A Clean Energy Transition Plan for India

What is the issue?

Provision of electricity security in India has a long way to go since its per capita electricity consumption is still only a third of the global average.

What is the status of India's energy security?

> *Energy security refers to the uninterrupted supply of energy at affordable prices.*

- As of 31 July 2020, the total installed power capacity in India was 372 GW.
- The share of non-fossil fuels in installed capacity is 38%.
- India's energy consumption is forecast to grow at around 4.5 per cent annually to 2035.
- India faces the twin challenges of providing energy security to its population and mitigating climate change.

What are the major sources of India's energy sector?

- **Thermal plants –** Coal is the key driver that fuels the thermal power plants in India.
- Coal plays a vital role to achieve SDG 7, which is "to ensure access to affordable, reliable, sustainable and modern energy for all".
- The thermal power plants contributed 71% electricity generated by utilities in India during FY 2020-21 .
- But they accounted for only 55% of the total installed generation capacity of 382 GW (as of March 2021).
- **Renewable energy -** Variable renewable energy sources (VRE) (primarily, wind and solar) account for 24.7% of the total installed generation capacity, as of March 2021.
- They contributed 10.7% of the electricity generated by utilities during FY 2020-21.
- The share of non-fossil fuels in installed capacity is 38% whereas India's INDC targets o achieve 40% by 2030.
- But the current level of VRE in the national power grid is increasing the

cost of power procurement for DISCOMs, leading to tariff increases for electricity consumers.

What is the clean energy transition plan?

- **Retirement of specific installed generation capacity in TPPs** - Based on key performance parameters such as efficiency, coal consumption, technological obsolescence, age, progressive retirement of 36 GW of installed generation capacity in 211 TPPs has been outlined.
- **High-Efficiency-Low-Emission (HELE) TPPs-** The utilization of HELE TPPs can be increased to cope up with the shortfall in baseload electricity generation.
- **Nuclear power -** The Nuclear Power Corporation of India Limited's (NPCIL) construction of 11 nuclear power plants with a total generation capacity of 8,700 MW will supply 24x7 power without any CO2 emissions.

What are the expected benefits out of this plan?

- The total installed capacity of TPPs operated by utilities will increase even after the retirement of obsolete TPPs.
- TPPs to be retired saves specific coal consumption and water requirement leading to reductions in electricity tariffs.
- The combined thermal and nuclear capacity of 235 GW can meet the baseload requirement (80% of peak demand) during the evening peak in FY 2029-30 without expensive battery storage.
- India's power generation from TPPs is expected to reduce from the level of 71% to 57% of the total electrical energy during FY 2029-30.
- Consequently, total CO2 emissions from the power sector will go down.
- HELE TPPs minimise the emissions of particulate matter (PM), SO2, and NO2.
- The installation of high-efficiency electrostatic precipitators can remove 99.97% of the PM pollution.
- This plan demonstrates India's commitment to climate change mitigation by optimising the use of our land, coal, water, and financial resources with indigenous technology.

What clean energy commitments have been made by India?

- India made commitments to increase renewable energy installed capacity to 450 GW by 2030
- It aims to implement a National Hydrogen Energy Mission to scale up

annual green hydrogen production to 1 MT by 2030.

- The government has announced to begin a Production Linked Incentive Scheme to add 10 GW solar PV manufacturing capacity by 2025.
- It has announced to create 15 MMT production capacity of compressed biogas by 2024,
- The government aims to achieve 20 per cent ethanol blending in petrol by 2025-26.
- It also promotes energy efficiency in agriculture, buildings, industry and transport to reduce the country's emissions intensity of GDP by 33-35 per cent over 2005 levels by 2030.

References

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