

Clean energy transition in India: Towards a brighter future

By Bidisha Banerjee.

India is the third-largest energy producer in the world and one of the top energy consumers. To build a pathway to clean energy transition, the country has made remarkable strides by putting in place a number of measures that support renewable energy production and research.

In its recent Union Budget, India allocated INR 19,500 crore for domestic solar cells and module manufacturing. Similarly, INR 1050 crore was allocated to the wind-power sector for expansion. In addition, India has always focussed on international collaborations, such as the one with the International Renewable Energy Agency (IRENA) in early 2022 to scale up clean energy technologies and assist India's long-term energy planning initiatives. India's future energy transition targets include achieving and installing 450 GW of renewable energy by 2030 and providing 24-hour access to electricity for all.

The roadblocks

Though India has made extraordinary efforts to develop solar and wind power, fossil fuels are still the mainstay of the electricity industry, making it difficult to take the road to clean energy transition. As of July 2022, the total installed coal, gas, and diesel thermal power capacities in India were 204.8 GW, 24.86 GW, and 0.51 GW, respectively, which account for ~59% of the total share. The share of renewables stood at ~29%, with the rest coming from hydroelectric (~12%) and nuclear (~2%).

Further, for a country like India — where fossil fuels power the economy — they are a lifeline for the local communities in many states. According to a recent survey, the coal industry employs around forty lakh Indians directly or indirectly, and another five lakh Indians depend on it for their pensions, highlighting the fact that coal continues to be the foundation of the Indian economy and the power sector.

Despite seeing an improvement in rural electrification in recent years — from 83.4% in 2015 to 98.5% in 2020 (according to the World Bank) — for communities in the rural areas of India, erratic power supply, routine outages for several hours, and high operation and maintenance costs of transmission network and supply remain big bottlenecks.

The roadmap

While India has taken several initiatives to improve energy access by increasing the integration of renewables, the focus now must be on providing affordable and reliable power. Grid stability and resilience in power systems can be enhanced through a hybrid renewable energy model which includes solar and wind, and opens the floor for investment opportunities in distributed energy resources such as rooftop solar and offshore wind.

At the same time, to overcome the unpredictable nature of policies, a long-term energy strategy is needed. The National Energy Policy drafted by NITI Aayog in 2017 is a suitable framework and can guide the policy decisions of central and state governments. The policy enables the fulfilment of the Government's bold ambitions for India's energy sector development, by making access to energy affordable for all through the extension of financial support to ensure merit consumption within the vulnerable sections of society; and ensuring improved energy security through both diversification of the sources of imports and increased domestic production of energy. Another objective of this policy is to ensure sustainability and economic growth through deep decarbonisation.

For monitoring, assessing, and enforcing energy policies, high-quality and timely energy data are crucial. To fill policy gaps and establish new laws, data on consumption by various industries, captive power plants, open-access energy procurement, etc., will be especially helpful. Thus, state services with access to such data and authorities acquiring the data must prioritise data structuring. Sharing data in the public domain would also help monitor progress.

The process of energy transformation offers substantial business potential. According to a recent report, India could potentially create 3.4 million jobs by adding 101 GW of new wind capacity and 238 GW of solar capacity to reach the 500 GW non-fossil-fuel generation capacity by 2030.

The clean energy transition is a revolutionary idea, which should be ingrained in policy, planning, and implementation for the country to effectively achieve its energy goals.

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