The hidden costs of renewable power

How compulsory purchases of renewable energy have made it expensive for discoms that primarily rely on thermal power

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India's renewable power programme, with tariff bids for solar power hitting new lows every few months, is coming up at the cost of thermal power. The idea is to do exactly that and replace the dirty carbon-fuelled coal power generation with green options. But the manner in which this is being achieved is unwittingly raising costs for renewable power purchases.

Solar tariff at ₹2.14 a kilowatt hour (kw/hr or unit) was the lowest ever after basic customs duty was imposed on solar equipment from July 1, 2021. It was achieved at a recent Madhya Pradesh government auction; and wind tariffs were in the range of ₹2.69-2.7 in the recently concluded bidding by Solar Energy Corporation of India.

Any policy-maker, however, will always reiterate the importance of coal-generated power in providing the base load for a country as big as India. Base load implies the bare minimum needed to keep the power grids functional and supply reliable, which is a challenge for renewable power. There are, of course, examples of some very small countries that run their power systems entirely on renewable power. Anguilla, in the Caribbean, runs entirely on solar power. Fiji meets its power requirement from renewables that include hydel power.

In India, the base load necessity for coal was reflected in the recent crisis that gripped the power sector in August-end, with power stations reporting bare minimum coal stocks. The country's largest power generator, NTPC, in fact, was frantically telling states to buy its more expensive natural gas-based electricity, while the Union government instructed power producers to immediately go in for coal imports. All this because the state utilities did not stock up enough coal to meet the rising power demand before the monsoon came in the way of transportation and blocked further supply.

This experience during the waning monsoon season puts a question mark on whether the country's increasing reliance on renewable energy can improve the power supply situation for India. For those with rooftop solar captive generation, monsoon is not exactly the season for high generation and the same goes for utility-scale renewables that enjoy a "must-run" status.

Must-run status means that power distribution companies (discoms) are obligated by regulation to pay for green power even if they do not need or use it. But this, in turn, means that a discom has to ask the thermal plant to back down. "This translates to paying for renewable power and also paying the fixed cost for thermal power; so there is an enhanced cost for buying renewable power," said a senior power official in one of the states that is at the forefront of adding renewable power capacity. This reality behind the purchase of renewable power makes the overall cost of buying green power higher than the tariff at which it was agreed to be bought.

The challenge at this stage of renewable power induction is to see whether the low tariffs are truly reflective of the cost that state discoms additionally pay for thermal power they are not using

The states obviously feel that they should not pay a higher price when they have agreements with thermal units tied up for 25 years. Therefore, each time the discovered tariff for solar is lower than earlier, some discoms do not honour green power purchase agreements (PPAs). Rewa Ultra Mega Solar Ltd, a joint venture of Madhya Pradesh and the Union government, for instance, got a tariff of ₹2.35 for 105 Mw unit and ₹2.33 for another 220 Mw unit from NTPC Renewable Energy offering for its Shajapur Solar Park on July 19. The state, therefore, decided not to proceed with a power sales agreement (PSA) it signed with NTPC just two-and-a-half months ago on April 30 for buying power at ₹2.7.

States also do not want to give up thermal PPAs signed even when they are trying to meet the country's target of 175 Gw of renewable installed capacity. The reason being the cost it would entail because of contractual obligations. Madhya Pradesh, for instance, on September 2 bought 23.17 million units (23,171 Mw/hr) from Reliance group's Sasan Ultra Mega Power Plant at ₹1.63. On the same day, it bought 10.66 million units (10,664 Mw/hr) from Kota Supercritical Thermal Power station of the Rajasthan government for ₹2.03. These are just two of the coal-based plants among many that fed electricity to the state consumers when the coal stocks were precariously low. According to a Union government portal, all must-run green power units together sold just about 21.8 million units (21807 Mw/hr) to the state.

This dichotomy was laid bare during the recent crisis when the states were trying to keep power generation going even while coal stocks were depleting. On August 30, almost 30 per cent of the generation capacity or 84,947 Mw monitored by the Central Electricity Authority was unavailable, of which 50,818 Mw was under "forced" maintenance or outage.

The dependence on thermal power, therefore, is huge but the capacity utilisation of these generation units is a little more than half, implying the sub-optimal utilisation of capital expenditure that has gone into it. The challenge at this stage of renewable power induction, therefore, is to see whether the low tariffs are truly reflective of the cost that state discoms additionally pay for thermal power they are not using. A universal look at generation capacity addition and power purchase mechanisms is needed rather than just a source-based approach to power sector planning.

DIVISION OF POWER

(All India installed generation capacity) — Mode-wise breakup — In Mw (as on July 31, 2021)

Region	Ownership/Sector	Thermal				Nuclear	Hydro	Renewable energy	Grand total
		Coal	Gas	Diesel	Total				
16	State sector	67,081.50	7,087.35	236.01	74,404.86	0.00	27,069.50	2,401.27	103,875.64
17	Private sector	76,003.00	10,598.74	273.70	86,875.45	0.00	3,651.00	94,849.14	185,375.59
18	Central sector	66,340.00	7,237.91	0.00	73,577.91	6,780.00	15,646.72	1,632.30	97,636.93
	All India total	209,424.50	24,924.01	509.71	234,858.22	6,780.00	46,367.22	98,882.72	386,888.15

Source: Government of India

ON THE JOB

From farms to the kitchen sink

MAHESH VYAS

Headline labour statistics for August 2021 were disappointing as expected. Weekly estimates had forewarned this outcome. They showed that the unemployment rate was rising steadily from around 7 per cent in July to over 8 per cent. It was over 8 per cent in each of the four weeks of August, and the employment rate had fallen sharply towards the end of the month.

Final estimates for August 2021 show that the unemployment rate increased to 8.3 per cent from 7 per cent in July. The employment rate dropped from 37.4 per cent in July to 37.2 per cent in August and employment in absolute terms shrunk from 399.7 million in July to 397.8 million. On a net basis, 1.9 million jobs were lost during the month.

The composition of this fall in employment in August reveals the challenges India faces in providing jobs. The loss was essentially in farm jobs. Non-farm jobs increased to absorb a very large proportion of the jobs shed in the farm sector to leave a net deficit of 1.9 million jobs. However, the non-farm jobs that expanded were mostly not the kind that could be considered good quality jobs.

Employment in agriculture fell by 8.7 million in August. Non-farm jobs increased by 6.8 million at the same time. Of these, employment in the form of business persons increased by nearly 4 million and those in the form of small traders and daily wage labourers increased by 2.1 million. Salaried jobs increased marginally, by 0.7 million during the month.

The fall in employment in agriculture reflects the seasonal nature of employment and uncertainty caused this year by an erratic monsoon. By end August 2021, the monsoon was nearly 9 per cent lower than expectations and sowing of the kharif crop was 1.7 per cent lower than a year ago. Employment had averaged 124 million during the kharif crop sowing months of May, June and July. In August, it fell to 116 million, which is comparable to the 114 million employed before the sowing season, in April.

Much of the labour shed by agriculture was absorbed in the services sectors. Industry could not absorb any. On the contrary, the industrial sector shed jobs in the month. Employment in the industrial sector in August 2021 was 2.5 million less than in July 2021. The manufacturing sector shed 0.94 million jobs in August. Factories, it seems, are not a reliable source of employment. They seem to have permanently lost about 10 million jobs in the pandemic-induced lockdowns. Before the Covid-19 crisis, the manufacturing sector employed about 40 million. This fell to 21 million in April 2020 and quickly climbed back to a level just short of 30 million by July 2020. But then it took till February 2021 to reach the 30-million mark. Then, the second wave brought employment in manufacturing down again to 26 million. By July this had recovered to nearly 29 million. But in August, this slipped back to 28 million. This fall in August is disappointing. The 40-million level that manufacturing was at before the lockdowns seems too distant now, almost out of reach. The fall of nearly a million jobs from the sector in August reveals how unreliable manufacturing jobs have become.

The services sector provided 8.5 million additional jobs in August. The big absorbers of employment within the services sector in August were personal non-professional services and retail trade. Personal non-professional services are distinct from providers of professional services to households such as lawyers or tax or investment consultants. Non-professional service providers include house-maids, home cooks, beauticians, masseurs, gymnasium trainers, barbers, plumbers, gardeners, security guards, handy-men and such. The increase in such jobs in August was a significant 4.7 million. Total employment in this category, at about 30 million, is comparable to the employment in manufacturing. But, this was down to 23.9 million in June and July. August pencilled a partial recovery as this type of employment climbed back to 28.6 million.

The other services sector that saw an increase in employment in August was retail trade. Employment in this industry reached a record 64.4 million. It was 59.9 million in July. The industry, therefore, saw an increase of 4.5 million jobs in the month. Given that salaried jobs increased by only 0.94 million, most of these jobs in the retail trade industry are likely to be informal in nature. Non-professional personal services are almost entirely informal jobs as well. Evidently, most of the gross increase in employment of over 9 million in these two sectors was mostly informal.

Excess or seasonal labour released from agriculture usually finds its way to construction sites. In better times, this is part of the transition from farms to factories. But, the construction industry itself shed over half a million jobs in August. And, manufacturing shed nearly a million. In these circumstances, labour seems to have found employment in the household sector as maids, cooks, gardeners, security guards and the like — a transition that could be described as from farms to the kitchen sink, instead of farms to factories. We had seen earlier that a reverse migration from factories from farms was under way. The next migration should not be to the kitchen sink.

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Rich countries hog vaccines. Is there a solution?

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REUTERS

Wealthy countries have hogged Covid-19 vaccines, providing a glaring illustration of how unfair the world can be. While 57 per cent of people in high-income countries had received at least one dose of vaccine by August 30, the figure in low-income countries was just 2 per cent, according to the United Nations. Health advocates worry that the imbalance will be aggravated by plans in wealthy countries to provide booster shots to fully inoculated people to combat the super-contagious delta variant of the coronavirus. The uneven distribution — which many scientists say will likely prolong the global health crisis — has prompted proposals to expand production of Covid shots, reallocate rich countries' excess doses, and ensure vaccines are deployed more equitably in future pandemics.

First in line

As inoculations were being developed, a number of affluent countries signed advance contracts with a variety of companies, securing the lion's share of initial doses. The US, as part of its multibillion-dollar programme hastening the development of vaccines, also used wartime powers to require manufacturers to fill massive US government orders first. The US, UK and European countries had the added advantage that firms with local manufacturing plants were the first to deliver vaccines with proven efficacy; China and Russia also rolled out vaccines early, before final trial results were in.

Others in queue

A number of middle-income countries, such as Turkey, Malaysia, Serbia and El Salvador, have now managed to procure supply to inoculate significant portions of their populations. But the poorest nations are still waiting for anything beyond a trickle of the life-saving doses. Because many lack the financial clout to secure contracts for Covid vaccines on their own, they depend for supplies largely on Covax, an initiative backed by groups including the World Health Organization that was designed to provide fair access to the shots for every country. And Covax has fallen short of its goals.

Covax shortfall

Covax uses funding provided by governments and donors such as the Bill & Melinda Gates Foundation to make its own contracts with vaccine manufacturers. But it has struggled to get hold of doses, especially after India — home to the Serum Institute, the world's biggest vaccine manufacturer — pared back exports to supply the domestic market following a new wave of infections in March. The original aim of Covax was to distribute at least 2 billion doses, two-thirds of them to lower-income nations, by the end of 2021. By August 30, it had shipped just 11 per cent of that.

Vaccine diplomacy

China and Russia were early to export vaccines as a tool of diplomacy, and in August China pledged to dramatically expand exports to 2 billion doses this year. In June, leaders of the Group of Seven nations upped their commitments so that in all they've promised to provide 2.3 billion shots to developing nations by next year. So far the actual contributions have been paltry. Health advocates say that billions more doses are needed and stressed that the speed of donations is as important as the quantity. They also worried that the flow of supply to the neediest countries would be interrupted by decisions in high-income nations to offer booster shots to people who've already been fully inoculated and to younger children.

What's at stake?

The coronavirus has flourished in some places where vaccines have been scarce. In addition to causing misery locally, that increases the risk of the emergence of additional, worrisome variants, which will inevitably make their way elsewhere and may not be neutralised by existing shots. Many countries short of vaccines are relying on continued lockdowns to suppress the virus, stifling economic activity, while wealthier nations have been opening up. It's possible that sub-Saharan Africa, where doses are in short-est supply, will be spared the worst effects. Researchers noted in a paper published in July that Covid's impact has been significantly lower in the region than elsewhere and argued that the main factors are the relative youth of the population and the low numbers of elderly living in long-term care facilities. Still, many African countries are struggling to combat Covid on top of other health threats. BLOOMBERG