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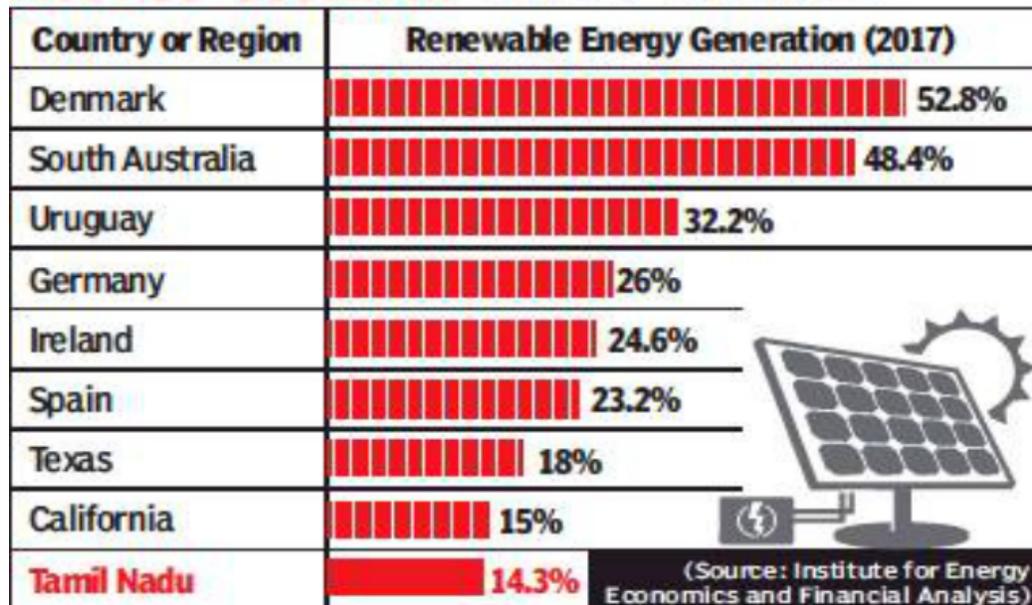
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Renewable power: State is 9th globally in output

Times of India : February 15, 2018

A new study by US based Institute for Energy Economics and Financial Analysis (IEEFA) places Tamil Nadu in the ninth spot globally among areas that generate wind and solar power. The report, "power-industry transition, here and now", includes case studies of markets – ranked by relative share of reliance on variable renewables – that include Denmark, South Australia, Uruguay, Germany, Ireland, Spain, Texas, California, and While Denmark had a share of 52.8% of the total wind and solar generation in 2017, Tamil Nadu's share was 14.3% and stood at ninth place. "We show how nine leading countries and regions have adapted to high market shares of wind and solar power using existing integration technologies and policy measures to improve their diversity of domestic generation without compromising reliability or undercutting supply," said the study.

KNOW WHERE THEY STAND



Tamil Nadu leads India in variable renewables' market share. Tamil Nadu also leads India in installed renewable energy capacity. Of the total 30GW of installed capacity across the state as of March 2017, variable wind and solar power accounted for 9.6GW or 32% of the total. Firm hydroelectricity added another 2.2GW or 7%, nuclear 8% and biomass and run-of-river 3%.

"Assuch, zero emissions capacity represents a leading 50% of Tamil Nadu's total. With much of Tamil Nadu's renewable energy coming from end-of-life wind farms installed 15-25 years



ago, average utilisation rates are a low 18%, making the contribution of variable renewables to total generation even more impressive," said the study. "A more diversified electricity generation mix will serve TamilNadu better. New low cost solar capital additions and a major repowering of TN's wind projects, a concerted improvement in energy efficiency plus reduced transmission and distribution losses, should deliver more than 80% of all electricity demand growth in the coming decade," IEEFA's Energy Finance Studies Australasia director Tim Buckley said. By adopting more green power, the discom will be able to operate profitably and at a lower tariff for consumers, said Buckley. TN, which has a total wind capacity of 8,000MW and solar to the extent of 2,500MW, is hoping to increase the capacity as well as evacuating more renewable power.

Study suggests Tamil Nadu move away from thermal power

Times of India : February 8, 2018

Tamil Nadu should double its wind energy capacity to 15GW and increase its solar capacity six-fold to 13.8GW by 2026-27 instead of investing in thermal units to the extent of 22,400MW in the coming years, says a study done by US-based Institute for Energy Economics and Financial Analysis (IEEFA).

Electricity Transformation in India: A Case Study of Tamil Nadu showed how Tamil Nadu is building 22,500MW of coal-fired power plants - almost double the entire existing coal-fired fleet in the state - despite favourable investment and electricity tariff costs of wind and solar. Building more non-pithead coal-based plants at a time when existing plants are being utilized only to the extent of 62% or below, as opposed to the optimal 80%, will make new and existing plants financially unviable, said the study released in the city on Wednesday. more diversified electricity generation mix will serve Tamil Nadu better. New low cost solar capital additions and a major re-powering of Tamil Nadu's wind projects, a concerted improvement in energy efficiency plus reduced transmission and distribution losses, should deliver more than 80% of all electricity demand growth in the coming decade," IEEFA's Energy Finance Studies Australasia director Tim Buckley said. By adopting more green power, the discom would be able to operate profitably and at a lower tariff for consumers, said Buckley.

Tamil Nadu has the maximum installed wind energy generation capacity in the country. It is behind only a few provinces in China and Texas in America. Tamil Nadu has temporarily slipped to third position in terms of commissioned solar infrastructure in India, but the 1.5GW solar tender of July 2017 will see the state vie for leadership position again by the end of 2018-19, said the study. Tangedco, on the other hand, says investing in thermal units cannot be stopped as wind and solar power are infirm sources and the discom cannot depend only on one source of power to meet the demand. "Wind power is seasonal in Tamil Nadu. This source of power is being evacuated to the maximum during summer season when most of the thermal units are on a standby mode due to better forecast. Same is the case with solar plants. Solar power is available during day time and for the rest of the period we need to use thermal units," said a senior Tangedco official reacting to the study recommendations. Tamil Nadu has many old thermal units which are working to good capacity utilisation despite living beyond its life. "Most of the new projects announced are only to replace old thermal units in Tuticorin and Mettur. Tangedco is not investing to add more thermal capacity and instead we plan to add not less than 1,500MW of solar capacity each year through tenders," said the official.

How Tamil Nadu became one of the world's leading renewable energy markets

Quarts India:

The southern Indian state of Tamil Nadu is one of the top nine markets globally to have achieved an exceptionally large share of renewable power generation, according to a



report by US-based think-tank Institute for Energy Economics and Financial Analysis (IEEFA).

The IEEFA studied the top 15 countries or power markets worldwide by their share of wind and solar energy—the percentage of net energy needs met by these sources in these nations. Denmark leads the pack with 53% in 2017, followed by southern Australia and Uruguay.

Tamil Nadu, which gets 14% of its energy needs from renewables, is the only Asian market on the list. This comes at a time when India is embarking on a major transition towards clean energy, targeting 175 gigawatts (1 GW = 1,000 megawatts) by 2022.

“Our report shows that on the ground now and in a variety of markets, these renewable-energy leaders have raced ahead of much of the rest of the world in proving how power grids can be readily sourced with up to 50% of their energy from wind and solar,” Gerard Wynn, lead author of the report, said in a statement. “Other states and countries can follow the lead...and so avoid radical redesigns of their power markets.”

Solid numbers

At around 10,800 megawatts (MW), Tamil Nadu today leads India in terms of installed renewable energy capacity.

It tops in wind power capacity, with around 7,870 MW as of March 2017, followed by Gujarat (5,429 MW) and Maharashtra (4,752 MW). Tamil Nadu is also India’s oldest power producer in this segment, with most of its wind farms around 25 years old.

In solar, it stands third with 1,697 MW as of June 2017. This includes the world’s second-largest single-site solar farm (648 MW). Andhra Pradesh (2,010 MW) and Rajasthan (1,961 MW) are the frontrunners.

How Tamil Nadu swung it

The availability of rich wind and solar energy resources, a wide gap between power demand and supply, and robust government policies helped Tamil Nadu take the lead.

The coastal state sees heavy wind flows for about six months a year and four more months of moderate flows. It also receives 300 days of clear sunshine, experts said.

Also, around two decades ago, when the renewable energy sector began emerging in India, Tamil Nadu faced a yawning gap between demand and supply of power. The demand came from industries like leather-tanning, textiles, cement, and automotive components.

“Because of the demand pull, they had to come up with a viable tariff...the feed-in tariff for the wind sector was very favourable,” Amit Kumar, a renewable energy partner with consulting firm KPMG, told Quartz. Today, the prices at which wind power is sold to electricity utilities is decided in an auction process in which firms participate. Till this was introduced in 2016, prices were fixed by state power regulators.

Moreover, most industrial units in Tamil Nadu were allowed to set up their own wind power plants. The textile industry was among the earliest to do this. So, the Tamil Nadu Spinning Mills Association (TASMA) today owns around 3,000 MW of wind farms, nearly 40% of the state’s total capacity. Many of its wind farms are over 20 years old, said K Venkatachalam, TASMA’s chief advisor.

Once solar made inroads, the state witnessed the second wave of renewables. “There, again, initially the Tamil Nadu government provided an attractive tariff,” Kumar said.

In recent years, the government has also worked to improve its transmission infrastructure, encouraging firms to expand, experts said. Since renewable energy is infirm, managing the



fluctuation in power generation is key. Tamil Nadu has begun forecasting the flow so that the grid is ready to handle things. "They have incorporated a fair amount of technology for the industry," said Anish De, partner at consulting firm KPMG.

Dark clouds

Of late, though, Tamil Nadu's renewables sector has been losing steam.

For one, it needs to continue upgrading its transmission infrastructure, and frame rules to ensure that insufficient infrastructure doesn't trip power generation. "Renewable energy assets in Tamil Nadu are facing significant backdown (as state power utilities are buying little power from these plants). This adversely impacts their feasibility," Kanika Chawla, a renewable energy expert at Delhi-based nonprofit Council on Energy, Environment, and Water, said.

Industrialists also say that the state's energy regulators are hampering growth—there are proposals to impose additional taxes on rooftop solar power plants. Authorities are also looking to regulate the "wind banking" option. Currently, producers like TASMA transmit excess power to the grid, and have the option of drawing the same amount from the grid during shortage later. But now, the power regulator is mulling changing this rule.

The state electricity utility's dismal financial situation, too, has its effects. There is almost a year's delay in the power-generating units receiving their payments from state utilities, Venkatachalam said, adding that, due to this, the producers then struggle to repay loans. "The geographical conditions are conducive for the renewable energy industry," he added. "What we lack is regulatory support."

What plagues the Open Access market in power sector - Ashok Sethi - COO & ED, Tata Power

The Economic Times : February 20, 2018

It will be prudent to consider some critical aspects which may help in ensuring balance between open access and regulated customers.

The power sector in India has undergone a plethora of reforms in the last decade. Introduction of competition has been one of the main aims of reform in the electricity sector in India. One of the most important steps taken towards achieving this was the introduction of open access in the Electricity Act, 2003, where large consumers have access to the transmission and distribution (T&D) network to obtain electricity from suppliers other than the local electricity distribution company (discom). The objective of open access was to provide opportunity to energy intensive industry and commercial establishments to source electricity directly from the market and manage costs to remain competitive. Open Access was to also improve the economic health of the Distribution Licensees by reducing power procurement at higher marginal cost so that the non-open access retail consumers of the Distribution Licensees would not get unduly burdened. Unfortunately, open access has not been so successful despite numerous steps to facilitate it.

It is very important to learn the lessons and make regulations conducive to creating win-win situation for both industry and Discoms. In win-lose game, any reform is not likely to be sustainable.

One of the challenges plaguing the open access market is that with prices of power plunging downward, the discoms lost the advantage of avoiding costly marginal power purchase. At the same time subsidised supply tariff did not catch up as envisaged leaving revenue gaps thus necessitating high cross subsidy charges. Further, there is always uncertainty about the future cross subsidy charges. There is an urgent need to rationalise tariffs as envisaged by tariff policy. This will pave the way for expanding this market without hurting the health of the discom.



Most recently, there has been another challenge that is creating problems for discoms. Large consumers in some states are frequently switching between the market and discom's regulated tariffs even on daily basis as power procurement on exchange has been enabled for open access consumers by allowing consumers to maintain their contract demand which is not reflective of fixed cost. Discoms have not been able to reduce their power purchase due to this frequent switching. Either the contract demand charges shall be made commensurate with fixed cost or discoms shall be allowed to lower the contract demand as per OA asked for at least three months or more. If not corrected, it will create volatility in the load which is to be served by the discom, thereby making power procurement planning difficult for them. It can even lead to stranded generation capacity.

The open access consumers tend to purchase only round-the-clock power on OA but continue to source expensive peak power component from the Discoms. This in fact makes Discom purchase power at higher marginal cost rather than reduce expensive marginal power procurement. It is contrary to what was envisaged. There is a need that Discoms do not have to pass this burden to other consumers. There is hence a need to rationalise different tariff-based TOD.

It will be prudent to consider some critical aspects which may help in ensuring balance between open access and regulated customers. In this regard, one way is separation of wires and supply which would create multiple choices for contestable consumers. The various suppliers can declare their rates on ToD/ time block basis and open access consumers can switch suppliers accordingly. Under such a scenario, the subsidy to low end categories of consumers would need to be directed and operationalized through the mechanism of collection of taxes and duties on consumption or assigning cheaper generators to the non-contestable consumers.

Multiple supply options could also be institutionalized by creating a platform for supply of power on open access wherein, even Discoms could participate as suppliers for open access consumers. In a way, this mechanism would ensure separation of wire and contents, possible under the present Act itself for open access consumers.

The Government of India's "Power for All" scheme promises continuous and uninterrupted power to all households and industries by March 2019. This means that India is about to face substantial increase in energy demand in the next few years, which will translate into higher demand for electricity. The availability of continuous power helps in sustaining economic activities and generating employment opportunities for local people that lead to better income generation. It is imperative for the government to reassess its approach and work in synergy with the state governments to ensure that the objectives of open access are met.

Ashok Sethi is the Chief Operating Officer and Executive Director at Tata Power.

20 percent cross-subsidy cap: Industrial power cost to reduce by 14-20 percent

Financial Express: February 13, 2018

Move to disallow AT&C losses above 15% in tariff orders threatens to add Rs 32,000 crore per year.

The power ministry's plan to cap cross-subsidy — additional tariffs paid by industrial and commercial consumers to subsidise households and farmers — at 20%, effective January 2019, could reduce the cost of electricity for businesses by up to 14-20%. At a time when raw material costs are high and pricing power is subdued, this could help companies increase earnings. Among the states, Tamil Nadu keeps the cross-subsidy at the highest level of 60%, while in Uttar Pradesh it is around 40%, one of the lowest.

However, the move will dampen the receipts of cash-strapped electricity distribution companies, which, helped by the revival scheme UDAY, are struggling to cut losses.

Besides, the ministry's decision to compute tariffs assuming aggregate technical and commercial (AT&C) losses of 15% — the actuals are higher; the reported national average is around 23% although there are wide variations across discoms — is also threatening to diminish discoms' revenue realisation by a substantial Rs 32,000 crore annually (assuming, based on industry inputs, the monetary value of every 1 percentage point change in AT&C losses to be around Rs 4,000 crore). To put this in perspective, the aggregate book losses of state-run discoms in the country were `50,907 crore in FY16. States with higher AT&C losses (for example, Jharkhand at 39.3% and Bihar at 38.4%) would face more problems.

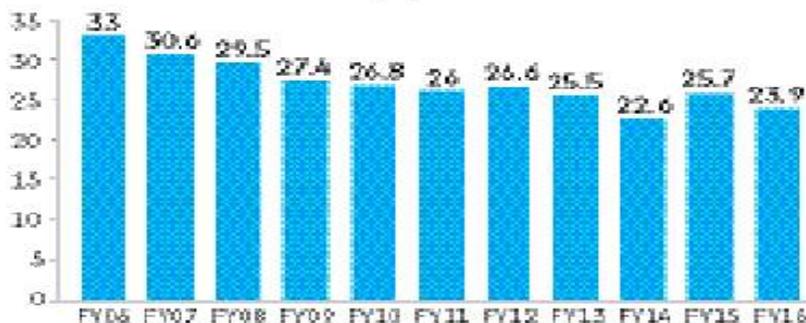
Currently, regulators compensate the discoms for bulk of their actual AT&C losses. To ward off the threat of disallowance of AT&C losses, discoms will have to make aggressive reduction in these losses with higher efficiencies in billing and collection.

If states comply with the power minister RK Singh's direction to limit cross subsidy at 20%, commercial and industrial consumers, who pay hefty power tariffs as high as Rs 8-12 per unit, might see rates coming down to around Rs 6.50 per unit. The average cost of power supply at the national level was Rs 5.43 a unit in FY16. Therefore, cross-subsidy at 20%, across all categories, would roughly translate into Rs 1.10 a unit. Kameswara Rao, partner, PwC, said, "Regulators have had a long time to gradually rationalise tariffs to cost-reflective levels but have refrained from doing so, leaving a huge backlog."

The situation in Tamil Nadu, which has one of the highest commercial and industrial power tariffs, can illustrate the situation. The average cost of power supply in the state was determined to be Rs 5.85 a unit for FY18. A reduction in cross-subsidy surcharge to 20% from 43% now would bring down industrial power tariffs in the state to Rs 7.02 a unit from Rs 8.37 a unit at present.

The latest tariff order by the Tamil Nadu Electricity Regulatory Commission (TNERC) admitted that "given the existing level of cross-subsidy, it looks difficult to reduce them to +20% of the average cost of power supply for all categories within a short span of time". Industrial consumers used 27% of the electricity sold in Tamil Nadu in FY16 but contributed 53% of the revenue.

Pan-India AT&C losses (%)



The National Tariff Policy, 2016, specifies that state electricity regulatory commissions should lay a roadmap to align tariffs within $\pm 20\%$ of the average cost of supply. However,



as per the TNERC roadmap, this can be achieved only in 10 years to avoid a shock to consumers.

As far as AT&C loss reduction is concerned, the regulators prescribe glide paths to discoms; since these paths are not strictly adhered to, there is of course an element of disallowance of the (AT&C) costs. According to Rao, the current ownership structure of discoms is not conducive for them to drive aggressive AT&C loss reduction.

“Also, the claims some states make of having reduced losses has to be tested, because it is easy to hide them under unmetered supplies For this reason, a distribution franchisee which has both the incentive to reduce losses as well as stricter monitoring protocols is the right approach.”

India Rating maintains negative outlook on thermal power

Money Control : February 19, 2018

India Rating and Research (Ind-Ra) has maintained a negative outlook on the thermal power sector for the fiscal 2018-19, due to lack of visibility with respect to long-term PPAs. The ratings agency, in a report, also maintained a stable outlook on the solar sector and revised its outlook on the wind sector to stable from negative for the next financial year. The report said that the existing excess power tie-up of discoms and PPAs already signed with Central and state sector generating companies, for buying power from 40 GW under construction thermal plants, preclude the need for purchasing power from private thermal plants, under long-term PPAs. Speaking about renewables, Ind-Ra said it anticipates favourable environment for wind and solar energy sectors, as bids are being driven by Central government agencies, and power purchase agreements (PPAs) becoming favourable to developers. "Development of guarantee funds by states/bidders, incentives to local solar panel manufacturers and exploring of wind-solar hybrid projects and offshore wind projects indicate a sustaining growth momentum in renewable power," the report said. It added that the bond market was favouring renewable and transmission companies.

Govt extends transmission charge waiver for solar, wind power till 2022

The order also provides that the waiver would be available to only those projects which are awarded through competitive bidding process

The government has extended the waiver of inter-state power transmission charges and losses for the solar and wind power projects commissioned till March 31, 2022, with a view to giving a boost to clean energy sources. Earlier, the waiver was available to solar and wind power projects commissioned till December 31, 2019, and March 31, 2019, respectively. The waiver was available for a period of 25 years from the date commissioning of the project. "For generation projects based on solar and wind resources, no inter-state power transmission charges and losses will be levied on a transmission of the electricity through inter-state transmission system for sale of power by such projects commissioned till March 31, 2022," according to an order issued by the power ministry. The waiver will be available to these projects for 25 years from the date of commissioning provided the developers sign power purchase agreements with entities, including discoms, for sale of power for compliance of their renewable purchase obligation, the order said. The order also provides that the waiver would be available to only those projects which are awarded through competitive bidding process according to the guidelines issued by the central government. Earlier the incentive was not available to firms other than power distribution companies.

Thus, other entities procuring clean energy from these projects were at a disadvantageous position. Now they can also avail the benefit. It also provides that these new conditions for waiver of transmission charges and losses irrespective of purchasing entity will be applied prospectively, the order dated February 13, 2018, said. The order assumes significance in



view of India's ambitious target of having 175 GW of renewable energy capacities including 100 GW of solar and 60 GW of wind energy. At present, India's installed renewable generation capacity is 62.84 GW excluding large hydro projects above 25 MW. The central government has planned to auction 40 GW of solar energy capacities and 20 GW of wind projects in 2018-19 and 2019-20 to meet the tall order.

Centre targets industry to save power

The Hindu : February 14, 2018

After success with LED, EESL aims at 6,000 MW savings by creating market for energy-efficient motors

The Centre, through its company Energy Efficiency Services Limited (EESL), is planning to replicate its success in the LED space in the commercial sector by creating a market for low-cost, energy-efficient motors, a senior official said.

"A large chunk of energy consumption goes to industry," S.P. Garnaik, national programme manager (CGM) at EESL told The Hindu. "About 30-34% of the total energy consumption goes to the industrial sector, which is a substantial amount. And out of that, about 70% is electrical energy consumption." Most of this electricity consumption is due to the use of motor-driven systems, Mr. Garnaik added.

"Now, we can address the efficiency issues in the entire system or as at the sub-assembly level, which is at the motor level," Addressing the entire system has larger opportunities but is more complex. You need so many technological interventions. So, initially, we decided to address it at a component level," Mr. Garnaik said.

Using a combination of economies of scale and design efficiencies, Mr. Garnaik said EESL had so far been able to create motors in the capacity range of 1.1 KW to 22 KW that are 30% cheaper and result in an average of 15% lower electricity usage.

'Other levers'

"Apart from the price benefit, one of the other levers to create demand is the fact that the Department of Industrial Policy & Promotion has issued a quality assurance guidance that says that manufacturers will have to supply a minimum energy performance standard adhering to the 'International Efficiency-2' (IE-2) level," Mr. Garnaik said.

The EESL motors are of the IE-3 level, which save between 7% to 23% of electricity compared with the current industry standard, depending on the application, Mr. Garnaik said.

"The present practice is of using non-IE motors," he said. "About 99% of the motors being used are IE-1 or non-IE." Phase 1 of the nation-wide programme, to be unveiled by Power Minister R.K. Singh, would seek to replace 1.2 lakh motors of the capacity of 1.1-22 KW, which would save 175 million units of electricity, he said.

In the second phase, , two lakh motors would be replaced, including those of a capacity higher than 22 KW. "There are in total about 11 million motors that can be replaced, which works out to about 15 billion units of electricity being saved," Mr. Garnaik said. "This can lead to 6,000 MW of capacity reduction. But 11 million cannot be done overnight."

Govt extends transmission charge waiver for solar, wind power till 2022

Business Standard : February 19, 2018

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Retired Gujarat IAS officer Pujari is Central Electricity Regulatory Commission chairman

Times of India : January 31, 2018

Former Union power secretary P K Pujari (1981 Gujarat cadre IAS), who retired in June last year, has been appointed as the chairman of the Central Electricity Regulatory Commission (CERC).

Energy saved is energy produced

Practice conservation of energy for the future generation