	6780	44,478.82	57,244.23	326,832.93	32,279.77	9.87
March 2018	222,906.59	6780	45,293.42	69,022.39	344,002.4	34,046	9.89
March 2019	226,279.34	6780	45,399.22	77,641.63	356,100.19	35,625.97	10
March 2020	230,599.57	6780	45,699.22	87,027.68	370,106.47	37,693.75	10.18
March 2021	234,728.22	6780	46,209.22	94,433.78	382,151.22	39,247.05	10.27

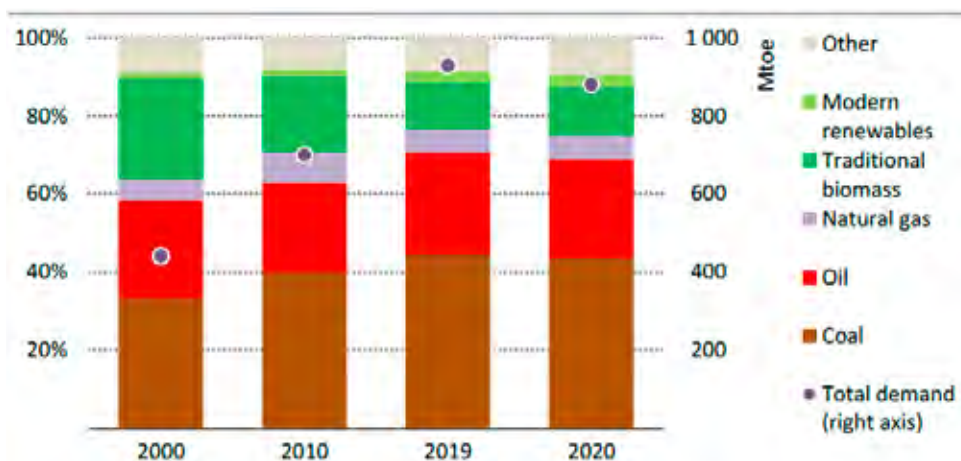
India's total energy demand (Figure 2a). Coal has also been responsible for the large growth in energy demand in the industries (Figure 2b).

In 2019, India reached near-universal household connectivity to electricity. The consumption of electricity has increased rapidly over the past two decades due to urbanization, industrialization and increase in income. Coal continues to dominate in supply contributing to 61% of total power generation. While coal has been a major part in India's economic growth, it has also heavily contributed to air pollution and increase in GHG emissions. One solution in the roadmap towards net-zero is to invest in clean energy and efficiency. This includes phasing down fossil fuel plants and moving onto renewable energy sources. Renewable sources have increased their share in the overall installed capacity in the power sector to 26.9% through government policy support and a reduction in the equipment costs.

Wind Energy - Driver to Net Zero

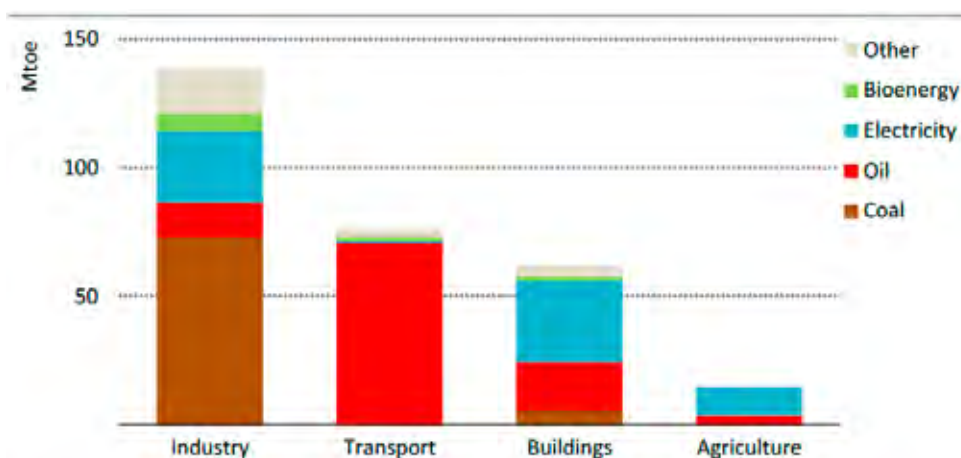
Wind energy for power generation started in India in the 1980s. However, unlike solar PV which had a rapid growth in the past five years, the capacity of the wind energy sector has dwindled in the past few years. This can be attributed to the shift in the tariff regime from Feed-in Tariff mechanism to competitive bidding and solar being attractive in cost competitiveness.

The potential of wind energy into decarbonizing energy sector is long known and have shown significant



India's energy demand has tripled over the last three decades: the share of traditional biomass has fallen, leaving coal and oil dominant.

Note: Mtoe = million tonnes of oil equivalent.



Among end-use sectors, the growth in energy demand has been larger in industries than in transport and buildings, and this growth has largely been fuelled by coal.

Figure 2:
 (a) Total Primary Energy Demand in India and
 (b) Change in Energy Demand by Fuel in Selected End-Use Sectors, 2000-19
 (Source: India Energy Outlook, 2021).
 Mtoe = million tonnes of oil equivalent

Table 2 : State Wise Onshore Wind Potential Breakup
(Source: NIWE)

S.No.	State	Wind Potential at 120m (GW)
1	Gujarat	142.56
2	Rajasthan	127.75
3	Maharashtra	98.21
4	Tamil Nadu	68.75
5	Madhya Pradesh	15.40
6	Karnataka	124.15
7	Andhra Pradesh	74.90
	Total 7 windy states	651.72
8	Other States	43.78
	Total	695.50

expansion over the years. The global annual wind energy is projected to increase 65 GW in accelerated cases (IEA 2020).

Barthelmie and Pryor (2014; 2021) have estimated scenarios where ambitious wind energy expansion involving >6000 GW of installed capacity by 2050 can help reduce CO₂ emissions by 15 Gt CO₂ per year and keep the global climate temperature well below 1.5°C provided there is reduction in energy use and GHG emissions from other sectors.

India's installed wind power capacity is 40 GW in February 2022 much less than the expected target of 60 GW in 2022. This is part of the 175 GW target of installed renewable capacities in 2022 established by India to decarbonize the energy sector. The importance of the wind energy sector is further emphasized by India's renewable goal of 450 GW by 2030. Wind is one of the cleanest sources of energy and has the second lowest levelized cost of energy (Ritchie and Roser, 2021). Wind provides a consistent daily generation unlike solar which is for 6-7 hours and also has no costs of carbon, lower marginal costs for dispatch and minimal water requirement. With an onshore

potential of 695.5 GW at 120m hub height (Table 2) and a long coastline of ~7500km for offshore plants, wind energy sector is in need of a revival and is an encouraging renewable energy option in India. Unlike other sectors which require materials to be imported, the wind sector is part of the "Make in India" Program thus providing rural employment and the involvement of 4000 vendors from various MSMEs.

Despite being an attractive solution for clean energy, the wind energy sector has its share of problems in India. Lack of communication and collaboration between the central and state governments, difficulty in acquiring lands for installation and withdrawal of feed in Tariff are some of the key issues which is hampering the growth. Offshore wind projects are encouraging due to India's long coastline. Whether they are financially viable is still under question because of the uncertainties involved including environmental risks, wind characteristics and difficulty in transportation of materials. However, by strengthening the onshore manufacturing base down the road, the price of offshore wind turbines is expected to be competitive and on par with onshore wind turbines.

Net Zero Path

Being the fourth highest wind installed capacity in the world India can look into improving the wind sector as one of the key solutions towards a net-zero economy. The scale-up of the wind sector is possible through new opportunities including hybrid projects, offshore projects, corporate PPAs and reintroduction of Feed in Tariff.

Wind Energy Industry stakeholders may also start tracking emissions during manufacturing, construction and operation of projects and adopt measures to reduce their carbon footprint.

Better coordination and partnership between the central and state governments around the policies including renewable costs, wind targets, supply chain utilization and a clear market roadmap will help India maximize its wind energy potential and could prove to be the critical link in the transition to clean energy and green economy both locally and globally.



Offshore WIND: World's Largest Wind Turbines to Spin Offshore Denmark

European Energy and Vestas have revealed their joint ambition to install Vestas' flagship V236-15 MW offshore wind turbines off the city of Frederikshavn in Denmark expected to be constructed and put into operation in 2024.

Source: Offshore Wind, May 12, 2022

Envision Energy Awarded 2000 MW Wind Turbine Contract in India

Envision Energy has been awarded 2000 MW order for supply and install 596 numbers of EN156/3.3 wind turbines with 156m rotor, which is the largest in the country. This rotor has a 3.3MW generator and a 140m hub height.

Source: EQ International, 30 April, 2022

Indian Electricity Grid Code Regulations, 2022

Central Electricity Regulatory Commission, New Delhi has circulated Indian Electricity Grid Code Regulations, 2022 vide Notification No. L-1/265/2022/CERC Dated: 7th June 2022 to come into force from the date notified by the Commission.

India can Install 2,500 MW Wind Power in Current Year: Tulsi Tanti

Mr. Tulsi Tanti, the founder and chairman, Suzlon Group and chairman of the Indian Wind Turbine Manufacturer Association has said that India is expected to install 2,500 MW Wind Power in Current Year. By changing the reverse bidding process, India can deliver 10,500 MW capacity every year which will require about Rs 70,000 Crore investment.

Source: ET Energy World, 28 April 2022

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SPECIFICATIONS

Weight	1.742 kg - 23 kg
Dimensions	DIA : 112 – 160 mm L : 192 – 660 mm
Brush	Gold wire
Ring	Gold-plated rings
Power Circuit Rating	5A – 20A
Communication Lines	1A
Operating Temperature	- 30°C up to 50°C
Heating Element	230V / 13W
Sealing	IP 54

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Record Wind Power Installations in 2021

- Drivers of the Renewable Energy Future



Stefan Gsänger

Secretary General, World Wind Energy Association (WWEA)
Bonn, Germany

The renewable energy is not only important for climate change mitigation but it is also needed for economic prosperity, independence and a stable world order, which becomes more obvious than before.

According to preliminary statistics published by WWEA, the world market for wind turbines reached another record in 2021 with wind turbines with a total capacity of 97.5 GW installed around the globe, after 92.7 GW in 2020. The overall capacity of all wind turbines worldwide has now exceeded 840 GW (after 742.5 GW in 2020), enough to provide more than 7% of the global power demand. This equals a growth rate of 13%, compared to 14% one year earlier and 10% in 2019.

According to preliminary figures from China, the country alone installed 55.8 GW of wind power in 2021, once again beating its own record of 2020 when 52 GW were installed. This is equivalent to a growth of 19.4%. China has now 344 GW of wind turbines installed across the country.

The US as the world's number two market saw robust growth of 12.5 GW, although substantially less than in 2020 when almost 17 GW were added. The installed wind power capacity in the US is now close to 135 GW.

Brazil has turned out as the world's third largest market for new wind turbines and showed 18.6% growth, adding 3.4 GW in one year. This makes the country the undisputed wind power leader in South America, with an overall wind power capacity of 21.4 GW.

The European markets show diverse developments: While the United Kingdom (2.6 GW) and Sweden (2.2 GW) achieved

This wind power boom reflects a general trend in the energy sector: The world is on its way to the age of renewables. In the power sector, investment in new renewable capacities has been exceeding the investment in fossil and nuclear power for more than a decade, reaching a share of 83% of net annual power capacity addition in 2020.

new installations of more than 2 GW and Germany slightly improved with 1.7 GW of net additions, although still far below 2017/2018, several European markets underperformed in 2021. Sweden entered the top ten wind markets as newcomer, with now 12 GW of overall wind capacity.

The second largest Asian wind power nation, India, reached a milestone of over 40 GW of total capacity, however, the country is behind its targets and added around 1.5 GW in the calendar year 2021. Ambitious national targets for wind power indicate that strong growth can be expected in the near future.

The new record shows us what the wind industry is capable of achieving, even in pandemic times.

General Growth in Renewable Energy

This wind power boom reflects a general trend in the energy sector: The world is on its way to the age of renewables. In the power sector, investment in new and renewable capacities has been exceeding the investment in fossil and nuclear power for more than a decade, reaching a share of 83% of net annual power capacity addition in 2020. Wind power has been a major driver in this, but solar energy has also seen impressive growth, even exceeding wind power in terms of new installations – although not yet in terms of energy production.

While in the transportation sector, the share of renewables is still below 5%, the trend is also clear: Driven by the electrification of cars as well as trains, much higher renewable energy shares can be expected in the very near future. In Germany, for example,

Table 1 - Wind Power: New Capacity added in 2021 and Cumulative Installations

Country/Region	2021	New Capacity 2021	Growth Rates 2021	2020	2019	2018
China*	343'829	55'800	19.4%	288'029	236'029	209'529
United States***	134'846	12'518	10.2%	122'328	105'433	96'363
Germany	63'924	1'716	2.8%	62'208	61'357	59'313
India	40'100	1'475	3.8%	38'625	37'529	35'129
Spain	28'196	750	2.7%	27'446	25'808	23'494
United Kingdom	26'812	2'645	10.9%	24'167	23'515	20'743
Brazil**	21'365	3'355	18.6%	18'010	15'452	14'707
France	19'081	1'132	6.3%	17'949	16'646	15'313
Canada	14'304	677	5.0%	13'627	13'413	12'816
Sweden	12'097	2'175	21.9%	9'922	8'985	7'406
Rest of the World*	135'166	15'019	12.5%	120'147	105'618	94'719
Total*	839'730	97'272	13.1%	742'458	649'785	589'547

* Preliminary, ** By November 2021, ***excl. Puerto Rico

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every fourth new car in December 2021 was a battery electric vehicle. In Norway, the market share of non-electric cars has shrunk in January 2022 to only 10%. In shipping and aviation, most experts expect soon synthetic fuels produced from green hydrogen to play an important role – also in this case, hydrogen will have to be produced based on electricity from renewables.

Electrification of the energy supply is also happening in the heating and cooling sector, the third large energy consumer. While the advantage of electric cooling has become obvious long ago, heat pumps, sometimes in combination with geothermal or solar energy, are about to become mainstream heating technologies in many European countries and beyond.

As we can see, the global trend towards renewable energy in all sectors is clearly visible and in general, all technologies which are necessary for this transformation already exist.

The Drivers of the Renewable Energy Future

Climate Emergency

One important driver for this development is without doubt the climate emergency. Climate induced disasters like droughts as well as floods but also devastating storms are happening more and more frequently, killing people all over the world and destroying the basis of human life. The most recent reports published by the International Panel on Climate Change (IPCC) do highlight how urgently the world needs to shift away from burning coal, oil or gas.

Economics

Another, equally important driver for renewable energy are the economics of the renewable technologies: The cost of not only wind power but also solar energy dropped within a decade to levels well beyond “conventional” power generation from fossil or nuclear energy. It is simply cheaper to invest in renewables.

Energy Independence

The third and today maybe the most important driver of renewable energies results from their universal availability: wind and sun can be harvested practically everywhere, the access cannot be blocked and accordingly in particular these two resources are the basis for energy independence of countries and communities around the world. This aspect plays now an even more concrete role than ever before: The current war in Ukraine has demonstrated once more the great dangers which are corresponding with an energy supply that is largely based on imported fossil and nuclear energy sources. It is well known that past conflicts did also originate from energy, in particular access to oil. One-sided dependencies are a potential cause not only for major tensions and for an unbalanced distribution of economic opportunities. They even entail a risk of war.

While some politicians used to praise renewables because of their environmental and economic benefits, remarkably some politicians refer now to another aspect, calling renewable energies “freedom energies,” like recently the German Finance Minister.

Accordingly, it can already be observed that the trend towards wind, sun and the other renewables will be accelerated by the ongoing war in Ukraine. Governments and people around the world are shifting towards locally resourced, affordable renewable energy which ensures energy independence and peace. In other words, governments, businesses and people are now aiming at phasing out fossil and nuclear sources as soon as possible for a peaceful, a free, a prosperous renewable energy world.

The wind community from around the world is certainly ready and prepared to support this endeavour and make it a success.

IWTMA Wind Power Data Repository

One-Stop Collection of data on Wind Power Sector of India

IWTMA's Data Repository was launched on 6th April 2022 by Shri Dilip Nigam, Advisor, Ministry of New and Renewable Energy (MNRE), Government of India developed and compiled by Mr. O P Taneja. This compilation is a one-stop collection of data related to the wind power sector in India.

Repository endeavors to provide data related to wind industry in India with the aim to benefit various stakeholders.

The Target Group of Repository

- Investors, who wish to create the manufacturing facilities of wind turbines and/or their components.
- Independent power producers, individuals, corporate, government institutions, etc. who wish to invest in the wind farms for wind power generation.
- Stakeholders across the eco system and value chain.
- Banks, Financial Institutions, Private Equity institutions and Consultants involved in investments.
- Consultants, clean-tech specialists, lawyers, surveyors, content writers, etc.
- Students and Research Scholars and educational institutions.

Areas Covered by the Repository

Repository covers most of the aspects of wind industry. The following topics (not limited to) and will be reviewed and updated from time to time.

- Regulations notifications, guidelines, schemes of central government and wind rich states of India.
- Policies of center and states.
- Potentials of the Indian states at various hub heights.
- Entities catering to wind and renewable sector like Ministry of New and Renewable Energy (MNRE), Ministry of Power (MOP), Ministry of Defense (MOD), Central Electricity Regulatory Commission (CERC), State Electricity Regulatory Commissions (SERCs), Central Electricity Authority (CEA), Energy Exchanges, Power System Operation Corporation (POSOCO), etc.
- Skill development in wind energy.
- Nodal Agencies involved in the Renewable Sector.

Original/base documents, amendments, etc. are compiled from recent to past in a compendium Book form. Each document has the Index of contents and page numbers for easy use. The data are in PDF format (downloadable) and will be updated regularly.

In most of the cases, the details will be available in one or several volumes depending upon the size of the documents. The Data Repository can be accessed on the website of Indian Wind Turbine Manufacturers Association.

Please visit www.indianwindpower.com

Discoms Legally Obligated to Supply 24/7 Power to Mid-Sized Cities

The Ministry of Power has issued a gazette notification that distribution licensees must ensure 24/7 uninterrupted power supply to all the consumers residing in cities with 100,000 or more residents to prevent the need for polluting diesel generators. The ministry notified the Electricity (Rights of Consumers) Amendment Rules, 2022 of the Electricity Act, 2003. The amended rules introduce key additions and revisions to the Electricity (Rights of Consumer) Rules, 2020.

Source: Mercom India, 5 May 2022

India Working Well on Phasing Out Coal, Need to Focus on Existing Schemes

India's efforts to boost renewable energy capacity were practically making it possible to reduce the use of coal, Francesco La Camera, Director General of the International Renewable Energy Agency told. He added that the country should look to strengthen existing renewable energy programs to speed up its transition. Edited excerpts.

Source: The Indian Express, 10 May 2022

SJVN bags 30 MW wind-solar hybrid project worth Rs 195 Cr

Government-owned Satluj Jal Vidyut Nigam (SJVN) has said that it has won a contract worth Rs 195 Crore for setting up of its first ever 30 MW Wind-Solar Hybrid project. This project will assist the company in achieving its ambitious shared vision of 5000 MW by 2023, 25000 MW by 2030 and 50000 MW by 2040 and simultaneously contribute towards RE capacity addition target of 500 GW by 2030 set by the government, the company added.

Source: Business Today, 6 May 2022





Regulatory Update on Wind Power

Renewable Energy Certificates (REC) Regulations, 2022

CERC has notified Renewable Energy Certificates (REC) Regulations, 2022 Vide Notification No. RA-14026(11)/1/2022-CERC dated 9th May 2022. Salient features of the new regulations are:

- Any RE Generator, whose tariff is not been determined under Section 62 or 63 of the Act or who has not sold power directly or through trader or in power exchange for RPO compliance would be eligible for Certificate subject to, he should not have availed benefits of concessional or waiver of transmission or wheeling charge.
- Registration of such eligible entities would be valid for 25 years.
- Captive generating station (CGP) based on RE sources shall be eligible for sale of REC beyond self-consumption.
- Distribution companies or open access consumer shall be eligible for REC to the extent of excess RE procurement above their RPO.
- In addition to, the transactions of Certificates through power exchange and transactions of Certificates through electricity traders at mutually agreed price have been allowed.
- There shall be no Floor or Forbearance Price for Certificates.
- The Certificates issued to the eligible entity shall remain valid till they are sold in power exchange or through a trader and used for RPO compliance.
- Certificate Multiplier assigned to on-shore Wind and Solar Certificate Multiplier is 1 applicable for 15 years from the date of commissioning. (<https://lnkd.in/dTGrCaGH>)

Promoting Renewable Energy through Green Energy Open Access

In order to further accelerate our ambitious renewable energy programmes, with the end goal of ensuring access to affordable, reliable, sustainable and green energy for all, Green Open Access Rules, 2022 have been notified on 06.06.22 by the Ministry of Power.

The salient features of the Rules are as under:

- a. The Green Open access is allowed to any consumer and the limit of Open Access Transaction has been reduced from 1 MW to 100 kW for green energy, to enable small consumers also to purchase renewable power through open access.
- b. Provide certainty on open access charges to be levied on Green Energy Open Access Consumers which includes transmission charges, wheeling charges, cross-subsidy surcharge and standby charges. Cap on increasing of cross-subsidy surcharge as well as the removal of additional surcharge, not only incentivise the consumers to go green but also address the issues that have hindered the growth of open access in India.
- c. Transparency in the approval process of the open access application. Approval to be granted in 15 days or else it will be deemed to have been approved subject to fulfilment of technical requirements. It will be through a national portal.
- d. Determination of green tariff: The tariff for the green energy shall be determined separately by the Appropriate Commission, which shall comprise of the average pooled power purchase cost of the renewable energy, cross-subsidy charges if any, and service charges covering the prudent cost of the distribution licensee for providing the green energy to the consumers.
- e. The Rules will help to streamlining the overall approval process for granting Open Access including timely approval, to improve predictability of cash flows for renewable power producers. It will also bring uniformity in the application procedure.
- f. Banking of surplus green energy with the distribution licensee mandated.
- g. There shall be a uniform renewable purchase obligation, on all obligated entities in area of a distribution licensees. It has also included the Green Hydrogen/Green Ammonia for fulfilment of its RPO.
- h. Consumers will be given the green certificates if they consume green power.
- i. Cross subsidy surcharge and additional surcharge shall not be applicable if green energy is utilized for production of green hydrogen and green ammonia.

(Source: PIB Delhi, 07 June 2022)

Karnataka Renewables Policy 2022-2027

The salient features relating to wind power are as follows.

- Facilitate 10 GW of additional RE Projects
- Achieve RPO targets.
- Upgrade transmission network
- Electric vehicles and charging stations
- Energy Storage Projects for Renewable Energy
- Round the clock power market
- Promote wind-solar Hybrid systems, hybridization of existing projects and developing new hybrid projects in the State.
- Wind-Solar Hybrid Power Parks at Chitradurga, Davanagere and Ballary 11,065 MW
- Development of green energy corridor
- Development of wind markets viz., new wind energy projects as well as Repowering of existing wind projects

Capping of Power Price on Exchanges by CERC, On Hold till 30th June 2022

Central Electricity Regulatory Commission (CERC) vide Order No. 4/SM/2022 dated 01/04/2022 directed the power exchanges until further orders, to redesign, with immediate effect, the bidding software in such a way that members can submit their bids in the price range of Rs.0/kWh to Rs.12/kWh for DAM and RTM. The Commission is of the view that this price moderation will be in keeping with the present market realities and shall not have any significant impact on the volume transacted and safeguard the consumer interests.

However on 06th May 2022 for Petition No. 5/SM/2022, the commission Put a HOLD on the order dated 01.04.2022 as detailed below:

In exercise of the aforesaid powers under Regulation 51(1) of the PMR 2021 and in view of the analysis of price trends and in order to balance the interests of investors in terms of reasonable return and protecting consumer interests, the Commission hereby directs the Power Exchanges, from the date of this Order till 30th June 2022, to redesign, with immediate effect, their software in such a way that members can quote price in the range of Rs.0/kWh to Rs.12/kWh in DAM (including GDAM), RTM, Intra-day, Day Ahead Contingency and Term-Ahead (including GTAM) Contracts. The contracts, which have already been transacted till the date of issuance of this Order shall be delivered and settled as per the earlier terms and conditions. Application of the price ceiling for a limited period is based on the belief of the Commission that intervention in the market should not be prolonged unless absolutely necessary in public interest as in the existing circumstances prevailing in the country.

The Exchanges are further directed to submit the compliance of this direction within two days from the date of this Order. With coming into effect of this Order, the Order dated 01.04.2022 in Petition No. 4/SM/2022 shall stand superseded.

Compiled by: **Om Taneja**, Renewable Energy Consultant



Indian Wind Energy Sector Envisions Flow of Rs. 80,000 Crore in Coming Years

"Indian Wind Energy Sector is hopeful of attracting Rs. 10,000-15,000 crore investments in upgrading equipment manufacturing capacity alone which will have the catalysing effect of attracting additional Rs. 70,000-80,000 crore investments in complimentary activities such as transmission, storage and services" said Mr. Tulsi Tanti, Chairman of Indian Wind Turbine Manufacturers Association (IWTMA), during the three-day mega clean energy event - Windergy 2022 - held at Pragati Maidan, New Delhi from April 27-29.

Source: Business World, 3 May 2022

Adani, TotalEnergies to Create World's Largest Green Hydrogen Ecosystem

Adani and TotalEnergies of France, have entered into a new partnership to jointly create the world's largest green hydrogen ecosystem. This will transform the energy landscape both in India and globally. Adani New Industries Limited (ANIL) ambition is to invest over USD 50 billion over the next 10 years in green hydrogen and associated ecosystem to develop green hydrogen production capacity of 1 million ton per annum before 2030.

Source: Adani.com, 14 June 2022

Gas Must Exit Global Power System by 2040: Report

Gas must exit electricity generation rapidly after coal as early as 2035 in rich countries, and by 2040 for the rest of the world to keep the Paris Agreement's 1.5 degrees Celsius limit in reach, a new report "Fossil gas: a bridge to nowhere", by research organisation Climate Analytics. It shows that the decline in fossil gas electricity generation should start immediately, and fall to just 15 per cent of total global electricity generation by 2030 to reach very low levels by 2035.

Source: Dajjiworld.com, 14 June 2022

Greenko Commences Construction of World's Largest Integrated RE Storage in AP

Greenko Group has initiated largest integrated RE storage project with Andhra Pradesh at Kurnool district. The 5,230 MW project is a first-of-its-kind single location energy storage project with wind and solar capacities and is being implemented with an investment of over \$3 billion.

Source: ET Energy World, 17 May 2022

IRENA Executive Sees India Influencing World on RE during G20 Presidency

A senior executive from the International Renewable Energy Agency (IRENA), has said that India will have many opportunities to share its expertise and products in renewable energy with developing countries. This will drive international cooperation on energy transition during India's upcoming G20 presidency.

Source: Solar Quarter, 20th May 2022

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Editor: Dr. Rishi Muni Dwivedi

Government Plans to Bid Offshore Wind Energy Blocks Off the Coast of Gujarat and Tamil Nadu



Shri R.K. Singh, Union Minister for Power and New and Renewable Energy held a meeting 9th June 2022 on transmission planning for offshore wind energy projects in India. Shri Alok Kumar, Secretary, Ministry of Power and Shri Indu Shekhar Chaturvedi, Secretary, Ministry of New and Renewable Energy were present in the meeting.

During the meeting, transmission and evacuation infrastructure required for offshore wind projects of total capacity 10 GW off the coasts of Gujarat and Tamil Nadu, was discussed. A presentation on this was made to the Minister by the Central Transmission Utility (CTU).

After a detailed review, it was decided to bid out offshore wind energy blocks as per the following trajectory:

- Bids equivalent to a project capacity of 4.0 GW per year for a period of three years starting with the current FY 22-23 for development off the coast of Tamil Nadu and Gujarat for sale of power through open access/captive/bi-lateral third party sale/merchant sale.
- Subsequently, a project capacity of 5 GW will be bid out every year for a period of five years i.e. up till FY 29-30.

The project capacity of 8 GW bid out in the first two years beginning FY 22-23 will also be able to avail of the benefits of green attributes like carbon credits.

The bidding for the first 12 GW will be conducted on a single stage two envelope model wherein the bidders will be evaluated based on their techno-commercial capabilities and only the technically qualified bidders will proceed to financial evaluation. The financial evaluation will be based on quoted lease fee per sq km of sea bed area. The bidder offering the highest lease fee per square km of sea bed area would be declared as the winner for allocation of the project.

Evacuation and transmission of power from offshore pooling substation (PSS) to onshore transmission will be provided free of cost for all offshore wind capacities that will be bid out up to FY 29-30.

The Ministry of New & Renewable Energy through its implementing agency will issue the first bid in the next three - four months for leasing out offshore wind energy blocks equivalent to 4.0 GW capacity off the coast of Tamil Nadu.

Source: Press Information Bureau, Delhi, 09 Jun 2022

India can be cheapest producer of green hydrogen: Kant

NITI Aayog CEO Mr. Amitabh Kant in an interactive session at the Raisina Dialogue has said that India can be the cheapest producer of Green Hydrogen in the world due to its enabling climatic conditions and pointed out that India has brought down the cost of renewable energy. Observing that India is a large consumer of Green Hydrogen, Kant said that the country will be the capital of the world in Green Hydrogen production.

Source: The Mint, 26 April 2022

GAIL Awards Contract to Build India's Largest Green Hydrogen Project

GAIL Limited has awarded a contract to set up one of the largest Proton Exchange Membrane (PEM) Electrolyser to produce 4.3 MT hydrogen a day in India. In tandem with the National Hydrogen Mission, the renewable energy-powered project would be installed in Guna, Madhya Pradesh.

Source: Swarajyamag, 12 May 2022

India Central to Transition to Green and Clean Energy: US Official

While speaking at an event organised by the DOE and thinktank Observer Research Foundation in Mumbai, assistant secretary for international affairs in the DOE, Andrew Light, said India will decide the global future of energy as well. India is central to any global climate response and a transition to green and clean energy, a visiting official from the US' Department of Energy (DOE) said.

Source: Business World, 13 May, 2022

India Working Well on Phasing Out Coal, Need to Focus on Existing Schemes

India's efforts to boost renewable energy capacity were practically making it possible to reduce the use of coal, Francesco La Camera, Director General of the International Renewable Energy Agency told. He added that the country should look to strengthen existing renewable energy programs to speed up its transition. Edited excerpts.

Source: The Indian Express, 10 May 2022



Thank you

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We will see you again in 2024.

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Windergy Team