In an effort to aid its distributed solar capacity for agriculture, this year Andhra Pradesh launched a pilot scheme to install 3HP and 5HP grid-connected solar pumps sets. In the initial phase, 250 pump sets were installed in the district of Vizianagaram. The scheme is also set to be implemented in the districts of Vishakhapatnam and Srikakulam.

The approach by Andhra Pradesh to solarise the state's entire agricultural demand, either through utility-scale or distributed solar, exhibits the dynamicity required to transition the agricultural sector to a cleaner and cheaper power supply.

Conclusion

Solar irrigation pumps are an excellent technology solution for India to provide clean power to the agricultural sector whilst also improving the discoms' financial situation. Distributed solar power generation reduces the pressure to expand transmission capacity as well as the need for large areas of land (unlike in the case of utility-scale projects). It also allows for the replacement of massive fleets of diesel gensets in the agricultural sector. This would boost India's efforts to reduce air pollution and reduce the need for imported diesel.

However, India's solar irrigation pump mission has had a sluggish run. The varying structures and dynamics of agriculture, power and water across states pose huge challenges to its implementation.

It is now very clear that one particular scheme or solution does not fit all states. Although to its credit, the PM-KUSUM scheme does provide flexibility (with three components to the scheme) and the budgetary support required to solarise India's agricultural demand.

To begin with, each state needs to zero in on which mode of solarising its agricultural power demand (off-grid vs on-grid) works best. States then need to improve cooperation between the various governmental bodies involved.

The states need to address the challenges of coordination, affordability, business models, technology and awareness creation.

There are different models of pump ownership that could work for different states or even for different districts of a state, depending upon the agricultural and power-related dynamics of the region.

A massive part of the Indian power distribution sector's woes stem from the burden of subsidies to agricultural consumers. This also impacts India's industrial and manufacturing sector as C&I tariffs remain high due to the heavy cross-subsidy burden on C&I customers. As a result, high power costs continue to inhibit India's industrial and manufacturing growth.

Solar irrigation pumps have massive potential to reduce discoms' power procurement costs, in turn reducing subsidy costs.

There is also a substantial opportunity to build Indian manufacturing of solar irrigation pumps to cater to local and international demand (in markets such as Bangladesh and Africa), which would help further the government's aim of a 'self-reliant' India and drive a greener economic recovery.

Solar irrigation pumps have massive potential to reduce discoms' power procurement and subsidy costs.

The state governments must now build on the learnings of the past few years to accelerate the deployment of solar irrigation pumps. They are key to expanding India's distributed solar generation capacity and in turn its power market transition.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

About the Author

Kashish Shah

Kashish Shah, a Research Analyst at IEEFA, has a master's degree in economics from the University of Sydney and an engineering degree from NMIMS University in Mumbai. Kashish has worked in the Global Analytics Division of the Royal Bank of Scotland with a focus on regulatory policies. He has research experiences in India's public sector in his work for a member of the Indian Parliament and a University of Sydney-based research group.
kshah@ieefa.org