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Needed: A Solar Manufacturing Strategy

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(This editorial is based on the article "Needed: a solar manufacturing strategy" which appeared in "The Hindu" on 6th June 2019. The article talks about the growing Indian potential in the field of solar energy and the institutional challenges it faces in realizing it.)

India in recent years has made significant progress in creating capacity for solar energy generation. The unit costs of solar power have fallen, and solar energy has become increasingly competitive with alternative sources of energy. India has expanded its solar generation capacity from 2,650 MW of solar power generation in 2014 to over 28.18 GW by March 2019.

All these efforts coincide with India's attempt at making a transitional change from traditional modes of energy to renewable sources of energy.

However, this is only one part of the story, capacity additions have slowed in the recent past, which means the 175 GW renewable generation – including 100 GW solar – target set for 2022 could become difficult to achieve.

Benefits of switching to solar energy

- **Environment-friendly**

Solar energy is environment-friendly. When in use, it does not release CO₂ and other gases which pollute the air. Hence it is very suitable for India, India being one of the most polluted countries in the world.

- **Varied use**

Solar energy can be used for a variety of purposes like heating, drying, cooking or electricity, which is suitable for the rural areas in India. It can also be used in cars, planes, large power boats, satellites, calculators and much more such items, just apt for the urban population.

- **Abundant & Secure**

Solar power is inexhaustible. In energy deficient country like India, where power

generation is costly, solar energy is the best alternative means of power generation.

- **Grid-independent**

You don't need a power or gas grid to get solar energy. A solar energy system can be installed anywhere. Solar panels can be easily placed in houses. Hence, it is quite inexpensive compared to other sources of energy.

Potential for the solar manufacturing industry

- **India's peak power demand is expected to rise from current demand 153 GW to about 690 GW by 2035-36. The solar sector can effectively show a way out of this dilemma.**
- The potential for solar energy capacity in India is enormous. The majority of the country's tropical landmass is located optimally for peak solar radiation. **According to the World Bank, India has the best conditions in the world to capture and use solar energy.**
- According to the Ministry of New and Renewable Energy, the country's total solar power potential is pegged at nearly 750GW, with 142GW of solar resource available in the state of Rajasthan alone.
- India is one of the most attractive markets in the world because of its sheer size: 10-12GW annually. This is even more relevant when one considers that the largest market, China, is virtually closed to foreign investors.

What impedes the growth of the Solar Industry?

- India has not been able to use the surplus solar energy to its full potential despite it being blessed with plenty of sunlight for most of the year. Despite the new policy focus on solar plant installation, it lags behind in manufacturing the solar panels and providing the input material required in the solar industry.
- Indian industries suffer from a lower level of technical competency and human capabilities required in the production of silicon ingots and panels.
- Very few Indian companies are involved in silicon production due to the higher capital requirements. 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.
- 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.
- The industry also suffers from the lack of human capabilities, technological capabilities and capital in the form of finance.

Boosting the domestic sector

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- The domestic sector can become more effective by going down the supply chain and making the input components locally instead of importing them and putting the modules together here in India.
 - The government should call out bids for solar power plants with the requirement that these be made fully in India, which also does not go against any World Trade Organization commitment.
 - State governments need to start supporting semiconductor production as part of a determined industrial policy to boost the technical know-how required in the solar sector for the future.
 - The Indian government should provide subsidized land acquisition, raw material, labor, and export, among others which would serve as a cost advantage to domestic manufacture when competing with foreign companies.

Way forward

- Considering the renewable energy potential in India, constructive steps should be taken at a rapid pace. The technology is evolving fast and therefore research needs a big push.
- Efforts should be directed at building a solar base that enhances India's standing as a global energy hub, and at the same time, consolidates its imprint in the renewable energy sector through increased indigenous manufacturing of solar components for the domestic market as well as for exports.

Drishti Input:

What are the benefits of switching to solar as a source of energy? What are the challenges the Solar Energy Sector in India is facing?