Global Energy Status

Source:DTE

Why in News?

The **International Energy Agency's Electricity Mid-Year Update 2025** highlights **rising power demand fueled** by heatwaves, air conditioners, data centres, and electric vehicles, while solar, wind, and nuclear energy rapidly reshape the global electricity mix.

What are the Key Highlights of the IEA's Electricity Mid-Year Update 2025?

- **Global Electricity Demand Forecast: Global electricity demand is projected to grow by 3.3% in 2025 and 3.7% in 2026, well above the 2015-2023 average of 2.6%.**
  - India and China will together contribute 60% of global demand growth through 2026, with India growing at 4% in 2025 and 6.6% in 2026.
- **Coal and Renewable Energy Outlook:** Solar and wind are set to surpass coal generation by 2025 or 2026, with their share growing from 15% in 2024 to 20% by 2026. Solar and wind will account for over 90% of the increase in electricity demand in 2025.
  - As a result, coal's share in total generation is set to drop below 33% for the first time in the last 100 years.
- **Growth in Nuclear Power: Global nuclear power generation is set to reach a record high in 2025, rising by 2% over 2025-26, driven by new reactor installations (in China, India, South Korea) and plant restarts (in Japan).**
- **Electricity Security:** Blackouts in Chile and Spain/Portugal emphasize the need for robust grid infrastructure, secure supply chains, and flexibility resources to ensure electricity security.
- **Emissions:** Global emissions rose by only 1.2% in 2024, despite extreme weather.
  - Low-emission sources (renewables + nuclear) are offsetting fossil fuel use, though unpredictable weather still affects year-to-year trends.

What is India's Energy Landscape?

- **Installed Electricity Capacity by Source (As of June 2025):**

Source	Capacity(GW)	Percentage Share
Thermal	242.04	49.92%
Nuclear	8.78	1.81%
Large Hydro (LH)	49.38	10.19%
RenewableEnergy(RE)	184.62	38.08%
Total	**484.82**	**100%**

- **Fossil vs Non-Fossil Energy Share in Installed (As of June 2025):**

Category	Capacity (GW)	Percentage Share
Fossil Fuel (Thermal)	242.04	49.92%

Non-Fossil Fuel (RE + LH + Nuclear)	242.78	50.08%
Total	**484.82**	**100%**

- **Renewable Energy: Solar power holds the largest share in RE, contributing 47.06% of the total non-fossil capacity, followed by wind power at 21.78%.**
  - Hydropower accounts for 20.35%, while bio power contributes 4.92%. Nuclear energy makes up 3.73%, and small hydro power holds a share of 2.17%.
  - As per **International Renewable Energy Agency (IRENA) RE Statistics 2025**, India ranks **4th globally in Renewable Energy Installed Capacity, 4th in Wind Power,** and 3rd in Solar Power capacity.
- **Oil, Gas, and Bioenergy:** Liquefied Petroleum Gas (LPG) **connections grew from 14.5 crore to 33 crore (2014–2025).**
  - **India achieved 20% ethanol blending** in petrol in 2025. The blend rose from just 1.5% in 2014 to 20% in 2025.
  - **Biopower** capacity rose from **8.1 GW to 11.6 GW,** and **Compressed Biogas (CBG)** capacity grew from 1 project (8 Tonnes per Day (TPD)) in 2014 to 150 projects (1,211 TPD) by March 2025.
- **Electricity Security:** Power shortages dropped from 4.2% in 2013–14 to 0.1% in 2024–25. **Per Capita Electricity Consumption** Up by 45.8% (from 957 kWh to 1,395 kWh)
  - **India achieved 100% village electrification** by April 2018 and has since connected more than 2.8 crore households to the grid.
- **Flagship Renewable Schemes:**

Scheme	Objective
PM-KUSUM	Promote solar energy use in agriculture
PM-Surya Ghar: Muft Bijli Yojana	Rooftop solar for 1 crore homes
Solar Parks	Infrastructure for large-scale solar projects
PLI Scheme for Solar Modules	Boost domestic solar photovoltaic manufacturing
National Bioenergy Programme	Waste-to-energy, biomass, and biogas for power generation
PM JANMAN (Solar Component)	Electrify tribal/PVTG households using off-grid solar
National Green Hydrogen Mission	Make India a global hub for green hydrogen production

International Energy Agency

- The IEA is an **autonomous intergovernmental organization** within the **Organisation for Economic Co-operation and Development (OECD)** framework.
- The IEA, founded in 1974 in Paris in response to the **1973-1974 oil crisis**, addresses oil supply disruptions.
  - It focuses on energy security, economic development, environmental awareness, and global engagement.
- The IEA has 32 member countries and 13 association countries. India joined as an Associate member in 2017.
  - The **IEA has invited India to become a full-time member**, recognizing its growing influence in global energy trends.
- The IEA conducts energy policy analyses and publishes reports like the **World Energy Outlook, and World Energy Investment Report.**

Drishti Mains Question:

Q. What are the initiatives taken by India to position itself as a global leader in renewable energy, and how successful have they been?

UPSC Civil Services Examination, Previous Year Question (PYQ)

Mains

Q. Describe the benefits of deriving electric energy from sunlight in contrast to the conventional energy generation. What are the initiatives offered by our Government for this purpose? (2020).
Q. The question of India's Energy Security constitutes the most important part of India's economic progress. Analyse India's energy policy cooperation with West Asian countries (2017)
Q. "Access to affordable, reliable, sustainable and modern energy is the sine qua non to achieve Sustainable Development Goals (SDGs)".Comment on the progress made in India in this regard. (2018)
Q. Write a note on India's green energy corridor to alleviate the problem of conventional energy.(2013).