

AIR Spotlight: India's Solar Capacity - Milestones and Challenges

AIR Spotlight is an insightful program featured daily on the All India Radio Newsonair. In this program, many eminent panellists discuss issues of importance which can be quite helpful in [IAS exam](#) preparation. This article is about the discussion on India's Solar Capacity- the milestones and challenges.

Participants:

1. Mukul Sanwal, Environmentalist and Former Director, UN Climate Change
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Context: International Solar Assembly will be held in New Delhi from 17th to 20th October, 2022.

Introduction:

- With expanding energy needs in a rapidly expanding world economy, the energy transition has been a major thrust area worldwide and International Solar Alliance is a crucial step in this direction.
- International Solar Alliance (ISA) is a treaty-based alliance which means that there are 90 countries that have ratified the treaty and 109 countries have signed it, which is nearly half the world.
- It is also very significant for those parts of the world that lack electricity. For instance, Africa has just one percent of renewable energy and is in dire need of electrification.

For more on International Solar Alliance, read here: [International Solar Alliance - Significance, Mandate, Objectives, Details for UPSC](#)

Energy Transition and Significance of ISA:

- There is a technological transformation going on in the world that supports energy transition.
- The technological transition is for sustainable energy or for sustainable development as it uses natural forms of energy like hydroelectricity, wind energy, etc.
- Solar energy is more significant for tropical countries. However, it is also significant for the United States, Europe, and China.

- The advantage of this transition is that the running cost is very low almost equal to the maintenance cost. Moreover, the price is further dropping because of the kind of technological advancement taking place in terms of volumes of scale.
- ISA has the potential to bridge the gap between the producer/supplier of solar technology and the consumer of the technology. The main focus of the alliance is on knowledge sharing, field preparation, and suggesting enabling activities. These are in contrast to other organizations that disburse money, build consensus, and connect the people.
- It is a most significant innovation, particularly for developing countries like Africa that lacks funds and finances. They are also unable to get technology due to IPR restrictions and inadequate capacity and experience to negotiate with organizations regarding technology transfer.
- It was observed that the cost and amount offered by ISA in global tenders were almost half of what Africa was paying for electrification. This was because of smaller demand. The demands are aggregated in ISA thus reducing the cost. ISA prepares a project with a large number of countries acting as a catalyst in providing both funds and technology. Thus reducing the cost of power and benefitting the economy.
- Moreover, the cost of servicing loans also becomes cheaper and the country enters into a virtuous cycle ultimately benefitting the public.
- India has a vision of providing accessible, equitable, and affordable energy to all before phasing out coal from the country which is a great vision. The way India is looking at energy transition is slightly reversed from the conventional approach.

Issues associated with Renewable Energy:

- The downside of Solar energy is it can light a bulb but cannot run other appliances like refrigerators efficiently or even small machines.
- Development in the present-day world is not just associated with replacing a kerosene lamp with a light bulb but also ensuring a better quality of life.
- There is also some issue with manufacturing and sourcing technological equipment like silicon wafers, photovoltaic panels, etc.
- Renewable energy is usually location specific. For instance, Wind Energy is not very significant in tropical countries in contrast to temperate countries and nuclear energy has issues like nuclear waste and toxicity.

Modhera Solar Village:

- Modhera is the first 24x7 solar-powered village in India. It is an important milestone for India in the context of Solar energy.
- It uses the concept of a mini-grid which uses a high-capacity solar plant and high-capacity battery storage. It has a capacity of 18 kVA of battery storage. Battery

storage facilitates the smooth functioning of the daily/operational needs of the local residents.

- Modhera's model was organized and well crafted. It not only provides an example for the upcoming conference but will also provide a research strategy for future works. It is a practical model that can be replicated in other parts of the world as well.
- The model was linked to tourism, thus giving it a good vision. It will not just be culturally symbolic but linking it with tourism will create pressure on the smooth functioning and proper maintenance of electricity in the region.
- It hence proves that linking it with some other activity can provide both the incentive and the motivation to keep the model working.
- India has thus showcased the vision of energy transition that can be scaled up and adopted by other countries.

Future Prospect for India:

- India could be a manufacturing hub and the research hub once the Atmanirbhar Bharat concept is fully implemented.
- Solar panel technology is not very complex and other components like inverters are also getting smarter. However, inverters lose significance after some time but with technological advancement, this can be tackled.
- Moreover, by connecting the rooftop with the grid the idea of a [One Sun One World One grid\(OSOWOG\)](#) can be realized. In India, approximately 25% of the energy is provided to the household. As India urbanizes this demand will further increase, Solar energy can thus prove helpful going forward.
- In the future, half of the energy requirement can be met by Solar energy through Utility-scale power plants. These are huge power plants for example the one established in Rajasthan with 1000 Mw and 35,000 crore investment.
- Energy Distribution countries can also benefit from leakage and wastage of electricity during transmission once the Grid connected solar energy becomes functional.

Conclusion:

Sunshine countries between the Tropic of Cancer and Tropic of Capricorn, referred to as Suryaputras by the Indian Prime Minister, have a special advantage which initiatives like International Solar Alliance aim to use bring low cost, low carbon footprint and sustainable solar energy to all.