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The Big Picture: One World, One Sun, One Grid

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Stressing that **India would generate 40 percent of power from non-fossil fuels by 2030**, the Prime Minister has called for connecting solar energy supply across borders, giving the mantra of 'One World, One Sun One, Grid'. The Prime Minister also considers the 121-country International Solar Alliance as the future OPEC for meeting the energy needs of the world. Oil cartel OPEC led by Saudi Arabia currently meets close to half of the world's oil needs. Solar power will play the same role that oil wells have played over the past few decades in meeting global energy needs. India will add as much as 50 GW of non-hydro renewable energy to existing 72 GW and is on its way to achieve **the target of having 175 GW of clean energy by 2022**.

International Solar Alliance

- **The International Solar Alliance (ISA)** is an initiative jointly launched by the Prime Minister of India and the President of France on 30 November 2015 at Paris, on the sidelines of Conference of Parties (CoP 21) to the United Nations Framework Convention on Climate Change.
- **Headquarters-** National Institute for Solar Energy, Gurugram (Haryana), India.
- It **aims at addressing obstacles to deployment at the scale of solar energy through better harmonization and aggregation of demand** from solar rich countries lying fully or partially between the Tropic of Cancer and Tropic of Capricorn.
- After ratification by a minimum number of countries, on 6 December 2017, ISA became the first full-fledged treaty-based international intergovernmental organization headquartered in India.
- Till date, out of 121 prospective member countries that **lie either fully or partially between the Tropics of Cancer and Capricorn, 68 countries have signed the Framework Agreement of the ISA.**

One World, One Sun, One Grid

- Humans have in the last 150-200 years relied on resources trapped below the earth's surface for meeting energy needs. But for a secure future, resources available above the ground like solar and wind energy need to be harnessed.
- Sun never sets for entire earth and therefore can be the source for the entire earth if every country is connected to a single grid.
- Hence, keeping in mind the Paris Agreement where it has been categorically mentioned that in order to prevent irrevocable changes in the climate, the stakeholders should limit the rise of temperature to 2 degrees, it is but imperative that by 2040 the world should make a substantial transition to the renewable energy.

Feasibility of such an idea

This idea is very much feasible since countries like India (India has integrated national grid) or even big continents like Europe are connected by more or less single grid.

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- The total world energy usage (coal+oil+hydroelectric+nuclear+renewable) in 2015 was 13,000 Million Ton Oil Equivalent (13,000 MTOE). This translates to 17.3 Terawatts continuous power during the year.
- If the area of the Earth is covered with solar panels, even with moderate efficiencies achievable easily today, it will provide more than 174 TW power.

- So, solar energy generated in one part of the world can be taken where enough landmass is not available to generate such quantity of power. For example, the power generated in the Sahara desert can be transmitted to Europe and in turn, Europe can give up on gas if they are connected via a single grid.
- Within India itself, there are huge tracts of desert in Rajasthan and Gujarat where solar panels can generate enough power so as to meet substantially the rising demand of energy.

Challenges

- In order to see the idea come through the most important challenge is to integrate economic policy imperative and energy policy imperative. Right now these two policies are in not blended.
- **Solar power depends on the efficient system of storage, which is yet to develop.**
- The mineral resources that contribute to making efficient and effective battery are dominated by China.

How to fuel and secure the energy need?

- **In the last five years, India has doubled energy generating capacity from 175GW to 350GW.**
- With economic growth and bettering of economic and social condition, the per capita demand for electricity is bound to increase.
- In this regard, it is imperative that the policies are so designed that the energy demand is more tilted towards renewable energy and away from fossil fuels. The best example will be electric cars. It will bring down fossil fuel consumption and solar power can take care of electricity generation.
- **India has succeeded in large solar projects.** The next big target is to get the solar panel in our 6 lakh villages. Such decentralization would lead to the production of 6 lakh kilowatts into the system.

Way Forward

- **The first and foremost action would be to develop storage technology.** In this regard, both the government and the private sector need to make a substantial investment.
- Continents like Africa can be explored for ensuring the constant supply of rare earth minerals that are important for making batteries for energy storage.
- **An alternative to storage like solar thermal can be explored.**
- However, the most important work has to be done at the front of ISA. The team of 121 countries should come together and work as a facilitator instead of a cartel (OPEC).