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(Energy Conservation : It Doesn't Cost. It saves)

03.06.2019

India becomes lowest-cost producer of solar power

The Economic Times : May 30, 2019

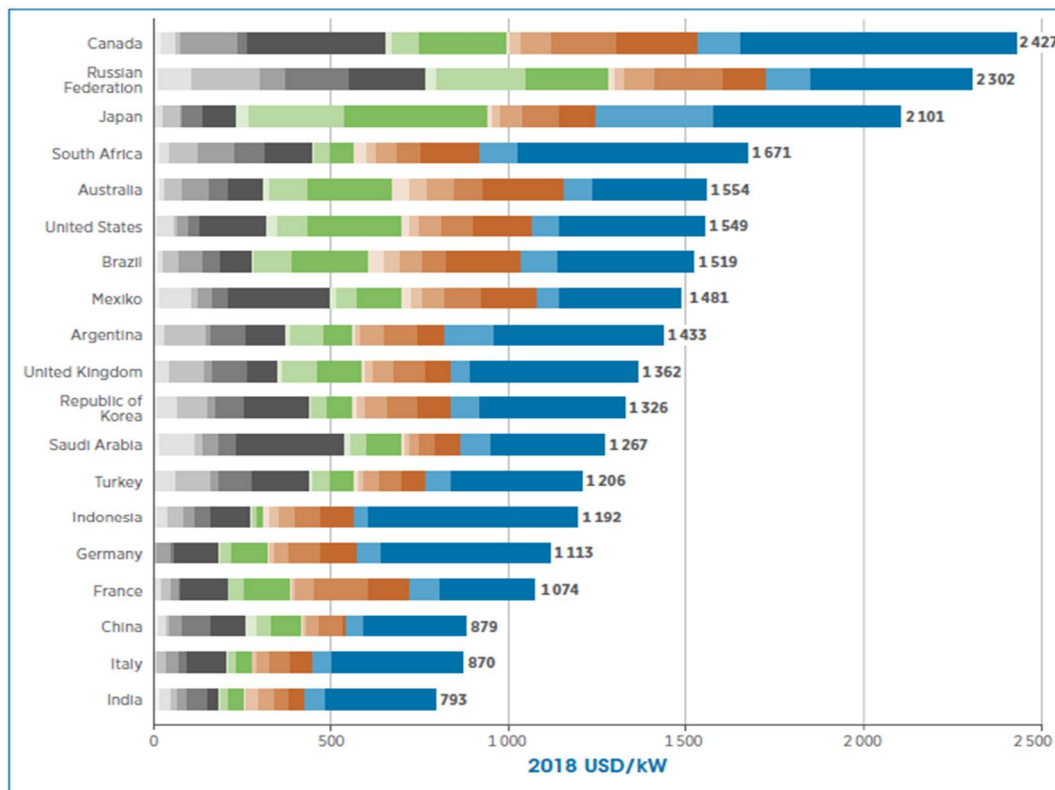
Further, the costs of setting up solar PV projects were found to have dropped at the fastest pace – 80 per cent – in India between 2010 and 2018.

India has finally bagged the tag of the lowest cost producer of solar power globally. The country-wise average for the total installed costs of utility scale solar PV in 2018 ranged from a low of \$793 per Kilowatt (Kw) – around Rs 5.5 crore per Megawatt -- in India to a high of \$2,427 per Kw in Canada, the International Renewable Energy Agency (IRENA) said today.

"India was estimated to have the lowest total installed costs for new utility-scale solar PV projects that were commissioned in 2018 at \$793 per Kw, 27 per cent lower than for projects commissioned in 2017," IRENA said in a detailed report titled "Renewable Power Generation Costs in 2018" released today.

Further, IRENA conducted an analysis of the decline in the cost of setting up solar PV projects between 2010 and 2018 across eight major markets including China, France, Germany, India, Italy, Japan, UK and the US. The costs were found to have dropped at the fastest pace – 80 per cent – in India.

Figure 2.4 Detailed breakdown of utility-scale solar PV total installed costs in G20 countries, 2018





Typically, the cost of hardware -- including modules, inverters and racking and mounting -- account for more than a half of the total cost of setting up a solar PV project in India while installation and soft costs like financing and system design account for the rest.

In 2018, 94 Gigawatt of new solar PV capacity was added globally, accounting for 55 per cent of the total new renewable power generation capacity additions. The largest markets for new capacity additions in 2018 were China (44 GW), India (9 GW), the United States (8 GW), Japan (6 GW), Australia and Germany (4 GW), and the Republic of Korea, Mexico and Turkey (around 2 GW each).

The report said the sustained and dramatic decline in the cost of electricity from utility-scale solar PV continued in 2018, with a fall in the global weighted-average Levelised Cost of Electricity (LCOE) of solar PV to \$0.085 per Kilowatt Hour (kWh) – 13 per cent lower than for projects commissioned in 2017.

The country-specific LCOE of utility-scale solar PV declined by between 62 per cent in Japan and 80 per cent in Italy between 2010 and 2018. "The year-on-year reduction in the LCOE in 2018 ranged from 21 per cent in India to a low of 1 per cent in Japan," IRENA said.

The cost reductions in 2018 were supported by crystalline silicon module price declines of between 26 per cent and 32 per cent, between December 2017 and December 2018, after modest declines of between 1 per cent and 7 per cent for the 12 months from December 2016 to December 2017.

Nuclear power better than any other source of power generation: Secretary, Department of Atomic Energy

The Economic Times : June 3, 2019

"Each unit of 1,000 MW of nuclear power requires 20 hectares while coal based power generation power plants require 70 hectares of land and returns are negligible," he pointed out.

Nuclear power generation is comparatively better than any other source of power generation, Secretary in the department of atomic energy K N Vyas said Saturday.

Vyas compared nuclear power generation with thermal power generation, which has many disadvantages.

"Each unit of 1,000 MW of nuclear power requires 20 hectares while coal based power generation power plants require 70 hectares of land and returns are negligible," he pointed out.

Speaking at the diamond jubilee celebrations of the Council of Scientific and Industrial Research and National Aerospace Laboratories on the NAL premises, Vyas said the solar park at Rajasthan spread over 1,000 acres will generate 200 MW, but it has a drawback that it has to be washed time and again in the arid region.

The nuclear scientist compared the Kaiga nuclear plant in Karnataka with the solar park in Rajasthan.

"... this (solar power plant) comes to about 1,000 acres and Kaiga is 4,100 acres. Definitely (at present) this (Kaiga) is not of any advantage.

Then what is the catch? We will be able to get 2,000 MW of electricity (at Kaiga), if we see the facility part of it. If you see solar power station, it is expected to produce more stable power during the day.

They (solar park authorities) are not talking about the night," he said.

Underlining that India still has to catch up with the rest of the world in terms of power generation, Vyas said it was lagging behind many developed countries.



Over The Barrel: How to boost the energy drive

The Indian Express : June 3, 2019

A blueprint of initiatives the new government can consider.

India faces a variety of challenges related to energy and environment. Here are some initiatives that the next government could contemplate early on its term.

One, integrate energy and environment policy. The various ministries currently engaged with energy and the environment should be collapsed into one omnibus Ministry of Energy and Environment. This will perforate the current siloed approach to energy policy and enable the new government to view the sector through an integrated and holistic lens. It could more easily track and evaluate the systemic implications of changes in any one or more component variable. Secondly, an "Energy and Environment Security Act" should be passed at the earliest possible opportunity. The objective of such an act should be to bring energy and environment into the national narrative; to set out the road map for managing and mitigating the emergent challenge of balancing economic development and energy demands with the goal of environmental protection; and, to mobilise public support for the policy and regulatory changes required to hasten the transition to a non-fossil fuel based energy system. Finally, energy data is scattered across various government departments. This hinders policy and investment. The new government should establish an integrated energy data centre, whose data should be regularly updated and made available to all players on commercial terms.

Two, decarbonisation, demand management and efficiency should be the watchwords of the new government's energy policy. In this context, the focus should be on generating electricity from solar and wind, incentivising electric vehicles, curtailing diesel consumption in agriculture, enforcing standards and emission norms, redesigning buildings and factories to make them carbon neutral and influencing behavioural change towards energy conservation. A multi-pronged thrust along these lines will weaken the current unhealthy relationship between economic growth, energy demand and the environment. Additionally, the "clean energy fund" which is currently funded through a cess on coal production and is managed by the ministry of finance should be augmented through the issuance of "green bonds" and a clean energy tax. This is to intensify research and development on clean energy technologies (battery storage, carbon capture and sequestration, hydrogen, coal gasification, modular nuclear reactors, etc.) and to fund the transmission and distribution infrastructure required for absorbing the flow of clean energy. Its loci of administration should be handed over to those with domain expertise. This to safeguard the funds from sequestration into the consolidated fund and to ensure that the conditions are created for incubating innovation, and forging international R&D and technology partnerships.

Three, energy diplomacy. The levers of energy and, in particular, oil policy, are today in the hands of autocratic leaders. This "personalisation" of energy politics would not have been an issue in the past when oil was traded mostly against long-term supply contracts. But today, against the backdrop of an integrated, liquid and fungible market characterised by short-term flexible supply deals, this is of relevance especially for import-dependent countries like India. The local actions of leaders now have global, supply-related ramifications. The new government should, therefore, look to develop a specialised cadre of "energy diplomats." It should contemplate lateral entrants at mid- and senior levels of government with relevant domain and international expertise. It should unshackle the energy public sector units from intrusive bureaucratic oversight to enable their management to respond with agility to unexpected market developments. And it should establish strong personal relations with the leaders of oil exporting states. At a crunch time, the latter could be the peg on which will hang India's supply security.



How distributed renewable energy could ease discom distress, improve power supply

Financial Express: May 30, 2019

Distributed renewable energy (DRE) is over a US \$100 Billion business opportunity for India, as per a report by Clean Energy Access Network (CLEAN).

Distributed renewable energy (DRE) is over a US \$100 Billion business opportunity for India, as per a report by Clean Energy Access Network (CLEAN). But harnessing any such potential requires unambiguous understanding of its role in country's development ambitions. The discussion on relevance of DRE in India often gets clogged between its competitive vs complementary nature with respect to traditional means of providing clean energy access.

Grid based electricity access to low income consumers remains a costly affair in India. Discoms continue spending capital for the non-paying segments, with low hopes for recovery. State-owned Discoms are expected to amass a mammoth outstanding debt of INR 2.6 lakh crores, at the end of current fiscal year. Consequently, due to suboptimal investment, longstanding concerns of consumers regarding poor service quality and infrastructure remain unalleviated. Industrial and commercial consumers have been resorting to buy power through open access in search of cost-effective quality power. Therefore, with reducing cross-subsidizing consumer base, the financial position of discoms seems exacerbating in future. Elseways, domestic consumers, especially in rural areas, cannot enjoy quality power due to low income levels.

Nevertheless, the government has focused on grid expansion to improve electricity access. Though, mini-grids have been developed in some areas, in absence of a regional integration and adoption plan, they become stranded after grid expansion. Given the poor financial position and lack of government push, public sector discoms have shown lukewarm response to DRE. Low consumer awareness and perception about reliability has been a major concern.

Domestic and MSME sectors, which could be effective carrier for DRE mass-adoption, remain untouched due to lack of business and financial models that are lucrative, both for developers and consumers. In absence of clear policy and regulatory signals by the government, financial institutions have been apprehensive of long-term viability of investments. Current financing for DRE seems to be sustained by international donor grants, debt from international development finance institutions and owner equity, driving only the early stage funding. The early stage enterprises seem to struggle with financing of DRE due to their short track record, high-risk profile and lack of assets to offer collateral.

In terms of government incentives, DRE remain a low priority item as they made up only 1.2% of total renewable energy subsidies and 0.12% of total energy subsidies in 2017, amounting to just US \$27.6 million. A gross comparison suggests that the current subsidy provided to coal sector (US \$2.3 billion) could pay for almost 114 million solar lamps and create nine-times more jobs than solutions using conventional fuels. Though policies such as KUSUM has been implemented, a much large scale deployment requires long term regional planning, involving both government and distribution companies. Nevertheless, current limited funding for DRE has been primarily dedicated to solar water pumps and government driven tendered projects with meagre support for enterprise-based models.

The demand level complexities for DRE are additionally saddled by technical and regulatory complexity related to grid infrastructure. The future grid needs to be ready to interact with these small generation sources, absorbing them after grid extension and supporting two-way communication.

Nevertheless the negligence cloak for DRE has hidden many much-desired benefits it might bring to the country. It could eliminate AT&C losses and be rapidly built with lower investment and customization as per community needs. In addition, it can also play



bigger role in assuaging India's stressful job and income scenario in gross-roots. A conservative estimate suggests that during year 2017-18, DRE deployment created at least 41,868 jobs. But given that India has about 63 million MSMEs, the potential is much bigger if they are roped in through suitable financial models and incentives. Decentralization and community involvement may act as an instrument of socio-economic development in rural areas.

A study in Ghana suggests that DRE access to women entrepreneurs increased their income by 11 times, also improving their participation levels in business-making processes, in turn. Increased ownership and accountability through DRE seems to be only possible way of changing current consumer perception towards electricity theft. Convincingly, DRE solutions are much relevant for India due to their potential to permeate effect of economic development to grass-roots, anchoring inclusive growth and ushering accountability for resources.

With rumination that energy, rather being just a commodity, is an enabler for development, and should be used wisely to avoid unrecoverable impact on land resources and environment, the future access policies need to be more 'services focused' linked with livelihood generation and productive consumption. And if there is vision of such 'service focused' energy access model in India, DRE is going to be one of the essential ingredients in it.

With advent of technologies, DRE is certainly a low-hanging fruit; but sustainable deployment requires a decisive and proactive government leveraging its potential through apposite policy vision and financial support.

Save Energy. Save Money. Save the Planet