Domestic Manufacturing in Solar Energy

Why in News

Recently, the **Union Ministry of New and Renewable Energy (MNRE)** has released the **first list of photovoltaic module manufacturers in India.**

- MNRE has made it mandatory for solar cell and module manufacturers to register under the **Approved List of Models and Manufacturers (ALMM)** - an initial step towards **reducing India's dependence on solar imports and self-reliance.**
- However, given the capacity constraints for domestic manufacturers, ALMM **may pose near-term challenges for the Indian developers for planning the procurement of imported photovoltaic modules.**

Solar Technologies

- **Solar PhotoVoltaic (SPV):** SPV cells convert solar radiation (sunlight) into electricity. A solar cell is a semi-conducting device made of silicon and/or other materials, which, when exposed to sunlight, generates electricity.
- **Solar Thermal:** Solar Thermal Power systems, also known as Concentrating Solar Power systems, use concentrated solar radiation as a high temperature energy source to produce electricity.

Key Points

- **About ALMM:**
  - The ALMM lists eligible models and manufacturers of solar cells and modules complying with the **BIS (Bureau of Indian Standards) certification.**
    - It was announced in 2019.
  - It aims to have a **quality benchmark for modules and prevent low-quality Chinese manufacturers** from dumping their products in India.
  - Enlisting in ALMM is **mandatory for manufacturers supplying to the government-owned solar projects.**
    - Only the models and manufacturers included in this list shall be eligible for use in projects under Government schemes & Programmes, installed in the country.
  - Further, the word **"Government"** includes Central Government, State Government, Central Public Sector Enterprises, State Public Sector Enterprises and Central and State Organizations/Autonomous bodies.
- **Issues Related to ALMM:**
  - **May Impact Bankability of Solar Projects:** Lack of clarity about ALMM means supply uncertainty, limited module choices, no access to newer technologies, and cost increases for developers of large-scale projects.
    - This may also result in a hike in solar power tariff prices which may undermine the prospects of solar energy.
  - **Overlap Between BIS and ALMM:** The ALMM was put in place to ensure the quality of solar products, but it overlaps the existing Bureau of Indian Standards (BIS) certification in many aspects.
    - BIS is related to product certification, ALMM is more of a process and manufacturing facility/original equipment manufacturer certification.
    - This has created a compliance burden for domestic manufactures.
  - **Supply-side Bottlenecks:** Many developers believe that the implementation of ALMM **will deter foreign players from supplying to the Indian market.**
    - With the domestic market still far away from being self-reliant, project developers are staring at a supply bottleneck in the foreseeable future.

- **Domestic Capacity of Solar Power in India:**
    - There has been **a significant progress in solar capacity addition since 2014,** with India progressively emerging as the **world's third largest solar market.**
        - However, India's solar story is **largely built over imported products.**
        - The domestic solar equipment manufacturing industry has largely failed to capitalise on the opportunity.
        - Nearly **80% of the solar inputs and components are imported from China.**
    - The reason for this is that **Solar cell manufacturing is a complicated process** that is technology and capital intensive and it also upgrades every 8-10 months.

        Further, the **global market of solar wafer and ingot manufacturing is dominated by China,** who uses anti-competitive measures to dump cheap solar equipment into India.

Solar Energy and India

- Just before the **Paris climate summit** in 2015, the Government of India had said it would install 175 GW of renewable power by 2022, including 100 GW of solar power.
    - In this context, the **National Solar Mission** is a major initiative of the Government of India and State Governments to promote ecologically sustainable growth while addressing India's energy security challenge.
    - Further, India's commitment as part of INDC at Paris climate deal to reduce the emissions intensity of its GDP by 33 to 35% by 2030 from 2005 level.
- **Sustainable rooftop implementation of Solar transfiguration of India (SRISTI) scheme** envisages to promote rooftop solar power projects in India.
- The **KUSUM scheme** would provide additional income to farmers, by giving them the option to sell additional power to the grid, through solar power projects set up on their barren lands.
- Through the establishment of **International Solar Alliance (ISA)**, India envisages the world to leverage solar energy potential of more than 122 countries, which lie either completely or partly between the Tropic of Cancer and the Tropic of Capricorn to promote solar energy.

    Further, ISA' s vision is to enable **One World, One Sun, One Grid (OSOWOG).**

Way Forward

- ALMM and BIS certification could have been better managed by **combining these two objectives** and making it a single-window process.
- **Strong financial measures** are required to finance the solar projects, innovative steps like **green bonds**, institutional loans and clean energy funds can play a crucial role.
- Promotion of **research and development in the renewable energy sector,** especially in storage technology.
- Proper mechanism should be provided to tackle China's dumping of solar equipment.

- Framework to avoid unnecessary delays in policy decision making and implementation. India **needs a Solar Waste Management and Manufacturing Standards Policy.**

Source: DTE