



Perspective: Global Solar Grid

Context:

- India launched the ambitious 'One Sun, One World, One Grid' (OSOWOG) programme on the second day of the negotiations at the global climate conference COP26.
- The project was launched along with the Green Grids Initiative (GGI) of the UK.
- UK Prime Minister and Indian PM jointly presented a One Sun Declaration.
- It was also decided to set up a 'Ministerial Steering Group', which includes France, India, the UK and the US, and will also have representatives from Africa, the Gulf, Latin America and Southeast Asia.

More on the news:

- OSOWOG initiative was presented at the fourth assembly of ISA and as a key enabler of energy transition, the UK and India joined hands and merge the Green Grids Initiative (GGI) and OSOWOG into GGI-OSOWOG as part of bilateral cooperation, formalised during the UK-India Virtual Summit earlier this year.
- ISRO will provide a solar calculator application to the world, which will be useful in deciding the location of solar projects and will strengthen OSOWOG initiative.
- 80 member countries endorsed a political 'One Sun Declaration', for the launch of GGI-OSOWOG at COP26 at Glasgow.
- PM Modi also addressed the launch of the 'Infrastructure for Resilient Island States' (IRIS) initiative, which aims to provide technical support on the issues posed by infrastructure systems and promote disaster and climate resilience of infrastructure assets in Small Island developing states.
- Citing the Suryopanishad' during his address, PM said that everything was born from Sun, Sun is the only source of energy and solar energy can take care of everyone.

Background:

- The concept of a single global grid for solar power was first outlined at the First Assembly of the ISA in 2018 by PM Modi.
- It envisions building and scaling inter-regional energy grids to share solar energy across the globe, leveraging the differences of time zones, seasons, resources, and prices between countries and regions.
- OSOWOG will also help decarbonise energy production, which is today the largest source of global greenhouse gas emissions.
- PM in his Independence Day address mentioned about the mega plan of OSOWOG or a trans-national electricity grid supplying solar power across the globe.
- In June, the ministry of new and renewable energy came out with a Request for Proposal (RFP) to hire consultants for converting this idea into policy.
- Several policy experts cited it as part of India's answer to China's One Belt One Road infrastructure initiative which entails investment in close to 70 countries.
- The concept of OSOWOG is what the British have called a green grid.

What does OSOWOG mean and what will it do?

- According to the draft plan prepared by the MNRE, the ambitious OSOWOG will connect 140 countries through a common grid that will be used to transfer solar power.
- The vision behind the OSOWOG mantra is "the Sun never sets" and is a constant at some geographical location, globally, at any given point of time.



- The **blueprint for the OSOWOG will be developed under the World Bank's technical assistance programme** that is implemented to accelerate the deployment of grid connected rooftop solar installations.
- With India at the fulcrum, the **solar spectrum can easily be divided into two broad zones viz. far East which would include countries like Myanmar, Vietnam, Thailand, Lao, Cambodia and far West which would cover the Middle East and the Africa Region**
- The plan is divided into three phases:
 1. The **first phase will connect the Indian grid with the Middle East, South Asia and South-East Asian grids** to share solar and other renewable energy resources.
 2. The **second phase will connect the first phase nations with the African pool of renewable sources.**
 3. The **third phase will be the concluding step of global interconnection.**

Other similar initiatives:

- Having international associations is not a new trend for the energy sector which **already has a strong geopolitical organisation such as OPEC.**
- Officially announced during UN Climate Change Conference in Paris in 2015, the **ISA is a partnership of solar-resource rich countries.** Currently, there are 121 countries that have agreed to be members for ISA.
- Additionally, **India has power trade with Bhutan and hydropower project development pact with Nepal.**
- Last year, the Central Electricity Regulatory Authority gave its nod to new regulations of '**Cross-border electricity trade**', thereby making the trade of electricity to neighbouring countries more seamless. This included setting up of nodal agency for bilateral trade of electricity, monitoring and planning by central agencies, and similar technology interface at both ends.
- **Australia based Sun Cable is developing the Australia-ASEAN Power Link (AAPL),** under which it will supply renewable electricity from Australia to Singapore and later to Indonesia.

Why is OSOWOG needed?

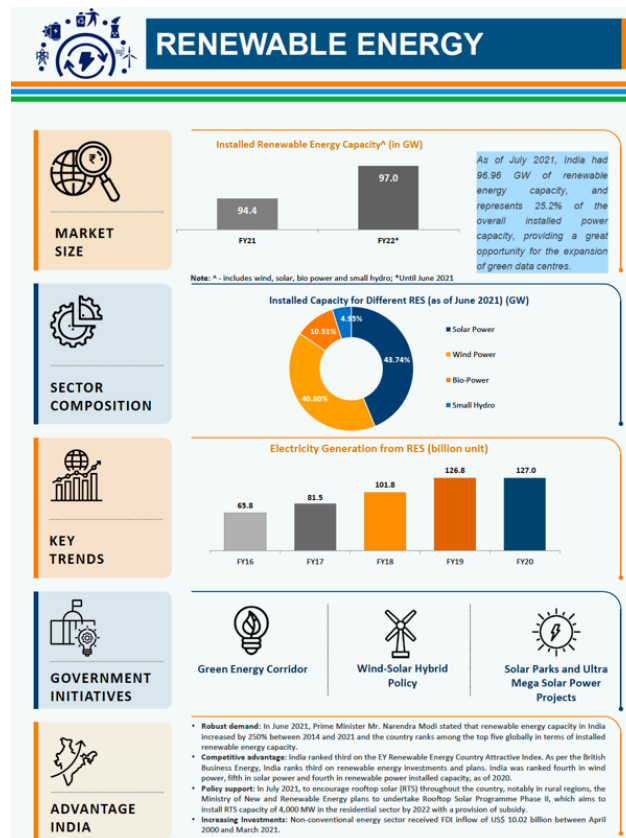
- While India is a partner nation with most trade associations, with ISA and OSOWOG, it is **planning to take a leadership position.**
- Potential benefits include **widespread scale up in energy access, abatement in carbon emissions, lower cost and improved livelihoods.**
- Geo-politically, this is being touted as a **clever strategy:** Chinese companies are already active in several African markets. While India has taken baby steps with ISA, a major investment drive is still missing. This is planned to be achieved through OSOWOG.
- **Help all the participating entities in attracting investments in renewable energy sources as well as utilizing skills, technology and finances.**
- **Lead to reduced project costs, higher efficiencies and increased asset utilization for all the participating entities.**
- Resulting economic benefits would **positively impact poverty alleviation and support in mitigating water, sanitation, food and other socio-economic challenges.**
- **Allow national renewable energy management centres in India to grow as regional and global management centres.**
- This move, during the time of the Covid-19 pandemic, gives India the opportunity to be seen as taking a lead in evolving global strategies.



Issues with the Project:

- **Geopolitics:** The project is seen as an Indian endeavour for world leadership but under Covid-19 uncertainties, the geopolitical implications of projects like OSOWOG are hard to decipher. The mechanism of cost-sharing will be challenging, given the varied priorities of participating countries depending on their socio-economic orders.
- **Economic benefit:**
 - The value of time-shifting could come from a place with large, cheap land, such as an enormous solar farm in North Africa for Europe.
 - But the transmission costs will usually outweigh the benefits of land and solar radiation.
 - Supply of energy through this grid, in a time zone with a six-hour difference will require thousands of kilometres of transmission of the electricity, which will add up a huge cost.
- **Globalisation vs De-Globalisation:**
 - The OSOWOG will turn out to be an expensive, complex and very slow progress project.
 - The strategic benefits, if any, of having a single grid will be obliterated in the wake of any geopolitical problem.
 - In India, the major issue of renewable energy developers is to deal with different state governments and hence, different laws and regulations.
 - Further, the project also contradicts the Prime Minister's Aatmanirbhar Bharat (self-dependent India) vision, as it extends the reliance for a major strategic entity, energy supply, to other countries through this grid.
- **Centralised vs Distributed Generation:** There is a difference in voltage, frequency and specifications of the grid in most regions. Maintaining grid stability with just renewable generation would be technically difficult.

Renewable energy in India:





Way Forward

- The move is the key to future renewable-based energy systems globally because regional and international interconnected green grids can enable sharing and balancing of renewable energy across international borders.
- It allows grabbing opportunities to learn quickly from global developments and share renewable energy resources to reduce the global carbon footprint and insulate the societies from pandemics.
- **Institution building is key to fulfilling the ambitions of a multi-country grid project.** In this context, ISA (International Solar Alliance) can act as an independent supranational institution to take decisions about how the grid should be run and conflicts settled.
- The areas that could be further strengthened when it comes to implementation of OSOWOG include **mechanism for cost sharing, structured process for implementation and a futuristic mechanism for maintaining local, regional and global grid stability that factors in issues such as frequency, voltage and grid specifications.**

<https://youtu.be/25xFKFJH4GE>

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