

INDIA POWERS TOWARD RENEWABLE ENERGY: PART II

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India powers toward renewable energy: Part II

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In the second instalment of this three-part exclusive, Sarosh Bana discusses the dynamics of the Indian solar market relative to other renewable energy segments in the country.



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[In part I](#) of his latest feature on the Indian renewable energy market, Business India executive editor Sarosh Bana provided an overview of the issues impacting the industry. In the second instalment of this three-part exclusive, Bana drills down deeper, discussing the dynamics of the Indian solar market and how it stacks up to not only solar countries around the world but also other renewable energy sectors within the India market itself.

Foreseeing solar to become a mainstream energy source in India, Ajay Goel, CEO of Bangalore-based Tata Power Solar¹, says the build-up of solar power capacities was hampered by the disinclination of companies to invest in manufacturing in the absence of long-term policy support that could have made these capacities viable, as well as increased demand and access to financing options.

Policy mismanagement does not appear India-specific. The US has been particularly affected by this drawback that decimated its wind farm installations by 90 per cent in 2013, from a record 13,000 MW the previous year, according to new data released by the Global Wind Energy Council (GWEC). The US, with 61,000 MW of wind capacities, is next only to China's 91,000 MW in the list of 85 countries surveyed by GWEC with cumulative wind capacities of 318,000 MW. India also reflected the global downturn where 45,000 MW wind generating capacities were installed worldwide in 2012, but slumped to 35,000 MW in 2013. This was only the second time in 25 years that installed capacity had shown negative growth.

Other impediments in India cited by Makhija are the mandatory forecasting for projects with severe penalty for deviation from scheduled generation, increased credit risk due to delayed payments by discoms, lower-than-expected increase in Feed-in Tariffs (FITs) in some states, severe evacuation constraints, and the steep Rupee depreciation that has affected foreign currency borrowings and cost of turbines using imported components and raw material.

While wind energy accounts for 8.24 per cent of India's overall electricity capacity, this share is 33.8 per cent in Denmark, followed by 24.6 per cent in Portugal, 20.9 per cent in Spain and 17.3 per cent in Ireland. [Denmark is targeting 50 per cent wind by 2020, primarily from offshore wind farms.](#)

Similarly, the global solar power industry is expected to get a boost from Saudi Arabia — the world's largest exporter of crude — which plans to harness solar energy to meet almost 30 per cent of its total energy requirement by 2032 by investing \$109 billion to produce 41 GW of solar energy by that time.

Wind turbine manufacturers such as Suzlon, Vestas and Enercon (renamed Wind World) have captured the largest market shares of wind power installations in India in the past, Gamesa's Kymal notes. "Over the past couple of years, many new entrants like Regen, Gamesa and GE have established their installation base in India," he adds.

In 2013-14, Suzlon regained its top spot in the country, with a share of 19.4 per cent, edging past Gamesa's 19.1 per cent. The shares of Wind World were 17.03 per cent, Regen, 15.9 per cent, GE India, 9.6 per cent, INOX Wind, 7.2 per cent, and Vestas, 3.9 per cent.

Venkataraman Rajaraman, director of infrastructure and project finance at Fitch Group's India Ratings & Research, in Chennai, says India has pushed ahead relatively successfully on renewable energy. Most global OEMs have set up manufacturing units in the country and wind developers have been helped in land acquisition by the respective state governments. But he says the sector is constrained by high costs of importing capital equipment, which is heavily debt funded.

"Many developers have not hedged these exposures, rendering them vulnerable to exchange and interest rates," Rajaraman notes. "Universally, solar power is expensive and unviable but for policy support from governments, and availability of debt too is generally more difficult than for other renewables."

Manufacturers leverage renewables

Amit Kumar, executive director, energy & utilities, PricewaterhouseCoopers Pvt. Ltd (PwC), says the high net worth beneficiaries of accelerated depreciation had been manufacturers of textiles, cement, steel and automobiles who used RE as captive power for their power-intensive industries. They enjoyed the benefits on their host business and were less concerned about improving power generation and Plant Load Factor (PLF). Others, including smaller investors, also invested in wind turbines to minimise their income tax liabilities.

"Projects were set up in areas of low wind density and this resulted in low generation," Kumar points out. "In short, the focus was more on earning profits and less on improving generation."

However, Kumar expects the shift from the tax benefit-based investment to the IPP-based model for wind power to represent the next generation growth phase. "IPPs are keen now to invest in this matured market that also has access to proven technology and skill-sets," he explains. "They have far less risky investment options now and are increasingly developing wind farms, each of an installed capacity of 50 MW and above." IPPs also have a choice of revenue models and are assured impressive returns with the right kind of strategy and revenue model.

Ashwin Gambhir, senior research associate at Pune-based Prayas energy consultancy, also sees India entering the next phase of renewable power development where installations will pick up mainly on commercial considerations and not on incentives. Observing that strict RPO compliance will further help the industry, he says, "Wind power prices, however, need to be discovered through competitive bidding — the same way it is done in solar — to discover true prices and help increase targets."

energy and energy efficiency policy and regulatory framework in India.

Tata Power pledges to extend solar and wind energy projects

Tata Power, India's largest integrated power utility has said it is committed to generating 20-25 percent of its total generation capacity from clean energy sources, adding 30-50MW of solar power and 150-200MW of wind energy in India year on year.

India powers ahead on renewable energy

Part 2. Energy-starved India is becoming a vibrant market for renewable energy. This bodes well for a country that has often seen its industrial and economic growth inhibited by a truncated supply of conventional power.

For wind, there is no competitive bidding involved and projects may be installed through the FIT or RE Certification (REC) route as long as the utilities off-take that power to meet their RPOs. Countries such as the US, China and Brazil have such bidding in wind. Solar power projects are selected through competitive bidding for pre-decided capacities.

Notified by the Central Electricity Regulatory Commission (CERC), REC is a market-based instrument that facilitates the RPO portfolio by inter-state exchange of RECs, one REC equalling one MWh. The REC mechanism seeks to address the mismatch between renewable energy availability and the requirement of the utilities to meet their RPO through a national-level market.

According to the CSE report, competitive bidding leads to market price discovery and the possibility of price reduction. It notes that competitive bidding without a robust policy framework for quality control may lead to project failure, as intense competition will force developers to quote unviable tariff and compromise on quality and technology.

Bikesh Ogra, president (Solar) of Mumbai-based Sterling & Wilson, finds India's wind sector reviving with the re-introduction of GBI, its 'backbone,' though REC has floundered from poor RPO implementation. CSE mentions that while most states introduced their own RPO targets in 2010, none of them abided by them. States with insufficient renewable resources face difficulty in meeting their RPO targets. For instance, Rajasthan reduced its target from 8.5 to 6 per cent. But Tamil Nadu reduced its target from 14 to 9 per cent, despite drawing 9.5 per cent of its electricity from renewables.

Solar projects upto 500 kW are provided 30 per cent of their capital costs by MNRE. The Viability Gap Funding (VGF), a capital subsidy, is expected to reward "genuine solar developers" who maintain the cost-quality balance, says Ogra. "Investments in RE are also being motivated by concessional excise and custom duties, as also FIT norms, the best example being Gujarat," he notes. "One of the drivers for investment in RE in future will be the build, operate, transfer (BOT) model."

Ripe for solar

Ogra says that because it is incipient, India's solar sector has enormous potential for growth, whereas countries like Germany and Spain have reached maturity. He maintains, however, that many RE projects have been derailed due to non-availability of project financing, apart from slow and poor policy implementation. "While financing is easily available in solar-developed countries like Germany, USA, Italy and Japan, project financiers and equity investors in India are slowly but steadily putting their money in RE projects," he notes. Sterling and Wilson, an associate company of the US\$2.5 billion 148-year-old Shapoorji Pallonji Group, is the largest solar EPC in India and 20th globally. It has commissioned over 200 MW of solar projects in India and is building about 200 MW of solar PV across the world.

However, with fair capacity additions in the country, financial institutions are now more open to funding if project developers have sound basics. Other renewable energy sources such as biomass and Small Hydro Projects (SHPs) are largely evaluated on a different risk profile based on location and availability of raw material (in case of biomass projects), these factors affecting their bankability.

FIT, the world's most successful policy mechanism for stimulating the development of renewables, was introduced in 1995 when the Ministry of Non-conventional Energy Sources, the precursor of MNRE, specified uniform FIT of Rs2.25 (3.81 cents)/kWh, with a yearly 5 per cent escalation for all RE sources. The National Tariff Policy empowers SERCs to determine preferential tariff for RE sources after taking into account their potential and impact on retail tariff.

Goel says that solar projects, starting from JNNSM Phase I, have been auctioned via a reverse bidding mechanism (companies selected on the basis of quoting the least FIT), rather than a predictable FIT that is used all over the world and in India for wind energy projects. "Reverse bidding mechanisms have gained popularity even at the state level," he indicates. "Gujarat's solar programme was funded through FIT and is considered by many as the most successful model to date." Incentive systems should hence be made predictable for solar projects through FIT at both the central and state levels, he adds.

Ashish Rajvanshi, Principal, and Raghav Iyer, senior associate (engagement manager), of Booz & Co. (India) Pvt. Ltd, now part of PwC and renamed Strategy&, explain that renewable energy projects are awarded in two categories, commercial and pilot. Pilot projects are generally given through FIT, commercial through reverse bidding, where IPPs bid the amount they need to set up and operate the plants. In case of conventional power projects, they are typically driven through public private partnerships (PPPs) or off-take agreements with built-in escalation for fuel prices.

"The ownership model in wind has clearly seen a shift towards IPPs from pure financial investors," Rajvanshi notes. "Solar still has small-scale investments from investors with no experience in renewable energy." With sourcing being the key to cleantech projects, he deems sourcing the right solar panels imperative as they account for almost half the up-front cost, and any savings on this front can significantly improve the business case for the project.

"Most IPPs have recognised this and have tie-ups with major equipment manufacturers," Rajvanshi adds.