

INDIA NEEDS A SOLAR MANUFACTURING STRATEGY

Relevant for: Indian Economy | Topic: Infrastructure: Energy incl. Renewable & Non-renewable

“Low-cost Chinese imports have undercut India’s ambitions to develop its own solar technology suppliers.” A solar panel being on the rooftop of a house in Nada, a village near Mangaluru.>A | Photo Credit: [AP](#)

India has made significant progress in creating capacity for solar energy generation in the last few years. The Prime Minister’s emphasis since 2014 has given a new fillip to solar power installation. The unit costs of solar power have fallen, and solar energy has become increasingly competitive with alternative sources of energy. India expanded its solar generation capacity eight times from 2,650 MW on May 26, 2014 to over 20 GW on January 31, 2018, and 28.18 GW on March 31, 2019. The government had an initial target of 20 GW of solar capacity by 2022, which was achieved four years ahead of schedule. In 2015, the target was raised to 100 GW of solar capacity by 2022.

This rapid progress should have been made earlier, however. India is energy deficient, yet blessed with plenty of sunlight for most of the year. It should have taken a lead in solar panel manufacture to generate solar energy long ago. Despite the new policy focus on solar plant installation, India is still not a solar panel manufacturer. Just as India has had no overall industrial policy since economic reforms began, there is no real plan in place to ensure solar panel manufacture. The share of all manufacturing in GDP was 16% in 1991; it remained the same in 2017. The solar power potential offers a manufacturing opportunity. The government is a near monopsonistic buyer. India is regarded by the global solar industry as one of the most promising markets, but low-cost Chinese imports have undercut its ambitions to develop its own solar technology suppliers. Imports, mostly from China, accounted for 90% of 2017 sales, up from 86% in 2014.

Substituting for imports requires human capabilities, technological capabilities and capital in the form of finance. On the first two capabilities, the supply chain of solar photovoltaic panel manufacturing is as follows: silicon production from silicates (sand); production of solar grade silicon ingots; solar wafer manufacturing; and PV module assembly. The capital expenditure and technical know-how needed for these processes decreases from the first item to the last, i.e. silicon production is more capital-intensive than module assembly. Most Indian companies are engaged in only module assembly or wafer manufacturing and module assembly. No Indian company is involved in silicon production, although a few are making strides towards it. According to the Ministry of New and Renewable Energy (2018), India has an annual solar cell manufacturing capacity of about 3 GW while the average annual demand is 20 GW. The shortfall is met by imports of solar panels.

So we may not see domestic players, in the short term at least, replacing imported ones. While the safeguard duty now puts locally made panels on par with imported ones in terms of cost, the domestic sector needs to do a lot more to be effective. For instance, it will have to go down the supply chain and make the input components locally instead of importing them and putting the modules together here. Public procurement is the way forward. The government is still free to call out bids for solar power plants with the requirement that these be made fully in India. This will not violate any World Trade Organization commitment. However, no bids will be received as manufacturing facilities for these do not exist in the country. But as Ajay Shankar, former Secretary, Department of Industrial Policy and Promotion, argues, if the bids were large enough with supplies spread over years, which gives enough time for a green field investment to be made for manufacturing in India, then bidders will emerge and local manufacturing can begin.

China's cost advantage derives from capabilities on three fronts. The first is core competence. The six largest Chinese manufacturers had core technical competence in semiconductors before they turned to manufacturing solar cells at the turn of the century. It takes time for companies to learn and put in action new technologies. When the solar industry in China began to grow, Chinese companies already possessed the know-how. Experts suggest that the human and technical learning curve could be five to 10 years. Indian companies had no learning background in semiconductors when the solar industry in India began to grow from 2011. State governments need to support semiconductor production as part of a determined industrial policy to develop this capacity for the future.

The second source of cost advantage for China comes from government policy. The Chinese government has subsidised land acquisition, raw material, labour and export, among others. None of this is matched by the Indian government. Perhaps even more important is commitment by the government to procure over the long run — without that the investment in building up the design and manufacturing for each of the four stages of production of solar power equipment would come to nought.

The third is the cost of capital. The cost of debt in India (11%) is highest in the Asia-Pacific region, while in China it is about 5%.

Fifteen years ago, the Chinese could also have remained dependent upon imports from Korea or Germany; they did not. Remaining dependent on imports only leads to short-term benefits for India. A continuation of the current approach means India's energy sector will be in the same condition as its defence industry, where enormous amounts of money have been spent procuring weaponry — so much so that India has been the world's second largest importer of defence equipment for years.

In the solar panel manufacturing sector, the Indian government allows 100% foreign investment as equity and it qualifies for automatic approval. The government is also encouraging foreign investors to set up renewable energy-based power generation projects on build-own-operate basis. But the Chinese government is clearly adopting an aggressive stance while the demand for solar power in India continues to grow, as does the government's commitment to renewables. In 2018, China cut financial support to developers and halted approval for new solar projects. As a result, Chinese producers will cut prices to sustain their manufacturing plant capacity utilisation by sustaining exports to India. In other words, the Chinese strategy is to undercut any planned effort by India to develop the entire supply chain capacity within India so that dependence on imports from China continues. As a counter, India needs a solar manufacturing strategy, perhaps like the Automotive Mission Plan (2006-2016), which is credited with making India one of the largest manufacturers of two-wheelers, three-wheelers, four-wheelers and lorries in the world. This would also be a jobs-generating strategy for an increasingly better educated youth, both rural and urban.

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