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India's Target of 500 GW Renewable Energy by 2030

Syllabus-GS 3: Environment and Biodiversity conservation

Why in news:

India's new target of **500 gigawatts** (GW) of renewable energy by 2030, announced at the 26th session of the Conference of Parties (**COP26)** in **Glasgow**, is a "very significant" contribution to meeting the goals of the climate summit. **50 per cent** of India's energy needs would be met from renewable energy sources.

'Panchamrit' announced at cop26:

- The first agenda is to raise the non-fossil fuel-based energy capacity of the country to **500 GW by 2030**.
- Also, by 2030**, 50% of the country's energy requirements would be met using renewable energy sources.**
- The country will reduce the total projected carbon emission by **one billion tonnes** by the year 2030.
- The **carbon intensity** of the economy would be reduced to less than **45% by 2030**. The previous goal was 35%.
- As the final agenda, the country would become carbon neutral and achieve **net-zero emissions by the year 2070.**

About renewable energy: Any naturally occurring, theoretically inexhaustible source of energy, as biomass, solar, wind, tidal, wave, and hydroelectric power, that is not derived from fossil or nuclear fuel.

Reasons for the growth of renewable energy:

Growth of energy demand:

- ✓ **Expansion of electricity coverage**: Increased coverage of electricity, along with the provision of last-mile connectivity to all households under the **SAUBHAGYA scheme or Sahaj Bijli Har Ghar Yojana** has led to higher demand for energy.
- ✓ **Rise in energy demand**: As urbanisation increases, there is also an **Increase in the per capita consumption of energy** leading to the growth of energy demand.

India's initiative for renewable energy:

- The Wind Energy Revolution
- National Biofuels Policy and **SATAT**
- Small Hydro Power **(SHP)**
- National Hydrogen Energy Mission **(NHEM)**
- Production-Linked Incentive **(PLI) Scheme**
- National Biofuels Policy and **SAYAY**
- **PM-Kisan Urja Suraksha Evam Utthaan Mahaabhiyan (PM-KUSUM) Scheme**
- **Scheme for Development of Solar Parks and Ultra Mega Power Project**
- **Atal Jyoti Yojana (AJAY)**
- **Development of Solar Cities Scheme**
- **Green Energy Corridor Project**
- Scheme For Biomass Based Cogeneration Projects

- However, it is to be noted here that the **average consumption in India has still remained well below the average global consumption of energy**.

✓ **Economic growth**: Despite the COVID-induced slowdown, India is one of the few countries which are looking at a substantial growth rate in the future, thus increasing the requirement of energy in the post-COVID world.

✓ **Growing acceptance of electric mobility**: Electric and hybrid vehicles have become the technology of choice around the world. This will create additional power demand for charging needs of the Electric vehicles.

Rise in importance of clean energy:

❖ **India's commitments under the Paris climate deal**: Apart from **decreasing the energy intensity** and **creation of carbon sink**, India has also committed itself to **meet 40% of its total energy demand from non-fossil sources.** Thus, it is imperative to invest in renewable energy to meet this target.

❖ **Personal energy invested by the PM**: PM has set the targets and reiterated that the Indian government is committed to increasing the share of renewable energy in India's total energy share. Initially, the target for renewable energy was set at 175 GW, but, now it has been further **revised to 500 GW by 2030**.

❖ **International Solar Alliance**: Similarly, the prime minister was instrumental in setting up the International Solar Alliance for creation of a grouping of like-minded countries that are committed to **research and development in solar energy** and sharing its benefits.

❖ **Impact of COVID**: COVID has led to people understanding the **importance of cleanliness**. This has also created a favourable perception of clean energy. Therefore, thermal energy, being one of the largest emitters of pollution, will naturally be considered an inferior source of energy.

❖ **Air Pollution**: Rise in the levels of air pollution in Delhi and other major cities have led to a change in the policy direction towards clean energy driven growth in India.

Current status of renewable energy in India:

✓ India ranks **3rd** in renewable **energy country attractive index** in 2021.

✓ The country has set an ambitious target to achieve a capacity of **175 GW worth of renewable energy by the end of 2022**, which expands to **500 GW by 2030.** This is the world's largest expansion plan is in renewable energy.

✓ India's installed renewable energy capacity has increased by over two and a half times and stands at **more than 141 Giga Watts** (including **large Hydro**), which is **about 37 per cent of the country's total capacity** (as on 16th June 2021). During the same period, the installed solar energy capacity has increased by over 15 times, and stands at 41.09 GW.

✓ Up to **100% FDI** is allowed under the automatic route for renewable energy generation and distribution projects subject to provisions of **The Electricity Act, 2003**.

Benefits of renewable energy:

- **Opportunity for the private sector:** PM indicated the possibility of a business of around $20 billion per year in the renewable energy sector. A target of setting up 500 GW of renewable energy sources by 2030 means that we need to augment the renewable energy capacity by **almost 25-30 GW per year**. This can be harnessed as a **high return on investment opportunity** by the private sector.
- **Low maintenance cost**: As compared to the traditional sources of energy like coal-based or oil-based thermal power plants, solar energy has the advantage of almost **no requirement of procurement of fuel as well as lesser wear and tear due to lack of movement of parts**. Therefore, return on investment is higher in the long run.
- **Government incentives**: Solar energy is a sustainable source of energy. Therefore, unlike thermal energy where the government policy is to penalise the usage, renewable energy will always be incentivised to invest additional resources and create more energy capacity.
- **Sustainability**: Renewable energy is a cleaner source of pollution, thus, benefitting the environment in general and **reducing pollution and the associated diseases** in particular.
- **Atmanirbhar Bharat**: Investment by the private sector in renewable energy would also be helpful in fulfilling the Government's objective of self-reliance. It will also **create employment** opportunities in the country.
- **Last-mile connectivity:** As renewable energy can also be **decentralised**, therefore, it is better placed to extend last-mile connectivity in remote areas, where it might **not be financially feasible to stretch the main grid**. This is also **economical** for the government and households as decentralised connectivity **decreases the Transmission and distribution losses**

Ministry of New and Renewable Energy data on renewable energy:

Sector	Installed capacity (GW)	Under Implementation (GW)	Tendered (GW)	Total Installed/ Pipeline (GW)
Solar Power	36.32	37.10	21.21	94.63
Wind Power	38.26	8.99	0.00	47.25
Bio Energy	10.31	0.00	0.00	10.31
Small Hydro	4.74	0.46	0.00	5.20
Wind Solar Hybrid	0	1.44	1.20	2.64
Round the Clock (RTC) Power	0	1.60	5.00	6.60
Total	89.63	49.59	27.41	166.63

Challenges of renewable energy sector:

- **Integration with the Main Grid:** Integrating the renewables with the main grid is the where area India needs to work upon. To accelerate the uptake of renewables, storage and battery solutions is needed in large quantities.
- **Cost factor:** Renewable resources are slightly expensive than conventional sources.
- **24*7 Power Supply:** Sustainable, round-the-clock power supply along with the storage system is a big challenge ahead.
- **Agricultural Sector:** Much power is consumed in the agricultural sector. The challenge is to provide sufficient power and energy to every household and to the agricultural sector as well.

Way Forward:

- It is estimated that India has the capacity to extract 900 GW from commercially available sources like the wind, hydro energy, bioenergy, and solar energy.
- High financial assistance is essential for this nascent sector to grow.
- The governments must undertake all measures necessary to increase the investments in the research and development of new sources of clean energy to safeguard the environment and to provide a sustainable energy source to the future generation.
- Bulk production can reduce the production cost.
- For example, if the solar panels are manufactured on a large scale, it will minimize the costs.
- It is essential to integrate the new technology with the existing infrastructure to reduce the cost of renewable technology.

Conclusion:

There can be no doubt about the fact that the renewable energy is the **energy of the future**. The current direction indicates the possibility of **elimination of fossil fuels based energy as early as 2050.** This will lead to a **cleaner planet, greener planet** and make the earth a better place to live in. However, it is important that we have a clear policy guideline, wherein we explore the **right mix of energy sources**, integrated into the grid to achieve maximum efficiency.