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TOWARDS NET ZERO COMPLIANT POWER SECTOR FOR DEVELOPED INDIA

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Balancing Energy Access, Environmental Sustainability, and Energy Security: Essential but not Sufficient for India

R.V. SHAHI

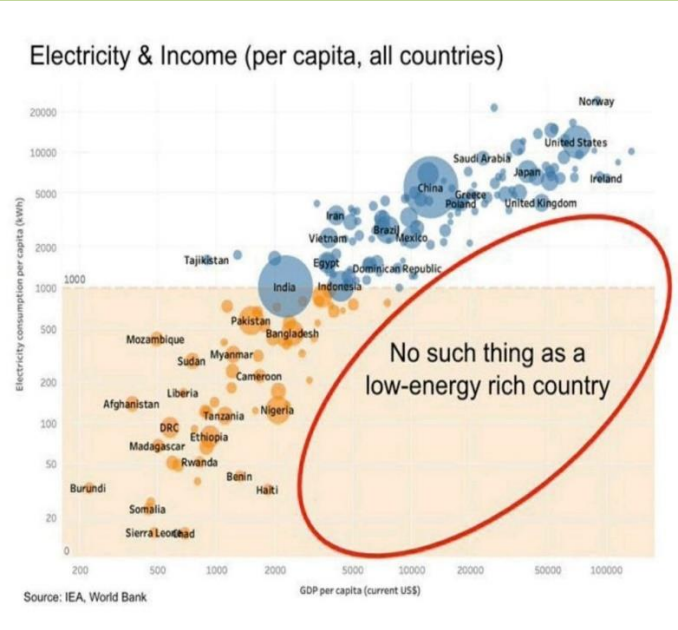
The developing world kept struggling for several decades for their economic development with mere energy access as their important goal. Simultaneously, the developed world, having achieved substantial economic development with accompanying growth of energy and electricity access, continued adding to energy consumption. A dilemma of energy access on the one hand and environmental sustainability on the other emerged as a major factor in planning of economic development. In last over fifty years, commencing from late 70's in the previous century this dilemma prevailed with varying degree of intensity affecting significantly the undeveloped and developing countries. India positioned itself, in the global debate on a significantly realistic formulation on climate change which revolved around the concept of "common but differentiated responsibility". It simply meant that India does commit to engage in planning and actions aimed at mitigating climate challenges emanating mainly from increasing carbon emissions and, hence, believes in this common agenda for mitigating this challenge, but, at the same time the extent of responsibilities shall have to be different for different countries. Those countries which have developed and already have a large amount of per capita carbon emission shall have to have much larger responsibilities as compared to those countries which are far away in their journey of economic development. Quite recently, the dilemma of development versus environment has received a different dimension, mainly in the changing dynamics of geo political situation which has brought into sharp focus the challenge of energy security. Availability of energy and its dependence on international level has seen challenging dimensions merely on account of geo political issues. Hence, the age-old dilemma has led to a trilemma of energy access, environmental sustainability, and energy security. In the context of India, the dependence of petroleum fuels, whose contribution in its overall energy basket is more than thirty percent, energy security has assumed a different dimension and a significant challenge.

Until 1980's India's industrial and economic development Policy Framework was primarily based on the concept of mixed economy in which both Government controlled public sector and those in the private sector would make their contribution, though this approach relied more on the public sector. The License Raj System did not facilitate in a substantial way financing and development of private and public owned industrial development. It is only the early years of nineties that major economic reforms were introduced facilitating private investments, de-licensing a large number of industrial and economic development enterprises, entry of FDI etc. The early phase of 1990's, when these reforms were taking place, is important note because at this stage both India and China were more or less at par in GDP and also in per capita income. It would be relevant to study and analyse on developments in both these countries during 1990 – 2024, examine and evaluate the Policy Frameworks and the implementation strategy to see how during this period the differences on various economic parameters have grown wider and wider to levels that in most of these parameters China is approximately four to five times of India. It is in this context that the requirements of balancing energy access, environmental sustainability, and energy security, are indeed essential but are not adequate enough for India to achieve a much higher rate of growth at much faster pace.

The aspirational goal set out by the present Government is indeed a laudable approach. India needs to catch up fast on GDP and, hence, its goal to progressively improve the country ranking is appropriately placed. However, the aspirational goal also must include an agenda of rapid rise in terms of per capita income. When India is ranked third in the overall GDP, we need to see its rank in the per capita income. The present Government has succeeded in re-orienting the nature of debate on economic

development, in creating among the people an aspiration and a commitment for fulfilling the aspirational agenda. The narrative should move toward the essential nature of rising of national income keeping in view the population. In retrospect the Indian Government initiative of early 90's to introduce widespread economic reform, though delayed considerably was well placed, it would need to be analysed in terms of the speed and direction of reform agenda. It would need a comprehensive analysis of different ingredients viz. infrastructure, energy and electricity, transport, basic industries, education and health, in terms of the priorities and pace of development simultaneous with the nature of ease of doing business. Still deeper analysis would be needed to evaluate why is it that during the period of about thirty years the two countries similarly placed in terms of GDP and per capita income are at such big differences in all the important parameters. During this period many of us continued to believe that it is only on account of the differences in the political structure that the differences in outcomes have been the results. Whether this assumption is realistic needs to be dispassionately examined.

Given below is a Chart which brings out the close co-relation between per capita electricity consumption and the per capita income.



The contrast between India and China is brought out clearly during last over three decades China's per capita annual consumption has risen to over 5000 KWhr. while India is about 1300 KWhr. As a result, similar difference is evident in the per capita income. Obviously, the decade of 90's was the decade of lost opportunities for power sector reform. Subsequently, post Electricity Act 2003 several initiatives in terms of policies and rules did yield significant outcomes while partial implementation of many of these did not bring the desired results. Political control on Distribution Sector and non-opening of this sector continues to have its adverse impact on not only growth of per capita electricity consumption, but on GDP growth itself. Indian Central Public Sector Undertakings, no doubt, are doing exceedingly well. However, iwhichever sector the has been opened up through proactive policies for wider participation of public and private sectors, the outcomes are clearly visible. We need to be convinced that accelerated growth of per capita consumption of electricity is the key to the accelerated growth of GDP, and, per capita electricity consumption growth at an accelerated rate will not be possible, unless Distribution Sector is opened up (it does not necessarily mean privatization of Distribution Sector).

In this context it is also relevant to mention that the projections for power sector profile till 2050 which are being contemplated, at Draft Stage though do not seem to match with an aspirational growth of Indian economy. It is necessary to re-visit and revise these projections, so as to bring these to a level of per capita electricity consumption of China as at present, to be reached by 2050. This statement itself does not give a comfortable feeling to aspire for India in 2050 to be at par with where China is now. Hence, we may plan even for a higher level of per capita power consumption than mentioned above.

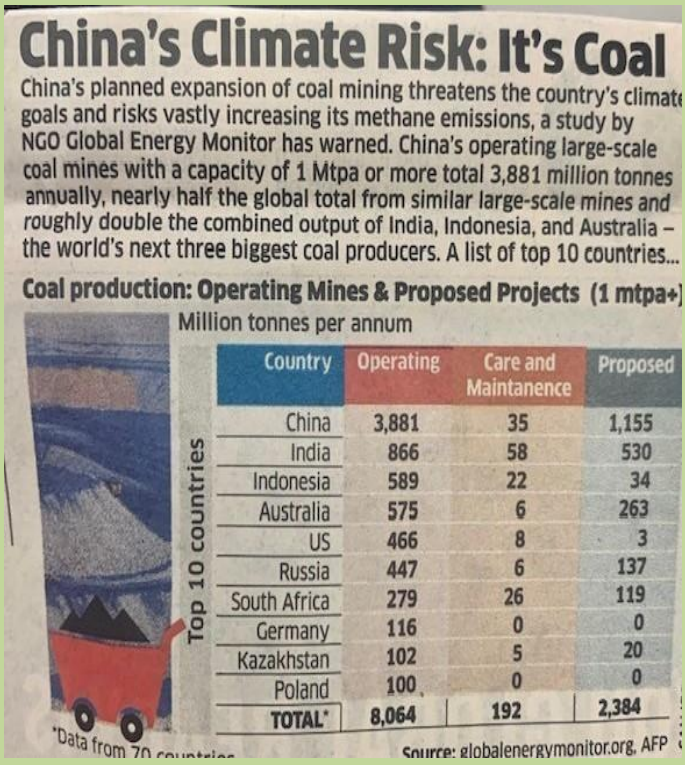
There is no short cut to raising the country's GDP and per capita income, other than an all- round industrial and economic growth. On manufacturing sector, India needs to go a long way if it has to catch up. Several steps have been taken on improving the infrastructure, and much more is needed. Perhaps on the basic industries, our consistent approach on overall global ranking based on volume of production rather than per capita ranking gave the Indian planners and developers a satisfying feeling, but it

failed to inspire for a different orbit of growth because the approach did not capture the per capita parameter. A recent Report mainly with reference to SME presents a very disturbing picture of import.

This shows the serious gaps that exist in India's manufacturing infrastructure. This again, as is well known is largely attributable to inadequacies in power supply including the highly skewed nature of the power tariff for industrial sector. India has launched upon a massive programme on Renewables. For such large scale expansion, the manufacturing capabilities in India and the size of requirements are seriously mismatched. Similar examples of different segments of economic development can be given. For a robust manufacturing sector, besides many other important requirements availability, reliability, quality, and above all price of power do stand in the way of the industry becoming competitive. Pressure on such developments continues with preference to imports rather than procuring from domestic sources. Opening up the Distribution Sector and creating a competitive power supply market is the key to providing the robust support for massive manufacturing expansion.

Post Electricity Act 2003 Generation and Transmission Sectors have indeed demonstrated a marked difference of growth compared to the past. However, it required a growth significantly higher than achieved. The track record of Distribution Sector with poor financials was completely inadequate to provide the required level of confidence for financing the Generation and Transmission capacity growth on a much larger scale. The situation is likely to continue unless we make major institutional changes to set right the electricity distribution business.

The path for energy transition over next few decades is generally on the right line. The expansion, however, as mentioned earlier, has to be re-visited with a significantly better catch-up plan. Thrust on Renewables and Nuclear needs to continue. Marginal set backs on any of these must be factored in to suitably re-adjust the target of coal-based power generation. In this context it would be relevant to see the experience of the Chinese planning which covered a very strong commitment for Renewables and at the same time substantial reliance on Thermal Power, which continues even now. The following Table would provide an insight into their planning approach.



China's Climate Risk: It's Coal

China's planned expansion of coal mining threatens the country's climate goals and risks vastly increasing its methane emissions, a study by NGO Global Energy Monitor has warned. China's operating large-scale coal mines with a capacity of 1 Mtpa or more total 3,881 million tonnes annually, nearly half the global total from similar large-scale mines and roughly double the combined output of India, Indonesia, and Australia – the world's next three biggest coal producers. A list of top 10 countries...

Coal production: Operating Mines & Proposed Projects (1 mtpa+)

Million tonnes per annum

Top 10 countries

Country	Operating	Care and Maintanence	Proposed
China	3,881	35	1,155
India	866	58	530
Indonesia	589	22	34
Australia	575	6	263
US	466	8	3
Russia	447	6	137
South Africa	279	26	119
Germany	116	0	0
Kazakhstan	102	5	20
Poland	100	0	0
TOTAL*	8,064	192	2,384

*Data from 70 countries

Source: globalenergymonitor.org, AFP

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From the Desk of the Honorary Secretary General

Dear Colleagues

Greetings!

I am pleased to share with you the September Issue of our monthly e-magazine TOTAL ENERGY. It covers the energy sectoral news and views and activities of the India Energy Forum.

The largest flagship event of renewable energy "Global RE-INVEST 2024", was on 16th to 18th September in Gujarat organised by the Ministry of New and Renewable Energy [MNRE]. Hon'ble Prime Minister of India, Shri Narendra Modi inaugurated the event. The Global Meet was a historic event that successfully drew investments commitments worth Rs 32.45 lakh crore from stakeholders, including companies, states and banks.

The government has received record investment commitments worth Rs 32.45 lakh crore up to 2030 through "shapath patras". State governments have given commitments for setting up 520 GW RE capacity and manufacturers have committed additional manufacturing capacity of 340 GW for solar modules, 240 GW for solar cells, 22 GW for wind turbines and 10 GW for electrolysers. Beyond this, banks and financial institutions have also come forward for supporting a greener and sustainable India.

This month MNRE informed that 6 GW RE capacity commissioned during June-Aug 2024 against target of 4.5 GW; non-fossil installed capacity reached 207.76 GW; RE implementing agencies have issued RE power procurement bids for 14 GW against target of 10 GW in June-Aug period

Also, two Solar parks are completed i the country and 1 lakh solar pumps installed under PM Kusum scheme. Under rooftop PM Surya Ghar Muft Bijli Yojana 3.56 lakh rooftop solar systems have been installed; 13.8 GW of solar module production commenced under solar PLI scheme; Under National Green Hydrogen Mission, 11 companies selected under the second tranche of the electrolyser manufacturing for a total capacity of 1,500 MW per annum. The offshore wind scheme was approved by the cabinet for the first time in India on 19 June 2024, and the Request for Selection (RFS) issued by SECI and bids have been floated in Gujarat. Finally, IREDA has incorporated a subsidiary, for green energy finance in Gift City in this period.

All the above efforts are made towards achieving the net zero commitment by Government of India.

During the month of September, Ministry of Power also informed that India's achievements in power sector shows that Ministry of Power has focused on Policy Reforms and introduction of new initiatives will go a long way in strengthening and empowering the Indian power sector.

The National Electricity Plan 2023 to 2032 for Central and State Transmission Systems has been finalised. This plan is aimed at meeting a peak demand of 458 GW by 2032. Under the previous plan 2017-22, about 17,700 ckm lines and 73 GVA transformation capacity were added annually. Under the new plan, transmission network in the country will be expanded from 4.85 lakh ckm in 2024 to 6.48 lakh ckm in 2032. During the same period the transformation capacity will increase from 1,251 GVA to 2,342 GVA.

Nine High Voltage Direct Current (HVDC) lines of 33.25 GW capacity will be added in addition to 33.5 GW presently operating. Inter-Regional transfer capacity will increase from 119 GW to 168 GW. This plan covers the network of 220 kV and above.

The total cost of the plan is Rs 9.15 lakh Cr. This plan will help in meeting the increasing electricity demand, facilitate RE integration and green hydrogen loads into the grid.

Government has approved 50 GW ISTS Capacity. The transmission network of 335 GW is planned to evacuate 280 GW of Variable Renewable Energy (VRE) to the Inter-State Transmission System (ISTS)

by 2030. Out of this, 42 GW has already been completed, 85 GW is under construction, and 75 GW is under bidding. Balance 82 GW will be approved in due course.

Transmission Schemes corresponding to 50.9 GW capacity have been approved during the 100 days. The total estimated cost of the approved projects is Rs. 60,676 Cr.

The approval covers transmission systems for Gujarat (14.5 GW RE), Andhra Pradesh (12.5 GW RE), Rajasthan (7.5 GW RE), Tamil Nadu (3.5 GW RE), Karnataka (7 GW RE), Maharashtra (1.5 GW RE), Madhya Pradesh (1.2 GW Thermal power), Jammu & Kashmir (1.5 GW Hydro power), and Chhattisgarh (1.7 GW).

India has a Pumped Storage Project (PSP) potential of more than 184 GW. India has planned to add 39 GW of PSP capacity by 2030 to address storage and grid stability needs. Presently, 4.7 GW has been installed. Around 6.47 GW capacity is under construction, 60 GW is under various stages of survey and investigation. Contracts for additional 3.77 GW of PSP have now been awarded.

The scope of budgetary support for the cost of enabling infrastructure for Hydro Electric Projects and Pumped Storage Projects (PSPs) has been expanded. Projects exceeding 200 MW will receive ₹0.75 crore per MW of support, while projects up to 200 MW will receive ₹1 crore per MW. Hydro projects with a capacity exceeding 25 MW, including private sector projects, awarded before 1st July, 2028, are eligible for this support. The implementation period is from 2024-25 to FY 2031-32. The total outlay for the scheme is Rs. 12,461 cr. This will support the development of 31 GW hydro potential including 15 GW of PSPs.

Government has also approved the Lower Arun Hydro Electric Project (669 MW) in Nepal. The project cost is 5792 Cr. The implementation period is 60 months.

While India aggressively pursues energy transition goals, ensuring energy security remains paramount. To meet the peak demand and base load requirements of a rapidly expanding economy, Ministry of Power has prioritized thermal capacity addition. Currently, the total thermal capacity: Coal and Lignite based stands at 217 GW. In addition, 28.4 GW capacity is under construction, out of which 14 GW capacity is likely to be commissioned by FY 2025. Further, 58.4 GW is at various stages of; planning, statutory clearances and bidding. Ministry of Power so far have awarded 12.8 GW of new coal based thermal capacity.

This month two virtual programmes were organized by India Energy Forum. On 5th September, a Webinar on “Amendment to the Non-Regulated Sector (NRS) Linkage Auction Policy, 2016 & 2020” was organized Coal Vertical and 20th September a Panel Discussion on Energy Transition was organized. Both the programmes were well attended by the IEF members and energy experts.

The next flagship event of IEF will be held on 21st October 2024 at Hotel Le Meridien, New Delhi on the theme “Towards Net Zero Compliant Power Sector for Developed India”. All members are invited to attend the programme.

With best wishes

K S Popli

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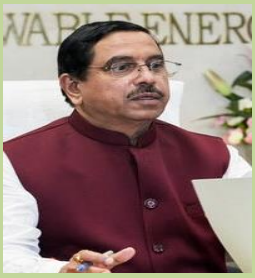
India to soon decide on non-tariff barriers on solar cell imports to boost local production: Minister Joshi



The Indian government will soon decide on imposing non-tariff barriers on solar cell imports by including them in the Approved List of Models and Manufacturers (ALMM), a move that could reshape the sector by curbing Chinese imports and promoting domestic production.

Pralhad Joshi, Union minister for new and renewable energy, recetly said that the ministry is actively considering the proposal.

The ALMM is a government-endorsed list of solar module models and manufacturers that are eligible to supply to state-backed projects. In April, Mint reported that after applying the ALMM to solar modules earlier this year, the Centre is now mulling similar measures for solar cells to support Indian-made alternatives.

When asked about extending the ALMM to solar cells, the minister said, "That is in the pipeline and thinking is on, and very shortly we will take a considered decision."

The move is aimed at reducing reliance on Chinese imports, which dominate the global solar market, and strengthen India’s domestic solar equipment industry.

The ALMM, introduced in 2021, had been suspended until FY24 due to low module supplies and concerns over its potential to slow down solar capacity additions. However, the list was reinstated this April. Currently, only India-made modules and those manufactured domestically are eligible under the ALMM, which has an approved solar module capacity of around 54 GW.

Key measures taken over recent years to bolster domestic production include a high import duty on solar modules and cells, the ALMM, and production-linked incentive (PLI) schemes designed to boost the solar module ecosystem.

As India aims to achieve 500 GW of non-fossil energy capacity by 2030—of which 292 GW is expected to come from solar power—the country will need an annual cell and module manufacturing capacity of 25-50 GW. Presently, India's solar cell manufacturing capacity stands at just over 6 GW.

“Our installed renewable energy capacity has increased from 75.52 GW in March 2014 go 203 GW now. That is a 165% increase in 10 years. India's progress serves as a model for other countries seeking to transition to a low-carbon economy,” Joshi said recently at the Bharat Electricity, PowerGen and Indian Utility Week 2024.

The minister emphasized the government's commitment to expanding renewable energy deployment, enhancing energy efficiency, and driving innovation across the energy value chain. He also invited global investors and companies in the renewable energy and green hydrogen sectors to explore opportunities in India’s "evolving energy landscape."

These efforts align with India's broader goal of achieving 500 GW of installed non-fossil power generation capacity by 2030 and reaching net-zero carbon emissions by 2070

Need to bring startups to boost green hydrogen: Pralhad Joshi

New and Renewable Energy Minister Pralhad Joshi recently stressed on the need to bring startups into the green hydrogen sector to bring new ideas and involve youth. Addressing a curtain raiser of the second International Conference on Green Hydrogen India 2024

New and Renewable Energy Minister Pralhad Joshi recently stressed on the need to bring startups into the green hydrogen sector to bring new ideas and

involve youth. Addressing a curtain raiser of the second International Conference on Green Hydrogen India 2024, Joshi said that there will be over 120 exhibitors in the event which is scheduled on September 11-13, 2024 in Delhi.

He said for pushing green hydrogen mission, we need to bring startups as it needs young blood and new ideas.

The event is to further green hydrogen mission for which government had allocated Rs 19,744 crore. There will be over 120 stalls in the exhibition on product and technology on green hydrogen.

There will be 150-plus national and international speakers. The European Union, Australia, Singapore and the Netherlands will be region of interest and there will be sessions on these. The event is being organised by the Ministry of New & Renewable Energy in association with Office of the Principal Scientists, Government of India. The event partners are Ficci and Solar Energy Corporation of India.

Make in India Powers Energy Transition: Fuels renewable energy equipment boom

India's solar PV module manufacturing capacity increases from 2.3 GW to 67 GW under 10 years of Make in India

As "Make in India" initiative of Government of India completes 10 years, it has been proven to be a driving force in promoting investment, fostering innovation, and building world-class infrastructure to transform India into a hub for manufacturing, design, and innovation. It continues to play a pivotal role in developing a robust manufacturing sector for renewable energy in the country. One of the key focuses of the Government is to support and incentivize domestic manufacturing in the renewable energy sector. The renewable energy equipment manufacturing sector in India is well-positioned to meet domestic demand and serve the global market through exports, establishing India as a key player in the renewable energy manufacturing space.

Union Minister for New and Renewable Energy Shri Pralhad Joshi posted on X " India's renewable energy sector has contributed immensely to the #10YearsOfMakeInIndia. From PLI to VGF, we are extending all possible support to our domestic industries. We are committed to establishing India as a major global player in the complete value chain of clean energy solutions."

Measures taken to promote domestic renewable energy equipment manufacturing: Several measures have been taken by the Union Government to promote the domestic manufacturing of renewable energy equipment, such as solar PV modules, cells, and upstream components like ingots, wafers, and polysilicon. These efforts also include the manufacturing of wind turbines, electrolysers for green hydrogen production, and battery energy storage systems for utility-scale electricity storage applications.

The Government's efforts span financial, fiscal, and policy measures aimed at bolstering domestic production. Financial incentives include the Production Linked Incentive (PLI) scheme for setting up fully or partially integrated manufacturing units for solar PV modules and upstream components. Additional support measures include Viability Gap Funding (VGF) for stationary Battery Energy Storage System projects and incentives for manufacturing electrolysers and green hydrogen production under the National Green Hydrogen Mission. Fiscal incentives include concessional customs duties on inputs required for domestic manufacturing, waivers on import duties for specific capital goods needed for solar PV cell and module production, and impositions of basic customs duties on imports of solar PV modules, cells, and inverters.

Under Union Minister for New and Renewable Energy Shri Pralhad Joshi, policy measures have been taken through provisions such as the Domestic Content Requirement (DCR) in schemes like PM Surya Ghar: Muft Bijli Yojana, PM-KUSUM, and CPSU Scheme Phase-II, where Government subsidies are provided. Other policies include linking PLI amounts to local value addition, Quality Control Orders for solar equipment, and approved lists of models and manufacturers for solar and wind technologies.

Boost to Solar PV manufacturing: Solar PV manufacturing remains a significant focus of the Government's efforts. The Government is committed to making India self-reliant (Atmanirbhar) in solar PV manufacturing and establishing India as a major player in the global value chain. This commitment is demonstrated by the Rs. 24,000 crores outlay for the PLI Scheme for High-Efficiency Solar PV Modules and additional policy interventions, such as the imposition of basic customs duties and domestic content requirements.

Since 2014, India's installed solar PV module manufacturing capacity has grown from 2.3 GW to approximately 67 GW, thanks to various measures under the "Make in India" initiative. This increase makes India capable of meeting domestic demand while also catering to exports. The country has seen rapid growth in solar PV module production capacity, jumping from 8 GW in 2021 to 67 GW per year in the last 3.5 years alone.

Furthermore, over 48 GW of fully or partially integrated solar PV module manufacturing projects are currently under implementation under the solar PLI scheme. Once completed, these projects will attract an investment of approximately Rs. 1.1 lakh crores and create direct employment for around 45,000 people. The solar PLI scheme will also bring cutting-edge solar PV module manufacturing technology to India, reducing the country's dependence on imports. With the solar PLI scheme and the Government's supportive policy framework, India is projected to achieve 100 GW per year of solar module production capacity by 2026, which will not only satisfy domestic demand but also contribute to earning foreign exchange through exports.

Indian wind and solar projects see 4 percent growth in FY24, cash collection cycles shorten

Indian wind and solar project-finance transactions witnessed a 4 Percent growth in power generation in the financial year ending March 2024 (FY24), driven by new assets becoming operational, according to a report by Fitch Ratings. However, overall power generation remained slightly below one-year P90 forecasts.

P90 is a statistical measure indicating the level of energy output that is expected to be met or exceeded 90 Percent of the time, providing a conservative estimate that financiers use to assess project viability.

Solar generation improved by 2 Percent in FY24, matching the one-year P90 estimate, while wind generation rose by 8 Percent, though it was still 1 Percent below the one-year P90 estimate. This marks an improvement from FY23, where wind generation was 5 Percent lower than the P90 forecast.

Fitch's report highlights that the enhanced performance of these renewable assets is attributed to operational improvements and favorable weather conditions. "The stability and predictability of solar resources relative to wind differentiate these asset types," noted Fitch. Solar projects have consistently outperformed wind assets in terms of generation against load factor estimates.

The report also indicates a significant improvement in cash collection cycles for the rated restricted groups (RGs) in FY24. The receivable days for revenue from the sale of power dropped to around 100 days, down from about 140 days in FY23. This improvement was supported by the Indian government's Late Payment Surcharge scheme, which has facilitated the clearance of overdue payments by state distribution companies (discoms).

"Receivable days at Fitch's rated portfolio improved to around 100 days in FY24, from about 140 days in FY23. Both wind and solar asset collections improved on an aggregate basis," Fitch stated in the report. The report noted that most state discoms have significantly reduced their payment delays, with only a few, such as those in Rajasthan, still showing delays.

The Fitch-rated portfolio consists of 110 wind and solar assets with a total capacity of 6,198 MW. Solar assets accounted for 65 Percent of the total capacity, while wind projects contributed the remaining 35 Percent . The report observed that the majority of the capacity (56 Percent) is contracted with state-owned Indian discoms, followed by sovereign-owned

entities such as NTPC and SECI, which account for 32 Percent of the off-take.

The report concludes that while challenges remain in the renewable energy sector, particularly with regard to resource availability and payment cycles, the outlook is positive. The continued improvement in generation performance and cash collection cycles suggests a more stable and predictable future for India's wind and solar projects.

Fitch emphasized the importance of continued reforms and operational enhancements to sustain this growth trajectory, particularly in light of India's ambitious renewable energy targets.

Wind, solar need to grow three times faster than current yearly rates to limit warming to 1.5°C

A new analysis by Climate Analytics and New Climate Institute that delves into wind and solar-two gamechanging technologies in the climate fight-reveals the pace at which both need to scale in key countries to limit warming to 1.5°C. Across 11 countries that account for over 70% of current wind and solar power, the technologies need to grow fivefold by 2030 (three times faster than current yearly rates) and eightfold by 2035 to meet global climate goals.

Climate Analytics is a global science and policy institute while NewClimate Institute is a think tank supporting implementation of action against climate change in the context of sustainable development around the world.

According to the report, India is set to more than triple wind and solar capacity by 2030 compared to 2022 but would need further international climate finance support to scale five-fold to over 600 GW to meet growing demand and move away from coal dependence in line with 1.5°C.

With electricity demand growing rapidly in India, wind and solar will need to continue accelerating to meet demand growth while phasing down coal power.

It finds India's wind and solar generation needs to grow five times by 2030 to align with 1.5ºC, reaching around 1100 TWh of wind and solar.

Just over 600 GW of wind and solar power (460 GW of solar and 150 GW of wind) would need to be installed by 2030. At 2022 levels it was 126 GW.

At the current pace of rollout, India is projected to reach around 400 GW of wind and solar by 2030. This falls short of the capacity needed in 2030 by 140 GW of solar and 70 GW of wind. As countries prepare new 2035 targets for their updated NDCs, India has the opportunity to show climate leadership by including a 1.5-aligned target of 990 GW of solar and 210 GW of wind capacity installed by 2035, full achievement of which would require international climate finance support. Long-term planning and scaled up international climate finance will be vital to supporting India in rapidly move away from coal dependence.

To accelerate the growth of wind and solar in line with the Paris agreement, it is also crucial to roll out sufficient storage solutions to support the flexibility of wind and solar power, ensuring the rising energy demand during non-solar hours is met.

The report aims to guide governments as they present new climate targets following a COP28 commitment to triple renewables in line with 1.5°C by 2030. Across the 11 countries, wind has a key nearterm role, providing more electricity than solar until the mid-2030s in a 1.5ºC aligned transition. By 2050, solar becomes dominant, providing around half of total electricity generation, and wind around a third.

“Wind and solar are the bread and butter of the energy transition and represent the most powerful tools in our toolbox. As countries update their climate targets, sending a strong, clear message on the central role of wind and solar could be the defining policy action in getting the world on track for 1.5°C,” says Climate Analytics CEO Bill Hare.

Enhanced international cooperation, including the provision of grants and concessional finance help to mobilise private capital, is urgently needed to ensure

emerging and developing countries benefit equally from the renewable rollout.

There is no single way to translate global goals to the national level. A country's wind and solar rollout depends on a range of factors, including forecast electricity demand, the pace of fossil phase-out needed, the availability of other renewable technologies like hydropower and geothermal, and the split between wind and solar. This new analysis represents one evidence point to guide countries as they prepare new 1.5°C-aligned climate targets.

"Industry stands ready to deliver the rapid roll out of wind and solar necessary to meet our climate goals. Businesses are calling on governments to set ambitions, specific and actionable targets in their NDCs and energy plans – this creates the market certainty needed to unlock investment and ensure a robust pipeline of renewable projects. That's why we are publishing an open letter, calling on leaders to Now Deliver Change in their upcoming NDCs," says Louise Burrows, Head of Government Affairs, Global Renewables Alliance.

Climate finance key to energy transition in India, says report

India's wind and solar generation needs to grow five to six times by 2030 to align with the 1.5 degrees C goal, reaching 900-1200 terrawatt hour (TWh) of wind and solar energy, a new report has projected.

At the current pace of roll-out, India would fall short of the needed capacity in 2030 to meet the 1.5 degrees C alignment, with the shortfall being around 140 GW of solar and 70 GW of wind. The 1.5 degrees C refers to one of the targets of the Paris agreement on climate, keeping global warming to under 1.5 degrees C above pre-industrial levels.

India will require large-scale investment to help phase down coal power, accelerate renewables deployment, and drive grid expansion, and international support will be key in supporting the energy transition with climate finance, the report by Germany based Climate Analytics and New Climate Institute said.

India's power sector remains heavily dependent on coal, which provided 75% of electricity generation in 2023.

At COP28,the climate conference in Dubai last year, governments agreed to triple global renewable capacity by 2030 globally. The report highlights the potential implications of this COP28 decision at the national level including for India.

"High-income countries will need to provide substantially increased climate finance to support emissions reduction abroad, in line with their 'fair share of climate action. Achieving these benchmarks in lower-income countries is therefore a global responsibility, rather than a domestic responsibility," the report states.

It also projects that if India is to align with 1.5 degree S C goal, fossil fuels must exit the Indian power sector before 2045. Fossil fuel generation must fall by 20- 44% between 2022 and 2030, it adds.

India's current nationally determined contribution (NDC) is to cut the emissions intensity by 45% below 2005 levels in 2030. India has also pledged to become net zero by 2070.

The country's current renewable targets are to reach 319 GW of solar and 110 GW of wind by 2030, according to the Indian National Electricity Plan 2022. Under current policies and market conditions, the International Energy Agency estimates that solar capacity will reach 238 GW in 2028, up from 83 GW of solar in 2022. Wind capacity is projected to reach 69 GW in 2028, up from 42 GW in 2022.

Importantly, the report has underlined that developing countries cannot achieve their renewable energy goals without action on climate finance, which is central to driving the clean energy transition.

HT reported on September 17 that there is no consensus on the most critical COP29 (the coming climate conference in Baku) negotiated agenda yet which is agreeing on a fair and ambitious New Collective Quantified Goal on climate finance (NCQG).

The new financial goal is to be set from the floor of $100 billion (a year) for the post-2025 period. Sources said the two major outstanding issues on NCQG are the quantum of the fund and the list of “contributors.”

Developed countries are pushing to expand the contributor base to the fund by inducting emerging economies (not necessarily historical polluters) in the list of contributors. “They are not ready to budge,” an official said recently.

Developing countries are clear that they will stick to the provisions of the Paris Agreement and the United Nations Framework Convention on Climate Change (UNFCCC) which state that finance must flow from developed to developing countries. Developing countries expect contributions in the trillions annually from developed nations, for climate change mitigation efforts as defined in their nationally determined contributions.

Apart from climate finance needed for transition, land conflicts, lack of access to land to set up solar and hydro projects, and population density are likely to pose a serious challenge to India’s target of achieving net zero emissions by 2070, the Council on Energy, Environment and Water flagged in a study earlier this month. While the country has a renewable energy (RE) potential of over 24,000 GW, even reaching the 7,000 GW required to achieve net-zero emissions by 2070 will require a holistic approach to address challenges such as land access, climate risks, land conflicts, and population density, that study added.

Maharashtra no 2 for cumulative rooftop solar installations in the country

As per the latest report released by Mercom India, Maharashtra has emerged as the second-largest state in India for cumulative rooftop solar installations, following Gujarat. Maharashtra's contribution to the country's total solar Photovoltaic (PV) installations stands at an impressive 13.3 Percent , as per the report. Sources said that the Mumbai Metropolitan Region (MMR) accounted for 8 Percent of the state's solar rooftop installed capacity.

The report highlighted that while India's total cumulative rooftop solar installations reached 11.6 GW by June, Maharashtra boasted an installed capacity of 1.5 GW, second only to Gujarat's 3.2 GW. "Maharashtra has also added the second-highest rooftop solar capacity in the second quarter of 2024 -- April to June -- with 95 MW. The installations increased by 77 Percent from 53.4 MW the previous quarter, which was Jan to March," the report stated. Notably, 74 Percent of the state's quarterly capacity additions were attributed to installations under the Prime Minister – Surya Ghar programme.

State energy department officials credited this growth to the Ministry of New and Renewable Energy's (MNRE) subsidy scheme, which provides a 20 Percent to 40 Percent subsidy on solar installations. This initiative has motivated many citizens and housing societies to adopt solar energy for partial or complete electrification of their homes, bungalows, and buildings. By generating solar power for the grid, residents have not only benefited from govt subsidies but have also experienced a reduction of 50 Percent or more in their monthly electricity bills.

Although the initial investment in solar energy is substantial, it is a one-time cost that comes with govt support. The solar-generated electricity can be utilised to power staircase lights, street lights within society premises, and even provide hot water for bathing purposes. Many societies have also implemented solar energy for their gardens and other common utilities, as the generated power can be shared among all residents.

MSEDCL managing director Lokesh Chandra said the power utility has received over 1.3 lakh applications across Maharashtra, with 26,000 rooftop solar installations completed and more than 70,000 applications approved to date. The MSEDCL is set to receive a subsidy of Rs 150 crore from the central govt under the PM Surya Ghar Muft Bijli Yojana, which will be distributed among power consumers. "The Union govt decision to further continue this scheme will encourage more residential consumers to switch to solar," he said.

A report from Mercom also revealed that renewable energy accounts for approximately 39 Percent of Maharashtra's power mix, with solar contributing

around 15 Percent. The state's cumulative solar installations stand at about 7.5 GW. "During the first half of 2024, the state installed approximately 800 MW of large-scale solar projects. Maharashtra has about 17 GW of solar projects in the pipeline, with the majority stemming from the Mukhya Mantri Saur Krishi Vahini Yojana – 2.0," the report added.

Madhya Pradesh and Uttar Pradesh to collaborate on a 2 GW solar project

Reportedly, Madhya Pradesh and Uttar Pradesh are expected to collaborate on a new 2 GW solar power project aimed at meeting the seasonal electricity demands of both states.
The solar plant is designed to supply power to Uttar Pradesh in the first half and to Madhya Pradesh in the second half of the year. The first half of the project will have capacity of 2 GW and is proposed to be built in Morena, Madhya Pradesh. Invitations for bids are expected to be issued within four months, with construction planned to begin within 12 months.

GERC to Amend Renewable Energy Rules to Allow Transfer of Connectivity Rights

The Gujarat Electricity Regulatory Commission (GERC) has decided to allow amendments to its renewable energy connectivity regulations to enable the transfer of connectivity rights in certain cases.

Background
The Gujarat Energy Transmission Corporation (GETCO) had filed a petition seeking amendments to an order restricting the transfer of grid connectivity for renewable energy projects.

GETCO requested the transfer of connectivity rights in cases where project developers or park developers are developing renewable energy projects for multiple entities.

The existing regulations prohibit connectivity transfer once granted and require the same entity that obtained connectivity to sign transmission/wheeling agreements.

This created challenges for renewable energy project and park developers who obtain connectivity for aggregate capacity but need to transfer it to individual project entities.

Commission's Analysis
The Commission noted that the developer model is widely used in the renewable energy sector, particularly for wind projects, with smaller entities often relying on this approach.

Restricting the transfer of connectivity rights could hinder the development of such projects and pose challenges for smaller industries. Allowing connectivity transfer in specific cases could lead to more efficient use of transmission infrastructure.

However, providing flexibility to developers must be balanced with preventing the speculative holding of connectivity rights.

Additionally, the Gujarat Renewable Energy Policy 2023 acknowledges the transfer of projects between developers and other entities, reinforcing the relevance of this issue.

Stakeholders emphasized that requiring individual connectivity applications for each small project would be inefficient. Moreover, applying new restrictions retroactively on previously granted connectivity rights could disrupt ongoing projects.

Considering these factors, the Commission decided to permit amendments enabling connectivity rights transfer in certain cases for renewable energy project and park developers while implementing safeguards to prevent misuse.

The decision seeks to balance promoting renewable energy development and ensuring the effective use of grid resources.

Recently, GERC ruled that wind power developers must share benefits from selling all types of carbon credits with Gujarat Urja Vikas Nigam and not just from the Clean Development Mechanism.

Earlier, GERC allowed net metering for rooftop solar systems with a capacity of 1 kW and up to 1 MW. Gross metering was permitted for rooftop solar systems with 10 kW and up to 1 MW capacity.

THDC to harness 6,790 MW of pumped hydro power storage at Rs 33,600 cr investment

THDC India recently said it has signed a pact with the Maharashtra government for harnessing six PSPs (pumped hydro power storage project) totalling 6,790 MW with an investment of over Rs 33,600 crore. The agreement aims to facilitate the developer in conducting surveys, investigations, preparing Detailed Project Reports (DPRs), and establishing projects in a time-bound manner while adhering to the prevailing rules, policies, and schemes of both the central and state governments, a company statement said.

According to the statement, the memorandum of understanding (MoU) was signed with the Department of Water Resources, Government of Maharashtra, for harnessing of Pumped Storage Energy through six PSPs, totalling 6,790 MW capacity and involving a proposed investment of more than Rs 33,600 crore.

The six planned projects under this MoU are Malshej Ghat Pumped Storage Project (700 MW), Aruna Pumped Storage Project (1,950 MW), Kharari Pumped Storage Project (1,250 MW), Humbarli Birmani Pumped Storage Project (1,000 MW), Aruna Kolamb Pumped Storage Project (1,200 MW), and Morawadi Majarewadi Pumped Storage Project (690 MW).

As part of the collaboration, the Maharashtra government will facilitate the process of water allocation necessary for the projects, including both initial filling and annual consumptive requirements, upon receiving applications from THDC India. In return, THDC is dedicated to preparing Detailed Project Reports (DPRs) for each project and submitting them for approval to both the Central Electricity Authority (CEA) and the state water resources department.

Incentives, local support at state level can boost biogas sector; states can save Rs 50K cr, says industry

Additional financial assistance, easy access to finance and local support mechanisms are some of the measures that the state governments can take to promote the biogas sector which can help them save Rs 50,000 crore in various means, Indian Biogas Association (IBA) has suggested. Talking to PTI in an interview, IBA Chairman Gaurav Kedia said, "States can bolster central initiatives for the sector by offering additional financial incentives, facilitating easy access to credit, and providing local support mechanisms."

He stressed that involvement of state governments is critical to achieve the larger goal of self-reliance in energy.

State governments can save up to Rs 50,000 crore through the biogas sector, he said, adding that savings could be in the form of waste management and pollution reduction, biogas production and health improvements of population.

He cited the example of the Uttar Pradesh government, which offers an additional Rs 75 lakh per ton of production capacity (up to Rs 20 crore) on the top of central government subsidies for biogas projects.

Such efforts can accelerate the growth of the sector and encourage more widespread adoption of biogas technology, he explained. He suggested that states can further enhance the sector by improving infrastructure around biogas plants.

For bio-energy enterprises investing Rs 50 crore or more, infrastructure like roads can be critical for ensuring smooth operations and reducing logistical costs, he pointed out.

He further stated that another area where state governments can contribute is in the allocation of underutilised land for biogas projects.

States could also explore integrating biogas facilities within existing agricultural operations, and industries generating organic waste streams, thereby streamlining the setup process and improving overall efficiency, he suggested.

Land is becoming an important commodity for any greenfield projects and state government can play an important role in the biogas industry.

There is a delay in almost 50 per cent of the plants due to the unavailability of land in various states, he noted. State governments can also play a critical role in creating a sustainable supply chain for organic waste or biogas plant substrate, which is essential for the continuous operation of biogas plants, he suggested.

More than 80 per cent of the operational biogas plants are unable to run at full capacity due to the unavailability of raw materials, he pointed. Collaboration with local agricultural and municipal sectors to establish a reliable feedstock supply from agricultural residues and food waste would enhance the sector's efficiency, he suggested.

Promoting the collection of biodegradable waste through state-level initiatives would also contribute to effective waste management, reducing the burden on landfills and mitigating environmental pollution, he stated.

"If implemented effectively, state-driven support for biogas projects could result in significant economic and environmental benefits. Achieving just 10 per cent of the SATAT target through these incentives could lead to savings of up to Rs 50,000 crore in areas such as waste management, biogas production, health improvements, and pollution reduction, " he said.

The biogas sector in India has witnessed significant momentum due to the central government"s proactive policies and incentives.

Central financial assistance from the Ministry of New and Renewable Energy, buy-back possibility under the Sustainable Alternative Towards Affordable Transportation (SATAT) scheme by Oil Marketing Companies (OMCs), and incentives for the production of Fermented Organic Manure (FOM) are among the measures introduced to accelerate the adoption of biogas technology across the country.

Agrivoltaics - Panacea for India's Energy Transition with Solar Power

The world needs to rapidly accelerate its energy transition towards net zero. It may already be too late for achieving the goal of restricting global warming to 1.5 degree Celsius. Restricting warming to 2 degrees is absolutely essential. For India, the transition away from fossil fuels would be dependent primarily on the use of solar energy along with storage. Solar power has the dominant share in the goal of achieving 500 GW of fossil fuel-free capacity by 2030; CEA estimates that by 2030, solar capacity is expected to increase to over 270 GW.

India has successfully achieved greater momentum in the development of solar power. India now has over 87 GW installed solar capacity, which is over four times what it had wanted to achieve by 2022 – when it launched its National Solar Mission. As India is a densely populated country and solar power needs a few acres for the installation of 1 MW of solar power, there is a natural concern whether there would be enough land to be able to provide all the demand for energy as India makes its transition to becoming a developed country.

Agrivoltaic or agriPV are a recent innovation. The same piece of land is used both for agricultural production as well as for solar power generation. The solar panels can be mounted at a height to allow crops to grow on the field. The angle of the panels can be adjusted remotely to maximise the value of the crops being produced from the field and the electricity being generated from the solar panels installed at a height on the same field. For India, going forward, this has the potential of also being an adaptation solution. When average temperatures rise, these solar panels would lower the temperature on the ground and delay the adverse impact on agricultural production from global warming.

With more than 25 pilot projects across India on private land, local agricultural universities, and government-owned property, there is growing momentum in demonstrating the proof-of-concept and potential advantages of this technology. The key results that would need to be analysed is the higher cost of solar power because of the elevated structures, lower density, specific adaptions to the

agricultural activity and the associated costs of grid integration. Globally, agriPV has showcased increased land use efficiency in some cases, reduced evaporation rates owing to the shade of panels, decreased incidents of soil erosion compared to ground-mounted systems, and protection of crops against extreme meteorological conditions.

Germany, France, Italy, and Japan have already put in place national frameworks for agrivoltaics so that the right balance between preserving food production and security with energy generation is mandated. After the pilot projects in different agro-climatic regions of the country have been implemented with the necessary learnings, work on designing regional frameworks for the large-scale scaling up of agrivoltaics would need to be taken up.

There is still considerable solar power potential from wastelands in the country. This can be developed at an accelerated pace to see that our target of 500 GW of non-fossil fuel capacity is achieved. Further, with the cost of solar and storage having become cheaper than electricity from new thermal, all additional demand of electricity can be met by rapid scaling up of solar power with storage. This is the cheapest option for meeting additional demand of electricity.

The biggest advantage of agrivoltaics is that it would increase the farmers' incomes substantially, which is a fundamental goal. It would create decentralised dispersed employment opportunities and incomes. Since the solar power would be generated near the load centre, the additional costs of long distance transmission from large solar projects would not be needed. The transition to meeting the entire electricity needs for irrigation from solar power would also be greatly facilitated.

As the programme is rolled out, a variety of viable business models would emerge. These could range from the farmers leasing land for the installation of the panels to the farmer himself investing in the solar panels with the provision of credit or easy loans. The large scale deployment of agrivoltaics would need a smart policy framework to make it attractive for private service providers to emerge for the installation and maintenance of these solar panels; and to arrive at mutually beneficial commercial relationships with the farmers on whose lands these panels would be installed. India, with over 180 million hectares of arable land, showcases an incredibly vast potential for Agrivoltaics deployment. A latest estimate of its potential in the GIZ's report, 'Agrivoltaics in India' ranges between 3.2 to 13.8 TW. The lower estimate of this potential with storage solutions could achieve approximately eight times the 2030 target of 500 GW of non-fossil fuel installations. This would be more than enough to meet our per capita needs when we become a developed country.

India's Solar PV Manufacturing Expands Significantly

India's solar photovoltaic (PV) module manufacturing capacity has seen an impressive increase from 2.3 GW in 2014 to 67 GW in 2024, driven by the government's "Make in India" initiative and key policy interventions. According to the Ministry of Renewable Energy, the capacity jump reflects the government's efforts to make India self-reliant (Atmanirbhar) in solar PV manufacturing and establish it as a global leader in the clean energy value chain. The Production Linked Incentive (PLI) scheme, with an outlay of Rs24,000 crore for high-efficiency solar PV modules, has been a significant factor in this growth.

In addition to the growth in solar PV modules, other renewable energy equipment manufacturing— such as wind turbines, electrolysers for green hydrogen, and battery energy storage systems—has also gained momentum. The solar PV manufacturing sector has surged notably, with production capacity rising from 8 GW in 2021 to 67 GW in 2024.

Currently, over 48 GW of solar PV manufacturing projects are under implementation, expected to attract investments of around Rs.1.1 lakh crore and generate employment for approximately 45,000 people. These initiatives are vital in meeting domestic demand while positioning India as a key player in the global renewable energy sector.

India’s coal production up 6.48% in FY25, dispatches grow by 5.14%

India’s coal production has seen a significant uptick in the first five months of the fiscal year 2024-25, with the ministry of coal reporting a 6.48% increase, bringing the total output to 384.08 million tonnes (MT) by August 2024. This marks a notable rise from 360.71 MT produced during the same period in the previous fiscal year

Coal India Limited (CIL), the country’s largest coal producer, contributed 290.39 MT to this figure, reflecting a 3.17% growth compared to 281.46 MT produced between April and August 2023. Captive and other entities recorded a sharp 30.56% surge in production, reaching 68.99 MT during the same period, up from 52.84 MT in the previous year.

In terms of coal dispatch, the cumulative figure up to August 2024 stood at 412.07 MT, a 5.14% increase from 391.93 MT in the same period last year. CIL's coal dispatch rose by 1.51% to 309.98 MT, while captive and other entities saw a significant 31.48% growth, dispatching 76.95 MT compared to 58.53 MT in the corresponding period of the previous year. This robust growth in production and dispatch underscores the sector's strengthened logistics and commitment to meeting the country’s coal demand.

India's coal imports rise 41% to 25.23 MT in July: mjunction

India's coal import rose by 40.56 per cent to 25.23 million tonne (MT) in July, according to data compiled by B2B e-commerce platform mjunction services. The country's coal import was 17.95 MT in the corresponding month of previous fiscal.

Coal import also rose to 100.48 MT in the April-July period of the ongoing fiscal from 89.11 MT a year ago, it said.

mjunction MD & CEO Vinaya Varma said the import demand is likely to be buoyant in coming weeks, ahead of the festive season next month.

"Imports of non-coking coal showed an uptrend amid softening of prices in the seaborne market. There, however, was a drop in coking coal volumes due to tepid demand from the steel mills," mjunction services said.

Of the total imports in July, non-coking coal's share stood at 16.52 MT, against 10.16 MT imported in the same month a year ago. Coking coal import volume was 4.81 MT against 5.03 MT in July last fiscal.

During the April-July period, non-coking coal import was higher at 65.64 MT compared to 56.69 MT a year ago. Coking coal import was marginally up at 20.26 MT as against 20.24 MT.

Coal and Mines minister G Kishan Reddy had earlier said that India should increase domestic production of the fossil fuel and reduce coal imports.

India's coal import rose 7.7 per cent to 268.24 MT in FY24. In July, coal production rose 6.36 per cent year-on-year to 74 MT.

India's total coal production in April-July was 321.39 MT, up 9.6 per cent from the same period a year ago.

India's Coal Imports See Marginal Increase Amid Surge in Coal-based Power Generation

India, endowed with the fifth-largest coal reserves in the world, stands as the second-largest consumer of coal, driven by a rapidly growing economy. However, the current consumption landscape reveals a critical need for imports, particularly for coking coal and high-grade thermal coal, which are not sufficiently available within domestic reserves. This shortfall necessitates imports to support key industries, including steel.

Coal imports during April-July period of FY 2024-25 experienced a marginal increase of 0.9%, reaching 90.51 million tonnes (MT) compared to 89.68 MT in the previous year. Notably, non-coking coal imports increased by 2% during this timeframe, while coking coal imports declined by 2.6%. In July 2024 alone, coal imports rose by 15.9%, reaching 21.81 MT compared to 18.82 MT in July 2023.

Despite a notable growth of 10.18% in coal-based power generation from April 2024 to July 2024 compared to the same period last year, imports for blending purposes decreased by 8.2% during the same period. This decline underscores India's steadfast commitment to achieving self-sufficiency in coal production and reducing reliance on imports. Increase in coal import for power sector is attributed to the substantial quantity of coal import by imported coal-based power plants (designed to utilize imported coal only) i.e. 17.69 MT during this period, up from 10.12 MT in the corresponding timeframe last year. Additionally, coal imports by the non-regulated sector saw a significant decline of 11%, falling from 50.53 MT to 44.97 MT during the same time frame.

Moreover, coal production during the April-July 2024 period demonstrated a commendable increase, reaching 321.40 MT compared to 293.35 MT in the same period of FY 2023-24, marking a growth of 9.56%. This upward trend reflects the government's ongoing efforts to streamline coal usage and enhance domestic production capabilities.

The Ministry of Coal continues to implement strategic initiatives aimed at bolstering coal production and improving availability. These efforts are not only focused on safeguarding foreign reserves but also on enhancing the nation's energy security. The proactive measures taken by the government to increase domestic coal output will ultimately reduce dependence on imports and contribute to the overall sustainability of India's energy landscape. In conclusion, while the dynamics of coal imports present certain challenges, the Indian government's strategic focus on increasing coal production and curbing coal import reflects a positive outlook for the country's energy future. The commitment to achieving self-sufficiency in coal production is vital for maintaining economic growth and ensuring energy security in the coming years.

Coal Ministry Achieves 411.62 MT Production in FY 2024-25

कोयला मंत्रालय
MINISTRY OF COAL
सत्यमेव जयते

The Ministry of Coal has achieved a remarkable upswing in coal production during the fiscal year 2024-25 (up to September 12th), reaching a provisional figure of 411.62 million tonnes (MT). This marks a significant increase from the 388.86 MT produced during the same period last year, reflecting a commendable growth rate of 5.85%, despite adverse climatic conditions that challenged mining operations. Coal India Limited (CIL), a key player in this sector, has also demonstrated resilience with its production rising to 311 MT during the same period, marking a growth of 2.80% compared to 302.53 MT in the corresponding period of the previous year. This growth is even more notable given the interruptions in mining activities in CIL subsidiaries due to heavy rains.

Coal dispatch has also experienced a substantial uplift, reaching 442.24 MT during the fiscal year 2024-25 (up to September 12th), compared to 421.29 MT in the same period last year. This reflects a robust growth rate of 4.97%. Furthermore, the dispatch of coal to power plants has shown significant growth of 4.03%, achieving 362.65 MT, underscoring the sector's commitment to meeting the nation's rising energy demands.

The current coal stock levels further highlight the sector's efficiency and preparedness. As of September 12, 2024, the coal stock held by coal companies has surged to 76.49 MT, showcasing an impressive annual growth rate of 49.07%. In parallel, the coal stock at domestic coal-based thermal power plants has reached 36.58 MT, representing a remarkable growth of 43.68%. These figures underscore the sector's robust performance and its enhanced capacity to ensure an uninterrupted power supply and effectively meet the nation's energy needs.

These statistics vividly illustrate the resilience and dedication of the coal sector in driving the country's energy security forward. The Ministry of Coal remains steadfast in fostering sustained growth and operational efficiency within the sector, demonstrating its unwavering commitment to the nation's energy needs. Through strategic planning and adaptive measures, the Ministry continues to strengthen the coal industry's pivotal role in India's energy landscape, ensuring that it remains a cornerstone of the country's development and progress.

Coal Ministry Reviews "Producing and Expected to Produce" Captive/ Commercial Coal Mines

Coal Ministry recently conducted a crucial meeting to review the status of 64 "producing and expected to produce" captive and commercial coal mines on 12th September 2024 in New Delhi. The meeting was chaired by Additional Secretary and Nominated Authority, Ministry of Coal, Smt. Rupinder Brar. This strategic review aligns with India's Atmanirbhar Bharat vision, which seeks to sculpt a resilient, self-sufficient India capable of not only meeting its own energy demands but also emerging as a global economic power house. During the meeting, she appreciated the efforts of all the allottees for their increased coal production and urged them to redouble their efforts to meet the committed coal production targets of FY 2024-25.

As of August 31, 2024, 55 captive/commercial coal mines are in production. Of these, 33 mines are allocated to the power sector, 12 to the non-regulated sector, and 10 mines are allocated for the sale of coal. Nine mines are expected to commence coal production in FY 2025.

The Ministry's efforts have yielded impressive results, with remarkable year-over-year (Y-o-Y) growth in both coal production and dispatch from captive and commercial mines. Coal production increased by 32%, rising from 50.11 million tonnes (MT) during April 01st to August 31st, 2023, to 65.99 MT during the same period in FY 2025.

Similarly, coal dispatch from these mines also showed significant growth of 32%, increasing from 55.70 MT during April 01st to August 31st, 2023, to 73.58 MT during the corresponding period in FY 2025.

These substantial increases in both production and dispatch demonstrate the effectiveness of the Ministry's initiatives and its commitment to enhancing India's domestic coal supply and aligns with the broader national goals of energy sufficiency and economic growth, positioning India for a more secure and prosperous future.

Coal Production and Supply Trends on Positive Trajectory

India's coal production and supply trends for the period from April to August 2024 show a positive trajectory, despite some short-term variations in the Month of August 24, due to above normal precipitation impacting the mining and mobility. The Ministry of Coal remains committed to meeting the country's energy demands through reliable coal production and supply.

From April to August 2024, India's total coal production reached 384.07 Million Tonnes (MT), representing a growth of 6.36% compared to 361.11 MT during the corresponding period of the previous year. However, in August 2024, overall coal production decreased slightly to 62.67 MT, down from 67.76 MT in August 2023.

In terms of coal supply across the country during the same period, from April to August 2024, it stood at 412.69 MT, with an increase of 5.17% compared to 392.40 MT during the corresponding period of last year. In August 2024, however, coal supply fell slightly to 69.94 MT, compared to 75.19 MT in August 2023.

Coal supply to the power sector remains a key priority. Between April and August 2024, supply to the power sector reached 338.75 MT, a growth of 4.13% over the 325.33 MT supplied during the same period last year. In August 2024, the supply to the power sector was 58.07 MT, slightly lower than the 61.43 MT recorded in August 2023.

As of 31st August 2024, coal stock levels at thermal power plants saw a significant increase, reaching 37.18 MT, a 32.08% growth compared to 28.15 MT on the same day in 2023.

These results reflect the Ministry of Coal's commitment to ensuring stable coal production and supply to meet the country's energy needs, while addressing the operational challenges in the sector.

Coal Ministry Issues Allocation Orders for 3 Commercial Coal Mines

The Ministry of Coal recently issued Allocation Orders for 03 Coal Mines namely Machhakata (Revised), Kudanali Lubri and Sakhigopal-B Kakurhi, to NLC India Limited, Gujarat Mineral Development Corporation Limited and TANGEDCO respectively. Of these three coal mines, one is fully explored coal mine and two are partially explored coal mines.

The cumulative Peak Rated Capacity (PRC) of the three coal mines for which Vesting Orders have been issued is ~ 30.00 MTPA and are having ~2,194.10 MT of Geological Reserves. These mines are expected to generate an Annual Revenue of ~Rs. 2,991.20 crores calculated on the basis of PRC and will attract Capital Investment of ~Rs. 4,500 crores. It will provide employment to approximately 40,560 people both directly and indirectly.

Including three coal mines for which orders were issued recently, vesting/ allocation orders have been issued for a total of 95 coal mines till date with cumulative PRC of ~202.50 MTPA. This will result in generating Annual Revenue of ~Rs. 29,516.84 crores calculated on the basis of PRC of the mines and will generate employment for 2,73,773 people both directly and indirectly.

BCCL's Strategic Moves Boost Domestic Coking Coal Consumption

Bharat Coking Coal Limited (BCCL) has made significant strides in reducing the country's reliance on imported coal through its active role in the "Mission Coking Coal" initiative under the Aatmnirbhar Bharat vision.

The import of coking coal puts a burden on India's valuable foreign reserve, and to cutting down on these imports, BCCL has undertaken substantial reforms to make its coking coal auction processes more flexible, transparent, and attractive for the country's steel producers.

One of BCCL's major efforts came after the Tranche VI auction, where none of the offered coal was booked. In response, BCCL reassessed its strategy and made several improvements. Key among them was the introduction of consortium bidding, which allowed smaller consumers to collaborate and participate collectively in the auction, broadening the pool of bidders and making the process more accessible.

In a bid to attract more participants, BCCL proposed amendments to the eligibility norms for linkage auction bidders. The proposal was approved at the Functional Directors' Meeting of BCCL and subsequently forwarded to CIL for further consideration. This proposal included the participation of consortiums comprising steel plants, existing or new coking coal washeries, and other plants capable of consuming the power coal by-products of washeries. CIL quickly embraced this idea, leading to the development of a new Scheme Document for Tranche VII of the Linkage Auction for the steel sub-sector.

Before the official notification of the Scheme Document and to ensure broad engagement, BCCL and CIL hosted a Consumer Meet in Delhi, gathering feedback from steel producers and industry associations. This effort, also coupled with continuous follow-up with potential bidders and proactive engagement, regular communication significantly improved participation in the auction process.

As a result of these initiatives, BCCL achieved record-breaking success in the recently concluded long-term linkage e-auction (Tranche VII) for the steel sub-sector. Of the 3.36 MT of coking coal offered, 2.40 MT was successfully booked, setting a new benchmark in coal bookings.

These efforts by BCCL are poised to significantly enhance the use of domestic coking coal, reduce reliance on imports, and strengthen the steel industry in India. The successful implementation of consortium bidding and clear communication regarding the auction process has ensured higher participation, benefiting both consumers and the country's broader goal of import substitution under the vision of Aatmnirbhar Bharat.

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India becomes 3rd largest power in Asia power index, surpasses Japan

India surpassed Japan to become the third-largest power in the Asia Power Index, according to an official statement by Ministry of Information and Broadcasting recently.

The ministry highlighted that this achievement is driven by India's dynamic growth, youthful population, and expanding economy, solidifying its position as a leading force in the region. It also reflects country's increasing geopolitical stature.

"In a major shift, India surpassed Japan to become the third-largest power in the Asia Power Index, reflecting its increasing geopolitical stature" said the ministry.

The Asia Power Index, launched by the Lowy Institute in 2018, is an annual measure of power dynamics in the Asia-Pacific region. It evaluates 27 countries across the Asia-Pacific, examining their ability to shape and respond to the external environment.

As per the ministry, one of the most significant findings in the 2024 Asia Power Index is India's steady rise in the regional power rankings. Witnessing a gradual rise, India is looking to achieve its full potential and exercise its influence in the region.

The key factors behind India's rise is the economic growth, ministry says that the country has shown remarkable post-pandemic economic recovery, contributing to a 4.2-point rise in its Economic Capability.

"India has shown remarkable post-pandemic economic recovery, contributing to a 4.2-point rise in its Economic Capability. India's massive population and strong GDP growth reinforce its standing as the world's third-largest economy in PPP terms" the ministry added.

It also noted that India's Future Resources score increased by 8.2 points, signalling a potential demographic dividend. Unlike its regional competitors, particularly China and Japan, India benefits from a youthful population that will continue to drive economic growth and labour force expansion in the coming decades.

The index also highlighted India's increasing role in multilateral diplomacy and regional security. India's leadership in the Quad and participation in various regional dialogues have allowed it to exert influence in security matters without formal military alliances.

Although its economic outreach has been more limited, defense sales like the BrahMos missile deal with the Philippines point to India's growing geopolitical ambitions.

The Asia Power Index evaluates countries based on eight core measures, divided into resource-based and influence-based determinants. These include Economic Capability, Military Capability, Resilience, Future Resources, Economic Relationships, Defense Networks, Diplomatic Influence, and Cultural Influence. India's strong performance across these categories highlights its growing role as a major power in the region.

India sets a Rs 9.15 lakh crore blueprint for power sector to meet 458 GW demand by 2032

In a strategic endeavor to revamp India's power infrastructure, the ministry of power, under the guidance of Prime Minister Narendra Modi, has rolled out a comprehensive plan worth ₹9.15 lakh crore aimed at amplifying the nation's power grid and enhancing energy security. Announced by Union minister Manohar Lal during a press conference in New Delhi, the National Electricity Plan 2023 to 2032 outlines an ambitious framework to scale India's transmission network and capacity to meet a projected peak demand of 458 GW by 2032.

"Our power infrastructure is pivotal to national security and economic stability," stated Manohar Lal. "The new electricity plan is a proactive measure to ensure we are well-prepared to meet future demands and incorporate emerging technologies like renewable energy and green hydrogen into our grid."

According to the plan, the transmission network in the country is set to expand from 4.85 lakh circuit kilometers (ckm) in 2024 to 6.48 lakh ckm by 2032, with the transformation capacity projected to rise from 1,251 GVA to 2,342 GVA. The Union Minister detailed that these enhancements are crucial for accommodating the increasing electricity demands and for supporting the integration of variable renewable energy (VRE) sources into the national grid.

Additionally, the minister announced the approval of 50 GW of Inter-State Transmission System (ISTS) capacity designed to evacuate 280 GW of VRE by 2030. "So far, 42 GW of this capacity has been completed, with 85 GW under construction and 75 GW currently in the bidding phase. The remaining 82 GW will be approved in due course," he added.

During the 100-day period, transmission schemes corresponding to 50.9 GW capacity were also approved, totaling an estimated investment of ₹60,676 crore. These schemes will facilitate the evacuation of renewable electricity across several states including Gujarat, Andhra Pradesh, and Rajasthan, enhancing the national grid's capacity to handle renewable outputs from large-scale green hydrogen and ammonia projects.

Highlighting other key achievements, Manohar Lal mentioned that 83,596 households from Particularly Vulnerable Tribal Groups (PVTG) have been electrified. Additionally, substantial progress has been made in segregating agricultural feeders, improving the reliability of power supply to rural farming communities.

The press conference also shed light on the recently established Computer Security Incident Response Team for the power sector (CSIRT-Power). "This specialized unit is equipped with cuttingedge cybersecurity tools to safeguard our critical infrastructure from cyber threats," explained the minister

On the regulatory front, the minister unveiled revised guidelines for electric vehicle charging infrastructure aimed at supporting the creation of a nationwide connected and interoperable network, further promoting the adoption of electric vehicles across the country.

India's power sector has potential of INR 40 trillion investment over next decade: IEA Power sector in India holds investment opportunities estimated upwards of INR 40 trillion over the next decade, brokerage Motilal Oswal asserted in a report. Of those estimated INR 40 trillion investment potential, INR 34 trillion is expected expenditure and the rest in optionality, with the generation, transmission, and smart metering accounting for an estimated 86 Percent , 10 Percent , and 4 Percent .

The tailwinds driving this "mammoth" investment are power demand accelerating at a higher CAGR, upgrading or replacing old power infrastructure as the electricity mix undergoes a shift, and transitioning to cleaner energy sources.

The report said India is a unique case where burgeoning real GDP/per capita growth, technology upgrades and electrification are all strong undercurrents and could continue to drive power demand higher for years to come.

"With a robust GDP growth outlook for India and the emergence of new demand drivers (electric vehicles, data centers, electrification of energy demand), we believe power consumption in India can compound at 7 Percent + over the next decade (currently 8-9 Percent)," Motilal Oswal said.

By 2035, electric vehicles and data centers are set to drive one-third of power demand growth in India, the brokerage report asserted.

Electric vehicles (EVs) and data centers account for a negligible share of power demand in India at present. "Yet, by 2035, we estimate one-third of power demand growth might be attributable to these two sectors," the report read.

India's current primary energy and electricity consumption trends closely mirror those of China in the early 2000s.

Like China, Motilal Oswal believes power consumption in India is at an inflection point given the expectation for India to grow by 6.5-7 Percent over the next decade, and can comfortably compound at 7- 7.5 Percent over the next 10 years versus 5 Percent CAGR in the past two decades.

At COP26 held in 2021, India committed to an ambitious five-part "Panchamrit" pledge. They included reaching 500 GW of non-fossil electricity capacity, generating half of all energy requirements from renewables, and reducing emissions by 1 billion tonnes by 2030. India as a whole also aims to reduce the emissions intensity of GDP by 45 Percent. Finally, India commits to net-zero emissions by 2070.

India bolsters power grid with 12.8 GW thermal capacity amid rising energy demands

In response to the escalating energy demands, the Union ministry of power has strategically added 12.8 gigawatts (GW) of thermal power capacity in the first 100 days of the new National Democratic Alliance (NDA) government. This development is part of a broader initiative to strengthen the nation's power infrastructure to meet future requirements, with an additional 28.4 GW already under construction.

Pankaj Agarwal, Secretary to the Union Ministry of Power, during a press conference in New Delhi, detailed the government's extensive plans to enhance energy production capabilities. "We have initiated contracts for 12,800 MW of new thermal power capacity which will soon move into the construction phase. This is in addition to the 28,400 MW that is already under construction," Agarwal stated, emphasizing the scale of the ongoing projects.

The move to ramp up coal-based power generation comes at a time when India has recorded unprecedented levels of power demand over the past three years. Thermal power, known for providing the base load power essential for grid stability, remains a critical component of the country's energy mix.

Union minister for power and housing & urban affairs, Manohar Lal, elaborated on the necessity of these developments. "As we work to balance our energy production with increasing renewable sources, it is imperative to continue enhancing our thermal power capacity to ensure grid stability and meet peak demands," Lal explained. He highlighted the transitional challenges faced in aligning renewable energy supply with the current demand.

Looking ahead, the minister also announced the impending launch of the National Electricity Plan 2023- 32, expected to be unveiled in the next 15 days. "This plan will prepare us to meet a projected peak demand of 425 GW by 2030 and 458 GW by 2032," he said. According to the plan, the nation's transmission network is set to undergo significant expansion, projected to increase from 4.85 lakh circuit kilometers (ckm) to 6.48 lakh ckm by 2032, with transformer capacity also set to rise significantly from 1,251 GVA to 2,342 GVA.

The comprehensive strategy also includes the approval of 50 GW of Inter-State Transmission System (ISTS) capacity, which forms part of the larger plan to evacuate 280 GW of variable renewable energy (VRE) by 2030. "Out of this, 42 GW has already been completed, 85 GW is under construction, and the remaining 75 GW is under bidding," Lal added.

The minister further informed that transmission schemes corresponding to 50.9 GW capacity have been approved during the period, totaling an estimated cost of Rs 60,676 crore. These schemes are designed to facilitate the effective evacuation of renewable electricity across various states, supporting the power requirements of upcoming green hydrogen and ammonia projects, and enhancing the nation's capacity for hydro and thermal power generation.

Thermal capacities needed till RE supply matches demand: Power Minister

There is a need to continue with installation of new thermal capacities as the supply of green power is not in line with demand, Union Minister Manohar Lal said recently. He also said that any call on reducing installation of thermal capacities can only be taken after 2030.

The union power minister made the remarks at an event to brief 100-day achievements of the Modi-3.0 government in the national capital.

"Till the supply of renewable energy does not match the demand, it seems necessary to increase the

capacity of thermal plant in the country, and reduce its installation gradually. But till 2030-35, We have to take these (thermal projects) ahead," Lal said.

The government is looking to set up an additional 80 GW coal-based capacity by 2031-32.

According to Power Secretary Pankaj Agarwal, in 100 days of the present government, 12800 MW or 12.8 GW capacity has been awarded for construction, while 28 GW is under progress.

The minister further said that the National Electricity Plan 2023-32 will be launched in next 15 days.

Roadmap has been prepared to achieve the 425 GW peak demand by 2030 and 458 GW by 2032. Under the new plan, the transmission network will be increased from 4.85 lakh ckm in 2024 to 6.48 lakh ckm by 2032.

The government will also increase transformer capacity to 2342 GVA (gigavoltampere) from 1251 GVA, Lal said adding that an investment of Rs 9.15 lakh crore will be needed for these development works.

India has a potential of 184 GW of pumped storage projects (PSPs). Around 4.7 GW have already been installed, 6.47 GW is under construction and 60 GW under process of survey and investigation. Lal said the country will have 1 lakh EV charging stations by 2030.

The government has also decided to grant up to Rs 750 core for hydro projects in Northeast. The minister also said that 50 GW ISTS (Inter State Transmission System) capacity has been approved. The transmission network of 335 GW is planned to evacuate 280 GW of Variable Renewable Energy (VRE) to ISTS by 2030.

Nine High Voltage Direct Current (HVDC) lines of 33.25 GW capacity will be added in addition to 33.5 GW presently operating. Inter-Regional transfer capacity will increase from 119 GW to 168 GW. This plan covers the network of 220 kV and above. The minister also said that 50 GW ISTS capacity has been approved.

The transmission network of 335 GW is planned to evacuate 280 GW of VRE to ISTS by 2030. Out of this, 42 GW has already been completed, 85 GW is under construction, and 75 GW is under bidding. Balance 82 GW will be approved in due course. Transmission schemes corresponding to 50.9 GW capacity have been approved during the 100 days. The total estimated cost of the approved projects is Rs 60,676 crore.

12.8 GW of thermal projects awarded in first 100 days of NDA 3.0, says government

A total of 12.8 GW of thermal power capacity has been awarded during the first 100 days of the new National Democratic Alliance (NDA), according to Pankaj Agarwal, secretary to the union ministry of power.

Another 28.4 GW of the targeted additional capacity of 80 GW to be installed by FY32 is under construction, he said. "28,400 MW is already under construction. Another 12,800 MW of contracts have been assigned in these 100 days, and will go into construction very quickly," he added.

The renewed focus on adding coal-based power generation capacity comes in the backdrop of record high power demand over the past three years and because thermal power provides basedload power and maintains stability in the grid.

Green power isn't up to speed yet
Addressing the media on the performance of the government in its first 100 days, union minister for power and housing & urban affairs Manohar Lal Khattar said there is a need to continue installing new thermal capacities as the supply of green power is not in line with demand.

"Until the supply of renewable energy matches demand, it seems necessary to increase the capacity of thermal plants in the country and reduce their installation gradually. But until 2030-35, we have to take [thermal projects] ahead," the power minister said.

He also said the National Electricity Plan 2023-32 would be launched in next 15 days. Noting that peak demand is expected to touch 425 GW by 2030 and 458 GW by 2032, he said that under the new plan,

the transmission network will have to be extended to 6.48 lakh circuit kilometres (ckm) by 2032 from 4.85 lakh ckm in 2024.

He said the government would also increase transformer capacity to to 2342 gigavolt-ampere (GVA) from 1251 GVA, adding that the overall capex for expansion and upgradation would be ₹9.15 trillion.

The minister also said 50 GW of inter-state transmission system (ISTS) capacity has been approved in the past 100 days. The transmission network of 335 GW is planned to evacuate 280 GW of variable renewable energy to the ISTS by 2030.

Of this, 42 GW has been completed, 85 GW is under construction, and 75 GW is under bidding, the minister said, adding that the remaining 82 GW will be approved in due course. Transmission schemes corresponding to 50.9 GW of capacity with an estimated cost of ₹60,676 crore have been approved during the first 100 days, he added.

Recoveries from stressed operational thermal plants to improve by 9 pc in next fiscal: Report

For asset reconstruction companies (ARCs), the cumulative recovery rate for stressed operational thermal power plants (TPPs) is set to improve 700-900 basis points (bps) on-year to 83-85 per cent next fiscal due to robust growth in power consumption, a report said recently.

“Increase in the recovery will be driven by higher power demand on the back of adequate coal availability, timely payment by distribution companies (discoms) and expected healthy merchant power prices,” CRISIL Ratings said in a report. These industry tailwinds are not only supporting faster resolutions but may also aid the resolution of about 5 GW of stressed TPPs over the next 2 fiscals, it said.

Power consumption is expected to rise 6-7 per cent in FY 2024-25, driven by strong demand from the commercial and industrial (C&I) segments, and growing urbanisation. The report said: “Government initiatives had improved coal availability for TPPs by 8.8 per cent in FY 2023-24, leading to healthy coal stock with the TPPs.

This trend is likely to sustain with a ramp-up in coal production and improved evacuation infrastructure.” Mohit Makhija, Senior Director, CRISIL Ratings, said: “The trend is likely to continue. Operating performance and cash flows of stressed operational TPPs will strengthen this fiscal. Additionally, timely realisations from discoms will also improve the liquidity position. The receivables position of thermal plants rated by us has already improved to 185 days as on March 31, 2024, from 200 days a year earlier.”

As much as 5 GW of thermal capacity with more than Rs 50,000 crore debt from secured creditors awaits resolution under the Insolvency and Bankruptcy Code. These capacities experienced stress during 2018-2019 owing to a multitude of factors such as over-leverage, implementation delays and lack of power purchase agreements (PPAs).

Power consumption cools 5% in August amid falling mercury

India’s power consumptions fell in August around 4.9% year on year 144.2 billions units, owning majorly to rainfall across the country which lowered temperatures. The electricity consumption was also lower by 4.2% from July, indicating lower use of cooling appliances.

In contrast, June had seen 152.4 billion units being drawn for consumption, which is 5.7% higher than August. Incessant rains also led to a sharp fall in power prices last month on the Indian Energy Exchange. The average daily price in the dayahead market (DAM) stood at ?4.33 a unit between August 1 and 28, down 35.5% over the same period last year.

Last year, there was a rainfall deficit in August and the month was warmer, leading to higher demand for irrigation and cooling.

Peak Power Demand has also cooled off, with August 31 recording the need for electricity at around 207 GW, as against 236.6 GW. Coal stocks have also been sufficient at power plants with 39.8 million

tonnes on August 30. This is equivalent to around 18-19 days of consumption.

According to the Indian Meteorological Department, the country recorded 287.1 mm of rainfall in August, which is about 16 per cent higher than the normal 248.1 mm.

CEA concurred two more Hydro Pumped Storage Projects total of 2500 MW

In a landmark step towards realizing India's renewable energy goals, the Central Electricity Authority (CEA) is making significant strides in addressing the growing need for large-scale energy storage in the nation's power grid.

In line with its commitment to ensuring a sustainable energy future, CEA has achieved another major milestone by concurring two more Pumped Storage Projects (PSPs) in Maharashtra viz. 1500 MW Bhavali PSP being developed by JSW Energy Ltd. and 1000 MW Bhivpuri PSP being developed by Tata Power Co. Ltd.

These PSPs concurred with the support of the Central Water Commission (CWC), Geological Survey of India (GSI), and Central Soil and Materials Research Station (CSMRS) and were concurred within 10 days of completion of the DPRs i.e. the date on which the complete DPRs were submitted on the ONLINE portal by the developers.

CEA targets to concur at least two PSPs each month during the current year depending upon the completion of the DPRs by the developers.

During 2024-25, CEA has targeted to concur 15 Hydro PSPs of 25,500 MW capacity, out of this 4 PSPs of 5,100 MW capacity have already been concurred.

Under ease of doing business, CEA has developed an ONLINE portal "Jalvi-store" which will bring more transparency in the processing of the chapters at the DPR stage of PSPs.

Further, some chapters have been done away with for expeditious concurrence of the DPRs. The checklist is also incorporated in the guidelines of PSPs which gives clarity on the information needed for respective chapters. GSI and CWC have made multiple teams for faster clearances of design chapters of PSPs.

The approval of these projects, spearheaded by private developers, underscores the growing role of the private sector in driving India's energy transition.

This marks a shift towards a collaborative energy ecosystem where the public and private sectors converge to achieve national goals. This partnership will accelerate progress towards India's renewable energy targets.

CEA is confident that these projects will play a pivotal role in enhancing the reliability and sustainability of India's electricity grid, paving the way for a robust and resilient energy future.

NHPC and SJVNL Conferred 'Navratna' Status

Union Minister for Power and Housing & Urban Affairs, Shri Manohar Lal, recently felicitated the CMDs of NHPC and SJVNL on the prestigious achievement of being conferred with 'Navratna' status by the Government of India.

The Navratna status will empower NHPC and SJVNL with faster decision-making, increased efficiency, and greater empowerment. This status supports major capital expenditure (CAPEX) decisions and investment plans, propelling growth, expanding market reach, and achieving long-term gains.

With the newly conferred powers, NHPC and SJVNL will have autonomy to establish joint ventures in overseas, access new markets and leverage local expertise. Furthermore, it will foster innovation through technological alliances, strengthen market positioning, and facilitate mergers and acquisitions, leading to growth with an increased market share.

Currently, NHPC and SJVNL have total installed capacity of 7144 MW and 2467 MW respectively. These companies are presently engaged in the construction of projects aggregating to 10443 MW by NHPC and 4836 MW by SJVNL.

Ethanol Blending Percentage Surges from 1.53% in 2014 to 15% in 2024: Hardeep S Puri

At the inaugural session of the India Bio-Energy & Tech Expo 2024 (IBETE), Shri Hardeep Singh Puri, the Minister for Petroleum & Natural Gas, presented a detailed account of India's progress in the bioenergy sector and its critical role in the country's energy transformation. Minister Puri emphasized that bioenergy is increasingly becoming a crucial alternative to fossil fuels, offering both environmental benefits and economic opportunities, particularly in rural areas.

In his address, Minister Shri Puri elaborated on the Indian government's strategic efforts to advance the bioenergy sector, highlighting its significance in reducing import dependence, saving foreign exchange, and promoting a circular economy. The government's strategy encompasses several vital areas, including ethanol and biodiesel blending, Compressed Biogas (CBG), Sustainable Aviation Fuels, biomass utilization (such as pellets and briquettes), Biohydrogen, and waste-to-energy solutions.

One of the standout achievements discussed by Shri Puri was the success of India's ethanol blending program. Since its inception, the ethanol blending percentage has surged from 1.53% in 2014 to 15% in 2024. Encouraged by this progress, the government has set an ambitious target of reaching 20% blending by 2025 and is confidently progressing towards this goal. Over the past decade, this initiative has delivered significant benefits, including saving Rs. 99,014 crore in foreign exchange, reducing CO2 emissions by 519 lakh metric tons, and substituting 173 lakh metric tons of crude oil. Furthermore, the program has had a considerable economic impact, with Oil Marketing Companies disbursing Rs. 1,45,930 crore to distillers and Rs. 87,558 crore to farmers.

Minister Shri Hardeep Singh Puri also highlighted the widespread availability of E20 fuel, which is now offered at over 15,600 retail outlets across India. He commended the Pradhan Mantri JI-VAN Yojana for its essential role in providing financial support to advanced biofuel projects, which is crucial for developing a sustainable ethanol production ecosystem.

The Petroleum Minister Shri Puri outlined several key government initiatives designed to enhance ethanol production and mitigate environmental impact. Notably, two second-generation (2G) refineries have been established in Panipat and Numaligarh to convert agricultural residues like Parali and bamboo into ethanol. These refineries are instrumental in reducing pollution and bolstering energy security while transforming farmers into "URJADATA" or active contributors to the energy sector, he said.

To further support the ethanol industry, the Minister Shri Puri said that the government has introduced various incentives for ethanol production. These include Rs. 9.72 per litre for ethanol derived from maize, Rs. 8.46 per litre for ethanol from damaged rice, and Rs. 6.87 per litre for ethanol from C-heavy molasses. These incentives have significantly boosted maize's contribution to ethanol production, which has risen to 36% in the 2023-24 Ethanol Supply Year (ESY) from a mere 0% in 2021-22. Additionally, he said, the government has resumed the supply of FCI rice to ethanol distilleries, allowing for the purchase of up to 23 lakh tonnes through e-auctions from August to October 2024. Starting from November 2024, the supply of sugarcane juice and syrup to distilleries will also commence, marking the start of the 2024-25 Ethanol Supply Year.

Shri Puri emphasized the importance of diversifying feedstocks for ethanol production to ensure security and avoid over-reliance on any single source. The government's ongoing policy of providing stable and remunerative prices for ethanol has effectively reduced pending arrears for sugarcane farmers, lessened crude oil import dependence, and contributed to foreign exchange savings while benefiting the environment.

A major milestone in ethanol fuel expansion was highlighted by Petroleum Minister with the successful

launch of E100 fuel at over 400 retail outlets across the country.

Minister Shri Puri urged Shri Nitin Gadkari, Minister of Road Transport & Highways Transport Minister Gadkari, to encourage automobile manufacturers to produce vehicles compatible with E100 fuel. He addressed common misconceptions about ethanol blending, clarifying that blending ethanol with petrol not only improves engine performance by increasing the octane number but also enhances engine efficiency. Contrary to some concerns, ethanol's presence in fuel helps prevent pre-ignition knock and improves overall engine operation.

Drawing from global practices, Shri Puri cited Brazil's successful use of high ethanol blends—up to 60-70% in vehicles—demonstrating the viability of high ethanol content. He reassured that India is committed to scaling up E20 production and supporting the transition with measures to facilitate the use of transition fuels in older vehicles.

Minister Shri Hardeep Singh Puri also commended the automobile industry for its proactive approach, noting that manufacturers are not only producing new E20-compliant vehicles but are also developing retrofit kits for older models. These kits, which can be installed during regular servicing, represent a significant advancement in accommodating older vehicles and promoting biofuel adoption.

In conclusion, Shri Puri underscored the vital role of biofuels in reducing fossil fuel dependence and emissions, paving the way for a cleaner and more sustainable future. He also discussed the Global Biofuels Alliance (GBA), established during India's G20 presidency, which serves as a collaborative platform for sharing knowledge, advancing technology, and developing policies to harness the $500 billion opportunity in biofuels and accelerate global adoption through technology transfer.

The India Bio-Energy & Tech Expo 2024 is being organized by the Indian Federation of Green Energy (IFGE) and MMACTIV Sci-Tech Communications Ltd. at the Yashobhoomi, Dwarka, from 2nd September to 4th September, 2024. Shri Gadkari, and Shri Puri inaugurated the event recently. The event will focus on driving growth in India's bioenergy sector, highlighting key government policies such as the National Policy on Biofuels 2018 and the SATAT Scheme on Compressed Bio Gas (CBG). It will also cover government initiatives like specific blending targets for ethanol, CBG, and SAF; the Repurpose Used Cooking Oil (RUCO) initiative; Galvanizing Organic Bio-Agro Resources Dhan (GOBARdhan); and the Samarth Mission.

India's biggest oil, gas bid round gets 4 bidders; Reliance-BP-ONGC bid together

India's biggest oil and gas bid round attracted four bidders that included state-owned ONGC and OIL and private sector Vedanta Ltd, with most blocks getting just two bids, according to Directorate General of Hydrocarbons (DGH). The OALP-IX bid round, where 28 blocks or areas spread over 1.36 lakh square kilometre were offered for finding and producing oil and gas, for the first time saw Reliance Industries Ltd-bp plc combine bidding together with ONGC for one block in Gujarat offshore.

Reliance and its supermajor partner bp plc had bid in just two of the past eight oil and gas bid rounds since 2017. Reliance-bp combine had bid and won the two blocks they had bid for in the previous rounds and this is the first time they have teamed up with ONGC to bid for a shallow water block in the GujaratSaurashtra basin.

In the previous eighth round of Open Acreage Licensing Policy (OALP-VIII), state-owned Oil and Natural Gas Corporation (ONGC) had not bid for the ultra deepsea Krishna Godavari basin block that Reliance-bp combine had sought.

The DGH recently released the names of the bidders for the 28 blocks offered under the OALP-IX round, bids for which closed on September 21.

ONGC bid for 14 blocks alone and with partners such as state-owned Oil India Ltd (OIL) and Indian Oil Corporation (IOC) for four other blocks. After considering its bid with Reliance-bp, ONGC in all bids for 19 out of the 28 blocks on offer.

Mining billionaire Anil Agarwal-owned Vedanta Ltd bid for all the 28 blocks on offer while Sun Petrochemicals Ltd bid for seven areas.

Of the 28 blocks on offer, four blocks got three bids each while the rest had two bidders, one being Vedanta Ltd.

Blocks are awarded to firms offering the highest share of revenues generated from oil and gas produced from the blocks and the work programme they commit to.

Of the 28 blocks offered in OALP-IX, nine are onshore blocks, eight shallow-water blocks and 11 ultradeepwater blocks across eight sedimentary basins, with an area of 136,596.45 sq km.

In the previous eight OALP rounds, 144 exploration and production blocks comprising a total area of 242,055 sq km have been awarded. In the last round (OALP-VIII) where 10 blocks were offered, stateowned ONGC won seven blocks while a private-sector consortium of Reliance Industries and bp, Oil India and private-sector Sun Petrochemicals received one block each.

The government introduced the OALP in 2017 to attract oil and gas firms to develop India's upstream sector. The OALP guarantees marketing and pricing freedom with a revenue-sharing model, apart from offering reduced royalty rates.

Reliance and bp have more than a decade-old partnership and are partners in KG deepsea block KGDWN-98/3 or KG-D6 from where they produce about 30 million standard cubic meters per day of gas.

The government has been hoping that opening up more acreage for exploration will help boost India's oil and gas production, helping cut down the USD 222 billion oil import bill.

In 2016, it brought in an open acreage policy which moved away from the previous practice of government identifying and bidding out blocks to one where explorers were allowed the freedom to identify any area outside of the ones that are already with some company or other, for prospecting of oil and gas.

The areas identified are to be clubbed twice a year and offered for bidding. The firm identifying the area gets a 5-point advantage.

But except for the first round, private sector participation has been scant. Mining mogul Anil Agarwal's Vedanta Ltd walked away with 41 blocks out of the 55 blocks on offer in the very first round and got another 10 areas in two subsequent rounds.

India's top oil explorer may set up refinery in Uttar Pradesh

India's Oil and Natural Gas Corp. is considering setting up a multibillion dollar refinery and petrochemical project in the nation's most populous state to bolster its business as fuel demand expands.

The New Delhi-based company — India's largest crude explorer — is looking at a 9-million-ton-a-year project in Uttar Pradesh that could cost more than 700 billion rupees ($8.3 billion), according to the four people familiar with the matter, who declined to be identified as the talks are not public. ONGC has held talks with Bharat Petroleum Corp, Ltd. to set up the unit in the city of Prayagraj as the state-owned refiner holds a parcel of land there, they said.

India's is one of the world's fastest-growing major economies, with surging crude and petrochemicals consumption, even as renewable-energy capacity gets built out. As it's common in the country for big-ticket infrastructure and commercial projects to face delays given the slow process of land acquisition, the potential access to BPCL's holdings may prove to be an advantage.

BPCL itself has been considering setting up a refining and petrochemical unit, either in the coastal state of Andhra Pradesh or Uttar Pradesh, two of the people said. The company, which has hired a US-based consultant for a siting study, favors Andhra Pradesh as the state has promised incentives, they said.

India could be a green power house hub

In the race to combat climate change, India is emerging as a dark horse contender to become a global green energy powerhouse. With ambitious targets, innovative technologies, and a diverse energy portfolio, the world's most populous country is positioning itself at the forefront of the renewable energy revolution.

As nations worldwide grapple with the urgent need to transition away from fossil fuels, India's multifaceted approach to green energy development is garnering attention.

"India has set an ambitious net zero goal to achieve by 2070," says Sanjukta Subudhi, associate director of microbial biofuels and biochemicals at The Energy and Resources Institute (TERI). As Sanjukta puts it, all forms of green energy molecules solar, biobased, hydrothermal, and other biomolecules are seen to play a key role in achieving this net zero goal.

One of the cornerstones of India's green energy strategy is its push for biofuels, an energy source that gets far too little attention. The country has rolled out several programs, including the ethanol blending program and the SATAT (Sustainable Alternative Towards Affordable Transportation) scheme, aimed at increasing the production and use of biofuels.

Govt reduces natural gas price for September from $8.51 to $7.85/mmBtu

The ministry of petroleum and natural gas (MoPNG) said that the price of domestic natural gas has been reduced to $7.85 per million metric British thermal units (mmBtu) for September 2024, down from $8.51 in the previous month. However, the price of the gas from the nominated gas fields of ONGC and Oil India has been kept unchanged at the price cap of $6.50 per mmBtu. "The price of domestic natural gas for the 1st September 2024 to 30th September 2024 is notified as $7.85/mmBtu on gross calorific value (GCV) basis," said the notification dated 31 July.

The price of domestic natural gas has been linked to the India crude oil basket since April and is changed every month.

The pricing decision is part of India's ongoing effort to manage its natural gas sector effectively and balance the needs of producers and consumers. The new price follows the guidelines set forth by the MoPNG's notification in April 2023, which established the framework for monthly price updates.

Key stakeholders, including the Directorate General of hydrocarbons, ONGC, OIL, and GAIL, have been informed of the new pricing structure, ensuring a coordinated approach in managing India's natural gas sector.

"The new pricing reflects India's efforts to align its energy policies with global standards while supporting domestic production and ensuring fair pricing for all stakeholders. The government's monitoring of global energy markets, coupled with its policy framework, aims to stabilize pricing and maintain growth in the country's natural gas sector," said an expert.

Ex Sebi chief to head panel on ending monopolies in gas transmission

Oil regulator has formed a committee under former Sebi chairman Ajay Tyagi to recommend ways of ending monopolies enjoyed by companies engaged in both transportation and marketing of natural gas and city gas retailing.

The eight-member committee has been asked to give its recommendations on splitting entities engaged in both transportation and marketing of natural gas, and ending the monopolies of city gas retailers where required, the Petroleum and Natural Gas Regulatory Board (PNGRB) said in an order.

The panel has been asked to submit its report in three months.

In mature markets, energy infrastructure is operated on a common carrier principle that gives access to third parties. Any user or supplier could access any gas pipeline, irrespective of who owns it. But that is

not the case in India with users and suppliers often complaining of not getting access.

The government had a few years back considered splitting state-owned gas utility GAIL (India) Ltd by hiving off its pipeline business into a separate entity and selling it off to strategic investors. This is because GAIL owns more than two-thirds of the country's pipeline networking, getting it a stranglehold on the market. GAIL is also the country's biggest natural gas marketing firm and users often complained about not getting access to the company's pipeline network to transport their own fuel.

To resolve the conflict arising out of the same entity owing the two jobs of transportation as well as marketing of gas, bifurcating GAIL was considered. But that plan was dropped without any explanation.

Parallely, city gas operators have monopolies in supply of CNG to automobiles and piped natural gas to household kitchens for cooking in several cities. Third parties do not have access to their network of pipelines if they wish to supply the fuel.

Now PNGRB has constituted the committee to promote competition and provide a level-playing field in gas transmission and distribution businesses.

In its September 10 order, the regulator said the PNGRB Act of 2006 mandates it to ensure separation of activities related to natural gas marketing and transportation including ownership of the pipeline in case an entity engages in both marketing of natural gas and laying and operating pipelines.

PNGRB said its regulations state that "if an entity is engaged in both marketing of natural gas and laying, building, operating or expanding pipelines for transportation of natural gas, it shall, on or before March 31, 2017, create a separate legal entity so that the activity of transportation of natural gas is carried on by such separate legal entity and the right of first use shall be available to the affiliate of such separate legal entity."

However, this objective has not been achieved, it said.

In addition, ending the exclusivity of city gas licences was important for opening up the gas market but the regulator faced hurdles to declare a licence area as common carrier upon expiration of given exclusivity.

"The declaration of geographical areas as common carrier or contract carrier is essential for ushering in fair competition and efficiency in the city gas distribution sector, which may benefit the end consumer," PNGRB said.

PNGRB said it is constituting an expert committee under Tyagi, who had previously dealt with gas issues when he worked as a senior bucrearact in the Ministry of Petroleum and Natural Gas.

The other members of the committee include A K Purwaha, former chairman of Engineers India Ltd, Shaleen Sharma, former head of BG India, and Sanjay Sah of Deloitte.

"The primary objective of the committee is to analyse global practices concerning the separation of transportation and marketing activities including ownership of the pipeline in the natural gas sector, assess the current situation in India, and recommend suitable measures to ensure effective implementation of separation of transportation and marketing activities in the natural gas sector," it said.

The panel has been asked to provide a "possible model for separation of transportation and marketing activities in the natural gas sector including ownership of the pipeline." It would also "provide actionable recommendations for revising the exclusivity framework in the city gas distribution (CGD) sector" and "suggest measures to address legal challenges and ensure a fair and competitive market".

The committee would also suggest "pathways for geographical areas where exclusivity for laying, building or expansion of the CGD network has ended".

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India to triple nuclear power capacity by 2032

The Indian government plans to triple its nuclear power generation capacity to 22.4 gigawatts by 2032, according to recent news sources.

The Indian government has set a goal of achieving carbon neutrality by 2070, positioning nuclear power as a key energy source. India will gradually increase its nuclear power capacity from 7.4 gigawatts to 13 gigawatts by 2029 and to 22.4 gigawatts by 2032.

To support this, the government is seeking to attract about $26 billion in private investment. It is in talks with at least five private companies including Reliance Industries, Tata Power and Adani Power for investments of around 44 billion rupees each. It is also encouraging private sector participation in small modular reactor research. Through this year's budget plan, India intends to provide $11.9 billion in support.

India is also working closely with Russia in the nuclear sector. Russia was responsible for building the Kudankulam nuclear power plant, the largest in India. The first unit started operating in 2014, and the second in 2016.

Subsequently, India and Russia began talks to build six more nuclear power plants. In December, they signed an agreement to construct two additional plants with a total capacity of about 6 gigawatts.

India Backs Small Nuclear Reactors to Power Heavy Industry

In an effort to meet net-zero targets, India plans to build a large fleet of small nuclear reactors to power hard-to-decarbonize industries like steel and cement.

During her budget speech in July, Finance Minister Nirmala Sitaraman unveiled plans to develop the 220-megawatt Bharat Small Reactor (BSR) in partnership with private industry. Then in late August, Amit Sharma, CEO of Tata Consulting Engineers, told local media that the company was collaborating with the Department of Atomic Energy (DAE) on the BSR project, with plans to deploy 40 to 50 of these new reactors over the coming decade.

The reactors will be a redesigned version of India's 220-MW pressurized heavy water reactor (PHWR), which has been in operation since the early 1980s. The program came about following requests from domestic heavy industries looking for ways to reduce their climate impact, says Anil Kakodkar, former chairman and current member of India's Atomic Energy Commission.

"Industry players have been expressing a lot of interest in having a captive nuclear power plant for their use," Kakodkar says. "Sensitivity about carbon emissions has gone up, and companies whose emissions are hard to abate are particularly conscious of it, because it's going to hurt them if they cannot bring down the carbon footprint of their products."

Industry turns to small nuclear reactors

Diminutive reactors have become fashionable in recent years, with the global nuclear industry promoting "small modular reactors" (SMRs) as a cheaper and safer alternative to large nuclear power plants. With capacities below 300 MW and a standardized, modular design that allows the bulk of the reactor to be prefabricated in a factory, SMRs are billed as quicker and less expensive to build. Developers also frequently claim they will be safer than previous generations of nuclear reactors.

Despite the supposed benefits, the idea hasn't yet translated into real-world deployments. Last year the first planned SMR in the United States was cancelled due to rising costs and lack of customers.

But India's BSR program has little in common with SMRs being developed elsewhere, says Kakodkar. Most of the world's SMR projects involve designing brand new reactors, which is inevitably expensive and can lead to unexpected setbacks and delays. India's BSR program differs in that it is simply an update of the already mature 220-MW PHWR technology, of which there are already 14 units operating at five sites around the country, says Kakodkar. (India also has an SMR development program.)

"In terms of capital cost per megawatt, [PHWRs] are very competitive," Kakodkar adds. "And in terms of safety, some of these reactors have, in fact, made a

world record at times for longest uninterrupted operating run. Their performance has been excellent." A 220-MW reactor at India's Kaiga power station held the world record for the longest run until 2020.

BSR reactors to reduce carbon emissions: In redesigning these plants, the DAE and Tata are primarily focused on improving the safety of the reactor so that the exclusion zone—an area around the reactor that must be left free of development to lessen the impact of any accident—can be reduced. Currently, this zone has a radius of 1 kilometer, making it difficult to install nuclear reactors on existing industrial sites. Existing reactors have a double containment system consisting of a pre-stressed concrete reactor building surrounded by an additional reinforced concrete structure. To shrink the exclusion zone, Tata plans to add a metallic liner to these safeguards.

Modularization is not a particular focus of the project, says Kakodkar, though he points out that most reactors feature some amount of modularization. "It is not an exclusive feature of SMRs," he says. "Even in the large nuclear power plants, there are several levels of modularization done where you try to enhance the factory production and minimize the work to be done at the site."

Perhaps the biggest change the BSR program will bring about is the increased involvement of private industry in India's highly regulated nuclear sector. Currently, reactors are financed by the government and designed, constructed, and operated by the government-owned Nuclear Power Corporation of India Limited (NPCIL), with private companies involved in supplying components and manufacturing. The BSR program envisages private companies financing and constructing reactors to power energy-intensive industrial processes like steel or cement making, says Kakodkar, though they would still be operated by NCPIL.

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Saurabh Todi, a policy analyst at the think tank Takshashila Institution, says the demand for captive nuclear power is there. With the European Union due to implement carbon tariffs in 2026, and other developed economies discussing similar policies, Indian exporters are looking for ways to reduce their emissions.

But allowing more private involvement in the industry will require changes to India’s Atomic Energy Act, which could take time. It’s also unclear how much control the country’s nuclear establishment is willing to cede. “If there are a lot of restrictions and it is not sufficiently deregulated we might not see as much adoption as we are expecting,” says Todi. “We might not reform enough for it to be attractive.”

India’s nuclear plan for net zero

India has regularly over-promised and under-delivered on nuclear roll-outs, most recently claiming that nuclear plants would be producing 20,000 MW by 2020, but the country currently produces just over 8,000 MW. Likewise, the scale and timeline of the new BSR deployments don’t seem feasible, says M.V. Ramana, a professor of public policy at the University of British Columbia who specializes in nuclear energy. “The nuclear industry has always promised large numbers of reactors,” says Ramana. “That’s the only way they can keep themselves in the public consciousness.”

More importantly, small reactors tend to cost more per unit of power than larger ones, he adds, because they can’t take advantage of economies of scale. That’s why most countries’ nuclear programs, including India’s, have progressively increased the capacity of their reactors.

But greater involvement of the private sector could help drive down costs and speed up delivery, says Kakodkar. Standardization of the reactor design, the use of newer construction techniques, and better project management are likely to improve on what is already a mature and commercially successful reactor design, he says. “Their economic performance is very good, and the tariffs are competitive,” he adds. “If the project implementation becomes more efficient, it will become even more competitive.”

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