India’s Energy Strategy

> ***Mains Syllabus: GS III - Infrastructure: Energy, Ports, Roads, Airports, Railways etc.***

Why in the News?

Recently Union Energy Minister held meeting on energy reforms and infrastructure.

What is the energy strategy of India?

> *India is now the third largest energy and oil consumer, fourth-largest refiner, and fourth-largest LNG importer globally.*

> *India’s energy demand is expected to grow two and a half times by 2047 and 25% of incremental global demand set to come from India.*

- **Diversification of Sources & Suppliers** – India is actively diversifying its energy sources among renewable and fossil fuels and suppliers to enhance energy security

and reduce reliance on fossil fuels.

India increased the number of its crude oil suppliers from 27 countries in 2006-07 to 39 in 2021-22, adding new suppliers like Columbia, Russia, Libya, Gabon, Equatorial Guinea etc.

- **Expansion of Domestic Production** – Government has aimed covering one million square kilometres by 2030 to unlock 42 billion tonnes of oil and oil-equivalent gas.
- **Transition to Renewables** - India is heavily investing in renewable energy as a key component of its energy strategy, aiming for a 50% share of non-fossil fuel sources by 2030 and net-zero emissions by 2070.
- **Affordability** - Fuel prices in India have been kept stable through excise cuts, insulating citizens from volatility seen in neighbouring countries.
- Despite global LPG prices rising by 58%, Pradhan Mantri Ujjwala Yojana (PMUY) beneficiaries pay Rs. 553 per cylinder, supported by targeted subsidies and compensation to oil companies.

What are the recent initiatives to promote energy sector?

- **Reduction of 'No-Go' areas** - India has cleared 1 million square kilometers of its 3.5 million square kilometers of sedimentary basin for oil and gas exploration with 99% reduction in 'No-Go' areas in India's Exclusive Economic Zone.
- **Open Acreage Licensing Policy (OALP)** – It allows investors to select and propose blocks for oil and gas exploration based on available data, without waiting for a formal government bid round.
- **Attractive Pricing Incentives** - The revised gas pricing mechanism, linking prices to 10% of the Indian crude basket and offering a 20% premium for new wells, has enhanced gas availability for city gas networks and industrial usage.

The Indian crude basket is a derived blend comprising sour grade (Oman and Dubai average) and sweet grade (Brent Dated) crude oil, processed in domestic refineries, with the current ratio standing at 78.50:21.50.

- **Revenue Sharing Contracts** - To reduce costs and accelerate monetisation, new revenue-sharing contracts allow shared infrastructure among Exploration and Production (E&P) players.
- **Exploration of Basins** - National Seismic Programme, Mission Anveshan, airborne gravity gradiometry (AGG) surveys, and continental shelf mapping have expanded exploration in frontier basins such as the Andamans, the Mahanadi, and the Cauvery.

National Seismic Programme (NSP) in India is a project to appraise sedimentary basins for hydrocarbon resources.

Mission Anveshan is a scheme to incentivize seismic surveys for mapping oil and gas deposits in India's sedimentary basins.

Airborne gravity gradiometry (AGG) measures the changes in the Earth's gravitational field as an aircraft flies over an area, providing detailed information about subsurface geological structures.

- **Unlocking Marginal Fields** - Discovered small fields (DSF) fields now operate under simplified contracts with minimal compliance burdens, unlocking marginal fields across basins.
- **Unified Pipeline Tariffs** - This aims to create a uniform pricing mechanism for transporting natural gas across the National Gas Grid (NGGS).
- This means that the cost of transporting gas will be the same regardless of the distance, location, or pipeline involved.
- **Collaborations with Global Majors** - ONGC's partnership with British Petroleum Inc. (BP) is projected to boost output from Mumbai High by 44% for oil and 89% for gas.
- **Attracting International Investors** - A data centre at the University of Houston now facilitates access to India's exploration datasets for international investors.
- **Digital Mapping of Assets** – Though PM Gati Shakti, the Ministry of Petroleum and Natural Gas has digitally mapped over one lakh assets and pipelines.
- **Synergy Across Ministries** - Integration with the National Master Plan ensures real-time project visibility and synergy across ministries.

What are the recent progresses in India's energy sector?

- **Expansion of Upstream Activities** - In the upstream oil and gas sector, India's exploration acreage has doubled from 8% in 2021 to 16% in 2025.
- **Expansion in Downstream Infrastructure** - India now operates 24,000 kilometres of product pipelines, nearly 96,000 retail outlets, and has significantly strengthened its strategic reserves and LPG storage.
- **Increase in Natural Gas Production** - It has increased steadily from 28.7 billion cubic metre (BCM) in 2020-21 to 36.4 BCM in 2023-24, with further growth projected.
- **Widening City Gas Network** – It has grown from 55 geographic areas in 2014 to 307 in 2025, with piped natural gas (PNG) connections up from 25 lakh to 1.5 crore.
- India's natural gas pipeline network now spans over 25,000 km and it targets 33,000 km by 2030.
- **New Discoveries in Basins** - The Oil and Natural Gas Corporation Limited (ONGC) and Oil India have together made over 25 hydrocarbon discoveries across the Mumbai Offshore, Cambay, Mahanadi, and Assam basins in the last four years.
- Noteworthy among these are the Suryamani and Vajramani wells on the west coast offshore and the Utkal and Konark fields on the east coast deep waters.
- **Increase in Reserves** - These discoveries add over 75 MMtoe (million metric tonnes of oil equivalent) and 2,700 MMSCM (million metric standard cubic metres) of gas to India's reserves.

What is the status of India's green strategy?

- **Ethanol Blending** - Biofuels have emerged as a cornerstone of India's green strategy and the Ethanol blending in petrol has surged from 1.5% in 2013 to 19.7% in 2025.
- This has saved 1.26 lakh crore in foreign exchange, reduced emissions by 643 lakh MT, and paid Rs. 1.79 lakh crore to distillers and over Rs. 1 lakh crore to farmers.
- **Feedstock Diversification** – The allowed feedstocks for biofuels production have been expanded ranging from molasses to maize to a robust ethanol ecosystem.
- **SATAT Initiative** - Sustainable Alternative Towards Affordable Transportation (SATAT) initiative has commissioned over 100 compressed biogas (CBG) plants and aims for a 5% CBG blending mandate by 2028.
- **Green Hydrogen** – It has been given a massive thrust with 8.62 lakh tonnes of production and 3,000 MW of electrolyser tenders awarded.

  Numaligarh Refinery Limited (NRL)'s green hydrogen unit in Assam is poised to become a first in the northeast.

- **Hybrid Leases** - Oilfields (Regulation and Development) Amendment Act 2024 has enabled hybrid leases, allowing renewables alongside hydrocarbons.

What lies ahead?

- Energy is not just a commodity but catalyst for sovereignty, security and sustainable development.
- Potential global disruptions in energy supply chain due to the changing geo political set up needs to be taken in to account to strengthen the energy supply.
- Energy diplomacy relationships need to be balanced among Russia, the US, and Gulf nations, ensuring stable supplies despite global tensions.

Reference

The Hindu | A strategy fuelled by vision, powered by energy