

An uncertain energy future

The government faces a renewable energy trilemma. It has set itself a target of quadrupling the generation capacity of solar energy by 2022 and shifting the production of new automotive vehicles from the internal combustion model to electric vehicles (EV) by 2030. In parallel, it wants the clean energy industry to develop within the framework of its "Make in India" agenda. Finally, it wants to reduce the country's dependence on energy and energy-related imports.

The trilemma is that it cannot achieve all three of these objectives, as matters stand today. It can, conceivably, meet its solar energy and EV targets but only if it allows the industry to trawl the international market for the cheapest sources of polysilicon, photovoltaic (PV) modules and lithium-ion batteries to ensure competitiveness. PV panels account for 60 per cent of the cost of solar power and lithium-ion batteries 40 per cent of the costs of an EV. Currently, China dominates the market for all three products. On the other hand, it can promote its objectives of "Make in India" and energy self-reliance but only by imposing tariffs, and/or anti-dumping duties, on the imports of these products. The consequential impact will be higher costs and the uncompetitiveness of solar energy generation and EV production. This would deter consumers from shifting to these cleaner alternatives and the government may have to forego its generation targets. In short, the government can at best achieve only two of its three objectives.

The government has set itself the target of increasing the generation capacity of solar energy from the current approximately 15 GW to 100 GW by 2022. The breakdown of this target (as originally indicated) was 60 GW from utility scale solar power through solar farms greater than 1 MW and interconnected to the high-voltage transmission grid and 40 GW from distributed solar of less than 1 MW and connected to the low-voltage distribution grid. (It is hoped that another 3 GW will be generated "off grid".) This target was, and is, an ambitious goal but the progress to date has been commendable.

The generation capacity of solar, at the time these goals were announced, was barely 2.5 GW. Today, there are 11.5 GW of capacity under construction and another 5.6 GW of tenders on the anvil pending auction. Had the government not set itself such a high bar, it would deserve commendation for this rate of growth. But not so against its own target. At this rate, it will not achieve its goal. It will have to pick up the pace but doing so will not be easy. For, the economic circumstances have tightened in recent months. The prices of PV modules have increased sharply (14 per cent in 2017 over 2016) because of a sharp increase in Chinese demand (China installed 45 GW of solar capacity in 2016/17, more than the aggregate of what it has installed over the past decade); the GST tax rate is higher than expected; and the bugbears of land acquisition, permitting and contract enforcement have yet to be satisfactorily resolved.

On electric vehicles, the government has set itself an even more audacious objective. It wants to replace all new cars with electric vehicles by 2030. Two cabinet ministers have gone public with this objective. The underlying purpose is to contain vehicular emissions. This is a laudable objective. But the actual target stretches credulity. The International Energy Agency (IEA) has estimated, for instance, that India would need to sell more than five times (that is, 10 million) the number of EVs that are currently on the road worldwide. Furthermore, and perhaps more relevant, this goal cannot be achieved without creating the enabling eco-system for the wave of associated investments, regulatory changes, innovative financing and partnerships that will be required to achieve the commensurate scale-up. Thus, for instance, the government would have to find the land for establishing the network of charging stations, align the charging protocols and standards, create the financial instruments for low-cost financing and credit guarantees and, if Tesla's current experience offers any insight, it would have to bring on board the incumbent automobile manufacturers. Tesla is facing huge cost and time overruns because it did not have the

experience to manage its supply chain effectively.

The above targets will be difficult to achieve even if the government does clear the domestic hurdles related to land acquisition, financing costs, conflicting regulatory standards and inconsistent policy. The task is further complicated by a dynamic that is specific to the solar and EV industry: The near monopoly of China over the production of the critical raw materials and components required for the growth of the solar and EV industry. Currently, China has approximately 50 per cent of the global market share of polysilicon; 80 per cent for PV modules and 55 per cent for lithium-ion battery cells (and based on existing investments already made, this will increase to 75 per cent by 2021). China invested hugely in these materials and components in anticipation of the growth of the renewables energy market and whilst today, a number of the Chinese companies that made this early investment are struggling to survive because prices have fallen more sharply than they expected, the cheapest source of supplies of these products is still out of China. The CIF price of Chinese materials landed in India is significantly cheaper than the prices offered by our domestic producers. One should also note that, given that the Chinese investments are “sunk” and that there is global “overcapacity” of polysilicon and PV modules, the economics of greenfield investment by our domestic industry makes, prima facie, no sense.

So what should we do? Our industry does not have the incentive to create indigenous capacity. And, if the government were to offer subsidies, tax credit and cheap financing, the policy would fly in the face of “good economics”. But in the absence of such incentives and the creation of a domestic industry for polysilicon, PV modules, and lithium-ion batteries, India would have to tie its “energy future” inextricably to the policies of China. Can it afford to do that?

This is not an easy trilemma to resolve. Choices will have to be made, trade-offs considered. But as a first step, it should carry out a strategic and comparative value analysis of the three objectives and rank order them. Maybe one of them will have to be dropped.

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