

Harnessing Renewable Energy: Experience of India

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Backdrop:

Energy sector is one of the major driving forces for the Indian economy. India's primary energy generation at present is largely dependent on fossil fuels (Coal and Lignite, Oil and Natural Gas), which constitute 92 percent of the total energy supply. Given high rates of economic growth projected by the 12th Five Year Plan, meeting the ever-increasing energy requirements of the economy remains a major issue. Renewable Energy is an important means to meet this enormous unmet demand for electricity and energy in the country. Moreover, for reorienting the carbon intensive growth trajectory to a more sustainable and low carbon one, harnessing renewable energy would be crucial. Development of renewable energy is also important to mitigate some of the negative externalities associated with the conventional sources of energy. These include concerns related to a high dependence on energy imports, both in the context of adverse impact on the Current Account Deficit and energy security (12th Five Year Plan). In contrast, the renewable sources are clean, localized, economical, sustainable, and favourable to the economic growth in the long-run.

Targets set for Renewable Energy in India:

Recognising the importance of renewable energy, the National Action Plan on Climate Change (NAPCC) recommended a minimum share of 5 percent for renewable energy in the national grid in 2009-10. This was to be increased by 1 percent every year for the next ten years so as to reach 15 percent by 2020. The 12th Five Year Plan envisaged the share of renewable energy in India's electricity mix to reach 9 percent by the end of 2017, and 16 percent by the end of 2030. The Ministry of New and Renewable Energy too, has set a target of 29,800 MW capacity addition from various renewable energy sources during the current plan period. This includes 15,000 MW of power from wind, 10,000 MW from solar, 2,100 MW from small hydro and 2,700 MW from bio-power. The targets set, would require a sustained support from the State for both financing as well as making the policy regime conducive for additional investments in the sector.

Sectoral Concerns:

So far the renewable energy sector has developed as secondary to the conventional power sector. It is widely acknowledged that the renewable sources, due to the variability factor (uncertainty associated with sustained energy generation across the year), cannot be relied on as the primary source of energy. This, coupled with the huge investment costs involved in generation, storage and transmission of power from the renewable surplus areas to other areas, hinders the

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development of renewables. At present there is a lack of adequate transmission infrastructure in states for evacuation of renewable power. These issues underline the need for concerted efforts for balancing renewables with other sources of energy.

Policy Commitments and Budgetary Outlays:

At the Union government level, development of renewable energy is being increasingly seen as an important policy priority. At the G20 Summit 2014, the Prime Minister stressed the need to increase access to clean energy, with efforts to make renewable energy competitive with conventional energy. The importance of promoting innovative funding for rapid expansion of renewable energy in a decentralised manner in rural areas was also discussed. This is indicative of the priority accorded by the government towards promotion of this sector.

The Union Ministry of New and Renewable Energy provides a number of fiscal and non-fiscal incentives for the promotion of renewable energy. These include providing concessional excise and custom duties, generation based incentives, Viability Gap Funding, preferential tariff for purchase of renewable power, provision of Renewable Purchase Agreements, enforcing the Renewable Purchase Obligations, operationalising the Renewable Energy Certificates and other such measures.

The Union Budget 2014-15 also put forth a number of measures to promote renewable energy. The budget proposed some new schemes under the Grid-Interactive and Distributed Renewable Power. These include agricultural pump sets and water pumping stations driven on solar power, solar energy parks and solar parks near irrigation canals. They have been introduced with outlays of Rs. 400 crore, Rs. 500 crore and Rs. 100 crore respectively. In addition, Rs. 1 crore has been earmarked for implementation of Green Energy Corridor to facilitate evacuation of renewable energy across the country. The budget also proposed Rs. 500 crore to take up Ultra Mega Solar Power Projects in Rajasthan, Gujarat, Tamil Nadu, and Ladakh in Jammu & Kashmir.

The government also announced exemptions in excise duty for solar equipment with concessional basic customs duty of 5 percent on machinery and equipment required for setting up of domestic solar energy plants. Another encouraging step has been increasing the Clean Energy Cess from Rs. 50/- per tonne on coal to Rs. 100/- per tonne. This would increase the funds available under the National Clean Energy Fund for funding research and innovative projects in clean energy technologies.

Although there have been a number of encouraging initiatives by the government, an assessment of the budgetary outlays for the Ministry of New and Renewable Energy is also important. The proposed outlay for the renewable energy in the 12th Five Year Plan was around Rs. 40,876 crore. However, bulk of this amount is yet to be allocated to the ministry. The Estimate Committee (2011) argues in favour of allocating at least 1 percent of Union Budget for the development of the sector, in view of the importance of and the huge investments required in the sector. Yet, the current level of allocation for the ministry is not even a tenth of this mark. Within

the sector, the Internal-Extra Budgetary Resources (i.e. the amount of investment made by the Public Sector Undertakings, which are outside the purview of the Union Government's budget) is higher than the Gross Budgetary Support (i.e. the amount provided from the Union Government's budget). This has been especially true in the post-NAPCC phase.

Certain concerns remain in the renewable energy sector, which warrant substantial public investments. These include lack of evacuation, transmission and distribution infrastructure, need for developing new renewable energy networks, development of storage technologies, incentivizing the sector to achieve grid parity with the conventional sources of energy etc. As per the Grid Corporation of India's estimates, in order to realise the capacity addition plans for the 12th Five Year Plan period, an investment of around Rs. 30,000 crore would be required for creating and strengthening renewable energy power transmission infrastructure alone.

Summing up:

Renewable energy has primarily been seen as complementary to the current conventional power generation. This, coupled with the fact that it involves huge investment costs, acts as a dampener in the development of renewables as a primary source of energy in the mainstream grid-connected areas. Thus, there is a need to strengthen the efforts for balancing renewables with other sources to ensure a reliable supply to the grid.