Volume 19, Issue 10

January 2026

Power Distribution Utilities Record Positive After Years of Losses; This Marks a New Chapter: Power Minister

INDIA ENERGY FORUM 908 Chiranjiv Tower, 43 Nehru Place, New Delhi 110 019, India

Reducing Import Dependence of Petroleum and Natural Gas: Crucial for Energy Security

Crude and Gas constitute almost one third of the energy basket of India. Dependence of industrial sector, but more particularly the transport sector, is so significant that the inputs to industry and even household can be seriously affected due to any mismatch of supply. It is precisely for this reason that most of the countries hold strategic reserves of oil and gas so that the activities do not get affected because of gaps in demand and supply. Considering the strategic importance of these petroleum fuels – Oil and Gas – received adequate attention of the Government and accordingly Oil and Natural Gas Commission on the production side and Gas Authority of India on the transmission side of supply were created, and both these organisations, along with the few others, have been providing the required development inputs to meet the needs of the country. Transport, Industry, and Agriculture, demands for these fuels continued to grow in a manner that the country has been facing the mismatch between demand and domestic production, and, hence, the needs for imports from outside became inevitable. The explorations for these petroleum products need sophisticated and highly technical investigations, including investigations in high seas. Dependable outcomes of these investigations, no doubt, can be expected, but quite often the results are not on expected lines. Apart from these challenges, once the reserves are extracted the rate of depletion requires a more aggressive rate of new explorations and discoveries. In Indian context, both for oil and gas the task has been much more daunting, resulting in rising gaps between demands for oil and gas and domestic production, necessitating substantial imports.

The Author had an opportunity to study and analyse the import dependence of these vital fuels which are the lifeline of Indian industry, agriculture, and household. This study carried out in 2008 resulted in a paper which found its place in the Author's Book "Energy Security and Climate Change" published in 2009. The study revealed that, despite all the efforts, the demand supply mismatch had become a cause of concern and hence the analysis was carried out for fifteen-year period of 1991 to 2007. While this paper is large, covering many other related issues, a few important extracts reproduced below would indicate how this problem has been eluding solutions and defeating all the efforts aimed at controlling this rising trend of import dependency.

"In the year 1991, domestic production was about 33 million tonnes while the import was about 21 million tonnes, i.e. about 39% of the total. Since then, import proportion has been continuously rising. During the year 2006-07, while the domestic production was only 33.64 million tonnes, the import was as high as 111.50 million tonnes i.e. almost 77% of the total. Thus, if the domestic petroleum sector on production of crude, remains totally stagnant, literally with zero growth in a period of more than fifteen years, which confronts the country with the inevitable consequence of having to increase its import from less than 40% to more than 75%, and that too in such a volatile market, its adverse effect on economy as a whole, and on inflation particularly, could very well be predicted and appreciated. There are countries which are also dependent on import but their domestic production partly mitigates the financial burden. In China, the crude demand has increased, over the years, but they have also increased their domestic production. Over 50% of total demand is met with indigenous production."

In case of Crude Oil Import, dependence even in the current Century the results are quite disturbing. The following figures from 2001 to 2024-25 indicate that the import as a percentage of consumption has increased from 70% to 88.9%. In case of Gas, the import is of the order of 50% even though its profile is only 6% compared to the target of 15% in the energy basket.

A Google search (reference at the end) in this regard presents the following picture of growing import dependence even in last twenty-five years.

"India's import dependency on crude oil has shown a consistent, long-term upward trend from FY 2000 to the projected levels in FY 2025, driven by rising consumption and stagnant domestic production. According to the Petroleum Planning & Analysis Cell (PPAC), the reliance on imported crude oil reached a record high of 88.2% in FY25.

Year-wise Crude Oil Import Dependence (Selected Years)

FY 2000-2010: In the early 2000s, import dependence was below 70%, but it grew steadily due to rapid economic expansion.

FY 2014-15: 68.9%, **FY 2015-16**: 72.2%, **FY 2018-19**: 83.8%, **FY 2019-20**: 85.0%, **FY 2020-21**: 84.4%, **FY 2021-22**: 85.5%, **FY 2022-23**: 87.4%, **FY 2023-24**: 87.7%, **FY 2024-25 (April-Feb)**: 88.2%, **April 2025 (FY26 start)**: 90% (Record monthly high)."

Increase in the consumption of petrol and diesel has been largely on account of drastic changes in the profile of transportation system. The most important reason has been the inadequate growth of Railway infrastructure and massive shift to Road Transport, though during last ten years there have been definite improvements in railway infrastructure Google search on this issue presents the following picture.

"Trend analysis of track capacity versus traffic intensity during last over fifty years indicates that the growth in traffic has consistently outpaced the growth in infrastructure. Traffic Density (measured in million gross tonne kilometers per running track kilometer) increased from about 4.3 in 1950 to 21.5 in 2020 reflecting a sustained high intensity usage. The fact that the share of Railways in total freight traffic has fallen from 85% in 1950-51 to 30% in 2011-12 indicates the progressive ad drastic shift of traffic from Railways to Road.

The decline in the railway's share of goods transport traffic (from around 85% in 1950-51 to 27% in recent years in India) is primarily due to road transport's superior **flexibility, last-mile connectivity**, and **customer service**, while railways have faced **capacity constraints**.

Railway-Specific Constraints

- **Capacity and infrastructure deficits**: Inadequate investment in railway infrastructure over the decades has led to severe network congestion, outdated technology, and a gap between demand and supply for transport capacity, resulting in slower speeds and unreliability.

- **Commodity focus**: The railway's freight business has been heavily dependent on bulk commodities like coal, missing out on the growth in high-value, non-bulk goods that prefer road transport.

- **Pricing policies**: Rail freight pricing has often been rigid and insensitive to market competition, making road transport a more attractive option for various usages".

This explains country's heavy dependence on petroleum fuel, primarily on account of Railway's completely inadequate expansion of its infrastructure. A long-term solution, therefore, lies in re-examination of freight traffic and massive efforts on exponential growth of Railway infrastructure, which will be driven by electric traction.

When the NDA Government led by Shri Narendra Modi, Prime Minister, assumed office in the year 2014, the challenge of import dependence of petroleum fuels was identified by the Prime Minister himself giving an agenda to reduce import from 76% by 10% point that is to 66% in ten years' time. The issue is so complex involving a number of uncontrollable factors involving geo political dimensions that this challenge has assumed now an alarming situation. It does not need to be emphasised that such massive import burden is not only an issue of percentage, but it also has the burden of foreign exchange management. And, even more importantly, because of the current geo political situation it is a threat to Energy Security.

How to reduce import dependency has been on the Agenda of the country for decades, but more meaningfully on the Agenda of the present Government in view of the Prime Minister himself setting the target. In a recent reply to an Unstarred Question, the Minister of Petroleum and Natural Gas gave a detailed reply on 8th December 2025 as given below:

(i) the percentage of the country's crude-oil import dependence in the current year and the steps taken to reduce it via domestic production or alternate energy sources;

(ii) the percentage of refinery-capacity utilisation in the country currently and any major projects underway to expand capacity or upgrade to petro-chemical feed-stock;

(iii) Government's roadmap for transitioning to cleaner fuels (e.g., bio-fuels, hydrogen, electric mobility) in the next decade and the expected timelines; and

(iv) the manner in which Government monitors the end-use consumption of petroleum products in key sectors (transport, industry, agriculture) and The percentage of the country's crude-oil import dependence in the current financial year 2025-26 (till Oct'25) is 88.5%. Government has taken various policy decisions and steps to boost domestic crude oil and natural gas production and reduce dependency on import of oil and gas which, inter alia, include:

a. Policy under Production Sharing Contract (PSC) regime for early monetization of Hydrocarbon discoveries, 2014;
b. Discovered Small Field Policy, 2015;
c. Hydrocarbon Exploration and Licensing Policy (HELP), 2016
d. Policy for Extension of PSCs, 2016 and 2017;
e. Policy for early monetization of Coal Bed Methane, 2017;
f. Setting up of National Data Repository, 2017;
g. Approval of Un-appraised areas in Sedimentary Basins under National Seismic Programme, 2017;
h. Policy frameworks for extension of Production Sharing Contracts (PSCs) for Discovered Fields and Exploration Blocks under Pre-New Exploration Licensing Policy (Pre-NELP) 2016 & 2017;
i. Policy to Promote/Incentivize Enhanced Recovery Methods of Oil/Gas 2018;
j. Policy Framework for exploration and exploitation of Unconventional Hydrocarbons under Existing Production Sharing Contracts (PSCs), Coal Bed Methane (CBM) Contracts and Nomination Fields, 2018;
k. Natural Gas Marketing Reforms, 2020;
l. Lower Royalty Rates, Zero Revenue Share (till Windfall Gains) and no drilling commitment in Phase-I in OALP Blocks under Category II and III basins to attract bidders;
m. Release of about 1 Million Sq. Km. (SKM) "No-Go" areas in offshore which were earlier blocked for exploration for decades;
n. Amendments to the Oilfields (Regulation and Development) Act, 1948 to promote ease of doing business, contractual stability, operational efficiency and faster dispute resolution.

India's strong commitment to clean energy is being propelled by Ethanol Blending Petrol Programme, Pradhan Mantri JI-VAN scheme, Compressed Bio

Gas (CBG) ecosystem, National Hydrogen Mission, etc. As a green fuel, Ethanol supports the environmental sustainability efforts of the Government. Government have been promoting blending of ethanol in petrol under the Ethanol Blended Petrol (EBP) Programme to reduce import dependence on crude oil while saving foreign exchange and promote domestic agriculture sector.

To promote CBG, Government have initiated various schemes like Sustainable Alternative Towards Affordable Transportation (SATAT), financial assistance for procurement of Biomass Aggregation Machinery (BAM) and scheme for the development of pipeline infrastructure (DPI) for transportation of CBG into the City Gas Distribution (CGD) network.

Government is implementing the National Green Hydrogen Mission with an objective to make India a global hub of production, usage and export of green hydrogen and its derivatives. Strategic Interventions for Green Hydrogen Transition is a key component of the Mission which provides financial incentives for production of green hydrogen and electrolyser manufacturing."

India Energy Forum organised a debate in the month of January, 2026 in which presentations were made by senior officials of ONGC and Gas Authority of India Ltd. Several reasons of continuing decline or stagnation in domestic production were highlighted. It emerged that exploration efforts needed to be intensified, the technologies used in investigations needed to be upgraded in tune with the latest developments in the world. Organisations concerned should have collaborations with successful global organisations. There are potentials, but it will require more intensive and technically more advanced investigations. Obviously, these are activities with long gestations and will not fetch any significant outcomes to provide the nature of solutions which are urgently needed. However, initiatives which have been identified, need to be pursued with all seriousness Even if the country would continue to depend heavily on import of Crude and Gas, a reversal in the upward trend should be first target which could be accelerated in coming years. A few following suggestions may require attention.

a) The approach should be to enhance production of Oil and Gas both. As, in case of Oil, it might take a little longer to make a big difference. In case of Gas the projects which have been identified under CBG Mission and other initiatives, need further encouragement and it could it could be expected to deliver in medium and long term. The potential identified is already of the order of 220 MCMD and could be harnessed in short to medium term.

b) Creating large Strategic Reserves of Crude as well as Gas India does have this facility but it may perhaps need substantial enhancement of capacity at par with international norms and practices to meet the requirement of security of supply.

c) It may be relevant to mention that just before the NDA Government came to power in 2014, the Railway itself heavily dependent on Diesel Locomotives. The Author of this paper, as Chairman of the Advisory Board of Railway Energy management Company, had an opportunity to examine the issue of energy consumption in Railways. The Advisory Board, after detailed analysis of all relevant factors, suggested a rapid rise in the shift from Diesel Locomotive System to Electric Traction. The Railway Board accepted the recommendation. The outcome has been that as against 16,000 Kilometer of Railway line on electric traction in 2015, the Electric Traction now covers over 60,000 Kilometer, more than 95% of the total railway lines.

d) The rate of shift from petroleum driven road transport to electric vehicle needs to be accelerated. Heavy commercial vehicles also should shift from liquid fuel to EV and Hydrogen driven transportation. The Solar Power used for producing Hydrogen is expected to justify the economics of Hydrogen driven heavy vehicle transportation. As the Solar Power capacity enhances from the present about 130 GW to over 500 GW and beyond in next five years or so, availability of Solar Power during day time would be significantly in excess of normal requirements and, hence, Solar Power might be priced much lower than it is today. Economics of Hydrogen generation would more than justify progressively supporting the proposed shift from the petroleum fuel to Hydrogen for transport.

e) There is a good development of rural agriculture shifting from diesel driven pumps to solar pumps or electricity driven solar pumps. In coming few years this shift will make a significant difference in drastic reduction of demand for diesel. In addition to agriculture, the rural area is supported for a number of other economic activities through use of petroleum fuels. These will also slowly shift to Solar Power.

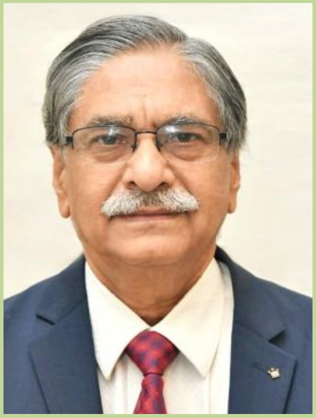
f) Inadequacies of Railway infrastructure resulted in massive shift of traffic- mainly the industry and trade-based traffic, from Railway to Road. During last ten years of NDA Government, a number of initiatives have been taken to strengthen and improve railway transport system. However, the backlog of decades of slow growth of this vital infrastructure requires huge investments to progressively reverse the declining proportions of goods traffic. Consequently, this will lead to substantial reductions independence on import of petroleum fuels. The present structure obviously has failed to deliver the regular and required augmentations of Railway infrastructure which is so essential for the industrial and economic growth of the country. Unless this infrastructure is also opened up, with PPP model and with substantial investment, it may not be possible to have the type of expansions of railways which have been essential for decades. Experiences of such initiatives on private sector participation have worked well in other sectors of economy. Almost all of them have succeeded when they have been opened up for private participation.

The objective of reducing import dependence of petroleum fuels has to follow a three-pronged approach –

(a) Enhancing domestic production, (b) Substituting major consumptions from petroleum fuels to electricity or Hydrogen, and (c) A major restructuring of Railway transportation business to get back a major part of goods traffic from roads, which would also be safer and environmentally better bedsides reducing import dependence. As articulated in this paper, the increase in domestic production of oil may have to undergo a longer time programme since it would require high technology investigation followed by further actions for developing oil fields explored successfully in case of Crude. Medium- and long-term plans on this with meticulous monitoring the outcome could be expedited. Public and Private Sector Companies may be encourage do with required support from Government. In case of Gas, initiatives already launched could deliver reasonable expected results. It may be advisable to use the advantage of Solar Power expansion and shift as much as possible the major consumption groups from petroleum fuel to electricity. In case of commercial transportation, production of Hydrogen may be stepped up to support similar shift in relevant areas from the petroleum fuels. Justification for opening up of the Railway Business for extensive participation of private sector to launch a large-scale augmentation of the Railway infrastructure to fulfill the vision of the Government for a developed nation has been articulated and it is time that the proposal is seriously considered. All these actions may not, perhaps need not, eliminate the import of petroleum fuels, but they would definitely lead to drastic reductions.

****

Dear Reader,



The January 2026 issue of Total Energy is with you now.

IEF started the Year 2026 with lots of events in its first month- two webinars, on 12^{th} and 16^{th} and Energy Debate on 17^{th}. Detailed report of these events is placed in this issue.

Annual General body Meeting was held on the 17^{th} in which, besides President's thought-provoking address on Energy Scenerio – reported in this issue in President Column- and Report by Secretary General evinced lot of interest, followed by discussions and suggestions by members present. I am reproducing the SG's Report of activities during the year as below:

REPORT BY SECRETARY GENERAL

During the year, the Forum organized physical, as well as virtual programs on the topics of critical importance for the Energy Sector. IEF launched India Energy Debate (a monthly discussion) on the 31st May 2025. Forum organised five National Conferences, four India Energy Debate, one hybrid program on Nuclear Energy in Mumbai and 11 Webinars as below:

National Conferences

1.	**14th Nuclear Energy Conclave** 11th March 2025, DAE Convention Centre, Anushaktinagar, Mumbai Theme: NUCLEAR POWER – Pathways to Rapid Growth Chief Guest: **Dr A K Mohanty**, DAE and Chairman, AEC
2.	**9th Coal Summit** Wednesday, 9th April 2025 Desire Hall, Hotel Le Meridien, New Delhi Theme: Optimising Coal Production & Productivity – Coal Pricing and Financing Chief Guest: Dr Kirit Parikh, Chairman, IRADE and Former Member (Energy), Planning Commission
3.	**22nd Renewable Energy Summit** Thursday, 31st July 2025, Sov 2, Hotel Le Meridien, New Delhi Theme: Renewable Energy – Key to Power Sector Decarbonisation Chief Guest: **Shri Santosh Kumar Sarangi IAS**, Secretary, Ministry of New and Renewable Energy
4.	Seminar on "Pumped Storage Hydro Power Projects" - 30th August 2025
5.	Colloquium: Developing, Sustaining and Strengthening Safety Culture in Nuclear Power Plants on 27^{th} Sept 2025 at AERB Auditorium, Mumbai. Jointly with Indian Nuclear Society and AERB. We intend to continue such joint programmes.
6.	**24th National Power Conference** Tuesday, 23rd December 2025, Desire Hall, Hotel Le Meridien, New Delhi Theme: "Towards Net Zero: Ensuring Reliability and Resilience in a High Renewable Power System" Chief Guest: **Shri Pankaj Agarwal IAS**, Secretary, Ministry of Power

	India Energy Debate
7.	Launch of India Energy Debate (An India Energy Forum Initiative - Monthly Discussion) and Panel Discussion on "Developing Hydro Projects in North East: Opportunities, Challenges and Way Forward" - 31st May 2025
8.	India Energy Debate on "Battery Energy Storage System – A Key Player in Energy Transition" - Monday, 30th June 2025
9.	India Energy Debate on "Meeting Power Demand or Accelerating Power Demand Growth: Which is more Challenging?" - 15th October 2025,
10.	India Energy Debate on "Petroleum and Natural Gas - Ways to Reduce Import Dependence" – 17th January 2026

Virtual Programmes

1.	Webinar on "Gas Exchange: Way Forward" - 29th January 2025
2.	Discussion (online) on "BUDGET 2025: Impact on Energy Sector" - 11th February 2025
3.	Webinar on BIO-GAS - 28th February
4.	Webinar on "Capacity Market for India" - 26th April,2025
5.	Webinar on "Improving Coal Quality for Improved Thermal Efficiency" - 22nd July 2025
6.	Webinar on "Enabling Renewable Energy Integration: Addressing Transmission Connectivity and Execution Challenges in India" - 29th September 2025
7.	Webinar on "Price it Right: Reforming InSTS Pricing, Building on ISTS Experience" - 11th October 2025
8.	Webinar on "Challenges in Implementation of CSP Technology: Role of R&D" - 28th November 2025
9.	Webinar on "Challenges and Opportunities in Implementation of Concentrated Solar Power: Role of R&D" - 28th November 2025
10.	Webinar on "Emerging Technologies and Business Models in Distribution" – 12th January 2026
11.	Webinar on "Making Coal Green - The Gasification Way" - 16th January 2026

Besides the above events, IEF is also bringing out regularly Daily Energy News Report and our monthly e-newsletter "Total Energy" which has been appreciated by the Members.

Our next program will be 18th National Conference on Coal in April followed by Nuclear Energy Conference at Mumbai and National Conference on Transmission and Distribution.

We do hope that the events arranged thru Conferences, Webinars and Energy Debate, as also Daily Energy News and Total Energy are benefiting its members. Suggestions from Members are welcome.

S M Mahajan

India targets $100 billion oil & gas investments by 2030: PM Modi

Prime Minister Narendra Modi recently said India is targeting $100 billion in investments in the oil and gas sector by 2030, as he pitched the country as a major destination for global energy investment at India Energy Week 2026.

"We are working to take our investment in the Oil and Gas Sector to $100 billion by the end of this decade," said the PM.

Further talking about the growth in oil and refinery, he added, “India is a land of opportunities for the energy sector as demand is continuously increasing … India will soon become the world's largest oil refining hub."

He also said India’s broader energy sector offers investment opportunities worth $500 billion and outlined plans to expand the country’s oil refining capacity from 260 million tonnes per annum to 300 MTPA in the coming years.

Highlighting economic reforms, PM Modi also said that India is “riding the reforms express” and undertaking policy changes across sectors to make it easier for investors to do business.

India to drive up to 35% of global energy demand growth over next two decades: Puri

Union minister for petroleum and natural gas recently said that India’s share of the increased global energy demand has been projected to rise to as much as 35% over the next two decades.

Speaking at the inaugural ceremony of the India Energy Week, Puri said that, as the world’s third largest energy consumer and one of the fastest-growing major economies, India stood at the heart of global energy transformation. Despite this projected growth, India’s per capita energy consumption remained at only about 40% of the global average, making the country’s growth trajectory “both necessary and responsible.”

“Our energy demand will continue to expand, with all sources set to grow,” Puri said.

The Union minister announced an immediate investment opportunity of approximately $5 billion for around 60 vessels needed for India’s oil and gas trade sector. The oil and gas sector accounts for nearly 28% of India’s trade basket by volume, making it the country’s largest commodity group handled at ports. This investment opportunity has been supported by the govt’s $8 billion package to boost the shipbuilding and maritime sector.

“Every job created in a shipyard generates an additional 6 to 7 jobs across the associated supply chain,” Puri said. The fourth edition of India Energy Week attracted over 75,000 energy professionals, with more than 700 exhibiting companies and delegates from over 120 countries.

Puri outlined recent reforms strengthening India’s energy sector, including the Oilfields (Regulation and Development) Amendment Act, 2025, which introduced single petroleum leases and time-bound approvals.

Puri emphasised India’s success in shielding citizens from global fuel price volatility, noting that despite significant price increases in many major economies after 2021, fuel prices in Delhi in 2025 remained lower than 2021 levels.

Puri, however, said that conventional energy would remain essential alongside renewable sources. “The history of energy has never been about replacement alone. It has been about addition. New sources have consistently complemented existing ones, allowing systems to expand and adapt,” he said.

Puri said that nearly 80% of incremental global energy demand came from emerging and developing economies, with close to 60% originating in developing Asia. However, around 730 million people still lived without access to electricity, and nearly 2 billion people continued to rely on cooking methods harmful to human health.

India saves $19.3 bn in forex via ethanol blending; eyes 100 GW nuclear by 2047: Puri

India achieved nearly 20% ethanol blending in Ethanol Supply Year (ESY) 2025, resulting in foreign exchange savings of approximately USD 19.3 billion and direct payments exceeding USD 15 billion to farmers over the last decade, said Hardeep Singh Puri, Union Minister for Petroleum and Natural Gas, recently. Speaking at the inaugural ceremony of the 4th India Energy Week (IEW) 2026 in Goa, the Minister detailed India's strategy to balance energy transition with economic security for clean energy targets.

The Minister stated that India remains on track to meet its compressed biogas targets as part of a broader push into bioenergy. He noted that while renewables have grown from "one-fifth to nearly one-third" of global electricity generation, conventional energy remains a necessity to meet rising demand.

To meet this, the government is expanding capacity across the full energy mix, including raising its nuclear ambition to 100 GW by 2047. This is supported by the Atomic Energy Bill 2025 SHANTI, which modernizes the nation's nuclear legal framework.

Puri highlighted significant reforms in the upstream sector, including the Oilfields (Regulation and Development) Amendment Act, 2025, which introduced single petroleum leases and long-term stability. Preliminary assessments from recently concluded exploration rounds in deep-water acreages are promising, leading to select drilling efforts.

"While fuel prices rose significantly in many major economies after 2021, prices in Delhi in 2025 remained lower than in 2021. For over 100 million PMUY beneficiaries, LPG prices have been maintained at around 5.5 - 6 US dollars per cylinder, among the lowest globally," he said.

The petroleum sector now accounts for 28 per cent of India's trade volume by weight at ports. With an USD 8 billion government package for shipbuilding, the Minister identified a near-term investment opportunity of USD 5 billion for approximately 60 vessels required for the oil and gas trade.

Furthermore, India's Global Capability Centres (GCCs) are projected to reach a revenue of USD 105 billion by 2030, supported by nearly 2,400 centers. "In just five years, their combined revenue has jumped from USD 40.4 billion in FY19 to USD 64.6 billion in FY24, with growth rate of 9.8% annually. The sector is projected to reach USD 105 billion by 2030, supported by nearly 2,400 GCCs employing over 2.8 million professionals," he noted.

"May India Energy Week serve as a catalyst for collective progress and a forum where solutions are shaped for the benefit of the world," Puri concluded.

Earlier in the day, Puri met Pramod Sawant, Chief Minister of Goa and H.E. Sultan Al Jaber, Minister of Industry and Advanced Technology and ADNOC MD and Group CEO, UAE.

Green hydrogen costs fall below $4 per kg as India scales up clean energy push: Hardeep Singh Puri

India has made significant progress in reducing the cost of green hydrogen and scaling up domestic capacity, positioning the country as a global leader in clean fuel production, Union Petroleum and Natural Gas Minister Hardeep Singh Puri said while speaking at India Energy Week in Goa recently.

He said that India’s decision to move directly towards green hydrogen without prolonged intermediate transition stages is beginning to deliver tangible results.

“When we started, the cheapest green hydrogen globally was around $5.4 per kilogram… Through competitive tenders, we have now brought the price to below $4 per kilogram and in the range of $3–4,” he added.

He attributed the progress to a combination of policy clarity, infrastructure readiness and strong industry participation.

"One of our companies is supplying green ammonia at less than ₹51,000 per tonne, among the lowest globally," Puri said. Under the National Green Hydrogen Mission, the government introduced a ₹19,700 crore PLI scheme, a significant portion of which has been utilised to support domestic electrolyser manufacturing. Key public sector companies including IOCL, BPCL and HPCL have issued green hydrogen tenders, while Indian firms are already exporting green ammonia to markets such as Germany and Singapore.

The minister expressed confidence that India's target of 5 million tonnes per annum of green hydrogen by 2030 is achievable and may even prove conservative if costs fall further.

"If green hydrogen comes down to about $2–2.5 per kilogram, public policy pressure will naturally shift towards it," he said, noting that hydrogen-powered buses emit only water vapour. The minister also pointed to India's integrated energy ecosystem including renewables, storage solutions like pumped storage, and rising domestic demand as key enablers for large-scale adoption.

Puri said energy is likely to be a major pillar of future trade with the 27-nation bloc once the agreement enters into force.

India's oil demand to rise by 8.2 mbpd by 2050, led by transport and petrochemicals: OPEC

India is expected to record the largest incremental oil demand growth of any country by 2050, with consumption rising by 8.2 million barrels per day (mbpd), according to the OPEC World Oil Outlook presented by Abderrezak Benyoucef, Head of the Energy Studies Department at OPEC, during Indian Energy Week in Goa recently.

Presenting OPEC's long-term assessment of global energy markets, Benyoucef said India would be the single biggest driver of global oil demand growth, reflecting its expanding population, rapid urbanisation and sustained economic momentum.

"India is set to be the largest contributor to global oil demand growth throughout the outlook period," Benyoucef said. "Its demand increase alone accounts for more than eight million barrels per day by 2050."

Road transportation will be the dominant driver of India's oil demand growth, adding 4.6 mbpd by 2050, OPEC estimates. Diesel and gasoil are expected to account for the bulk of this increase, with demand rising from around 2 mbpd in 2024 to nearly 5 mbpd by mid-century.

Benyoucef pointed to the rapid expansion of India's vehicle fleet as a key structural factor. "The exponential growth of India's passenger car and commercial vehicle fleet is a major contributor to rising fuel demand," he noted.

According to OPEC projections, India's passenger car fleet will grow almost fivefold, from around 50 million vehicles in 2024 to more than 240 million by 2050, while commercial vehicles are expected to increase fourfold, significantly boosting diesel and gasoline consumption.

Beyond transport, the petrochemical sector is set to become an increasingly important pillar of India's oil demand growth. OPEC estimates that naphtha demand, a critical petrochemical feedstock, will rise from 0.4 mbpd in 2024 to around 1 mbpd by 2050.

Demand for other refined products including bitumen, petroleum coke, lubricants and waxes is also expected to grow steadily, driven by infrastructure expansion, manufacturing growth and urban development.

"India's oil demand growth will not be limited to transport alone. Petrochemicals and other refined products will play an increasingly important role as the economy diversifies and industrial activity expands," Benyoucef said.

To support rising domestic consumption, India is expected to be a major contributor to global refining capacity additions, OPEC said.

Globally, refining capacity is projected to expand by 19.5 mbpd by 2050, with nearly 85per cent of additions coming before 2040, largely concentrated in the Asia-Pacific region. India alone could add around 3 mbpd of refining capacity, positioning it as one of the world's most significant refining hubs.

Crude and condensate imports into the Asia-Pacific region, including India, are projected to rise from 24 mbpd today to 34 mbpd by 2050, reinforcing India's growing importance as a destination market for global exporters, particularly from the Middle East.

Benyoucef cautioned that meeting India's rising demand would require sustained investments across the entire oil value chain.

"Adequate and timely investments in upstream, midstream and downstream sectors are essential to ensure market stability and energy security as demand continues to grow," he said.

OPEC's outlook, he added, underlines the need for realistic energy pathways that balance emissions reduction goals with affordability, energy access and economic development particularly in fast-growing economies such as India.

Crude prices to soften in 2026, touch $50/barrel by Jun: Report

Crude prices are expected to soften significantly in 2026, and they could touch $50/barrel by June 2026, a report said recently. According to the SBI Research report, the deceleration of prices is likely to be faster, and this could average CPI inflation for FY27 decisively below 3.4 per cent.

Benign energy prices will impact the GDP outlook favourably, it said, adding that the expected impact on annual GDP growth is around 10 -15 bps.

The medium-term trends since 2022 for Brent and Indian basket show that there has been a downward trend in crude prices, it added.

The latest event in Venezuela has not impacted the price significantly on the upside, the report pointed out.

Brent crude price has been hovering around $60 per barrel for the last one week.

Since oil prices constitute the largest component in the import basket and cannot be substituted with domestic production in the short term, contraction of the import bill on account of crude import prices will impact the rupee, it said.

Analysis, using recent history, suggests that assuming USD/INR base price of ₹90.28, the 14 per cent expected correction may result in 3 per cent appreciation in the rupee, which is approximately ₹87.5 per dollar, and a part of this could play out in Q4 FY26, it said

The US Energy Information Administration estimates that the Brent crude oil price will fall to an average of $55 per barrel in the first quarter of 2026, largely driven by the buildup of inventory.

India has 132 Compressed Bio Gas plants operational nationwide; output touches 920 tonnes per day

India has set up 132 Compressed Bio Gas (CBG) plants with a combined production capacity of 920 tonnes per day, with more capacity being added under the Sustainable Alternative Towards Affordable Transportation (SATAT) initiative, Union petroleum and natural gas minister Hardeep Singh Puri said on X. In a social media post, the minister said the CBG programme is helping convert farm and organic waste into clean fuel while supporting rural incomes and lowering emissions.

"What was once waste is now powering progress. India has 132 Compressed Bio Gas plants producing 920 TPD today, with more capacity coming up under SATAT," Puri wrote.

SATAT was launched on October 1, 2018, with the objective of creating an ecosystem for producing CBG from waste and biomass sources across the country. Under the initiative, oil and gas marketing companies such as IOCL, BPCL, HPCL, GAIL and IGL have invited expressions of interest from entrepreneurs to procure CBG for marketing, according to news agency ANI. Separately, the minister also highlighted recent steps taken to boost India's domestic energy production.

Puri said that in December 2025, India offered 50 new exploration and production blocks covering oil, gas and coal bed methane assets, describing it as a significant step towards strengthening energy security.

"We are offering 50 new E&P blocks across Open Acreage Licensing Policy (OALP-X): 25 blocks, Discovered Small Field (DSF-IV): 55 fields across 9 contract areas/blocks. Special CBM Bid Rounds 2025 and 2026: 3 blocks (2025) & 13 blocks (2026)," the minister said in his post.

Under the Open Acreage Licensing Policy, 25 blocks covering around 1.83 lakh square kilometres are on offer, including onland, shallow water, deepwater and ultra-deepwater blocks.

Puri said these blocks allow exploration throughout the contract period, graded royalty rates and flexibility in work programmes.

The Discovered Small Field Bid Round-IV includes 55 discoveries across nine contract areas, with incentives such as zero royalty for the first seven years in deepwater areas and relaxed eligibility norms.

Similar incentives apply to coal-bed methane rounds, including pricing freedom and cost reimbursement for mandated drilling in the 2026 round, as per ANI.

Puri also said the Oilfields (Regulation and Development) Amendment Act, 2025 and the PNG Rules 2025 have introduced a unified regulatory framework to improve ease of doing business in the sector.

Domestic natural gas consumption to surge by 3-4% in FY27 by expansion of City Gas Distribution: ICRA

The domestic natural gas consumption is expected to rebound and grow by 3-4 per cent year-on-year in FY2027 after witnessing a phase of near-term moderation in FY2026, according to a report by ICRA.

The report highlighted that the recovery in gas consumption will be driven by a pickup in industrial offtake and the continued expansion of the City Gas Distribution (CGD) network. ICRA expects higher gas usage from key consuming sectors such as refining, fertilisers and CGD to support this growth in FY2027.

It stated "India's natural gas consumption is expected to grow by 3-4 per cent year-on-year in FY2027, following a period of near-term moderation in FY2026".

ICRA noted that during the first seven months of FY2026, gas consumption declined by 4.5 per cent yearon-year. This drop was mainly due to lower offtake from major consuming sectors including fertilisers, power generation and refineries.

While the CGD segment has continued to record healthy growth and remains a key driver of demand, overall gas consumption for FY2026 is expected to remain flat or witness low single-digit moderation.

The report also pointed out that domestic gas production has remained stagnant, with any incremental output likely to be offset by the natural decline from existing gas fields. This has contributed to the subdued consumption trend in the near term.

Looking ahead, ICRA said the broader energy environment is expected to be supportive. Crude oil prices are projected to average between USD 60-70 per barrel in FY2027 due to muted global demand growth amid rising supplies.

Even at these price levels, the profitability of domestic crude oil producers is expected to remain healthy, and their capital expenditure plans are likely to stay intact. At the same time, domestic consumption of petroleum products is expected to grow by 1-2 per cent in FY2027.

On the global front, LNG prices have eased due to expectations of warmer winters in key regions and healthy inventory levels. Additionally, significant LNG capacity additions planned globally are expected to lead to a moderation in LNG prices from calendar year 2027. Domestic gas prices are also expected to soften in line with lower crude oil prices.

Overall, the report suggested that after a year of moderation, India's natural gas consumption is set to regain momentum in FY2027, led by industrial recovery and steady growth in the CGD segment.

India's gas output falls 2.4% in Nov; LNG imports rise 3.7%

India's gross natural gas production fell 2.4 per cent year-on-year to 2,900 million metric standard cubic metres (MMSCM) in November 2025, while liquefied natural gas (LNG) imports increased 3.7 per cent to 2,812 MMSCM, according to data released by the Petroleum Planning and Analysis Cell (PPAC).

Natural gas available for sale during the month stood at 5,233 MMSCM, registering a 0.9 per cent increase compared with November 2024, aided by higher LNG imports despite lower domestic production. On a provisional basis, total gas availability for consumption was reported at 5,675 MMSCM, PPAC said.

The data showed that fertiliser sector remained the largest consumer of natural gas in November, accounting for 30 per cent of total consumption, followed by city gas distribution (CGD) at 24 per cent, power at 10 per cent, refineries at 9 per cent and petrochemicals at 6 per cent. Overall gas consumption during the month was estimated at around 195 million standard cubic metres per day (MMSCMD).

After accounting for internal consumption, flaring and losses, net domestic gas available for sale was about 84 per cent of gross production, the report said. Domestic output during the month was contributed by national oil companies as well as private and joint venture operators.

On a cumulative basis, total natural gas consumption during April–November 2025 declined 3.8 per cent year-on-year to 46,599 MMSCM, largely due to lower offtake from the power and refinery sectors, while CGD and petrochemicals recorded growth during the period, PPAC data showed.

GAIL Revises Completion Schedule for Srikakulam-Angul Pipeline Project

GAIL (India) Limited has announced a revision in the completion schedule for its Srikakulam-Angul Pipeline Project. The total pipeline length is 744 km, comprising 422 km of the main line and 322 km of spur line.

While the main line was successfully commissioned on September 26, 2025, the spur line faced delays due to pending forest clearance for a 56 km section. The necessary permissions were progressively received by June 23, 2025, with tree cutting permissions granted up to September 2025. Currently, tree cutting work is in progress, and the revised project completion is now scheduled for June 2026. The revision was approved by GAIL's Board of Directors in their meeting held on January 3, 2026. The company confirmed that the disclosure is in compliance with SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015.

This update highlights GAIL's commitment to completing critical infrastructure projects while adhering to regulatory and environmental requirements.

..

Ministry of Coal Executes Agreements for Three Commercial Coal Blocks with Damodar Valley Corporation, Advancing India's Energy Security and Employment Goals

In a significant step towards reinforcing India's energy security and accelerating economic growth, the Ministry of Coal has executed Coal Mine Development and Production Agreements (CMDPAs) with Damodar Valley Corporation for three commercial coal blocks—Dhulia North, Mandakini B, and Pirpainti Barahat. These blocks were successfully auctioned under the 13th round of commercial coal mining auctions.

The execution of these agreements represents a significant milestone in India's journey towards self-reliance in the coal sector. All three coal blocks are fully explored and together account for a cumulative Peak Rated Capacity (PRC) of 49 million tonnes per annum (MTPA), underscoring their strategic importance in meeting the country's growing energy requirements.

The projects are envisaged to generate an estimated annual revenue of Rs. 4,621 crore, while attracting a capital investment of approximately Rs. 7,350 crore, thereby contributing substantially to economic activity and industrial growth.

In addition to strengthening energy availability, the development of these coal blocks is expected to deliver significant socio-economic benefits. The three projects are projected to create around 66,248 direct and indirect employment opportunities, fostering livelihood generation and regional development in the coal-bearing areas.

The Ministry of Coal remains steadfast in its commitment to expanding domestic coal production through a transparent, competitive, and investor-friendly auction framework. These efforts are aimed at ensuring long-term energy security, stimulating economic growth, and advancing inclusive development, in alignment with the national vision of Atmanirbhar Bharat.

India's coal imports rise in Nov, likely to drop in coming months due to increased domestic availability

India's coal imports, which jumped 28.1 per cent in November, is expected is see a decline in the coming months on account of increased availability of domestic resources, according to industry data.

Imports in November rose to 25.07 million tonnes (MT) as against 19.57 MT imported in November 2024, according to data compiled by mjunction services ltd, a B2B e-commerce platform and joint venture of SAIL and Tata Steel.

"There was an uptick in volumes in November mainly due to winter restocking by steel mills. Also, some buyers took fresh positions as seaborne prices remained weak. In coming months, however, we expect to see a drop in imports due to increased domestic availability," mjunction MD & CEO Vinaya Varma said.

Of the total imports in November 2025, non-coking coal import stood at 14.28 MT, higher than 12.32 MT imported in November last fiscal year.

Coking coal import stood at 6.51 MT, compared to 4.25 MT recorded for the same month last financial year.

Coal import in the April-November period of the ongoing financial year also increased to 186.16 MT, over 182.02 MT in the corresponding period of the previous fiscal year.

Even as the government is taking several steps to ramp up domestic output and bring down reliance on imports, the coal output by Coal India Ltd (CIL) dropped 3.7 per cent to 453.5 MT in the April-November period of the current financial year.

Coal India Ltd, which accounts for over 80 per cent of domestic coal output, produced 471 MT of fossil fuel in the corresponding period of the previous fiscal year. The company is targeting a production of 875 MT and an offtake of 900 MT in the 2025-26 financial year. Coal India Ltd had earlier said it would aspire to reach its production target of 875 MT in the current fiscal year. In 2024-25, CIL produced 781.1 MT coal, nearly 7 per cent below the company's target for the financial year. CIL's coal production target for FY25 was 838 MT.

Ministry of Coal's Year End Review-2025

Country witnessed highest ever coal production in the Year 2024-25

1. INTRODUCTION
Ministry of Coal is working with a vision to make Bharat Aatmanirbhar by ensuring the accelerated, efficient, sustainable use of coal, and enhancing its export potential. In its ongoing efforts to strengthen the coal sector and bring India closer to the vision of Aatmanirbhar Bharat, the Ministry of Coal has undertaken a series of reforms for overall development of coal sector and towards speeding up the exploration and early operationalization of coal mines.

Current Status and Performance of the coal Industry:

Coal is the mainstay of energy contributing more than 55% to India's primary commercial energy. In total power generation, coal-fired power generation accounts for about 72%, and coal will remain an indispensable pillar of India's energy security, along with steady advances in its clean energy transition as the coal provides reliable baseload power, supports critical industries such as steel & cement and plays a vital role in sustained economic growth and national development. The coal demand is expected to increase to about 1.5 Billion Tonne by 2030.

The coal production for 2024-25 increased by 4.98% over previous year to 1047.523 Million Tonne. The country has witnessed highest ever coal production in the year 2024-25. The all India coal production in the year 2024-25 stood at 1047.523 Million Tonne in comparison to 997.826 MT in the year 2023-24 with a growth of about 4.98%.

The coal supply also increased from 973.01 Million Tonne in FY 2023-24 to 1025.33 Million Tonne in FY 2024-25 with a growth of about 5.38%. The country has witnessed a big leap in overall coal production from 565.77 Million Tonne in FY 2013-14 to 1047.52 MT in FY 2024-25.

During Calendar Year 2025 (January 2025 to December, 2025), the country has produced about 1042.90 MT (provisional) of coal as compared to about 1039.62 MT (provisional) coal during the same period of last year with a growth of about 0.23%.

During Calendar Year 2025 (up to 31st December, 2025), the country has supplied about 1016.14 MT (Provisional) of coal as compared to about 1013.59 MT (Provisional) coal during the same period of last year with a growth of about 0.25%.

There has been abundant and uninterrupted coal supply to the consumers as per their requirement in this period and there have no reports of coal shortages in the country.

Stocks at the thermal power plants
1. With the support of Railways, the Coal stocks at the Domestic Coal Based Thermal Power Plants end as on 31.12.2025 was 50.31 MT almost 17.42% higher than last year on the same date. At the level of actual consumption, this stock is sufficient for 21 days.

2. TPP stock crossed 50 MT mark on 22.11.2025, which is 80 days earlier than the previous financial year. In the last financial year, the 50 MT stock was reached on 09.02.2025.

3. Abundant and uninterrupted supply of coal to power sector has led to reduction in imported coal blending by 54.17% over the last year. This coal imported for blending upto December 25 is just 5.5 MT as compared to 12 MT last year.

4. The coal imported for blending was 35 MT in 2022-23 which is gradually reducing due to abundant supply of domestic coal.

Coal Imports
With increased domestic coal production, the coal imports in the country during 2024-25 fell by 7.9%, totaling 243.62 million tonnes (MT), compared to 264.58 MT in the same period of previous fiscal year. This reduction resulted in foreign exchange savings of approximately $7.93 billion (₹60681.67 crore).

The total import of coal during the current year i.e. April 25 to October 2025 was 149.80 MT against 149.23 MT during the corresponding period of last financial year.

2. IMPLEMENTATION OF REFORMS & POLICY

Coal Linkage Policy implementation

1. Policy for Auction of Coal Linkages to Non-Regulated Sector (NRS):

• During Calendar Year 2025 (up to Dec, 2025) two tranches (VIIIth) & (IXth) were held under the NRS e-auction in which 9.97 MT & 12.03 MT respectively were booked against the total offered quantity of 51.77 MT & 74.10 MT respectively.

• CoalSETU - Amendment to the NRS Linkage auction policy. Auction of Coal Linkage for Seamless, Efficient & Transparent Utilisation (Coal SETU) by creation of new window named “Coal SETU window” in the NRS Linkage Policy to utilise coal for any industrial use and export. Approved by CCEA on 12.12.2025. Policy guidelines have been issued on 19.12.2025. Key features as under

• Coal linkage for own consumption, export of coal, or any other purpose (including coal washing) except resale in the country.
• Coal linkage holders eligible to export coal upto 50% of their coal linkage quantity.
• Coal linkage holders may flexibly utilize the coal obtained under this window as per their requirement amongst its Group companies.
• Coking coal shall not be offered under this window.

2. Scheme for Harnessing and Allocating Koyala (Coal) Transparently in India (SHAKTI) Policy:

- Two tranches under SHAKTI B (VIII-A), were conducted by Coal India Limited for coal Linkage Auction from March to December, 2025. Out of the total offered quantity of 61.29 MT of coal, 26.47 MT of coal have been booked by successful bidders.

- Coal linkages granted to 1 Central/State GENCOs for a capacity of 140 MW from January to December, 2025 under SHAKTI policy B(i).

- Three rounds of coal linkage auction under SHAKTI B(iii) was conducted by CIL in the year 2025. Out of the total offered quantity of 86.81 MT of coal, 23.80 MT of coal was booked by successful bidders.

- Under B (iv) of SHAKTI Policy, coal linkages were granted to 3 States for a capacity of 5320 MW from January to December, 2025.

- Revised SHAKTI Policy: Approved by the Cabinet Committee on Economic Affairs (CCEA) in the meeting held on 07.05.2025. The current revision with innovative features has further enhanced the scope and impact of the SHAKTI policy and supports the power sector through Greater flexibility, Wider eligibility and Better accessibility to coal. Key features as under

    - Preferential linkage for pithead power plants.
    - Greater flexibility, wider eligibility and better accessibility to coal
    - All imported coal based (ICB) power plants eligible for coal linkages.

Linkages provided for 11,260 MW so far in Revised SHAKTI Policy.

2. Coal Exchange

The setting up of the Coal Exchanges would create an independent market place, where sellers and buyers can transact coal through a transparent, competitive & efficient price discovery mechanism. This required necessary amendment in the Mines and Minerals (Development and Regulation) Act, which has been completed and received the assent of the Hon’ble President of India on 21st August 2025. The Amended MMDR Act, 2025 provides the definition of ‘mineral exchange’ and further inserted a new section 18B in MMDR Act, 1957 to empower the Central Government to promote development of market, including trading, of minerals, its concentrate or its processed forms (including metals) through mineral exchanges in such manner as may be provided by rules by the Central Government. The provisions of the Act have come into force on 01.09.2025

In exercise of the powers conferred under the MMDR Amendment Act 2025, Coal Controller Organization has been appointed on 10.12.2025 as the authority to register and regulate coal exchanges. Further, draft Coal Exchange Rules have been framed and placed in public domain for stakeholders' consultations on 19.12.2025 as a part of the pre-legislative consultations.

3. Amendment in Colliery Control Rules, 2004 to do away the requirement of CCO's prior approval before opening Mine or Seam or Section of Seam Colliery Control (Amendment) Rules, 2025 notified on 23.12.2025 doing away the requirement of prior approval of CCO before opening of a Mine or Seam or Section of Seam. Now, the Board of the Company is empowered to accord such approval and furnish an intimation to CCO within 15 days. This reform will ensure faster operationalization of coal mines

4. Revised Guidelines for the preparation of Mining Plan & Mine Closure Plan for Coal & Lignite Block issued by Ministry of Coal on 31.01.2025.

For the first time since Independence, 15 mines have been scientifically closed in accordance with approved mine closure plans. Final Mine Closure Certificates have been issued by the Coal Controller Organisation (CCO) for these mines, ensuring that the mines were safely and scientifically closed.

5. Launch of Coal Land Acquisition and Management Portal (CLAMP)

Ministry of Coal has launched a Coal Land Acquisition and Management Portal (CLAMP) Portal on 29.10.2025. It is a digital, unified platform created by the Ministry of Coal, Govt. of India for land acquisition under Coal Bearing Areas (Acquisition and Development) Act, 1957. The portal is designed to streamline and digitize the entire process of land acquisition, starting from submission of application, uploading land details, processing and approval of application; tracking acquisition progress, e.g., notifications, possession and compensation etc.; monitoring and tracking of payment of compensation to landowners, and monitoring of Rehabilitation & Resettlement (R&R) of affected communities.

It acts as a central repository in digitised form for land records with respect to the land being acquired under the CBA Act and contributes to citizen-centric governance. Affected persons can verify the uploaded information, check the status of their claims or see how their grievance is being handled in real-time.

6. Incentives for bidders participating in auction of coal blocks reserved for underground mining.

Methodology dated 28.05.2020 for auction of coal mines for sale of coal has been amended vide order dated 23.04.2025 to provide the bidders participating in auction of coal mines (reserved for underground mining) for sale of coal with the following incentives:

i Reduction of floor percentage of revenue share to 2%.

ii. Complete waiver of the Upfront Amount.

The successful allocatees of coal/lignite mines classified for underground mining on the aforementioned modified conditions of reduced floor percentage of revenue sharing and complete waiver of upfront amount shall not be allowed to convert the Under-Ground Mine to Open Cast or Mixed Mine at any stage during the life of the mine.

7. Launch of 14th round of Auction of Coal Mines for Sale of Coal

14th round of auction of coal mines for sale of coal was launched on 29.10.2025 in which 41 coal mines were offered. In addition to conventional coal mining, provisions for Underground Coal Gasification (UCG) have also been introduced within the auction framework.

Power Distribution Utilities Record Positive PAT After Years of Losses; This Marks a New Chapter, Says Power Minister

The country's power distribution utilities (DISCOMs and power departments) have collectively recorded a positive Profit After Tax (PAT) of ₹2,701 crore in year FY 2024-25 marking a significant turning point for the sector. The distribution utilities as a whole have been reporting PAT losses for past several years since unbundling and corporatization of State Electricity Boards.

The positive PAT of ₹2,701 crore returned in FY 2024-25 compares to a loss of ₹25,553 crore in year FY 2023-24 and a loss of ₹67,962 crore in FY 2013-14.

While commenting on this, Shri Manohar Lal, Union Minister of Power said that this marks a new chapter for the distribution sector and is a result of several steps that have been taken to redress the concerns of the distribution sector.

The Minister said this achievement was possible due to the leadership and vision of the Prime Minister Shri Narendra Modi captured in his words that, "India is driving not only its growth but also the growth of the world, with the energy sector playing a significant role in this". Shri Manohar Lal said the government is committed to the required reforms in the sector so that the power sector can support our growing economy and play its part in the journey towards Viksit Bharat.

INITIATIVES IN THE DISTRIBUTION SECTOR
Some of the transformative initiatives in the distribution sector include:

- Revamped Distribution Sector Scheme (RDSS): Enhancing financial viability through infrastructure modernization and accelerated smart metering.
- Additional Prudential Norms: Linking access to finance for Power sector Utilities to achievement against performance benchmarks to promote fiscal and operational discipline.
- Amendments to Electricity Rules: Enforcing timely cost adjustments, prudent tariff structures, and transparent subsidy accounting to ensure full cost recovery.
- Electricity Distribution (Accounts and Additional Disclosure) Rules, 2025: Introducing uniform accounting and enhanced transparency across Distribution utilities for improved financial governance.
- Late Payment Surcharge Rules: Enforcing legal contracts through timely payments in the power sector thereby supporting investment in new RE projects.
- Incentivizing states to implement critical power sector reforms, with borrowing limits tied to performance metrics as part of Additional Borrowing Scheme.

IMPROVED INDICATORS
The result of these reforms is evident not just in the positive PAT posted by the Distribution Utilities after so many years, but also in other performance indicators.

- The Aggregate Technical & Commercial (AT&C) losses have reduced over the years, signalling a transformation. The AT&C losses have reduced from 22.62% in FY 2013-14 to 15.04% in FY 2024-25.

- Further, signalling much improved cost recovery, the Average Cost of Supply–Average Revenue Realized (ACS–ARR) gap has narrowed from ₹0.78/kWh in FY 2013-14 to ₹0.06/kWh in FY 2024-25.

- Reforms such as the Electricity (Late Payment Surcharge) Rules have led to a 96% reduction in outstanding dues to generating companies—from ₹1,39,947 crore in 2022 to just ₹4,927 crore by January 2026—while bringing down Distribution utility payment cycles from 178 days in FY 2020-21 to 113 days in FY 2024-25.

The Ministry of Power has put in concerted efforts over the past decade to improve the performance of distribution utilities across the country. In addition to the different policy initiatives, extensive engagements with States and UTs have emphasized reforms in the distribution sector. These include discussions led by Shri Manohar Lal, Union Power Minister during the Regional Conferences of Energy Ministers of States/UTs in 2025 - Gangtok (Northeastern Region), Mumbai (Western Region), Bengaluru (Southern Region), Chandigarh (Northern Region) and Patna (Eastern Region). Regular interactions and review have played an important role in DISCOMs accomplishing this remarkable turnaround.

This momentum is expected to be sustained as a result of the deliberations underway in the Group of Ministers constituted by Shri Manohar Lal under the chairmanship of Union Minister of State for Power and New & Renewable Energy, Shri Shripad Naik on the matter of improving Financial viability of the DISCOMs.

India’s peak power demand touches 241,201 MW in December

India’s peak electricity demand rose to 241,201 MW in December 2025, marking the highest level recorded during the month, according to official data.

The peak was recorded on December 31, when total energy met stood at 4,681 million units (MU). Electricity demand remained elevated during the final week of the month, reflecting sustained consumption across regions. At the beginning of December, peak demand stood at 206,206 MW on December 1, with energy met at 4,185 MU. Demand crossed 220,000 MW by the second week and continued to rise steadily through the remainder of the month.

On December 9, peak demand touched 221,974 MW, with energy met at 4,337 MU. By December 15, demand increased further to 228,917 MW, while energy met reached 4,451 MU.

The upward trend continued in the closing days of the month. Peak demand rose to 239,059 MW on December 26, with energy met at 4,601 MU, and remained near that level on December 27 at 238,815 MW. On December 30, peak demand increased to 239,690 MW, before reaching the monthly high on December 31.

An official attributed the rise in demand to a combination of economic and seasonal consumption patterns. “The increase in electricity demand during the latter part of December was driven by higher industrial activity, year-end commercial operations, and increased residential consumption,” the official said.

Energy met during the month ranged between 4,185 MU and 4,681 MU, indicating higher electricity usage during the closing days of December.

Data showed that multiple days in the final week recorded demand levels above 230,000 MW, underscoring sustained pressure on the power system as consumption peaked toward the end of the year.

India’s power transmission network crosses 5-lakh ckm milestone

India’s power transmission network of 220kV or above crossed the 5-lakh ckm mark recently. A government release noted that this feat was achieved on January 14, 2026 when the 765kV Bhadla-II to Sikar-II line in Rajasthan, spanning 628 ckm, was commissioned.

With the commissioning of this line, the India’s National Grid – known to be the world’s largest synchronous grid – crossed a significant milestone, the release noted.

“The milestone of 5,00,000 ckm of transmission lines reflects the government’s sustained efforts towards ensuring reliable, affordable, and secure electricity supply across the country while supporting rapid growth in renewable energy integration,” the release said.

The country’s grid currently has a transformation capacity of 1,407 GVA, considering substations of 220kV or above.

Growth since 2014
Since April 2014, the country’s transmission network has grown by 71.6 per cent with the addition of 2.09 lakh ckm of transmission lines (220kV and above), boosting transformation capacity (220kV and above) by 876 GVA. [1 GVA = 1,000 MVA]

The interregional power transfer capacity, which now stands at 1,20,340 MW, has enabled seamless transfer of electricity across regions, successfully realizing the vision of "One Nation – One Grid – One Frequency," the release noted.

Recent growth trends
As can be seen from the table below, transmission line addition during FY25 fell sharply to 8,830 ckm, succumbing largely to R0W-related challenges. This made an adverse comparison with the preceding four-year period from FY20 to FY24 when 14,427 ckm was added on average. During the first nine months of current fiscal year FY26, transmission line addition stood at 5,077 ckm. While the planned addition in FY26 stands at 10,696 ckm, it appears that FY26 will close with under-achievement.

During the five period from FY20 to FY25, India's transmission network (of 220kV or above) showed a compounded annual growth rate (CAGR) of around 3.1 per cent. On the other hand, 765kV lines did better with a corresponding CAGR of 4.9 per cent. This is also borne out in the share of 765kV line in India's total transmission network (of 220kV or above) rising from 10.6 per cent in FY20 to 11.5 per cent in FY25.

Projects under implementation
Interstate transmission system (ISTS) projects, currently under implementation, are expected to add around 40,000 ckm of transmission lines and 399 GVA of transformation capacity. In addition, intrastate transmission system (InSTS) projects under implementation are expected to add another 27,500 ckm of transmission lines and 134 GVA of transformation capacity, which will further enhance grid reliability and power evacuation capability.

Bhadla-II to Sikar-II line
According information available with tndindia.com, the Bhadla-II – Sikar-II line that completed the final leg of the 5-lakh ckm journey, is part of an interstate-TBCB project of Power Grid Corporation of India Ltd (PGCIL).

Officially termed as "Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II, Part E," this project is housed under PGCIL's TBCB subsidiary "Powergrid Bhadla Sikar Transmission Ltd."

The commissioning of this line – the lone element of the project – rendered the project fully commissioned, making it PGCIL's eight ISTS-TBCB to fully commission in FY26 so far.

CREA: Coal-fired power generation registers year-on-year decline of nearly 3% in 2025

India's coal-fired power generation registered a year-on-year decline of nearly 3 per cent in 2025, marking it only the second full-year drop in at least 50 years, according to the Centre for Research on Energy and Clean Air (CREA). The finding is part of CREA's 2025 review of the power sector.

While the first fall in coal-fired generation followed the Covid-19-induced drop in power demand in 2020, the decline in 2025 was driven primarily by record growth in clean power, lower air-conditioning demand due to milder weather, and a longer-term slowdown in electricity demand growth compared with the 2019-24 period.

CREA said coal-based power generation fell from 1,322 billion units (BU) to 1,283 BU, the sharpest decline among major power sources. In comparison, year-on-year growth in thermal power generation stood at 5 per cent in 2024, 15 per cent in 2023, 10 per cent in 2022 and 14 per cent in 2021. Overall power generation in 2025 was recorded at 1,844 BU, about 1 per cent higher than in calendar year 2024.
Power generation from renewable sources - including solar, wind, small hydro and bio power - rose by over 22 per cent, from 221 BU in 2024 to 270 BU in 2025. The report added that nuclear generation also saw a downturn, falling 2 per cent in 2025 after growing 12 per cent in 2024.

CREA noted that despite the year-on-year decline, coal continued to supply around 70 per cent of total electricity generation, underlining its dominance over clean energy sources. It said electricity demand appeared higher in 2024 due to extreme heat, but once the impact of high temperatures was removed, data showed demand growth was slowing and did not justify a large expansion of coal-based power capacity.

According to CREA's temperature-adjusted analysis, the slowdown in electricity demand growth began in late 2023. Heatwaves in 2024 pushed up electricity consumption, particularly from air-conditioning, temporarily masking this trend. When temperatures normalised in 2025, the slower demand growth became clearly visible.

On June 12, when peak power demand in 2025 touched 242.5 gigawatts (GW), only 215.9 GW of thermal power capacity was available, with around 26 GW offline due to maintenance or outages. The demand was comfortably met through solar, hydro and other renewable sources.

CREA said that if India meets its target of 500 GW of non-fossil fuel power capacity by 2030, there would be no room for growth in coal-based generation, even if electricity demand rises faster than expected. Adding new coal plants would further reduce the utilisation of existing thermal assets.

Year End Review of Ministry of Power – 2025

The year 2025 marked a landmark period for India's power sector, with historic advancements in energy generation, transmission, and distribution. From meeting peak power demand of 242.49 GW to reducing energy shortages at the national level to a mere 0.03% in FY 2025-26, the sector demonstrated resilience and commitment to sustainable growth. Significant strides in energy conservation, consumer empowerment, and infrastructure development underscore the government's efforts to ensure reliable, affordable, and clean energy for all. With groundbreaking initiatives such as universal electrification, enhanced rural power availability, and the adoption of cutting-edge technologies, India is firmly on the path to becoming a global energy leader.

Improvement in Power Supply Position:

1. Record Demand Met: India successfully met the maximum power demand of 242.49 GW during FY 2025-26.

2. Sharp Reduction in Power Shortages: Due to significant additions in generation and transmission capacities, energy shortages at the national level have reduced to a mere 0.03% in FY 2025-26, a major improvement from 4.2% in FY 2013-14.

3. Rise in Per Capita Electricity Consumption: Per capita electricity consumption in India has surged to 1460 kWh in 2024-25, marking a 52.6% increase (503 kWh) from 957 kWh in 2013-14.

4. Improved Power Availability: The average availability of electricity in rural areas has increased from 12.5 hours in 2014 to 22.6 hours, while urban areas now enjoy up to 23.4 hours of power supply as compared to 22.1 hours in 2014, reflecting substantial improvements in the reliability and reach of electricity services.

Generation:

5. Significant Growth in Installed Capacity: India's total installed power generation capacity has surged by 104.4%, increasing from 249 GW as of March 31, 2014, to 509.743 GW as of November 30, 2025. Generation Capacity Addition during January-November 2025 is 55.57 GW.

6. Major Expansion in Renewable Energy: Since April 2014, 178 GW of renewable energy capacity, including large hydro, has been added. This includes 130 GW of solar power, 33 GW of wind power, 3.4 GW of biomass, 1.35 GW of small hydro, and approximately 9.9 GW of large hydro generation capacity, demonstrating India’s strong commitment to clean energy.

7. Award of thermal projects: To meet the projected electricity demand of India’s rapidly expanding economy, 13.32 GW of new coal- based thermal capacity has been awarded in FY 2025-26 (till 30.11.2025). Further, 7.21 GW capacity has been commissioned in FY 2025-26 (till 30.11.2025). The total installed capacity of coal and lignite-based thermal plants now stands at 226.23 GW. An additional 40.35 GW of capacity is under construction, with 7.03 GW expected to be commissioned in FY 2025-26. A further 24.02

GW of capacity is in various stages of planning, clearances and bidding.

8. Coal Stock Position: As of March, 2025, Domestic Coal-Based (DCB) power plants held a coal stock of 55.48 MT. As of 21st December, 2025, these plants hold 51.7 MT of coal which is targeted to increase to 66 MT by March 2026. Sustained coal supply during Q1 and Q2 of FY 2026 ensured meeting the peak demand of 242.49 GW in June 2025. With improved domestic coal availability, the Ministry of Power discontinued its advisory for blending imported coal beyond October 15, 2024.

9. Revision of SHAKTI Policy: The Cabinet Committee on Economic Affairs approved the Revised SHAKTI (Scheme for Harnessing and Allocating Koyala Transparently in India) Policy for Coal Allocation to Power Sector in May 2025, streamlining coal linkage mechanisms for the power sector. With the introduction of Revised SHAKTI Policy, existing eight Paras of the SHAKTI Policy, for coal allocation, have been mapped to only two Windows, in the spirit of ease of doing Business, enhancing coal accessibility, operational flexibility, and competition. It ensures optimal utilization of thermal capacity, promotes affordable power, reduces import dependency, and strengthens India's energy security.

10. Hydro Projects. Central Government in August 2025 has approved Tato-II Hydro Electric Project (700 MW) in Arunachal Pradesh. The project will be completed in 72 months at the cost of Rs. 8146.21 Cr. Further, NHPC has fully commissioned Parbati-II Hydroelectric Project (800 MW) on 15.04.2025.

11. Pump Storage Projects (PSP): India has the potential of PSPs of about 258 GW with around 7 GW (2.7%) developed so far. Government has set an ambitious target of adding 57 GW PSP capacity by 2031-32 out of which, 12 GW is under construction and rest is under development stage.

12. Battery Energy Storage System (BESS): Under the Viability Gap Funding (VGF) Schemes for development of BESS, a capacity of 43,220 MWh is targeted for addition.

Transmission:

13. National Electricity Plan: Govt. of India has finalised National Electricity Plan from 2023 to 2032 for Central and State transmission systems to meet a peak demand of 458 GW by 2032. The total cost of the plan is Rs 9.16 lakh Cr. Under the previous plan 2017-22, about 17,700 circuit kilometres (ckm) lines and 73 GVA transformation capacity were added annually. Under the new plan, transmission network in the country will be expanded from 4.98 lakh ckm in Nov'2025 to 6.48 lakh ckm in 2032. During the same period the transformation capacity will increase from 1,398 Giga Volt Ampere (GVA) to 2,345 GVA. Inter-Regional transfer capacity will increase from 120 GW to 168 GW. This plan covers the network of 220 kV and above. This plan will help in meeting the increasing electricity demand, facilitate RE integration and green hydrogen loads into the grid.

14. 25.8 GW ISTS Capacity Approved: 25.8 Giga Watt of RE linked Inter State Transmission Projects costing Rs. 38,849 Cr have been approved from Jan'25 to Nov'25. About 335 GW transmission network would be required to connect 280 GW of Variable Renewable Energy (VRE) to the Inter-State Transmission System (ISTS) by 2030. Out of this, 48 GW has already been completed, 172 GW is under construction, and 18.5 GW is under bidding. Balance 96.5 GW will be approved in due course.

15. Improvement in Transmission System: During 2025, 6,511 ckm of transmission lines (of 220 kV & above), 1,00,368 MVA of transformation capacity (of 220 kV & above) and 1600 MW of Inter-regional Transfer Capacity have been added.

16. Right of Way (RoW) compensation Guidelines: To ensure the timely development of power transmission infrastructure for evacuating 500

GW of renewable energy by 2030, the Ministry of Power revised the Right of Way (RoW) guidelines in June, 2024, linking compensation to the market value of land. For tower base area, the compensation has been increased from 85% to 200% of the land value. For the RoW Corridor, compensation has been raised from 15% to 30% of the land value.

Further, Ministry of Power issued Supplementary Guidelines for payment of compensation in regard to RoW on 21.03.2025. These supplementary guidelines provide for assessment of market rate of land, to be determined by a Market Rate Committee (MRC) based on the valuation by independent land valuers, for the payment of RoW compensation. The compensation amount for RoW corridor has been revised for ISTS lines as 30% of the land value in rural areas, 60% of the land value in municipal corporations & metropolitan areas notified by the State Government, and 45% of the land value for municipalities, nagar panchayats and all other urban planning areas notified by the State Government.

Distribution:

17. Revamped Distribution Sector Scheme (RDSS): Under RDSS which aimed at improving operational efficiencies and financial sustainability of Discoms, 19,79,30,131 prepaid Smart meters, 52,52,692 DT meters and 2,05,475 Feeder meters have been sanctioned at a cost of ₹1,30,671 Cr. Loss Reduction works of ₹ 1,52,854 Cr. have been sanctioned and ₹ 38,187 crores have been released under RDSS. As on 31.12.2025, 3.76 Consumer meters, 12.56 DT meters and 1.58 Feeder meters have been installed under RDSS. As a result of reform measures taken under the scheme. AT&C losses have come down to 16.16% (provisional) and ACS-ARR gap has reduced to Rs. 0.11/kWh (provisional) in FY2025 from 21.91% and Rs 0.69/kWh respectively in FY 2021.

18. All identified households from Particularly Vulnerable Tribal Groups (PVTGs) under the PM- JANMAN (Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan), tribal households under the DA-JGUA (Dharti Aaba Janjatiya Gram Utkarsh Abhiyan) and households identified under Pradhan Mantri Anusuchit Jaati Abhyuday Yojna (PM-AJAY) are being provided with on-grid electricity connections under RDSS. To date, a total of ₹ 6,522 crore has been sanctioned for the electrification of 13,65,139 households under RDSS, along with public places identified under the PM-JANMAN and DA-JGUA initiative.

Energy Conservation and Efficiency:

19. Indian Carbon Market: The Ministry of Power has notified the Carbon Credit Trading Scheme, empowering industries to reduce greenhouse gas emissions and earn carbon credits. This initiative fosters investments in transformative technologies, positioning India as a leader in global green finance. The landscape of CCTS broadly comprises of two mechanisms – a.) Compliance and b.) Offset.

a. Under the compliance mechanism, the obligated entities have to comply with the prescribed greenhouse emission intensity (GEI) targets by the Central Government. Further, the obligated entities who reduce their GHG emission intensity below their prescribed norms will be issued carbon credit certificates (CCCs) whereas those entities who could not meet their targeted GHG emission intensity can meet their shortfall by purchasing CCCs from Indian carbon market. The Greenhouse gas emission intensity (GEI) target notification for four sectors - Aluminium, Cement, Chlor-Alkali, and Pulp & Paper covering 282 obligated entities was notified by the Central Government in October 2025.

b. Under the offset mechanism, which is a voluntary project-based baseline and credit mechanism, the non-obligated entities can register their projects for GHG emission reduction or removal or avoidance for issuance of carbon credit certificates. This mechanism will enable country to tap mitigation from sectors not covered under the compliance mechanism and can incentivize actions in such sectors. Under offset mechanism, 9 methodologies and detailed procedures have been published.

20. Standards and Labelling Program: In the appliance sector, the Standards and Labelling (S&L) programme of BEE has been very successful in providing the consumer an informed choice about energy intensive appliances and equipment. Voluntary star labelling program has been introduced for EV Charger and Evaporative Air Cooler in FY 2025-26. With these additions, the programme now covers 41 appliances out of which 18 appliances are under the mandatory phase while the remaining 23 appliances are under the voluntary phase.

21. To strengthen energy efficiency in MSMEs, ADEETIE (Assistance in Deploying Energy Efficient Technology in Industries and Establishments) was launched in July 2025 with ₹1,000 crore outlay. It provides investment-grade audit support, handholding, and interest subvention (5% for micro/small enterprises; 3% for medium enterprises). It covers 60 clusters across 14 sectors, promoting energy efficiency and competitiveness.

Reforms and Initiatives

22. Late Payment Surcharge Rules, 2022: To promote payment discipline across the power sector value chain, which had long been a concern due to the mounting receivables of generating companies and other entities, Central Government notified the Electricity (Late Payment Surcharge and Related Matters) Rules, 2022 on 3rd June 2022. Since their implementation, significant progress has been achieved - against legacy dues of Rs.1,39,947 crore as on 03.06.2022, 13 States/UTs have paid Rs.1,31,942 crore through 39 EMIs, prepayments, and reconciliations. Consequently, the outstanding legacy dues have reduced to Rs.8,005 crore, and DISCOMs are now largely paying their current dues on time, reflecting a marked improvement in sectoral financial discipline.

Ministry of Power notified an amendment to the Electricity (Late Payment Surcharge and Related Matters) Rules on 2nd May 2025, bringing intra- state transmission licensees under the payment security mechanism prescribed in the Rules. This inclusion will help ensure timely payments and enhance payment security for intra-state transmission licensees, thereby attracting critical investments for strengthening intra-state transmission networks. This is vital for evacuating power from the planned renewable generation capacity expansion.

23. Electricity (Amendment) Rules, 2025: Electricity Rules, 2005 have been amended to allow consumer-owned energy storage. These amendments strengthen the regulatory framework to facilitate the integration of energy storage into India's power system, enhancing reliability, flexibility, and renewable energy utilization.

24. The Government of India, vide notification dated 01.08.2025, has revised the capital expenditure limit for schemes related to setting up hydro generating stations to ₹3,000 crore, requiring the concurrence of the CEA. Further, the Government has exempted off-stream closed-loop pumped storage schemes, irrespective of the quantum of capital expenditure, from the requirement of concurrence by the CEA.

25. Energy Transition and NDC Achievement: India has achieved its Nationally Determined Contribution (NDC) target of 50% cumulative non-fossil electric capacity nearly five years ahead of schedule. Non-fossil capacity share has risen from 32% in 2014 to 51% by October 2025, demonstrating India's rapid transition towards clean energy and its commitment to global climate goals.

Economic Survey 2026: Capital, Land & Grid Hurdles need to be tackled to sustain India's renewable energy momentum

The Economic Survey 2025-26, tabled in the parliament on January 29, 2026, has underlined the need to address high capital costs, land acquisition delays and grid constraints to sustain India's power and renewable energy momentum, while calling for large-scale deployment of battery storage and pumped storage projects to manage renewable variability.

It also stressed that for competitive businesses, energy costs are as critical as capital costs, making power sector efficiency central to India's broader industrial and long-term growth strategy.

Against this backdrop, India's installed power generation capacity climbed to 509.74 gigawatts (GW) as of November 2025, up 11.6 per cent year-on-year. The Survey presented this physical expansion alongside digital and financial reforms as part of a structural transformation of the electricity sector.

India energy stack: Digital rails for a new power market

A key reform highlighted is the proposed India Energy Stack (IES), envisioned as a Digital Public Infrastructure (DPI) for the power sector. Built on open standards and protocols, IES aims to enable consent-based data sharing, interoperable systems and standardised measurement and settlement, allowing households, farmers and MSMEs to participate more easily in energy markets.

The platform is expected to unlock services such as peer-to-peer electricity trading, demand response, EV charging ecosystems and aggregation of rooftop solar and storage. By lowering entry barriers and standardising interfaces, IES could foster a new ecosystem of energy service providers and aggregators, shifting the focus from "energy access" to "energy agency", where consumers can choose services and earn from distributed energy participation.

DISCOM finances see historic turnaround

The Survey noted a significant improvement in the financial health of distribution utilities. In a historic first, DISCOMs and power departments recorded a positive Profit After Tax of Rs 2,701 crore in FY25, reversing years of losses.

Aggregate technical and commercial (AT&C) losses fell from 22.62 per cent in FY14 to 15.04 per cent in FY25, and the average cost of supply-annual revenue realisation gap narrowed to Rs 0.06 per kWh, indicating improved cost recovery. Outstanding dues dropped sharply from Rs 1.4 lakh crore in June 2022 to Rs 4,927 crore by January 2026, supported by tighter payment discipline and tariff adjustment mechanisms.

Distribution infrastructure and reforms

Central schemes such as Deen Dayal Upadhyaya Gram Jyoti Yojana, Integrated Power Development Scheme and SAUBHAGYA have seen investments of about Rs 1.85 lakh crore, electrifying 18,374 villages and connecting 28.6 million households. Under the Revamped Distribution Sector Scheme, projects worth Rs 2.8 lakh crore have been approved to upgrade networks and roll out smart meters.

The proposed Electricity (Amendment) Bill, 2026 aims to further improve efficiency through regulated competition in distribution, cost-reflective tariffs and stronger regulatory oversight, while safeguarding subsidised supply for vulnerable consumers.

Coal remains central in transition

Renewable energy (RE) now accounts for 49.83 per cent of total installed capacity as of November 2025. Total RE capacity has more than tripled in a decade to 253.96 GW, with a record 34.56 GW of non-fossil capacity added in the first eight months of FY26, led by solar.

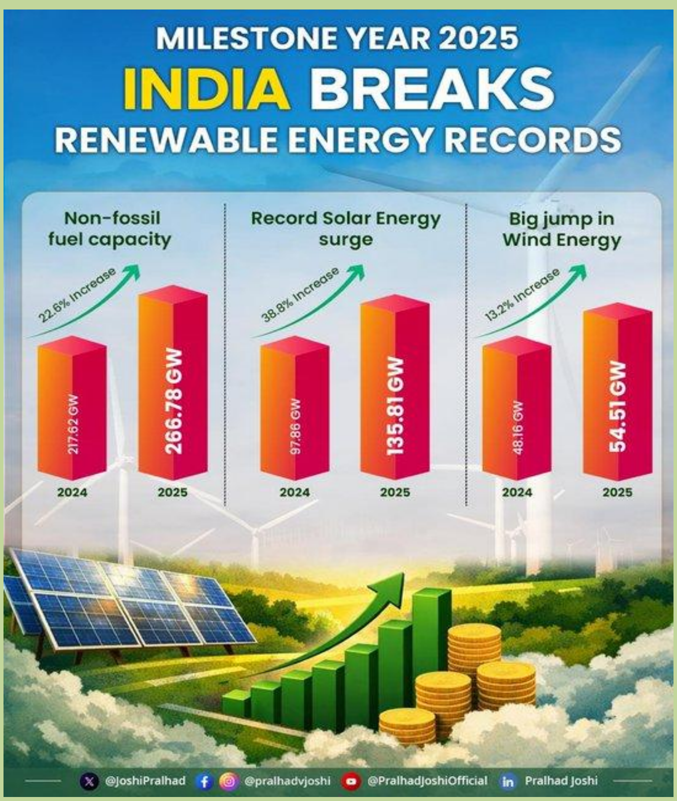
Even as clean energy expands, coal continues to anchor energy security. India holds the world's fifth-largest coal reserves and depends on coal for about 55 per cent of its energy mix and over 74 per cent of power generation.

In FY25, coal production reached a record 1,047.52 million tonnes, while imports fell 7.9 per cent, reflecting stronger domestic supply. The Survey suggested that coal will remain a stabilising pillar of grid reliability during a managed transition toward cleaner sources.

Overall, the Survey framed power sector reform, spanning infrastructure, digital systems, financial restructuring and storage deployment, as critical not only for energy security but also for enhancing industrial competitiveness in an economy where energy input costs directly shape growth prospects.

India Marks Record-Breaking Year in Clean Energy in 2025 : Union Minister Pralhad Joshi

India marked a record-breaking year in its clean energy journey in 2025, with non-fossil fuel installed capacity rising to 266.78 GW, Union Minister of New and Renewable Energy Shri Pralhad Joshi said. This represents a 22.6 per cent increase over 2024, when non-fossil capacity stood at 217.62 GW, with 49.12 GW of new non-fossil capacity added during the year.



Solar and Wind Drive Renewable Energy Expansion: Solar power led the expansion, with installed capacity increasing from 97.86 GW in 2024 to 135.81 GW in 2025, registering a growth of 38.8 per cent. Wind energy capacity also witnessed steady growth, rising from 48.16 GW to 54.51 GW, marking an increase of 13.2 per cent. Together, solar and wind continued to drive India's renewable energy expansion during the year.

Bioenergy and Small Hydro Add to Clean Energy Diversification: Other renewable energy segments also contributed to the overall growth in 2025. Bioenergy installed capacity reached 11.61 GW, including 0.55 GW from waste-to-energy off-grid projects, reflecting steady progress in clean fuel generation and waste management.

Small hydro power capacity increased to 5.16 GW, supporting decentralised and region-specific renewable energy development. Large hydro power capacity stood at 50.91 GW, including 7,175.6 MW of pumped storage, strengthening grid stability and renewable energy integration.

Policy Leadership Strengthens India's Clean Energy Pathway: Union Minister Shri Pralhad Joshi said that the record growth achieved in 2025 reflects decisive policy direction, long-term vision and sustained implementation under the leadership of Prime Minister Shri Narendra Modi. He said the progress strengthens India's pathway towards energy security, climate responsibility and a self-reliant green economy, while moving steadily towards the national target of 500 GW of non-fossil energy capacity by 2030.

The Minister added that Ministry of New and Renewable Energy will continue to work closely with States and stakeholders to further accelerate renewable energy deployment across the country.

Bioenergy to Play Pivotal Role in Decarbonising MSMEs: Union Minister of State Shripad Yesso Naik

Union Minister of State for New and Renewable Energy and Power today highlighted the pivotal role of bioenergy in India's clean energy transition, particularly in decarbonising industrial process heat in the MSME sector. The Minister was delivering the keynote address at a national workshop on' Introduction and Adoption of Biomass for Green Steam and Heat Applications in MSMEs', organised by the Ministry of New and Renewable Energy in collaboration with the German Agency for International Cooperation (GIZ) and Grant Thornton Bharat. On the occasion, the Minister also jointly released the report titled "Decarbonizing MSMEs: Use of Biomass for Green Steam and Heat Application".

Shri Naik said that under the leadership of Prime Minister Narendra Modi, India's renewable energy journey has witnessed unprecedented momentum over the past decade, with bioenergy emerging from a peripheral role to become a strategic pillar of the country's clean energy transition.

The Minister noted that bioenergy today extends far beyond electricity generation and contributes simultaneously to multiple national priorities, including energy security, rural livelihoods, waste management, pollution reduction and climate action. Highlighting the challenge of industrial decarbonisation, particularly in the MSME sector, he pointed out that while MSMEs contribute nearly one-third of India's manufacturing output and employ millions, a significant share of their energy demand for steam and heat continues to be met through fossil fuels such as coal, furnace oil and pet coke. Transitioning this segment towards clean and renewable thermal energy, he emphasised, is therefore essential.

Emphasising that biomass-based green steam and heat solutions offer a practical, scalable and India-specific pathway, the Minister said that India's abundant availability of agricultural residue, animal waste and municipal solid waste presents a unique opportunity to convert waste into value, reduce emissions and generate additional income for farmers and rural entrepreneurs. He outlined the Government's integrated approach through initiatives such as the National Bioenergy Programme, SATAT and GOBARdhan, which support biomass briquettes and pellets, non-bagasse-based cogeneration, industrial applications and decentralised solutions tailored to MSMEs, while also strengthening linkages with the National Green Hydrogen Mission.

Highlighting the significance of the report released during the workshop, the Minister said that it provides a data-driven, sector-specific roadmap for adopting biomass-based green heat and steam solutions across industries such as textiles, food processing, chemicals, foundries and pharmaceuticals. The report also brings out key policy and market enablers including biomass deployment obligations, standardised steam supply agreements, biomass exchanges and strengthened supply-chain coordination, and is expected to serve as a valuable reference for policymakers, industry and financial institutions.

The Minister underlined that technology alone cannot drive transformation and called for close collaboration across the entire value chain, from farmers and FPOs supplying biomass to aggregators, logistics providers, boiler manufacturers, energy service companies, financiers and regulators. He stressed that MSMEs require confidence in fuel availability, pricing stability, operational reliability and supportive policies, and noted that platforms such as this workshop are critical for trust-building, knowledge-sharing and co-creation of solutions.

The Minister said that bioenergy truly embodies the spirit of Sabka Saath, Sabka Vikas. He expressed confidence that the outcomes of the workshop and the insights from the report would accelerate the adoption of green steam and heat solutions across the MSME sector and urged all stakeholders to convert intent into action

Secretary, Ministry of New and Renewable Energy, **Shri Santosh Kumar Sarangi** highlighted, that, biomass-based applications have the potential to be deployed across the country. From municipal solid waste-to-energy projects and compressed biogas to decentralised biogas plants in rural areas, biomass solutions support livelihoods, promote decentralised energy access and strengthen rural value chains, making bioenergy a critical pillar of India's clean energy transition, he said.

Referring to the report launched at the event, the Secretary said it brings out the significant potential of biomass-based industrial heat and steam applications across sectors such as textiles, food processing, metals and artisan-based industries, while remaining adaptable to both large-scale and decentralised use. He underlined the need to strengthen biomass supply chains, enhance R&D and promote multi-fuel boiler technologies to ensure year-round fuel availability and cost-effective operations for MSMEs. Emphasising the importance of international collaboration, particularly with Germany, he called for greater engagement on advanced boiler technologies and encouraged MNRE's scientific and R&D community to expand partnerships and accelerate adoption of biomass-based solutions across Indian industry.

The workshop was attended by senior officials of the Ministry of New and Renewable Energy, representatives of the German Embassy and GIZ, industry leaders, MSMEs, financial institutions, State Governments, technology providers and knowledge partners.

Brief Summary of Report on Decarbonizing MSMEs: Use of Biomass for Green Steam and Heat Application: The report, jointly developed by MNRE and GIZ in support identifies the key industries and sectors such as textile, food processing, chemical, metallurgical/foundry that need to adopt green heat and steam using biomass related solution. The report also provides recommendation to promote biomass usage in industries by having a Biomass Deployment Obligation, developing a biomass exchange and trading platform, specific industrial policy to promote usage of biomass, standardising steam supply agreements to mention a few. The report provides an overall understanding at where industries stand now in terms of energy consumption and adoption of biomass and what India can do to increase biomass and Green heat and steam adoption.

India's energy storage projects installation to surge 10-fold to 5GWh in 2026: IESA

The nation will see nearly 10-fold jump to battery energy storage capacity addition to 5GWh this year from 507 MWh in 2025 mainly due to huge backlog of project under execution, according to a study of India Energy Storage Alliance (IESA) released recently.

According to the report, while 2025 was defined by unprecedented tendering activity -- 69 tenders totalling 102 GWh, nearly equal to all tenders issued between 2018 and 2024 combined -- 2026 will be the year the industry proves itself operationally, as the wave of tenders awarded since mid-2023 finally materialise into commissioned assets with typical project timelines of 18-24 months.

An IESA statement on the study stated that India's energy storage sector is poised for a transformative breakout in 2026, with battery energy storage capacity addition set to surge nearly 10-fold from 507 MWh in 2025 to approximately 5 GWh.

The report reveals that 2026 marks a critical inflection point as the industry transitions from tendering to execution, with 60 GWh of projects entering the implementation phase following a record-breaking 2025 that saw cumulative capacity (under execution) surge 84 per cent to reach 224 GWh.

"All eyes will remain on whether the performance of these projects is in line with what was committed," IESA President Debmalya Sen said in the statement.

2026 will be the year when a number of projects will enter the operational phase. The next challenge is financing of these projects, especially the ones with low tariffs, Sen added.

Perhaps the most dramatic development of 2025 was the collapse of tariffs to levels that stunned the industry. Standalone 2-hour Battery Energy Storage System (BESS) tariffs plummeted from ₹2.21 lakh/MW/month in early 2025 to just ₹1.48 lakh/MW/month by year-end in APTRANSCO's tender. Solar-plus-4-hour-BESS projects saw tariffs fall to ₹2.70-2.76/kWh, with over 50 new bidders entering the market and intensifying competition.

March 2026 will serve as a crucial test when Adani commissions one of the world's largest single-location BESS projects, 1,126 MW/3,530 MWh in Gujarat. January brings Rajasthan's tender for India's largest solar-plus-BESS project at Pugal Solar Park, while the commercial and industrial market shows signs of rapid emergence following Juniper Green Energy's pioneering 60 MWh merchant BESS installation in December. "The transition from tendering to execution in 2026 represents a watershed moment for India's energy storage sector," said Vinayak Walimbe, Managing Director of Customized Energy Solutions. The government provided crucial backing through the second tranche of Viability Gap Funding worth ₹5,400 crore, supporting 30 GWh of standalone BESS, while mandating 20 per cent domestic value addition for VGF projects. Interstate Transmission System charge waivers were extended until 2028 for pumped storage and solarplus-BESS projects.

Small hydro projects get ₹2,500-crore push

The finance ministry's expenditure finance committee has approved a proposal of about ₹2,500 crore for small hydro power projects to avail government fiscal support, said people familiar with the matter. This move is expected to help double the country's installed hydro power capacity to 10 gigawatts over the next decade.

Under the plan, developers of hydro projects with up to 25 MW capacity would be eligible for central financial assistance covering about 20-30 per cent of benchmark costs set by the power regulator, said one of the persons cited above.

India currently has just over 5 GW of operational small hydro power projects, comprising projects of up to 25 MW each. Policy support and implementation for this segment are overseen by the Ministry of New and Renewable Energy (MNRE). With the committee's approval, MNRE would now prepare a note for cabinet nod on the scheme.

While India is continuing to add non-fossil fuel-based energy sources, the focus on small hydro power projects has also intensified since they require lesser land, have longer life span, provide local irrigation, create jobs, among other benefits. Small projects also have a smaller environmental footprint as they don't involve large-scale displacement of communities or extensive deforestation, a second person said.

Most are either canal-based or run-of-river projects that use natural water flows without the need for large reservoirs.Operational flexibility is another advantage as these projects can provide spinning reserves or quick rampup capacity and are usually located closer to consumption centres, mostly at tail end of transmission networks. The power generated can be absorbed locally, reducing transmission losses. Cost of such projects typically is between ₹10 crore and ₹12 crore per MW

"Hydropower projects are capital-intensive and need support during the construction phase," an industry executive said, suggesting phased payments linked to project milestones.

NTPC Green Issues EPC Tender to Build 6 MW Floating Solar-Plus-BESS Project in Chhattisgarh

NTPC Green Energy (NGEL), a renewable energy arm of National Thermal Power Corporation (NTPC), has issued an EPC tender to develop a floating solar project with a 6 MW/24 MWh Battery Energy Storage System (BESS) project.

NGEL issued the tender for the project on behalf of a joint venture (JV) between NGEL and Chhattisgarh State Power Generation Company Limited (CSPGCL). The tender aims to develop the BESS project at the Atal Bihari Vajpayee Thermal Power Station (ABVTPS) of Chhattisgarh State Power Generation Company Limited (CSPGCL). The company has sought bids for the project until January 12, 2026.

India's push for 100 GW nuclear capacity by 2047

India has set a target to achieve 100 gigawatts (GW) of nuclear power capacity by 2047. According to an E&Y report published last year, the country's annual energy demand is projected at about 35,000 terawatt hours by 2047. Seen in that context, the national task to achieve the nuclear target appears relatively modest.

The recently approved SHANTI (Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India) Bill has been able to address concerns related to liability and private sector participation.

The government has already given the provision of ₹20,000 crore for the development of the 55 MW Pressurised Water Reactor (PWR) Small Modular Reactor (SMR), the 200 MW PWR Bharat Small Modular Reactor, and the High Temperature Gas Cooled Reactor.

Over 250 nuclear power plants (NPP) are targeted to be set up by 2047, according to Vice Admiral (retd) N M Nadaph, Nuclear Advisor, Walchandnagar Industries, a key player in heavy engineering with a strong presence in the nuclear sector.

Both the government and the private captive owners are scouting for suitable sites across the country. According to an ET Bureau report dated July 15, 2025, the government is considering 10 sites of retired old thermal plants to set up nuclear facilities, the feasibility for which will depend on the seismic stability, water availability, etc.

While India can boast today of developing all aspects of nuclear technology, reaching 100 GW nuclear capacity is a reality driven by hard power sector mathematics and would require targeted reforms.

Critical Shifts

The problem with nuclear fuel is complicated. Even though there are no political barriers for importing uranium, there could be commercial challenges similar to the oil and gas sector.

India has vast reserves of thorium, so moving from an open-cycle approach to a closed-cycle approach and from uranium to thorium will not only reduce import dependence but also enable India to become an energy supplier of the world. However, mining of these metals is still under government control, and so far there is no indication of privatisation or licensing.

"India continues to depend on uranium imports and champion moving from an open fuel cycle, a once through process where spent fuel is treated as waste, to a closed fuel cycle to reprocess spent fuel to extract usable materials," said Anil Kakodkar, former chairman of the Atomic Energy Commission.

He said that the Molten Salt Reactor route, which is already in the works, is ideal for India and will prove the use of thorium for energy production, cost reduction, and scale.

Fuelling the Nuclear Ambition Smaller 220 MW PHWRs are gaining traction, particularly for applications in captive power plants. At the same time, cost economics are expected to drive wider adoption of 700 MW PHWRs by domestic companies

NPCIL is advancing the rollout of indigenous 700 MW reactors, with three units already in operation and over a dozen others at various stages of construction and development. Groups such as Reliance, Adani, Tata Power, JSW, Hindalco and more have shown serious intent to enter into this business.

The government's move to roll out the second and third fleet-mode batches of 10 PHWRs of 700 MW capacity has been welcomed by industry. However, India's dependence on a small pool of global suppliers for critical forgings and materials remains a concern, particularly for nuclear power, and needs to be addressed through joint ventures and indigenous capability under Make in India.

"Some of the critical materials are not cost-effective, as these are only available from limited international suppliers with minimum order quantities that are high and should be given as free issue materials by the owners of NPPs. The government should develop such material in India, such as heavy forgings for reactor headers, plates for calandria, etc.," said Vice Admiral (retd) N M Nadaph.

He added that there is a need to improve the terms of contract for better cash flows to improve the overall cost, as the cost of borrowing from the banks is very high.

"The major challenge the industry will face is in the development of a supply chain for the raw material, including special nuclear-grade steels. Since this business requires stringent quality control and inspection at various stages, this will be a challenge to be addressed," said Nitin Patil, Head of Nuclear Business, KSB Group, a manufacturer of critical pumps for the nuclear sector.

Compared to thermal power plants, a nuclear power plant requires much more regulatory approval and deeper safety checks and has many fewer experienced design specialists and suppliers.

"Typically a nuclear plant without any delays should be completed in five to six years, but that is generally not the case, and these projects can get extended to 10 years from concept to commissioning because of the challenges in land acquisition, pre-project technical studies and statutory clearances," said Mani T T, Managing Director, Avasarala Technologies, a Bengaluru-based factory automation company.

The government is trying to address this by involving the state governments and the single-window clearance concept.

"Few players on the Indian market, apart from NPCIL, have proven and widely recognised experience in supporting the development of the civil nuclear market. To deliver a comprehensive response, it is essential to rely on players who are capable of offering complete and integrated engineering solutions," said Ashish Tandon, managing director, Assystem in India, a full-service design, engineering and project delivery consultancy.

To deliver a comprehensive response, it is essential to rely on players who are capable of offering complete and integrated engineering solutions.

India's 100 GW nuclear programme will also require a large pool of highly specialised manpower.

BARC Training School, now Homi Bhabha National Institute (HBNI), has traditionally trained personnel in R&D, while NPCIL conducts in-plant training followed by licensing exams. NTPC, the latest entrant, is training its engineers at HBNI and its own institutes in consultation with the institute. Going forward, new players will need to develop their own training and HR programmes to align workforce supply with demand.

SHANTI Act can spur nuclear power deployment in India: Fitch-BMI

The Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act has potential to catalyse the next phase of growth in India's nuclear sector, according to BMI, a unit of Fitch Solutions.

In a report on the impact of this legislation, BMI said the Act encourages diversification away from indigenous pressurised heavy-water reactors (PHWRs) to include conventional light-water reactors (LWRs) and small modular reactors (SMRs). Strong interest is also expected from foreign suppliers and new ownership models for nuclear new-build projects.

"We believe the SHANTI Act is a pivotal reform that lowers the weighted average cost of capital," BMI said, adding India's nuclear sector has historically been state-led and cost-plus tariff based, with higher nominal financing costs than the US and UK due to elevated interest rates and risk premia.

The SHANTI Act passed by parliament last month replaced the Atomic Energy Act of 1962 and integrated the Civil Liability for Nuclear Damage Act into a unified statutory framework. According to BMI, this is a significant reform of India's nuclear legal and regulatory framework, aimed at modernising risk allocation, improving bankability and enabling greater participation by private and foreign stakeholders.

"The Act makes nuclear risk quantifiable and insurable," BMI said, noting this facilitates participation by lenders and export credit agencies (ECAs), lowering the cost of debt.

This is being done by introducing clear liability caps for suppliers and operators and replacing statutory supplier liability- where suppliers are held by law- with contractual risk allocation. As overall project risk declines, equity investors demand a lower risk premium, altogether lowering the overall weighted average cost of capital (WACC).

BMI expects an upside for SMR development under this new system since they will fall under a lower liability tier, significantly reducing the maximum downside risk faced by operators and investors.

India targets 22.38GW of nuclear capacity by 2032 and 100GW by 2047.

Nuclear power play: NTPC, foreign companies ink pacts

NTPC, India's largest power generator, has signed non-disclosure agreements with Russia's Rosatom and France's EDF to explore collaboration on deploying large, pressurised water reactor (PWR) projects in the country, people aware of the development said.

These engagements span the full lifecycle of nuclear projects, from concept development to commissioning, with emphasis on indigenisation, said the people cited above.

The agreements come around a time when India decided to change its laws that facilitate the entry of the private sector into the nuclear industry, and to ease provisions on suppliers' liability that have kept foreign technology providers from participating in the sector.

Focus on Cost: With the agreements, NTPC can analyse the specifications of the technologies it would want to harness, said one of the persons cited above. "Tech specifications would help to finalise tenders for all global majors to qualify," said the person.

Companies including ROSATOM, Korea Electric Power Company of South Korea, Westinghouse of US and EDF have shown interest in participating in India's nuclear energy sector, according to the sources.

However, the key focus for NTPC would be the cost and economics of any technology. The state-owned power producer has experience in setting up large power plants and working in a joint venture with Nuclear Power Corporation of India (NPCI).

Powering growth : It has announced a target capacity of 30 GW by 2047 - a major chunk of India's 100 GW road map for Viksit Bharat through its unit NTPC Parmanu Urja Nigam. NTPC is the only PSU, apart from NPCIL, which is currently building a nuclear power plant.

The Mahi Banswara Rajasthan Atomic Power Project is being developed by ASHVINI, a joint venture of NPCIL and NTPC.

The company had, in March this year, invited expressions of interest from global companies for cooperation in indigenizing PWR technology and to establish large-capacity nuclear power plants with a target capacity of around 15 GW.

The company has been scouting for land and water at more than 30 locations across the country. Some states have given permission for the same and site-specific studies have started with some states giving their approval.

To diversify technology options is a key pillar of NTPC's nuclear strategy, a company official had earlier said. It is already exploring the deployment of small modular reactors (SMRs) in collaboration with USbased Holtec International. SMRs offer potential advantages in terms of modular construction, more safety features, and suitability for phased deployment, according to the people quoted above.

NPCIL Achieves Key Milestones at Rajasthan Atomic Power Project in January 2026

Nuclear Power Corporation of India Limited (NPCIL) has recorded major operational progress at the Rajasthan Atomic Power Project (RAPP), strengthening India's clean and reliable nuclear energy capacity. In a significant achievement, RAPP-7 has been successfully operating at 90% of Full Power since 29 December 2025, following the receipt of regulatory clearance. The milestone reflects stable reactor performance and marks an important phase in the unit's commissioning journey.

Meanwhile, RAPP-8 has crossed another critical commissioning milestone with the successful completion of the Primary Heat Transport (PHT) System Hot Conditioning on 05 January 2026 at 04:35 hrs. This key technical achievement brings the unit substantially closer to the next phases of development, including Initial Fuel Loading, Criticality, and eventual Grid Synchronization.

These twin milestones underscore NPCIL's commitment to precision engineering, rigorous safety standards and India's long-term clean energy strategy. With RAPP-7 approaching full commercial operation and RAPP-8 advancing steadily through pre-commissioning activities, the Rajasthan Atomic Power Project continues to play a vital role in enhancing India's base-load power capacity while supporting national climate goals.

REC, PFC can boost lending for nuclear projects by banks

The government has opened the nuclear sector for private players, but the biggest concern is getting capital to start the project. State-owned non-banking financing companies – PFC and REC – could address this concern by lending for nuclear projects and building confidence for banks and private lenders, experts say.

Alok Kumar, former secretary, Ministry of Power, says nuclear power will come into the domain of the government's two big power lending companies – Power Finance Corporation (PFC) and REC Ltd.

"So, if REC & PFC come in nuclear sector, it will build confidence for the other lenders in the private sector or banks. I feel that it is a very important thing, like for Ultra Mega Power Projects (UMPP), REC & PFC were part of the whole exercise. We had numerous meetings with the banks and brought them on board because ultimately, lending is critical to this sector," Kumar, who was power secretary between 2021 and 2023, tells Business Today.

The capital cost of these projects is expected to remain high at over Rs 15 billion per MW, necessitating investments of over Rs 250,00 billion over the next five to seven years.

He further said that while the ministry was drafting the UMPP documents, both the power financing companies were leading the process.

"So that they were aware of the investors' concerns and were detailing the concerns of investors and lenders. For the initial few projects (nuclear), the government will have to interact with the lenders to take care of their risk perceptions. It's a new act and for the first time private sector is being involved like government did for UMPPs," he adds.

Kumar says that the cost of capital is high for power projects because of the quality of project management.

"I am very sure that when the private sector comes, they will improve project management, and the IDC will come down as the private sector can take quick decisions. The government will have to ensure that the licensing process is time-bound. I think those are the factors that impact the cost of capital because the completed project cost also includes IDC and interest during construction, and it is very high if your project execution duration goes on and on," he added.

REC Ltd is already evaluating to enter into the nuclear space in the next two to three years, with plans to lend to the public sector companies coming up with nuclear power projects, the company's Director (Projects) Vijay Kumar Singh said in a media interaction in June 2025.

"Nuclear is another new opportunity for us to participate. This entails a Rs 10-12 lakh crore opportunity. We would evaluate and in the next 2-3 years, we could see something happening," he said, adding that the company will focus on small modular reactors (SMRs).)

Webinar on “Emerging Technologies and Business Models in Distribution” 12th January 2026

IEF T&D Sectoral Group organised a Webinar on “Emerging Technologies and Business Models in Distribution” held on 12.01.2026**.** Deliberations were held over two sessions viz. Integration of Behind-the-Meter Resources and Distribution Automation & AI technique in Distribution Network Management followed by concluding session**.**

Shri I S Jha, Chairman, T&D Group-IEF welcomed all dignitaries, speakers and participants of the Webinar and highlighted the importance of this webinar in present day context.

Shri R V Shahi, President, IEF gave opening remarks and highlighted that Generation and Transmission are visible but Distribution is not visible. He expressed his concern over the by passing of meters though we have started using smart meters. He stressed upon all to find out the solutions of problems being faced by Distribution recently.

Following eminent speakers presented their views and experience on challenges of integration of Behind-the-meter resources and distribution automation as well as AI/ML technique in load forecasting, demand response:

*Role of Discoms in enabling and managing increasing renewables, DERs, Energy Storage system by **Shri Abhishek Ranjan**, CEO, BRPL-Delhi*

EV Charging: Changing Load profile and V2G as an opportunity for grid balancing *by **Dr. Nilesh Kane**, Chief – Transmission & Mumbai Distribution, Tata Power*

Application of AI in Load foecasting and demand response by **Shri Pawan Vishwakarma**, Trigap Solutions

Use of Robotics/Drones coupled with AI for Distribution Network Management by **Shri Bapurao Tilekar** Head (Business Technology), AESL.

Valedictory address by **Shri Biswajit Basu**, Managing Director, Tripura State Electricity Corporation Ltd.

It was highlighted that pillars of Discom operation are Customer operation, Project management etc. Major issues of Discoms are increase in Renewables, DERs, aging infrastructures, Distributed intelligence, Rapid electrification of transportation, Smart appliances, Smart home, Smart Building, Climate changes, Cyber security, Peer-to-peer trading etc. Discoms are now becoming Distribution System Operator for resolving all these issues. It emerged that EV sale CAGR will be 14-15% during this decade. EV charging demand coincides with evening peak (5-10 pm). EV Charging demand is normally 26% during solar hours and 44% during peak hours. The load may be shifted during solar hours for balancing Grid. Vehicle-to-Load and Vehicle-to-Grid may also be used for balancing Grid.

It was presented that present day distribution system has become complex due to bi-directional power flow, dynamic load etc. AI & ML is resolving these emerging problems. AI & ML analyses historical data, makes load forecast, predicts equipment failure and thus reduces downtime. AI & ML also optimizes Grid operation without human intervention. Digital Twin Technology which are virtual replicas, simulates the existing system. Peer-to-peer (P2P) model enables energy exchange among prosumers by passing traditional intermediaries.

Deliberations were held on how drones take high resolution videos; AI analyses the defects from captured videos and thus improves productivity. Signals from drone can automatically trigger notifications and tasks in ERP. Drones can also be

used for disaster management. However, use of drones requires DGCA approval, SOP, Training and domain expert. Robots can be used for inspection of live transmission line, Substation maintenance, Digital Road Survey and Optimization (DRSO) also.
In the valedictory address, Shri Biswajit Basu, MD, TSECL highlighted that like other Discoms, TSECL has been engaged in installation of Smart meters and Solar power under RDSS and PMSGMBY. He mentioned that increase in use of Solar power, EV, Storage are the major challenges. To address theft of power, UG cables, Covered Conductors, AB Cables and Drones are being applied especially to curb hooking of power line. Discoms are facing problems such as reduction in financial position due to increased use of Rooftop Solar, payment of long term PPA, reliance of consumer on Grid power during night, absence of contemporary tariff design, ignorance of consumer regarding time of use of any equipment, absence of smart equipment for automation, absence of Cyber security etc.

Key takeaway:

i) Distribution is playing central role to facilitate RE integration and marching towards clean energy transition.

ii) Focus is on installation of Distributed Energy Resources like Rooftop Solar PV System, BESS, EV Charging, Vehicle-to-Grid.

iii) Demand forecasting is key to provide reliability and affordability. AI/ML technique is being used in this regard widely. Demand flexibility through suitable Demand Response is also important to maintain grid balance and stability.

iv) Asset management of Distribution system is critical. Predictive maintenance technique is being considered using AI/ML tools, Robots/Drones.

v) Increased penetration of Rooftop Solar leading to less energy consumption from Discom network. Discoms are facing short fall in revenue. Further, drone is being used to monitor hook line and mitigate power theft to a large extent.

Webinar on “Making Coal Green - The Gasification Way” 16th January 2026

India Energy Forum organized a Webinar on “Making Coal Green - The Gasification Way” on 16th January 2026 on Webex. **Shri N N Gautam**, Chairman, Coal Group, IEF welcomed the distinguished speakers and participants. While the Presidential Address was given by **Shri R. V. Shahi**, President IEF and Former Secretary Ministry of Power, **Shri Anil K Jha**, Vice President, IEF and Former CMD, CIL set the context of the webinar. The other distinguished speakers who shared their experience and views were **Shri Asheesh Kumar**, Director (Business Development), Coal India; **Shri Naveen Kumar Ahlawat**, President, Sustainability and Decarbonisation, Jindal Steel; **Dr Prakash D Chavan**, Sr Principal Scientist, Gasification & Catalysis Research Group, CSIR—CIMFIR.

Full Report and Recommendations will be published in the next issue of the Total Energy.

India Energy Debate on Petroleum and Natural Gas – Ways to Reduce Import Dependence 17th January 2026

India Energy Forum organised an India Energy Debate (a monthly discussion) on the theme, “Petroleum and Natural Gas – Ways to Reduce Import Dependence” on 17th January 2026 at IIC, New Delhi.

Dr BS Negi, Chairperson of Oil & Gas vertical, while welcoming the participants, expressed that 89% of the Petroleum and Petroleum products, 51% of Natural Gas are imported to meet the energy consumption of India. In terms of cost, during 2025, the INR 12,87,000 Crore of worth is the foreign exchange outgo. India is poised to become the third largest economy of the world for which energy requirement is going to increase further. As per his paper written in 2021, the Indian energy demand was estimated to grow at 4.959% year on year basis from 2020 to 2030. The Primary energy consumption as per that study should have been 982MTOE as against actual 974.5 MTOE in 2024.

He further observed that to reduce import burden, India needs to do the following:

- Decrease energy intensity
- Increase energy efficiency
- Increase domestic production of oil and gas
- Scout for oil & gas equity abroad
- Substitution of fossil fuels by Renewable Energy, Bio Gas, Biofuel, Waste to Energy, Sustainable Aviation Fuel, Sustainable Marine Fuel etc.

It is in the above context of the debate, that the issue was deliberated at length to find a way forwarded.

Shri RV Shahi, President IEF, expressed that the Petroleum sector has been disturbing as the import dependency has been increasing year on year. He referred to his observations in his book "Energy Security and Climate Change", which was based on his efforts from 2003 to 2011, wherein he observed that "The management of the Petroleum Sector could have done better". He also shared that the Oil import in 2014 stood at 76% of the consumption, which the government aimed at bringing 10% per year down, but instead it has increased to 89%.

He hoped that the discussion will lead to some tangible solution to the increasing import. He further suggested that substitution of fossil fuels by indigenous energy resources like electrification of Railways, introduction of EVs could be a part of the solution.

Mr SN Yadav, Executive Director Gail (India), expressed that Bio Gas is one of the alternative indigenous sources of energy. India has biogas potential of 220 MMSCMD, as against present gas consumption of 200 MMSCMD. He shared that the gas demand by 2030 will be 280 MMSCMD which goes to 400 MMSCMD by 2040 (as per IEA estimate).

He informed that the Government has taken policy initiative to encourage Bio Gas production and distribution. Apart from plant cost subsidy, the policy supports absorbing the part cost of bio gas by combining it with APM gas. The bio gas producers are paid about 70 /Kg but the user like CGD companies are charged only INR 1.00/Kg over APM price of INR 28.6/Kg ($6.25/MMBTU at a parity of INR 90 to USD). Also, the policy allows subsidies to the tune of 50% on pipeline laying for monetizing the bio gas.

However, he shared that the existing 160 plants are producing only 3,75,000 SCMD of gas against installed capacity of 1.36 MMSCMD (operating at 27.6% efficiency). The constraints for such low performance are:

- Land availability
- Feed Stock availability on sustainable basis
- Municipal corporations not cooperating to segregating the solid waste
- Technology to digest multi-feeds
- High cost of purifying gas to make it worthy transportation through pipeline

Mr Yadav has been confident that bio gas is going the play an important role in providing input to CGD, especially with CBG Synchronization Scheme of the Government.

Mr Askok Kumar, ED ONGC, presented that the domestic exploration has only covered part of the basins as 15 out of 26 basins remain unexplored. India has large potential of in-place reserves and also of enhanced recovery. He cited the example of Bombay High, where a normal recovery of 28-30% was envisaged originally, but with advanced technology, a recovery of 50% is being planned with adoption of new technology.

He expressed that with new policy of the government, where partnership and collaboration with global technology experts has been allowed, as a result Global E&P giants who left Indian assets, have now shown interest to collaborate and ONGC expects:

- Adding 1 MMSCMD gas production in short term
- Sustain the oil production as against depletion rate of approx. 10%/Annam
- Add on 19 MMT oil production

- South Basin field will continue to produce 22MMSCMD gas
- The pipeline connectivity will enable to uncap the wells and monetise gas from isolated and marginal fields
- Alternatively, SS LNG, CNG in Cascades will help monetise more than 1 MMSCMD OF GAS

He emphasized that the E&P activities are very cost extensive. ONGC plans to invest INR 60,000 Cr which may find in-place reserves of 84 MTOE, producing 2 MTOE/Year.

Mr Parivesh Chugh ED Gail, explained that the Renewable Energy (RE), has high potential but with much needed efforts, India has installed 133 GW of Solar (4%of the potential) and 54 GW of Wind (5% of the potential). RE is the best resource for saving foreign exchange out go and protect the environment. He also suggested that the contribution of Nuclear can add on to the contribution of RE. The point which needs consideration for enhancing the contribution of RE are:

- Land requirement
- New policy initiative of the government envisages the Cells used in solar panels be made indigenously, this has increased the cost of solar installation.
- PLF is low for solar and wind (approx. 22%)
- Transmission network not coping with scattered Solar and wind installation

He opined that the share of RE as planned by the Government (450 GW) is nearing achievement and India is sure to install more capacity.
The debate has been quite interactive and concluded with observations that:
India has now sustained efforts for E&P enhancement.
The initiative on RE and Bio Gas are appreciable
These efforts are sure to reduce import burden,
Such interactive debate to continue in future.

The debate was concluded with **Mr Ashok Verma**, Convenor, Petroleum and Natural Gas, IEF proposing a vote of thanks.

23rd Annual General Meeting

17th January 2026, IIC Annexe, New Delhi

The 23rd AGM of India Energy Forum was held on 17th January 2026 at Lecture Hall 1, IIC Annexe, Lodhi Road, New Delhi. Shri R V Shahi, President, IEF and Former Secretary, Ministry of Power, welcomed all the Members present.

One-minute silence was observed in the name of IEF Members who passed away during the year i.e. Mr. U. Kumar, Mr. K.S. Popli, and Mr. Krishnakumar and also for prominent energy professionals of India who passed during the year i.e. Dr. M. R. Srinivasan. Former Chairman of AEC and Mr. R. K. Vishnoi, Former CMD, THDCIL. He appraised the Members about the year achievements of the energy sector. Shri S M Mahajan, Secretary General, IEF gave a Report on the Activities of IEF during the year. Dr V K Garg, Treasurer, IEF presented the Audited Accounts for the Year 2024-25.

The President honoured the Members who attained the Golden Age (80 years) during the year by presenting the Golden Age Plaque. They were; Dr H L Bajaj, Former Chairperson, CEA; Shri B M Varma, Former CMD, Jharkhand Electricity Board; and Shri Subhash Sethi, Former Member, DERC.
The AGM was followed by the family get-together.

24th National Power Conference

held on 23rd December 2025, Hotel Le Meridien, New Delhi

Theme: "Towards Net Zero: Ensuring Reliability and Resilience in a High Renewable Power System"

Full Proceedings and Recommendations are annexed with this Issue of Total Energy.