General Studies-3; Topic– Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

Solar Manufacturing Strategy in India

1) Introduction

- India has made significant progress in creating capacity for solar energy generation in the last few years.
- Despite making significant progress, India still relies on China for equipment.

2) Present Status

- 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 2014 to 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.

3) India's Efforts

- 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.
- The safeguard duty on solar cells now puts locally made panels on par with imported ones in terms of cost.

4) Opportunities

- India is blessed with plenty of sunlight for most of the year.
- The solar power potential offers a manufacturing opportunity.
- India is regarded by the global solar industry as one of the most promising markets.

5) Concerns / Challenges

- India still relies on China for equipment.
- Despite the new policy focus on solar plant installation, India is still not a solar panel manufacturer.
- India has no real plan in place to ensure solar panel manufacture, much like a lack of a dedicated Industrial Policy.
- Low-cost Chinese imports have undercut India's ambitions to develop its own solar technology suppliers.
- Imports, mostly from China, accounted for 90% of 2017 sales, up from 86% in 2014.
- 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.
- 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 capital expenditure and technical know-how needed for solar photovoltaic panel manufacturing is low.
- The Chinese government is clearly adopting an aggressive stance, exploiting India's growing demand for solar power.

6) Lessons from China

- **Core competence**
  a. The six largest Chinese manufacturers had core technical competence in manufacturing solar cells.
  b. When the solar industry in China began to grow, Chinese companies already possessed the know-how.
  c. Indian companies had no learning background in semiconductors when the solar industry in India began to grow from 2011.
- **Government policy**
  a. Chinese government has subsidised land acquisition, raw material, labour and export.
  b. Commitment by the government to procure over the long run.
- **Cost of capital**
  a. The cost of debt in India (11%) is highest in the Asia-Pacific region, while in China it is about 5%.

7) Way Forward

- Remaining dependent on imports only leads to short-term benefits for India.
- Substituting for imports requires human capabilities, technological capabilities and capital in the form of finance.
- Need for domestic sector to make the input components locally instead of importing them.
- Public procurement is the way forward.
- State governments need to support semiconductor production as part of industrial policy to develop the capacity for the future.
- India needs a solar manufacturing strategy, perhaps like the Automotive Mission Plan (2006-2016), which is credited with making India one of the largest Automobile manufacturers
- This would also be a jobs-generating strategy for an increasingly better educated youth, both rural and urban.