



MAD - 2020

Day - 7

Environment

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Question:

India has taken rapid strides in solar sector power production. Low cost imports have played a big role in it. Discuss the implications of the recent tension between India and China on the solar sector and suggest some way forward.

Answer:

Introduction

- India's solar story through its compelling business case is maximising the falling renewable technology costs as the key to future energy decarbonisation. The country has realised that it is cheaper to build and operate solar farms than to run existing coal-fired power plants. Renewable energy also has significant environment benefits making it the single biggest driver to help us meet our carbon emission reduction targets in our fight against climate change. With India being a growing economy, power consumption is only going to rise, so adoption of alternate forms of energy is the ideal way forward to manage balance between economic growth and sustainable environment.
- In 2010, the total installed solar capacity was 10 MW and in 2016, the installed capacity stood at 6000 MW - a steep climb of 600 times in just 6 years. As of March 2019, the total installed solar capacity stands at 30 GW, accounting for an increase of 5 times in 3 years. Today, solar has reached 30% of the 2022 target of 100 GW contributing 38% to the renewable energy mix.

Implications of the recent tension with China on Solar Sector

- The solar industry is not immune to this increasing impact of the contagious virus. The biggest concern of the outbreak is the uncertainty it holds. Add to it the recent tensions between India and China and Indian solar industry seems to be in a limbo.
 - **Uncertainty over achieving of Paris Agreement targets** - As part of the initial commitments to the Paris Climate Accord, India plans to reduce its carbon emission intensity - emission per unit of GDP - by 33-35% from 2005 levels over 15 years. It is working towards producing 40% of its installed electricity capacity by 2030 from non-fossil fuels. This would lead to a significant shift from coal-based power generation to renewable energy sources. To achieve these challenging statistics, it has to produce 100 gigawatt from solar, 60 gigawatt from wind, 10 gigawatt from biomass and 5 gigawatt from small hydropower by 2022. India has set great expectations for the solar industry to achieve the renewable energy target of generating 100 gigawatts by 2022. The Indian solar manufacturing industry is in its early stages and is largely dependent on imports from China, as about 80 per cent of solar cells and modules are imported from China. It is also one of the top-10 imported items from China in the country. The recent tensions can jeopardise India's target of achieving Paris Agreement targets.
 - **Cost escalation** - The solar panels or modules imported from China are generally cheaper than those produced by domestic manufacturers. High cost to consumers will make the shift to solar difficult.
 - **Lack of adequate infrastructure for manufacturing** of Solar cells and modules. Domestic manufacturing capacity of solar cells and modules meets only half of the country's demand. 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.

- At a time when imports from China are in limbo, the global supply chain has come to a screeching halt. 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 demand will have to be met otherwise solar industry might suffer a big setback.

Positives

- Recently an analysis by IRENA found that the costs for setting up solar PV projects have dropped by about 80 per cent in India between 2010 and 2018.
- China sells equipment at artificially low rates for dumping and hurting Indian manufacturing. The government's plan to impose duty of 25% on solar equipment imports from August 1, which is proposed to be raised to 40%. It will help in increasing Indian manufacturing, creating more jobs and Atmanirbhar Bharat.
- Cyber threats are another reason why the country is choosing its suppliers carefully. Imports from other countries will be inspected for malware as Power systems are sensitive systems and they're vulnerable to cyber-attacks.

Way Forward

- Fifteen years ago, the Chinese could also have remained dependent upon imports from Korea or Germany; they did not. Similarly, remaining dependent on imports only leads to short-term benefits for India.
- 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. There is an urgent need to become self-reliant. We can learn from China.

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%.

At the same time, we need to

- Promote renewable energy storage system. Renewable energy, which is seasonal and intermittent for ensuring 24x7, robust supply of energy. The thrust on solar and wind projects has increased the challenges in maintaining system stability, which is encouraging developers to support power grid networks with battery storage to help manage the variations in power supply.
- Address the bankability of renewable energy projects which has always been an issue in India, owing to off-takers' inability to absorb power and pay for it.
- Remain energy positive and to make the most of renewable energy sources, parallelly focus on aggressive promotion of energy efficiency practices as India's Energy demand will witness an exponential surge owing to the lighting and cooling requirements due to the varied climatic conditions, the developments in the Electric Mobility, growth of the Industries as well as rural electrification

Conclusion

- With 300 clear sunny days, over a dozen perennial rivers and a coastline of more than 7,500 KMs, India since the age of Puranas, had realised the importance of the sun and other sources of renewable energy and the power they possess for the benefit of its inhabitants. We need to acknowledge the importance of renewables and work on it.