OPINION: What is the role of states in India's clean energy transition?

New Delhi: As a rapidly developing nation, India is currently the world's fourth-largest emitter of greenhouse gases. However, we aim to reduce the overall carbon intensity and achieve 50 per cent of power from non-fossil fuel sources by 2030, which is currently at 43 per cent as per Central Electricity Authority (CEA).

Solar, wind, and other renewable energy (RE) sources are already replacing the historic share of coal and gas in the power generation mix. The share of fossil fuels in the installed capacity has reduced from 67% in 2017 to 57% in 2023 (CEA), and installed RE capacity has reached 125.7 GW as of 30 April 2023.

The 2030 RE goal requires participation from all the states, with the rate and extent of the transition depending on RE resolutions adopted at the state level. However, in recent years, RE installations have been majorly concentrated (up to 78% according to MNRE) only in a few states—Karnataka, Tamil Nadu, Gujarat, Rajasthan, Maharashtra, and Andhra Pradesh. Therefore, states with the potential of contributing to RE installations and the 2030 clean energy transition goal need to be identified and leveraged systematically.

Identifying the potential of other states

The mechanism to identify and prioritise key states can involve a selection matrix, which can help compare and sort states from different regions for a just comparison of resources. The key factors that could turn out to be crucial in identifying the RE potential are presented in the figure.

While assessing the RE potential factor in a state, the extent of solar share is important. Higher solar is indicative of ease of deployment, considering the mature use of technology, wide technology expertise in the market, and unanimous acceptance. The non-solar share may be helpful to indicate the subjectivity, or state peculiarities, in overall resources. For example, a state may be rich in other non-solar RE sources such as hydro, biomass, or wind. Similarly, based on assessments made with the key factors, a basic matrix may be created, which can give broad indications on leveraging the RE potential of states in different regions.

For example, if we apply the key factors to the northern region, we can see that Jammu and Kashmir has a higher score compared to the other states. This is owing to its higher untapped potential, the share of solar, higher rate of improvement in terms of RPOs for the year 2021–22, and initiated RE schemes (such as the draft J&K hydropower and RE policy 2020). If the eastern region is considered, then Jharkhand has a higher score. The attributing factors are high untapped potential, high solar potential, and the recently renewed Solar Rooftop Policy, 2022.

A recent study by the Institute for Energy Economics and Financial Analysis (IEEFA) also undertook a similar approach, wherein Karnataka and Gujarat have been rated as the top-performing states in India's energy transition. The factors considered were progress in power system performance, ecosystem readiness, the extent of decarbonisation, and the level of commitment to policies and governance.

Way Forward

Similar identification exercises can be conducted by research groups, academia, consultancies, and think tanks for states that are lagging behind in realising their RE potential. Executing this idea can create an evolved and usable matrix for selecting the next batch of states that can lead RE installations. The exercise can also improve decision-making at the state and national levels and lead the dialogue on state-specific stakeholder engagement. The need of the hour is to put the remaining states at the forefront of the RE discussion and encourage them to lead the nationwide participation in RE installations. Electricity is ultimately a concurrent subject and despite the national focus, each state has to come forward and devise its own plan and road map to meet the 2030 clean energy goals.

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