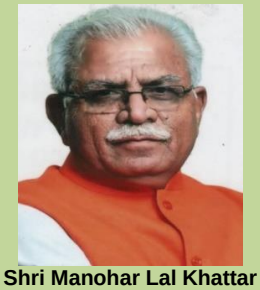
INDIA ENERGY FORUM

TOTAL ENERGY

Volume 18, Issue 3 **June 2024**

HEARTY CONGRATULATIONS
From India Energy Forum to Hon'ble Ministers



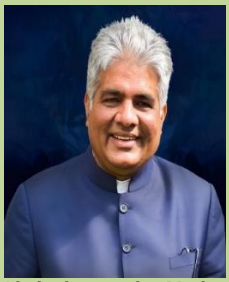
Shri Manohar Lal Khattar
Minister of Power and Housing and Urban Affairs

Shri Pralhad Joshi
Minister of New and Renewable Energy, Consumer Affairs, Food and Public Distribution

Shri Hardeep Singh Puri
Minister of Petroleum & Natural Gas

Shri G Kishan Reddy
Minister of Coal and Mines

Dr. Jitendra Singh
Minister of State of Atomic Energy, Space, Prime Minister Office, Personnel, Public Grievances and Pensions



Shri Bhupender Yadav
Minister of Environment, Forests & Climate Change

Shri Shripad Yesso Naik
Minister of State of New & Renewable Energy, Power

Shri Suresh Gopi
Minister of State of Petroleum & Natural Gas, Tourism

Shri Satish Chandra Dubey
Minister of State of Coal, Mines

Interests of Electricity Consumers Rest on Distribution Sector Reforms

R.V. Shahi

Electricity sector in India developed on the basis of, and regulated by, the provisions of two very old legislations viz. Electricity Act 1910 and Electricity Supply Act 1948. Governance of this vital infrastructure waited far too long to be changed under the expectation that the country's developmental needs and consumer aspirations for reliable supply of electricity could be served under these policy frameworks. Even after more than 50 years of independence, the country could not cross 1,00,000 MW mark of power generation capacity and a mere 700 KWhr. per capita consumption of power. Toward the end of the last century, though highly belated, it was recognized that the sector needed major structural changes that these two legislations had outlived their utilities, and that Electricity Board structure had completely failed to deliver. After a few years of nationwide extensive debates, which witnessed several rounds of drafting and re-drafting of a new legislation the Electricity Bill went through another round of discussions with all concerned stakeholders' groups by the Standing Committee of the Parliament. It was indeed a lengthy and extensive consultation process. Finally, Electricity Act 2003 came into being in May, 2003.

The Act provided the Executive to formulate National Electricity Policy, National Electricity Plan, Tariff Policy, and Rural Electrification Policy. Following the Notification of the Act, these Policies and also the Rules envisaged in the Act were put in place by 2005. The Act and the Policies together led to major structural changes in the electricity sector – unbundling of the Electricity Boards, Delicensing of Power Generation Project Development, Opening Up of the Transmission Sector, Strengthening of Regulatory Institutions etc. Implementation of these led to expected response from Developers, Investors, and Financial Sectors. The country got power generation capacity enhanced to over 425 GW from less than 100 GW before the Act, the proportion of generation capacity by the private sector, due to highly positive response from Financial Sector and Project Developers, from less than 10% to more than 50%. The Transmission Sector, which was once considered by many as a virtual monopoly got opened up with substantial response from private sector. It must be recognized that inadequacies of power generation capacity, the Transmission Infrastructure and association distribution networks were badly needed to be addressed, not only to enhance availability of power, but also to reach this to the large masses of unserved population and power starved industry sector. To a great extent, the Act, in a period of twenty years, has delivered well on these two important segments – Generation and Transmission.

Distribution sector does have some coverage in the Electricity Act, but the legislation falls hugely short of the requirements to drastically restructure this sector, to attract badly needed massive amounts of investments, to create competition in not only expanding the Distribution Infrastructure but also to provide high quality service to consumers. The objective of the Act does emphasise on the centrality of consumer interests, but it falls short of making specific provisions to fulfill these objectives. However, it needs to be admitted that electricity being a concurrent subject in the Constitution of India, and Electricity Distribution being under the strong control of the State Governments, any attempts for a massive restructuring of the Distribution segment might have delayed or even stopped the Electricity Act to come into being, in which case the benefits that the nation has secured on Generation and Transmission segments might not have been possible.

After twenty years of this legislation, it is now better recognized that the Distribution Sector problems have thrown biggest challenge of financial sustainability of Distribution Companies. The annual financial loss of Distribution Companies has reached a staggering figure of almost Rs. 70,000 Crores and accumulated loss of the order of Rs. 7,00,000 Crores. To provide reliable supply of power the

investment requirements in Distribution are huge, without which not only the increasing demands of power cannot be appropriately met and supplied, but a reliable and quality supply of power becomes virtually impossible. The Challenge is the financial health of the Distribution Companies, reflected by losses year after year, bailing out packages from time to time on the one hand and meeting the requirement of these huge investments on the other. Investors and Bankers are reluctant in the face of Policy and Regulatory uncertainties, considering the huge subsidiary requirements to be met by the respective State Governments which in many cases are as large as 25% to 30% of the overall revenue of these Distribution Companies.

It is admitted that the Act did not enter into Distribution segment as intensely as it should have, yet, certain provisions did get included with enormous opportunities to make some difference in reforming Distribution Sector. Some of these are given below:

- Parliamentarians were concerned that the Bill as amended on the basis of recommendations of Standing Committee, duly considered by the Ministry of Power provided for creating competition for the benefit of consumers at the level of power supply in Distribution segment, with the stipulation of Open Access on Distribution Network which could be available to any other supplier. The power to implement this had been left to the State Regulators in the Bill. The Government had to introduce an amendment, considering the suggestions of the Parliamentarians, which obligated the Regulators to implement this in a time bound manner. A phased implementation of this provision would have definitely provided, though in a small way, an important reform in the Distribution Sector. Implementation of this has not been so effective, in view of several hurdles and unacceptable levels of Surcharges fixed by Regulators.

- The Act provides for parallel Licensees in different areas of supply. Consistent with the provisions of the Act, detailed rules were also formulated and notified. However, this provision, which had a potential to introduce competition in the larger interest of consumers, has remained unimplemented.

- The Statutory Tariff Policy envisaged management of cross subsidy in a specified manner. This could have also facilitated introduction of Open Access in much larger way. This has been implemented more by way of exception than by the letter and spirit of this provision.

- The Rural Electrification Policy provided that in rural areas Generation, Transmission, and Distribution - all would be de-licensed to the extent of development of projects upto 1 MW and supply of power. This provision again had a powerful potential of introducing competition, but has remained unimplemented.

- The Rural Electrification Scheme introduced in the year 2005 with a grant funding of 90% of the capex along with 10% of loan by REC to the Distribution Companies had an obligatory provision that the Discoms shall introduce a power Input based Franchisees, so as to ensure financial discipline and also quality of supply. This Scheme again had a good potential for not only developing and maintaining a good supply system, but also a framework leading to a major structural reform and financial accountability. Subsequently, the provision of Franchisees was taken out of this Policy.

The country has reached almost 450 GW of capacity and the system has been able to deliver 250 GW of peak power supply. The momentum that has picked up has the ability to move forward at an even better pace. The thrust of Renewable Power development, together with other related preparations even to meet the challenges of large scale expansion of Renewables would definitely take the system to more than 800 GW in next ten years. If the Distribution sector is not overhauled, the financial health of the State Governments, which has been providing subsidies to DISCOMS would not be able to support. The massive requirement of investments in Distribution Infrastructure would be virtually impossible to arrange. Even the expansions on the Generation capacities and Transmission Infrastructure would face major challenge. Restructuring of Distribution was needed, as this

paper has brought out, even at the time of framing of the Electricity Act 2003. It could not be done for the reasons and circumstances as explained. It is high time that this issue now receives appropriate attention with required degree of urgency.

Structures of the Indian power sector, particularly in the context of the Distribution segment, shows a large amount of similarity across the country. But, when it comes to challenges, there are huge variations from region to region and State to State. Therefore, several options will have to be evolved to restructure the Distribution businesses in different States. A very simplistic view which is sometimes stated is that retail business cannot be the business of Government. Attempt to do so might not only be too costly, but it might not satisfy the consumers. Competition is of essence at retail level – at least benchmark competition enables consumers to have distinctive evaluation and demand for quality of service. In Indian context, whichever sector was opened up, without discarding the relevance of public sector altogether, it has been seen that we have highly successful models which have delivered satisfactory outcomes. Examples are Telecom, Airlines, Power Generation, Power Transmission, Steel, etc. Any abrupt attempt to think in terms of privatisation lock stock and barrel will not only not work, private sector organisations may not also be prepared for such large scale change. The transition path has to be worked out. There could be several options to progressively restructure and reform.

- Privatisation of Delhi Electricity Distribution, adopting the model of strategic disinvestment has delivered highly successful outcomes. Aggregate Technical and Commercial Looses which used to be in the range of 50 to 55 per cent have come down to about 5 to 7 per cent, Availability of System and Reliability of Supply in the range 98 percent.

- Input Based Franchisee Models, in many places, have worked well, though there have been some examples of not so successful outcomes which have provided experience to re-work the structure. This Model al–so has tremendous applicability.

- We have a few highly successful Distribution Companies in the country under State Governments. There is no reason why they should not access the capital market, be listed, and explore investments.

- Parallel Licensee Model with experience of a number of years in Mumbai has provided a competitive structure. The Electricity Act provides this arrangement aimed at competition and choices to consumers.

- Rural Electrification Policy with 2 MW of Generation, Transmission and Distribution fully delicensed can bring about transformation of rural economy.

These are a few examples of different Models which can be considered. State specific programmes need to be worked out. Larger public interests demand rapid growth of power sector. The challenge is how fast India reaches a per capita electricity consumption of the order of 4,000 kwhr. from present 1250 kwhr. And, quality of power supply must improve. Electricity Consumers also should benefit from the outcomes of competitive market structure and rapid growth of power supply systems. Government budget alone cannot fund such expansions and with a pace that the country deserves. Policy and Regulatory uncertainties create avoidable risks, not desirable for attracting investments which we badly needed. Opening up of various sectors of economy, e.g. Telecom, Airlines, Ports, Airports etc. are successful examples of what competition can lead to for consumers. We must recognise that, in ultimate analysis, Interests of Electricity Consumers rest on Distribution Sector Reform, which is overdue.

****

From the Desk of the Honorary Secretary General

Dear Colleagues

Greetings!

The month gone by was one of the hottest month in at least last 74 years.

The average global surface land & ocean temperature in June was 1.05*C above average, ranking June 24 as earth's warmest June on record.

The scorching heat also led to an unpresented demand for Power in Delhi touching 8647 MW on June 18/19 surpassing a record of 8302 MW set just a month ago. There were instances of outdoor transformers and Air conditioners catching fire because of intense heat.

In a significant achievement for India's power sector the country met a record maximum power demand of 250 GW on 30.5.2024.

All these events emphasized that we need to transition fast to non-fossil fuel resources else cost of slower or delayed action will be huge.

The data released last month shows, the major infrastructure sectors' growth rose by 6.3 per cent in May on healthy expansion in the production of coal, natural gas, and electricity.

On 18th June 2024, IEF organized a Webinar on Distribution Sector Reforms which was inaugurated by Shri Pankaj Agarwal IAS, Secretary Ministry of Power. Mr. Suvojoy Sengupta, Partner, McKinsey gave an address on "Analysis of Discoms Performance as per 12th Integrated Report" and Mr. Ashish Goyal IAS (CMD - UPPPCL) shared his views on the Distribution Sector Reforms.

On 28th June 2024, a Webinar on "Bio-Gas: Success Stories and Challenges" was organized by the RE Vertical. Shri M P Singh, Director, PEDA shared his views on "Success Stories and Challenges faced by Bio-gas Industry in Punjab", Lt Col Monish Ahuja, CMD, PRESPL address was on "Supply Chain and Logistics Success Story and Challenges" and Shri Gaurav Kedia, Chairman, Indian Bio-gas Association gave IBA's Perspective on Development of Bio-gas in India". Shri Guru Inder Mohan, MD, Carbon Circle shared his Success Story and Challenges/Risks in Developing Bio-gas Plant". The discussions were very candid and brought out various facts needing attention of the concerned ministries.

Both the webinars were appreciated by the members.

This month, IEF will be organizing three Webinars one on "Future Outlook for LNG in India" on 13th July 2024, second on Coal Gasification on first half of 26th July and third one "Discussion on World Bank Report on Empowering Utilities for Energy Transition" on second half of 26th July. Members are requested to attend the webinar.

With best wishes

K S Popli

Edited & e-printed by **Mr K S Popli, Hon. Secretary General, IEF**
Published by Mr S S Rawat, Head (Admn), IEF

on behalf of
INDIA ENERGY FORUM

Registration No. DELENG/2007/20915
303 PHD House, 4/2 Siri Instituonal Area, August Kranti Marg, New Delhi – 110 016

Collective action required to achieve renewable energy targets: MoS Shripad Yesso Naik

Collective action is required to achieve renewable energy targets, making India a leader in wind energy and creating a greener, brighter future for all, Minister of State of New and Renewable Energy and Power, Shripad Yesso Naik, said.

Speaking on the 'Global Wind Day', MoS Naik congratulated Gujarat, Karnataka and Tamil Nadu for achieving the highest wind capacity addition in the country during FY 2023-24. Bhupinder Singh Bhalla, Secretary, MNRE, said that combining solar and wind energy is essential for a reliable grid and meet the country's target of 500 GW renewable energy capacity by 2030 and net zero by 2070.

India has a history of wind energy generation spanning more than four decades. With a cumulative installed wind power capacity of 46.4 GW by May, it has progressed to become the fourth largest in the world. Bhalla highlighted the previous year's achievements and motivated the stakeholders to collaborate to realise the short term as well as long term goal for the sector. The event witnessed panel discussions on the potential of both onshore and offshore wind energy, with the active participation from Central and state government authorities, manufacturers and developers, academia, think tanks, and other key stakeholders.

Renewable energy companies look abroad for green hydrogen plants

Renewable energy companies such as Hero Future Energies and Renew are looking to set up green hydrogen plants abroad, while others like Adani New Industries and Avaada Group are in talks with global companies for offtake of the new-age energy.

Hero Future Energies (HFE), part of Hero Group, is evaluating deployment of green hydrogen plants in the UK and the rest of Europe in association with its partners, said Srivatsan Iyer, global CEO, HFE.

HFE has a partnership with Tier 1 electrolyser OEMs such as Ohmium International to develop 1,000MW of green hydrogen production facilities in India, UK and rest of Europe. HFE is also evaluating use cases for green hydrogen, working on projects to be commissioned in the immediate future, and looking at opportunities to scale these up, he said. HFE has established strategic partnerships with players throughout the green hydrogen value chain to operationalise projects, Iyer added.

Another renewables player, Adani New Industries (ANIL), is exploring international markets such as Europe, Japan and South Korea for offtake partners of green hydrogen and its derivatives, said a company spokesperson. ANIL is a subsidiary of Adani Enterprises.

Last year, Adani Global, Singapore, a step-down subsidiary of Adani Enterprises, announced a 50:50 joint venture with Kowa Holdings Asia, Singapore for sales and marketing of green ammonia, green hydrogen and its derivatives. The JV will concentrate on marketing of products in Japan, Taiwan and Hawaii, it said.

ANIL is developing large-scale integrated green hydrogen and derivatives plants in Gujarat and is conducting feasibility and construction-readiness studies.

The company’s focus includes development of downstream products like green ammonia,green methanol, and sustainable aviation fuel, tailored to cater to diverse sectors; he said. ANIL is aiming to develop projects equivalent to 1 MMTPA (million metric tonne per annum) of green hydrogen and 5.6 MMTPA of green ammonia by 2030.

Another company planning an overseas plant is Renew, founded by Sumant Sinha. It has signed an exploratory framework agreement with Egypt to set

up a green hydrogen plant in the Suez Canal Economic Zone. We will continue making progress on green hydrogen through these and other initiatives; Sinha had said in a recent interaction with FE.

India to invest over $360 billion in renewable energy and infrastructure by 2030: Moody's

India's infrastructure companies will need to invest between $190 billion and $215 billion in the next seven years to meet the country's goal of achieving 500 gigawatts (GW) of renewable energy capacity by 2030, according to estimates from ratings agency Moody's. An additional $150 billion to $170 billion will be required for the expansion and enhancement of electricity transmission, distribution, and energy storage systems.

Abhishek Tyagi, a Vice President and Senior Credit Officer, Moody's, noted, "The sizeable pipeline of announced projects will keep the financial leverage of renewable power companies rated by Moody's high over the next 2-3 years – a credit negative – but the leverage of government-related issuers will remain moderate over the same period, given their relatively strong balance sheets."

While India is aggressively expanding its renewable energy capacities, Tyagi added, "We expect the strong growth in India's renewable energy capacity to continue, although coal will remain a major source of electricity generation over the next 8-10 years."

Government policies and stable regulatory frameworks are expected to support the credit quality of these investments. These policies have already assisted in increasing the share of renewable energy to about 43 per cent of India's total power capacity mix in fiscal 2023 and 2024, contributing significantly towards the country's 2030 transition targets and its 2070 net-zero ambitions.

Simultaneously, ICRA, an affiliate of Moody's in India, predicts increased spending on transportation infrastructure, with significant investments expected in roads, ports, and airports. The Ministry of Roads, Transport and Highways (MoRTH) has seen its budgetary allocation for the road sector rise to INR 2.7 lakh crore in fiscal 2025, marking a 22 per cent compound annual growth rate over the past decade.

Girishkumar Kadam, ICRA's Senior Vice President and Group Head, Corporate Ratings, said, "India's road construction is expected to grow by 5 per cent-8 per cent to between 12,500 km and 13,000 km in fiscal 2025, following a robust expansion of around 20 per cent in fiscal 2024."

Investments in airport infrastructure are also on the rise, with around INR 55,000 crore to INR 60,000 crore committed over the next 3-4 years for the development of new greenfield airports, as well as expansions and enhancements of existing facilities.

Overall passenger traffic at airports is forecasted to increase by 8 per cent-11 per cent to between 407 million and 418 million passengers in fiscal 2025, supported by a resurgence in both leisure and business travel, as well as increased international connectivity. Additionally, India's rapid digitalization is expected to drive approximately INR 1.5 lakh crore into investments in data centers over the next 5- 6 years, boosting the country's digital infrastructure capabilities.

Govt approves ₹13,595 crore ISTS projects for 9 GW RE evacuation in two states

The Centre has greenlit new Inter State Transmission System (ISTS) schemes, set to facilitate the evacuation of 9 GW of renewable energy (RE) power from Rajasthan and Karnataka.

With an aggregate budget of approximately ₹13,595 crore, these schemes will be carried out through Tariff Based Competitive Bidding (TBCB) and are a part of the national endeavor to reach 500 GW of RE capacity by 2030, of which 200 GW is already connected.

Detailing the approved schemes, the Rajasthan Renewable Energy Zone (REZ) initiative will handle the evacuation of 4.5 GW of RE power from three major complexes in Rajasthan. This includes 1 GW from Fatehgarh, 2.5 GW from Barmer, and 1 GW from Nagaur (Merta), with the generated power being

transferred to the Mainpuri Region, Fatehpur, and Orai in Uttar Pradesh. The completion of this extensive project is targeted within two years, at an estimated cost of ₹12,241 crore.

Concurrently, the system strengthening scheme in Karnataka aims to evacuate another 4.5 GW of RE power, specifically from the Koppal and Gadag areas. This particular scheme is slated for completion by June 2027 and is budgeted at around ₹1,354 crore.

Renewables can cut 17 per cent of India's heavy industry emissions by 2030: Ember

Renewables energy can avoid 17 per cent of the anticipated carbon emissions from India's heavy industry by 2030, according to a new report by energy think-tank Ember. It added that based on industry growth projections, electricity demand for heavy industries is expected to rise by 45 per cent.
Meeting this increased demand with renewable energy could help to avoid 180 million tons (Mt) of CO2, equivalent to the total annual emission of the Netherlands.

At present, 11 per cent of energy consumption in these heavy industries comes from electricity, with the rest from fossil fuel-based thermal energy.

"Besides being one of the most promising levers for decarbonising industries, renewable based electrification offers multiple co-benefits. It allows industries to benefit from low cost renewable power, improves grid flexibility, and most importantly, improves air quality within industrial facilities," said Duttatreya Das, an independent consultant and the report's lead author.

Das added that switching to renewables immediately and ensuring clean air within industrial premises needs to be a people-first strategy for heavy industries.

The report indicates possible near and long term strategies to smash emissions as India negotiates with the EU bloc on mechanisms to comply with the Carbon Border Adjustment Mechanism (CBAM). CBAM is a regulatory framework that imposes a carbon tariff on imports to the EU.

It said that in order to fully decarbonise their electricity use and remain competitive in the global market, India's heavy industries require 120 GW of dedicated renewable energy capacity by 2030. The report focuses on the steel, cement, petrochemicals, aluminium and ammonia sectors.

"Decarbonising these emission-intensive 'heavy' industries can significantly benefit both India's industrial sector and renewable energy ecosystem," it added.

According to the report, for deep decarbonisation of industries in the longer run, the report finds that it is crucial that key technologies to electrify thermal processes become commercially viable.
"If these new technologies and the government's green hydrogen mission succeed, the share of electricity in the industrial energy mix could triple by 2050, reaching about 700 GW and avoiding 737Mt of emissions," the report added.

Aditya Lolla, Asia Programme Director at Ember, said that with emissions-related trade regulations such as CBAM are expected to take effect soon, understanding the potential for near-term emission reductions is crucial for Indian heavy industries.

He added that renewables-based electrification also offers multiple co-benefits to India's wider energy ecosystem. It can open up multi-million-dollar private investment opportunities, stimulate India's clean energy manufacturing sector and propell India towards becoming a global leader in clean energy.

.

.

Shri G. Kishan Reddy to launch 10th round of Commercial Coal Mines Auction for 60 Coal Blocks on 21st June

In a significant move to enhance domestic coal production and ensure energy security for the nation, the Ministry of Coal is set to launch the next tranche of coal block auctions. Union Minister of Coal and Mines, Shri G. Kishan Reddy will launch the 10th round of Commercial Coal Mining auctions on 21st June, 2024 in Hyderabad. Minister of State for Coal and Mines Shri Satish Chandra Dubey, Deputy Chief Minister of Telangana Shri Mallu Bhatti Vikramarka and Secretary, Ministry of Coal Shri Amrit Lal Meena will be present on the occasion.

This initiative is poised to foster transparency, competitiveness, and sustainability within the coal sector. The upcoming auction round includes 60 coal blocks, encompassing a diverse range of coking and non-coking coal mines. Strategically located across different States/Regions, these blocks will support regional economic development and employment generation.

The launch of this auction tranche represents a pivotal moment in the mission to achieve self-reliance in the coal sector. By opening up more blocks for transparent and competitive bidding, the GOI is unlocking India's vast coal reserves to drive economic growth and energy security. The Govt is committed to sustainable mining practices that balance economic development with environmental stewardship.

The forthcoming 10th round of Commercial Coal mining auctions, in the wake of previous successful auctions signifies the Ministry’s unwavering commitment to propel the sector forward. A total of 60 coal mines will be offered in the upcoming round. Among these, 24 coal mines are Fully Explored, while 36 are Partially Explored.

Additionally, 5 coal mines are being offered under the 2nd Attempt of round 9 of Commercial Coal. Of these, 4 are Fully Explored, and 1 is partially explored. Also, 2 coal mines are being offered under the 2nd Attempt of round 8. Of these, 1 is Fully Explored, and 1 is partially explored.

There are no restrictions on the sale or utilization of coal. Notably, eligibility criteria have been eliminated, removing any technical or financial barriers for participation. Also, a strategic shift from the notified price to the National Coal Index ensures transparency and fairness, establishing a market-driven pricing mechanism. The amendment of mineral laws has been instrumental in unlocking the coal sector, providing an equitable playing field for both public and private sector players and allowing auctions for various purposes, including own consumption and sale.

For ease of doing business, the Ministry of Coal has conceptualized a Single Window Clearance System (SWCS) portal to create a platform to obtain various clearances for the early operationalization of coal mines, ultimately resulting in the augmentation of coal production in the country through a single gateway. These reforms serve as pillars of progress and resilience in the coal sector.

Furthermore, the upcoming commercial coal mine auction holds the potential to propel economic growth, generate employment opportunities, strengthen energy security, and contribute to sustainable development. The Ministry remains committed to fostering a conducive environment for growth and innovation in the energy sector.
Detailed information regarding the mines, auction terms, timelines, etc. can be accessed on the MSTC auction platform. The auction will be conducted online through a transparent process, based on the Percentage Revenue Share model.

India's coal production CAGR rises to 5.63 per cent, imports slow to 2.49 per cent

India, holding the fifth-largest coal reserves globally and ranking as the second-largest consumer, has seen notable changes in its coal production and

import patterns, reflecting a strategic shift towards enhancing energy self-reliance.

According to recent data, the compound annual growth rate (CAGR) for coal production in India rose from 4.44 per cent during the fiscal years 2004-05 to 2013-14, to approximately 5.63 per cent from 2014-15 to 2023-24. This growth signifies the country's concerted efforts to increase domestic coal output in the past decade.

Concurrently, the CAGR for coal imports saw a significant decrease. From a high of 21.48 per cent between 2004-05 and 2013-14, it plummeted to just 2.49 per cent from 2014-15 to 2023-24. Furthermore, the share of imported coal in overall consumption also dropped, with the CAGR plummeting from 13.94 per cent in the earlier period to around -2.29 per cent in the latter period.

These trends underscore India’s strategic focus on reducing dependence on imported coal, despite the necessity for imports to meet specific industrial needs such as steel production, due to the unavailability of coking coal and high-grade thermal coal within domestic reserves.

The shift is part of India's broader aim to optimize its indigenous coal resources and leverage innovative technology to bolster energy security. This approach aligns with the national goal of Atmanirbhar Bharat (self-reliant India), emphasizing the importance of self-sufficiency in critical sectors such as energy.

As India progresses on this path, the reduction in import dependency and the enhancement of domestic coal production capacities are set to play pivotal roles in the country's energy landscape.

Coal Production Grows by 10.15%, Coal Dispatch by 10.35% in May, 2024 Compared to Corresponding Period of Last Year

In May 2024, India's coal production reached 83.91 million tonnes (MT) (Provisional), exhibiting a growth rate of 10.15% compared to the corresponding period of the previous year, which stood at 76.18 MT. During this period, Coal India Limited (CIL) achieved a coal production of 64.40 MT (Provisional), marking a growth of 7.46% compared to the same period last year, when it was 59.93 MT. Additionally, coal production by Captive and other entities in May 2024 stood at 13.78 MT (Provisional), reflecting a growth of 32.76% from the previous year, which was 10.38 MT.

Similarly, India's overall coal dispatches for May 2024 reached 90.84 MT (Provisional), up by 10.35% compared to the same period last year when it was recorded at 82.32 MT. During May 2024, CIL dispatched 69.08 MT (Provisional) of coal, with a growth of 8.50% compared to the corresponding period of the previous year when it was 63.67 MT. Additionally, coal dispatch by Captive and other entities in May was recorded at 16 MT (Provisional), reflecting a growth of 29.33% from the previous year, which was 12.37 MT.

Total coal stock with coal companies stands at 96.48 MT. The coal stock lying with CIL is 83.01 MT, while Captive and other companies hold 8.28 MT.

India’s coal import rises 13 per cent to 26 MT in April: mjunction

India's coal imports rose by 13.2 per cent to 26.10 million tonnes (MT) in April 2024 as buyers took fresh positions amid early onset of summer. The country had imported 23.05 MT of coal in the yearago period, according to data compiled by B2B e-commerce company mjunction services ltd.

This comes amid coal and mines minister G Kishan Reddy stating that India should increase domestic production of the fossil fuel and reduce coal imports.

"India's coal and coke imports in April 2024 through the major and non-major ports increased by 13.2 per cent over April 2023," the data showed.

Of the total import in April, non-coking coal import stood at 17.40 MT against 15.15 MT in the yearago month. Coking coal import was 4.97 MT against 4.77 MT.

"There was an increase in volumes...Going ahead, there may be continued demand from both the power and non-regulated sectors due to pre-monsoon restocking," mjunction MD & CEO Vinaya Varma

said. Coal imports in April were up by 8.93 per cent as against March when imports stood at 23.96 MT.

India's coal import rose by 7.7 per cent to 268.24 MT in FY24 driven by softness in seaborne prices and likelihood of increase in power demand during summer.

Govt in process of finalising policy to offer PCI coal to steel makers to reduce imports

The government is in the process of finalising a policy to offer washed PCI coal to steel makers in order to reduce imports, a senior official said recenrly. PCI (pulverized coal injection) coal is a type of metallurgical coal, which is used in the steel making process as auxiliary fuel for partial replacement of coke. It helps steel plant increase efficiency and reduce carbon emissions.

"We are actually thinking about a policy...whereby we will be washing and offering washed PCI coal to the steel sector (only specifically to the steel sector) end use so that we will be able to reduce imports," M Nagaraju, additional secretary, coal, said at a workshop on coal matrix for the Indian metals industry organised by industry body Ficci here.

He also said that there was a need to remove ash content in PCI coal.

At present, most of the steel makers in the country import PCI coal and its demand is expected to go up to anywhere between 20-30 million tonnes by 2030, Nagaraju said.

"We are finalising a policy and once done, we will be able to offer washed coking coal to the steel sector specifically so that they are able to blend with the imported coking coal and reduce imports," he said.

Nagaraju further said that the government will set up about eight coking coal washeries to meet the demand of the steel sector. "We are going to set up about eight coking coal washeries so that by 2030 we will be having at least 60 million tonnes of washed coking coal in the country to meet the steel sector demand," he added.

According to mjunction services -- a B2B e-commerce platform -- India's coking coal imports rose to 57.22 million tonnes in FY24 compared to 54.46 MT imported in FY23. Imports of PCI coal also increased to 16.69 MT in 2023-24, against 15.69 MT a year ago.

CIL ties up with private sector to revive unviable mines

Coal India has awarded 23 discontinued underground mines to the private sector on a revenue sharing model as the mines seemed financially unviable to the state-owned company, it said recently.

The cumulative peak rated capacity of the 23 mines is 34.14 million tonnes with an estimated total extractable coal reserves at 635 million tonnes.

The company had earlier identified 34 mines with good quality of coal reserves which were discontinued as these were not financially viable for CIL. The company had then decided to tender and offer these mines to private sector players who were willing to share part of the revenue with CIL.

The company had signed non-disclosure agreements with the private operators with the contract period extending up to 25 years. As per the contract, the minimum revenue to be shared is 4%. Moreover, the mine operator can utilize the existing infrastructure and project facilities without any additional payment to the authority.

Of the 34 identified mines, 10 mines each are located in the West Bengal based Eastern Coalfields and Jharkhand based Bharat Coking Coal, both subsidiaries of CIL. Five such mines belong to Western Coalfields, four to South Eastern Coalfields, three to Mahanadi Coalfields and the remaining two belong to Central Coalfields.

The mine operator will be responsible for selling coal mined from these mines at market driven price through an auction process on behalf of Coal India. “They shall have the freedom to adopt their preferential method of technology and deployment of

mining machinery to extract coal from the mines.," the company said.

The company is now identifying a few more mines for the purpose to attract wider private participation with some relaxation in the bid norms.

Of the total quantity of coal sold exclusively for coal gasification or coal liquefaction purpose in a year, a 50% on contracted percentage of revenue share of the authority will be provided to the operator, the company said.

Highest ever Coal Stocks Available at Thermal Power Plants

The Ministry of Coal (MoC) is working tirelessly round the clock to ensure a consistent supply of coal to thermal power plants. As result of enhanced production, efficient management of logistics and smooth inter agency coordination, Ministry of Coal has ensured the highest ever stocks of Coal at thermal power plants. This proactive initiative aims to secure uninterrupted power for citizens nationwide during this peak demand period. Despite extremely high demand for power, the coal stocks at Thermal Power Plants remain robust, exceeding 45 million tonnes (MT) as on June 16, 2024, which is ~ 31.71% higher compared to the same period last year when it was 34.25 MT.

The demand of Coal based power has grown by 7.30 % in this FY compared to last year in same period. This is highest ever demand of coal.

As on 16.06.24, cumulative coal production stands at 207.48 MT, reflecting a growth of 9.27% compared to the corresponding period last year, which was 189.87 MT. Coal India Limited (CIL) has recorded coal production of 160.25 MT, growing by 7.28% compared to the corresponding period last year, which stood at 149.38 MT. Similarly, coal production from captive and commercial mines reached 33 MT, with a growth of 27% compared to the corresponding period last year.

The cumulative coal dispatch stands at 220.31MT as on June 16, 2024, with a growth of 7.65% compared to the corresponding period last year which was at 204.65 MT. Coal India Limited recorded 166.58 MT in dispatches, growing by over 4% compared to the corresponding period last year which was 158.91 MT. Coal dispatch from captive and commercial mines is recorded at 39.45 MT, with a growth of 30%. Dispatch to the power sector stands at 180.35 MT, reflecting a growth of 5.71% compared to 170.61 MT last year.

This achievement is attributed to efficient logistical arrangements ensuring a smooth and adequate supply of coal. The Sub-Group, comprising representatives from the Ministry of Power, Ministry of Coal, Ministry of Railways, and power-generating companies has played a crucial role in maintaining an efficient supply chain.

The overall coal stock in the country (mines, transit, power plants) is over 144.68 MT, ensuring a sufficient coal supply to the power sector. The Ministry of Railways has ensured 10% average growth in the daily availability of railway rakes, with an average of 428.40 rakes per day supplied daily as of June 16, 2024. The evacuation through coastal shipping has also experienced significant growth. Traditionally, coal was transported via Paradip port only, but now, under proper coordination according to the coal logistics policy, coal is also being evacuated through Dhamra and Gangavaram ports. The infrastructural augmentation in the railway network has notably improved the movement of rakes from Son Nagar to Dadri, resulting in more than a 100% improvement in turnaround time.

The Ministry of Coal is fully committed to ramp up coal production and transportation, ensuring power plants have ample reserves to meet the surge in electricity demand. These coordinated efforts have significantly contributed to maintaining a steady and efficient coal supply to meet the high-power demand.

Eastern Coalfields begins first-ever pilot project for underground coal gasification in Jharkhand

The government recently said Eastern Coalfields Ltd, a Coal India subsidiary, has commenced its first-ever pilot

project for underground coal gasification in Jharkhand. Underground coal gasification (UCG) is a method of converting coal still in the ground to a combustible gas that can be used for various uses, including power generation.

"Under the strategic direction of the Ministry of Coal, Eastern Coalfields Ltd (ECL) has embarked on an innovative pilot project for Underground Coal Gasification at the Kasta coal block in Jamtara district, Jharkhand," the coal ministry said in a statement.

The move indicates the Centre's proactive diversification efforts within the coal mining sector.

The initiative aims to revolutionise the coal industry by using in-situ coal gasification to convert it into valuable gases such as methane, hydrogen, carbon monoxide, and carbon dioxide. These gases can be utilised to produce synthetic natural gas, chemical feedstock for fuels, fertilizers, explosives, and other industrial applications.

The coal ministry said that it is fully committed to promote coal gasification projects, recognise their potential to transform coal into various high-value chemical products.

Coal India selected the Kasta coal block to implement UCG technology tailored to the country's geomining conditions. Managed by ECL in collaboration with CMPDI Ranchi and Ergo Exergy Technologies Inc (EETI) from Canada, this project spans two years and comprises two phases.

The first phase, which commenced recently involves preparing a technical feasibility report through borehole drilling and core testing. The second phase will focus on coal gasification at a pilot scale.

The successful execution of this pilot project is expected to create transformative opportunities for the country's energy sector.

India’s coal sector likely to witness investment of ₹1.25-lakh crore in 2024

India’s coal sector investment is expected to grow by almost 10 per cent y-o-y to around $15 billion, or roughly ₹1.25-lakh crore, in the current calendar year as the country prepares to meet demand due to rising electricity consumption and expanding industrial base.

According to the International Energy Agency (IEA), investments in the coal sector by the world’s second largest producer and consumer has been growing consistently since 2021 with the annual rate of growth in investments expected to double in 2024 compared to 2023.

The agency in its world energy investment report 2024 anticipates that efforts by the world’s third largest energy consumer to ramp up coal production will fall short of meeting the demand for the critical commodity with reliance on imports increasing.

Aided by an expanding industrial and commercial base, as well as growing electricity consumption, which is appreciating at about 10 per cent annually, India’s appetite for coal has risen substantially in the past decade.

Investments in coal

The IEA pointed out that the government announced plans to increase domestic production to meet rising demand and investment, which has been growing steadily since 2021.

“Investment increased by 5 per cent in 2023 and is set to expand by nearly 10 per cent in 2024 to around $15 billion. The Ministry of Coal is relying on a series of measures to boost coal supply, including commercial auctions with a revenue share mechanism, allowances for the sale of additional coal production and rolling auctions,” it revealed.

Nonetheless, based on current trends, demand is set to rise faster than supply, which means India could soon overtake China to become the world’s largest coal importer, it added.

lean energy investments rising

The IEA pointed out that India’s clean energy investments have grown fast in the past three years in response to ambitious clean energy targets.

India plans 80 GW of new thermal power capacity by 2032 to meet surging demand

India is gearing up to enhance its thermal power capacity by 80 gigawatts (GW) by the year 2032, in response to consistently rising electricity demand across the country. This ambitious target was highlighted during a webinar on the trends and outlook of the thermal generation and power distribution sectors by the ICRA.

As per the webinar, the decision to boost thermal power capacity is driven by the necessity to accommodate strong growth in electricity demand. "Strong growth in electricity demand necessitating a rethink by the Government on thermal capacity addition," the report stated, emphasizing the need for new investments in thermal power projects to meet future energy needs.

The webinar also provided insights into the current status and projections for India's power sector, noting that electricity demand is expected to grow by 6% in FY2025. This growth comes on the heels of an 11% increase in demand recorded in the first quarter of the same fiscal year, supported by a favorable base and healthy economic activity

Additionally, the Plant Load Factor (PLF) for thermal power is anticipated to remain stable at 70% in FY2025. This stability is attributed to demand growth and limited new capacity additions in the thermal segment. The sector's outlook remains optimistic as renewable energy sources are also set to contribute significantly to capacity expansion, with over 30 GW projected in FY2025, increasing the total power generation capacity to 470 GW.

Further details revealed during the webinar indicated that coal stock levels are satisfactory, supported by improved supply from domestic sources and augmented by higher imports. In FY2025, imports are expected to account for 7% of coal consumption by thermal utilities, ensuring steady fuel supply for the expanding thermal power infrastructure.

The strategic move to boost thermal power capacity is part of India's broader energy strategy, which also involves substantial additions in renewable energy capacities to ensure a balanced and sustainable energy mix. The initiative reflects the country's commitment to strengthening its energy security while catering to the increasing power requirements of its growing economy.

Highest ever peak demand of 89 GW in the Northern Region successfully met on 17th June 2024

The Northern Region of India has been experiencing high demand conditions due to a prevailing heat wave since 17th May 2024. Despite these challenging conditions, the highest ever peak demand of 89 GW in the Northern Region was successfully met on 17th June 2024. This achievement was made possible by importing 25 to 30% of the region's power requirement from neighboring regions. All utilities have been advised to maintain a high state of alert and minimize forced outages of equipment. According to the IMD forecast, heat wave conditions in North-West India are expected to abate from 20th June.

In response to the increased demand and to ensure adequate power availability across the country, the Ministry of Power has implemented a series of measures to meet the highest ever peak demand of 250 GW during this ongoing summer season. These measures include:

- Imported Coal Based (ICB) Plants Operation: Directions have been issued under Section 11 of the Electricity Act, 2003, for ICB plants to continue the generation support during the high demand period.

- Maintenance Scheduling: Minimum planned maintenance of generating units has been scheduled during this period. Efforts are being made to minimize partial and forced outages to maximize the availability of generation capacity. Additionally, plants under long-term outage have been sensitized to revive their units to ensure maximum power generation.

- GENCOs Advisory: All generating companies (GENCOs) have been advised to keep their plants in healthy condition to ensure full capacity availability for optimal operation of various generation sources.

- Coal Stock Maintenance: Adequate coal stocks are being maintained at coal-based thermal stations.
- Hydro Stations Advisory: Hydro stations have been advised to conserve water during solar hours and dispatch maximum generation during non-solar hours to ensure power adequacy at all times.

- Gas-Based Power Plants Operation: Gas-based power plants have been directed to provide grid support under Section 11 of the Electricity Act, 2003. Additionally, around 860 MW of additional gas-based capacity (non-NTPC) has been tied up through competitive bidding specifically for this summer. Furthermore, approximately 5000 MW of NTPC gas-based capacity has been instructed to be ready for immediate operation as per system requirements.

- Market Utilization of Surplus Power: Any un-requisitioned or surplus power available with generating stations is to be offered in the market as per provisions of the Electricity (Late Payment Surcharge and Related Matters) Rules, 2022, and its amendments. This power can be utilized by any other buyer from the power market.

- Inter-State Power Tying: States can also tie up power with other states having surplus capacity via the PUShP portal.

India fossil fuel consumption up 8% in 2023

Fossil fuel consumption in India rose 8 per cent in 2023, accounting for almost all demand growth, while its share of overall consumption stood at 89 per cent, according to a report. According to an Energy Institute (EI) report, for the first time, more coal was used in India than Europe and North America combined. EI and co-authors KPMG and Kearney recently released the 73rd annual edition of the Statistical Review of World Energy, presenting for the first time full global energy data for 2023.

The report suggests that five key stories emerge from the 2023 data, starting with record global energy consumption, with coal and oil pushing fossil fuels and their emissions to record levels.

"Global primary energy consumption overall was at a record absolute high, up 2 per cent on the previous year to 620 Exajoules (EJ). Global fossil fuel consumption reached a record high, up 1.5 per cent to 505 EJ (driven by coal up 1.6 per cent, oil up 2 per cent to above 100 million barrels for first time, while gas was flat)," said the report. As a share of the overall mix they were at 81.5 per cent, marginally down from 82 per cent last year. Emissions from energy increased 2 per cent, exceeding 40 gigatonnes of CO2 for the first time. Solar and wind push global renewable electricity generation to another record level. Renewable generation, excluding hydro, was up 13 per cent to a record global high of 4,748 TWh, it said. This growth was driven almost entirely by wind and solar and accounted for 74 per cent of all net additional electricity generated.

As a share of primary energy use, renewables (excluding hydro) were at 8 per cent, or 15 per cent, including hydro. Meanwhile, the ongoing Ukraine conflict has cemented gas rebalancing in Europe. European gas demand fell 7 per cent, following a fall of 13 per cent the previous year. Russia's share of EU gas imports fell to 15 per cent, down from 45 per cent in 2021, with LNG imports outflanking piped gas to Europe for a second year in a row. Dependence on fossil fuels in major advanced economies is likely to have peaked. In Europe, fossil fuels fell to below 70 per cent of primary energy for the first time since the industrial revolution, driven by demand reduction and renewable energy growth. US consumption of fossil fuels fell to 80 per cent of total primary energy consumed. Growth economies struggle to curb fossil fuel growth, but renewables accelerate in China.

In Africa, primary energy consumption fell in 2023 by 0.5 per cent. Fossil fuels accounted for 90 per cent of overall energy consumption, with renewables (excluding hydro) at only 6 per cent of electricity. China's full return post-Covid saw fossil fuel use increase to a new high, up 6 per cent, but as a share of primary energy it has been in decline since 2011, down to 81.6 per cent in 2023, the report said. China added 55 per cent of all renewable generation additions in 2023 -- more than the rest of the world combined. It also overtook Europe on an energy per capita basis for the first time. EI President Juliet Davenport OBE HonFEI said, "With global temperature increases averaging close to 1.5°C, 2023 was the warmest year since records.

Thermal power plant load factor to remain healthy at 70% in FY25: ICRA

Thermal plant load factor or capacity utilisation is expected to remain healthy at 70 per cent in FY2025 on power demand growth of 6 per cent, ICRA said recently.

ICRA's outlook for the thermal power segment is "Stable", following the improvement in the thermal plant load factor (PLF) and healthy demand growth, thereby improving visibility on signing of new power purchase agreements (PPAs), an ICRA statement said.

Also, it stated that the implementation of the Late Payment Surcharge (LPS) scheme enabled an improvement in payment discipline from state distribution utilities (discoms) to power generation companies from August 2022.

However, it stated that ICRA's outlook for the power distribution segment remains "Negative" amid limited tariff hikes and continued loss-making operations.

According to the statement, ICRA projects the all-India thermal PLF level to rise marginally to 70 per cent in FY2025, from 69 per cent in FY2024, led by the growth in electricity demand and limited thermal capacity addition.

The rating agency projects the full-year demand growth for FY2025 at 6 per cent, slightly lower than its expectation for the GDP growth for this fiscal (6.8 per cent).

While this trails the growth of 7.6 per cent reported in FY2024, it remains higher than the historical average seen over the past 10 years.

The healthy growth in electricity demand over the past three years has necessitated a rethink on thermal capacity addition, with the government looking to encourage new thermal power projects, including private sector participation, it stated.

Vikram V, Vice President & Co-Group Head - Corporate Ratings, ICRA, said in the statement that ICRA expects the generation capacity addition to increase to 30 GW in FY2025 from 25 GW in FY2024, with the overall installed power generation capacity surpassing 470 GW by March 2025.

The thermal segment is expected to add 5.0-5.5 GW capacity in FY2025, with the balance 25 GW contributed by the renewable energy (RE) segment, he added.

While the RE segment would remain the key driver of the generation capacity addition going forward, ICRA expects the thermal segment to witness new project announcements, given the healthy demand growth, he stated.

Power ministry mandates continued 6 per cent coal blending to secure energy supply

The Centre has extended the advisory for coal blending in thermal power stations to ensure an uninterrupted power supply in light of rising demand. The ministry of power has issued a directive to all GENCOs, including Independent Power Producers (IPPs), to continue blending imported coal at a minimum of 6 per cent by weight with domestic coal until June 2024.

This directive comes as a strategic response to a substantial gap of approximately 12 million tonnes between the receipt of domestic coal and its consumption noted from September 1 to October 9, 2023. Originally set at a 4 per cent blending rate before adjusting to 6 per cent, the policy aims to enhance power production and address the shortfall in domestic coal supplies.

Despite increased domestic coal production and improved logistics, power demand peaked at 250 GW in May 2024 due to high consumption rates during the summer season. The Ministry's review highlighted that logistical challenges during monsoon seasons historically lead to reduced coal supply, affecting power generation.

The ministry emphasized the government's commitment to ensuring stable and uninterrupted power supply throughout the country. "Maintaining adequate coal reserves in domestic coal-based plants by all Central/State GENCOs and IPPs is crucial to meet the peak power demand during the upcoming summer months," it added.

The extension of the coal blending advisory reflects the government's proactive approach to managing the nation's energy requirements and stabilizing the power generation sector amidst fluctuating global energy markets and domestic supply challenges.

800 MW Ultra Super Critical Thermal Power Unit to Be Set Up in Haryana – CM Saini

To step towards self-reliance in the field of power generation, Haryana Chief Minister Nayab Singh Saini recently announced the establishment of an additional 800 MW Ultra Super Critical Thermal Power Unit at the Rajiv Gandhi Thermal Power Plant in Khedar, Hisar, at a cost of Rs 7,250 crore. CM Saini claimed that this initiative will enable Haryana to achieve self-reliance in power generation in the near future.

The Chief Minister was addressing the gathering while launching the Additional Subsidy Scheme in Haryana under ‘Pradhan Mantri Suryaghar Free Electricity Scheme’ at a state-level function organized in Ambala recently. He also distributed certificates to the beneficiaries of the scheme on this occasion.

In another important announcement, the Chief Minister declared the abolition of the monthly minimum charge for electricity. From now on, residents of the state will receive bills based solely on the number of units of electricity consumed, providing much-needed relief to electricity consumers.

While congratulating the people of the state on the launch of the ‘Pradhan Mantri Suryaghar Free Electricity Scheme,’ the Chief Minister said that under this scheme, a subsidy of Rs 60,000 will be provided by the Central Government, led by Prime Minister Narendra Modi, for setting up a rooftop solar plant for poor families with an income of less than Rs 1,80,000. Additionally, a subsidy of Rs 50,000 will be provided by the State Government. Although the cost of installing a rooftop solar plant is Rs 1,10,000, the consumer will not have to spend anything from their pocket.

Similarly, families with an income between Rs 1,80,000 and Rs 3 lakh will receive a subsidy of Rs 60,000 from the Central Government and Rs 20,000 from the State Government. The Chief Minister said that Prime Minister resolved to start this scheme on January 22, 2024, from the holy land of Ayodhya. Today, this scheme is being implemented in the state of Haryana. The Prime Minister aims to install solar rooftop plants on one crore houses through this scheme, which operates on a first-come, first-served basis. Eligible individuals who register first on the portal will receive the benefits of the scheme first, he added.

The Chief Minister said that the Prime Minister is dedicated to uplifting the most marginalized individuals in society. Over the past 10 years, PM Modi has worked to empower the poor and lift them out of poverty through various welfare schemes. During this period, 25 crore poor families have been elevated above the poverty line in a planned manner. The ‘Pradhan Mantri Suryaghar Free Electricity Scheme,’ launched today in the state, is another step in strengthening the poor. This double-engine government is fully committed to realizing the Prime Minister’s vision.

Taking a dig at the opposition, the Chief Minister criticized previous governments for politicizing the issue of electricity in the state. He noted that rallies

were organized, and promises of 24-hour electricity were made, but the opposition failed to deliver on these promises after securing votes from the innocent people of the state. In contrast, the current administration launched the 'Mhara Gaon-Jagmag Gaon Yojana' in a planned manner, ensuring 24-hour electricity supply to every village in Haryana today. The Chief Minister condemned opposition leaders for misleading the public by advising them not to pay electricity bills with false promises of bill forgiveness once in power. These deceitful leaders gained power through deception but never fulfilled their promises. The Chief Minister asserted that it is the double-engine government of the Center and Haryana that has put an end to this type of dishonest politics.

CM Saini stated that under the leadership of Prime Minister Narendra Modi, the country is making rapid progress in solar energy. In 2016, the Prime Minister inaugurated the International Solar Alliance Secretariat in Gurugram, accelerating the nation's transition to green energy.

Highlighting recent initiatives, the Chief Minister mentioned the allotment of 100-square-yard plots to poor families in Sonipat. The government not only passed the bill for this in the Assembly but also made a separate budget provision. Recently, more than 7,500 eligible people received allotment/possession for their plots. Where Panchayats lack available land, eligible individuals receive Rs 1,00,000 in their accounts to purchase plots.

Additionally, the HAPPY Yojana was also launched, providing free bus travel for 84 lakh people from 23 lakh families with incomes less than Rs 1 lakh. Each person can travel up to 1,000 km per year on Haryana Roadways buses.

The Chief Minister said that after taking oath for the third time, PM Narendra Modi released Rs 20,000 crore to farmers under the Pradhan Mantri Kisan Samman Nidhi (PM-Kisan) scheme. Furthermore, just as the central government has built houses for 4 crore poor people under the Pradhan Mantri Awas Yojana, it aims to provide 3 crore more houses in the next five years.

The Chief Minister emphasized the significant progress in the country from 2014 to 2024 in areas such as roads, universities, medical colleges, medical universities, and infrastructure development. Haryana has also seen all-round development during this period under the leadership of former Chief Minister Manohar Lal Khattar. The state government has ensured college facilities for girls within a 20 km radius and is bearing the education costs for girls from families with incomes less than Rs 1,80,000.

Speaking on this occasion, Energy Minister Ranjit Singh expressed that today marks a historic day for Ambala. In recent years, Haryana has made significant strides in the power sector, with both UBBVN and DHBVN achieving 'A Plus' category status. He highlighted that not only have line losses been minimized to the lowest levels, but all four power companies in Haryana are now recognized as reliable across the country. Minister Ranjit Singh emphasized that the 'Pradhan Mantri Suryaghar Free Electricity Scheme' is PM Modi's dream project, now overseen by former Chief Minister Manohar Lal Khattar in his role as Union Energy Minister. We will proceed with full confidence to ensure the effective implementation of this scheme across the state, he added.

Earlier, Minister of State for Transport Aseem Goyal said that the 'Pradhan Mantri Suryaghar Free Electricity Scheme' will illuminate the lives of the people of Haryana. He noted PM Modi's vision for India to lead in solar energy, setting an example for other nations. The scheme's launch in Haryana today underscores this commitment.

"Thermal plants working well, efforts on to make Rajasthan best in energy production": Energy Minister

"Amidst the scorching summer in Rajasthan, State Energy Minister Heeralal Nagar asserted that all the thermal power plants in the state are working well and the government under the leadership of Bhajan Lal Sharma is working towards making Rajasthan a state that would sell electricity in the future.

Speaking with ANI, Heeralal Nagar said, "This time, the summer season reached its peak and the heat wave was so high that the demand was 30pc more than last time. And it was beyond anyone's imagination that so much demand for electricity would come. Despite that, we tried to provide electricity..."

The energy minister also added, "We tried to provide relief to the public by purchasing electricity but there were some problems during the night when the demand was high."

Asserting that Rajasthan in future will become a state that will sell electricity, Heeralal Nagar said, "... The thermal production is going well. Now, the Bhajan Lal Sharma government will work towards making Rajasthan a state that sells electricity and not a buyer of electricity."

He added, "All our 7500 MW thermal power projects are working, and there is no shortage of coal in them. Our effort is to make preparations from now for the coming years so that Rajasthan can become the number one state in energy production."

Lauding the efforts by the state government, Nagar said, "All the thermal plants of Rajasthan Energy Production Corporation are producing electricity at 90 to 95% capacity and this has happened because of our continuous monitoring and efforts."

Meanwhile, Radheshyam Sharma, Jaipur's India Meteorological Department Director said that certain areas of Rajasthan in the next 48 hours will witness light rainfall and hailstorms.

Bikaner, Ajmer, Jaipur and Bharatpur of Western Rajasthan will receive light rainfall and hailstorm... Thunderstorms and duststorms will be recorded in areas of Eastern Rajasthan..." He added, "On 9th June, in some areas of Northern Rajasthan, there is a possibility of a thunderstorm... In most areas, the maximum temperature recorded will be less than 43 degrees Celsius... There is no possibility of a heat wave for the next 4-5 days." Meanwhile, the IMD also took to its official X handle and posted, "Hailstorm along with squalls (50-60 kmph) very likely in isolated pockets of Rajasthan on June 7 and West Madhya Pradesh during June 7-9, 2024."

BSES launches India's largest battery energy storage system in Delhi

In the time to come, you may get continuous electricity supply even if there is a technical fault in the power transmission or distribution system or the grid develops a snag. Power distribution company BSES, which supplies electricity to nearly two-third of Delhi through its two subsidiaries, has started working on India’s first utility-scale standalone Battery Energy Storage System (BESS), which is said to be the largest in south Asia.

Being installed at BSES Rajdhani’s Kilokari substation in south Delhi, the system will serve as an alternative source of power supply in the local area when there is a power cut due to unforeseen reasons. BSES Rajdhani has already got the approval from the Delhi Electricity Regulatory Commission (DERC) to initiate the project and it should be ready to be commissioned within 10-12-months. Once commissioned, more residential areas will be taken up under the project.

Officials said the project would be designed to handle the extreme variations in electricity demand, improve power supply, reduce network overloading and enhance the grid stability. It will also help in reducing the cost of power procurement and integrate renewable energy, thus deferring the need for capacity upgrades at the 33/11 kv power sub-station at Kilokri.

“The BESS is being installed using cutting-edge technology as a cost-effective option for managing electricity distribution at high and medium levels,” said a BSES official.

BSES Rajdhani is working on the project in partnership with IndiGrid and the Global Energy Alliance for People and Planet’s (GEAPP) and likely to improve power supply for nearly one lakh residents Kilokri, a heavily congested low-income residential pocket. With its easy deployment, the project will set templates for other state electricity regulatory commissions and power discoms, paving the way for future projects across the country.

.

India achieves 15% ethanol blending; aims for 20% by 2025: Hardeep Singh Puri

Union Minister for Petroleum and Natural Gas, Hardeep Singh Puri recently said that the country has successfully achieved 15 per cent ethanol blending in May and is on track to reach the 20 per cent target by 2025.

Addressing the media upon assuming office, Puri emphasized the accelerated goal, originally set for 2030, demonstrating India's commitment to enhancing its energy matrix. "In the month of May only, we were able to cross 15 per cent of ethanol blending. Based on the current progress, I am reasonably confident that the 20 per cent blending target will be completed by the year 2025," he remarked.

In addition to biofuel integration, Puri highlighted the launch of green hydrogen projects as part of India's strategy to reduce carbon emissions. "The first green hydrogen plant (10 MW) was commissioned on 27th May 2024, even as elections were on. Many of our Oil PSUs are in the process of issuing tenders for the supply of green hydrogen," said Puri. He also noted the operational green hydrogen station at Kochi, servicing buses from Kochi Airport, marking a significant step towards sustainable public transportation.

Puri also touched on the broader energy landscape, including the successful expansion of LPG coverage under the Ujjwala scheme and forthcoming increases in oil and gas production. "Our LPG connections have increased from 14 crores in 2014 to 32 crores now, and oil production from the 98/2 well will soon reach 45,000 barrels per day," he added.

The minister further discussed the ongoing projects aimed at bolstering the nation's refining capabilities. "BPCL is in the advanced stage to set up greenfield refineries, and the Cauvery Basin Refinery by IOCL at Chennai is coming up, which will further enhance our refining capacity," Puri said.

Petroleum use dips in India, but aviation and diesel fuel defy trend

India recorded a marginal decrease of 1 per cent in overall petroleum products consumption in May 2024, with total usage at 20.49 million metric tons (MMT), as per the latest report from the Petroleum Planning and Analysis Cell (PPAC). This slight decline contrasts with specific growth seen in sectors like aviation and motor spirit consumption.

The report detailed that High-Speed Diesel (HSD) consumption experienced a growth of 1.8 per cent, reaching 8.37 MMT for the month. Similarly, Motor Spirit (MS) or petrol usage increased by 2.4 per cent, amounting to 3.43 MMT. This reflects continued demand in transport sectors despite overarching consumption trends.

Aviation Turbine Fuel (ATF) consumption notably increased by 10.8 per cent to 0.74 MMT, driven by a surge in air traffic, suggesting a robust recovery in the aviation sector. The rise in ATF usage highlights growing air travel demand both domestically and internationally. Conversely, Bitumen and Kerosene saw declines in their consumption rates. Bitumen usage fell by 5.5 per cent to 0.82 MMT, while Kerosene usage, predominantly under the Public Distribution System (PDS), recorded a modest increase of 1.9 per cent. Natural Gas (NG) consumption reported a slight uptick of 0.3 per cent, totaling 5708 million standard cubic meters (MMSCM). This growth aligns with the broader adoption of NG across various industries including power generation and fertilizers, underscoring its increasing importance in India's energy mix.

Additionally, the Liquefied Petroleum Gas (LPG) segment, which mainly includes domestic usage, grew by 1.9 per cent. This increase is supported by the continued expansion of the Pradhan Mantri Ujjwala Yojana (PMUY) and other state schemes promoting clean cooking fuels.

India's LNG surge supports Asia's imports in June

Asia's imports of liquefied natural gas (LNG) are expected to dip slightly in June from May, with strength in India holding up the top-buying region's appetite for the super-chilled fuel.

Asia is on track to import 23.18 million metric tons of LNG in June, down a touch from May's 23.55 million, but up 8.9 per cent from the 21.28 million from June last year, according to data compiled by commodity analysts Kpler.

The largely steady outcome in June from the prior month reflects the little change in arrivals to China and Japan, the world's two biggest LNG importers respectively. China is on track to import 6.17 million tons in June, little changed from May's 6.19 million and the 6.20 million from June 2023.

Japan's arrivals are estimated at 4.69 million tons in June, down marginally from May's 4.80 million and 4.92 million in June 2023.

The real action in Asia's LNG market is in India, the continent's fourth-largest importer, which is slated to see arrivals of 2.72 million tons in June, the second-highest on record and up from May's 2.46 million.

The June imports are also 54 per cent higher than the 1.77 million tons from the same month in 2023, and first half imports of 13.71 million are almost one-third above the 10.44 million from the same period last year.

The breakdown of India's imports also shows a strong increase in arrivals from the United States, with a record 960,000 tons expected to be landed in June.

This is up from 470,000 tons in May, and almost double the previous record month of 580,000 tons from June 2021.

There are likely two dynamics at work with the rising shipments from the United States, then first being that U.S. producers are looking for alternative markets to Europe, where LNG imports have declined in recent months.

The second factor is likely that U.S. cargoes are being offered at a lower price to those from other top shippers Qatar and Australia, especially since U.S. natural gas prices remain at levels that would allow their plants to offer competitively priced cargoes and still make profits.

Another factor that shows India is keen to buy LNG currently is that it imported a cargo from Australia in June, with 70,000 tons arriving on June 11 from Chevron's Gorgon plant in Western Australia.

India rarely buys from Australia, with June's shipment being only the second cargo this year after one in April. Prior to the April shipment, the last cargo that India imported from Australia was in June 2023. India's demand for LNG is being boosted by the strong rise in power demand amid an ongoing heatwave and robust economic growth.

Gas-fired electricity generation normally only accounts for around 2 per cent of the India total, with coal supplying 75 per cent. However, in May gas-fired generation rose to 3.1 per cent of the total, up from 1.6 per cent in the same month in 2023, according to data from Grid India. LNG in India is also used in industrial processes such as making fertiliser, and the strong economy is helping to boost demand. Gross domestic product is growing 7.8 per cent in the 2023-24 fiscal year.

The question for the LNG market is whether India's strong demand is likely to continue, or will it ease amid the recent higher prices for spot cargoes.

The spot price of LNG for delivery to North Asia, the regional benchmark, was $12.60 per million British thermal units (mmBtu) in the week to June 21.

This was unchanged from the prior week, which in turn was the highest price in six months, and also up 52 per cent from the low so far this year of $8.30 per mmBtu, reached in the week to March 1.

India has traditionally been viewed as a price-sensitive buyer, but the strength of demand from the robust economy and the persistent high temperatures has been enough to overcome higher LNG prices.

There may be some relief from temperatures in coming months as the monsoon season brings rain and cooler weather, and while the economic growth rate is tipped to ease, it is still expected to remain around 6-7 per cent in the current fiscal year.

The opinions expressed here are those of the author, a columnist for Reuters.

Indian Biogas Association demands Rs 90 per kg fixed rate for procurement of compressed biogas

Indian Biogas Association (IBA) is demanding a fixed rate of Rs 90 per kg for procurement of biogas by oil and gas marketing companies, from the government, citing environmental benefits and to boost the sector. The IBA will soon put up the suggestion about fixing the procurement price of the biogas, along with other recommendations, for boosting the sector before the newly appointed Union Minister of New and Renewable Energy Minister Pralhad Joshi.

While the retail selling price of compressed biogas (CBG) is aligned with CNG (compressed natural gas), the procurement price is unfortunately linked to the retail selling price (RSP) of CNG, IBA Chairman Gaurav Kedia told PTI.

Consequently, he said with CNG prices in New Delhi hovering at Rs 75-80 per kg, the procurement price of CBG by oil and gas marketing companies falls to Rs 59 per kg (excluding GST).

"This pricing structure fails to recognise the inherent environmental value of CBG. Ideally, CBG should command a premium (of Rs 10-15), reflecting its green credentials. It should be around Rs 90 per kg," he said.

The successful implementation of the SATAT (Sustainable Alternative Towards Affordable Transportation) programme is expected to significantly reduce India's import bill by USD 15 billion, representing roughly 10 per cent.

SATAT is a government initiative to promote CBG as an alternative, green transport fuel.

The current offtake price of CBG is pegged to a discounted retail price of CNG, which is counterintuitive, considering the critical need to prioritise climate change mitigation, Kedia said.

To incentivise biogas producers and accelerate industry growth, the government needs to establish a more efficient and rational pricing mechanism, he said.

After 7 years and $1.2 bn investment, ONGC offers stake in Deen Dayal gas field

After spending close to USD 1.2 billion and seven years of little success, stateowned Oil and Natural Gas Corporation (ONGC) is seeking partners to rescue the Deen Dayal gas field in the KG basin in Bay of Bengal. ONGC on June 12 sought expression of interest from "global oil and gas companies with requisite technical expertise and financial strength to join as partner (with participative interest) for firming up a viable strategy" for the field, according to the tender document.

The field has produced negligible quantities of gas since ONGC in January 2017 acquired Gujarat State Petroleum Corporation's (GSPC) 80 per cent interest in the KG-OSN-2001/3 block off the east coast of India.

The block contains the Deen Dayal West (DDW) gas/condensate field which was discovered by GSPC almost two decades back. The Gujarat government company had showcased the field as a promising prospect when it sold its stake to ONGC in order to cut its debt.

The field, which was initially said to hold up to 20 trillion cubic feet of in place gas reserves - by far the biggest in any deepsea field in the country - but later trimmed to a tenth, has proved to be tougher than anticipated. "A total of seven development wells are drilled till date," ONGC said in the tender document. A development well is one that helps produce hydrocarbon from below the earth's surface or seabed. "However, four wells which were completed did not yield good productivity as anticipated and

performance was sub-optimal. Severe technical challenges and complications were encountered in the other three wells during drilling and completion phase and had to be abandoned," ONGC said. The company now wants a global partner who could help with the development of DDW.

Besides the acquisition cost, ONGC has spent undeclared sum of money in trying to bring the DDW field to production. GSPC holds 10 per cent's stake in the field and the remaining is with Jubilant Enpro. The KG-OSN-2001/3 block, which was awarded to GSPC and its partners in the first bid round of New Exploration Licensing Policy (NELP) brought by the then NDA government under Prime Minister Atal Bihari Vajpayee, comprises five fields - DDW, DDE, DDN, DD-DT and DD-BRU. Of these, DDW, which lies about 10 km off the Andhra Pradesh coast, is spread over 37.5 square kilometers and is under development. DDW already has a well head platform with 16 well slots, a process platform that has capacity to process 5.66 million standard cubic meters per day of gas, and a subsea pipeline to take the gas to an onshore terminal.

ONGC said the reservoirs in the field are classified as high-pressure high temperature (HP-HT). "The in-place reserves are to the tune of 55 billion cubic meters (1.94 Tcf) of gas." The company intends to undertake a revision of the field development plan that was previously submitted to authorities. "Considering the technology challenges associated with the field and costs involved, ONGC would like to seek technical expertise to firm up a way forward for future development," the tender document said. Bids are due by September 12. When ONGC acquired GSPC stake, it had reasoned that it would be able to use facilities such as process platform as well as subsea pipeline to bring to production Cluster-1 discoveries in its neighbouring KG-DWN-98/2 or KG-D5 block. Also, the KG-OSN-2001/3 block infrastructure was supposed to be a back-up option for Cluster-II discoveries in KG-D5 in case of disruptions, he said. But the company never used the facilities and instead built new ones on KG-D5 block. According to the field development plan that GSPC submitted to the Directorate General of Hydrocarbons in 2009, DDW was to produce 200-300 million cubic feet a day. Output however has been a fraction of that

ONGC and IOCL sign MoU for new LNG Plant at Hatta, Vindhyan Basin upgraded

ONGC and IndianOil Corporation Limited (IOCL) have inked a memorandum of understanding (MoU) to establish a small-scale Liquefied Natural Gas (LNG) plant near the Hatta Gas Field in the Vindhyan Basin, upgrading the basin from a Category II to a Category I status. The MoU was signed on June 17, 2024, at Deendayal Urja Bhawan in New Delhi.

GAIL fast-tracks net zero carbon goal to 2035 from 2040

In a significant strategic move, GAIL (India) Ltd has revised its target to achieve net zero carbon emissions to 2035, advancing it by five years from the initially set goal of 2040.

The board of directors of GAIL approved this advancement on Friday. The company stated, "GAIL (India) Ltd board of directors today accorded approval to advance its net zero target for Scope-1 & 2 emissions by five years, from the year 2040 to year 2035. This decision follows an extensive study undertaken by GAIL to enhance its sustainability goals and align with India's broader Net Zero commitments."

To reach this ambitious goal, GAIL plans to implement a series of strategic initiatives. These include the electrification of processes, the integration of renewable energy sources, the installation of battery energy storage systems (BESS), utilization of compressed biogas (CBG), and the development of green hydrogen and carbon dioxide valorization initiatives, along with afforestation efforts.

Sandeep Kumar Gupta, chairman and managing director of GAIL, emphasized the role of natural gas in the transition to cleaner energy sources. "GAIL is in the business of marketing and transmission of natural gas, which is a cleaner fuel that aids in reducing emissions of various industries and end-consumers," Gupta noted. He added that GAIL is actively taking steps within its operations to reduce emissions, contributing to a cleaner environment.

By advancing its net zero emissions target to 2035, GAIL reaffirms its commitment to playing a leading role in India's energy landscape, promoting sustainable development, and significantly contributing to the national target of achieving net zero carbon emissions by 2070.

GAIL announces ₹60,000 crore investment for new ethane cracker project in Madhya Pradesh

In a significant move to expand its petrochemical operations, state-run GAIL (India) Ltd. has announced plans to set up a massive ethane cracker project in Madhya Pradesh with an investment of ₹60,000 crore. The project, which aims to produce 1500 kilotons per annum (kta), is set to bolster GAIL's position in the petrochemical industry significantly.

The company said it has submitted its request to the Madhya Pradesh state government to provide suitable enablers for the project. "Around 800 hectares of land will be provided by the MP Industrial Development Corporation Ltd., for which the state government has already initiated the process," GAIL said in an exchange filing. The filing further mentioned that the investment approval from GAIL's board would be sought following a favorable resolution of the project enablers.

Ethane crackers are crucial in the petrochemical industry as they process ethane—a component of natural gas—into ethylene. Ethylene is a key raw material for manufacturing plastics, adhesives, synthetic rubber, and various other petrochemicals.

In addition to the ethane cracker, GAIL plans to develop a 70-hectare township for the project. The groundbreaking ceremony is expected to take place by February 2025, with commercial production commencing in the financial year 2030-31.

This announcement comes amid financial reports indicating a downturn in GAIL's recent performance, with a 5.6% decline in revenue to ₹32,317 crore for the March quarter. The company also reported a more than 23% drop in net profit, attributed to lower revenue and weaker-than-expected results in the gas marketing segment. This new initiative is part of GAIL's strategy to diversify its business and enhance its footprint in the global petrochemical market.

Jakson Green to execute world's first CO_2 to ethanol plant in Chhattisgarh

In a significant development for India's clean energy sector, Jakson Green has been appointed as the Engineering, Procurement, and Construction (EPC) partner for the world's first project converting flue gas CO2 to 4G ethanol. The initiative, developed by NETRA (NTPC Energy Technology Research Alliance), the R&D wing of NTPC Limited, is set to operationalize within two years in Lara, Chhattisgarh.

The project aims to produce 10 tons per day of 4G Ethanol from flue gases, capturing 25 tons per day of CO2 and generating 3 tons per day of Green Hydrogen through a 7.5 MW Electrolyser. The captured CO2 and hydrogen will be converted into ethanol using advanced microbial fermentation technology provided by LanzaTech Inc.

Highlighting the project's importance, Kannan Krishnan, Joint Managing Director, Jakson Green Private Limited, said, "We take immense pride in continuing our longstanding relationship with NTPC to establish the landmark project. This partnership builds upon the success of our numerous joint projects, further solidifying our commitment to revolutionizing Power-to-X mission. Increasing the production of Ethanol is crucial to achieving India's blending goals, strengthening energy security, and fostering a cleaner future. We are proud to be at the forefront of this transformative project, paving the way for a brighter, more sustainable future."

This ground-breaking project reinforces the company's position as a frontrunner in India's green molecule space. With over 8,500 TPA of green hydrogen and its derivatives production capacity under development across six marquee Power-to-X projects, Jakson Green is uniquely positioned to spearhead India's clean energy transition and contribute to a sustainable future.

.

India targets 70 per cent increase in nuclear power capacity by 2029, plans to add 7 new reactors

Union Minister Jitendra Singh after reviewing the 100-day action plan of the Department of Atomic Energy (DAE), said that the country's nuclear power generation capacity will increase by 70 percent in the next five years. This growth is expected to elevate the current installed capacity from 7.48 GWe to 13.08 GWe, facilitated by the addition of seven new reactors.

"In the coming five years, India's nuclear power generation capacity is set to increase by around 70 percent," Singh stated, emphasizing the strategic importance of nuclear energy in meeting the country's growing power demands. The expansion plan is part of a broader initiative to enhance national energy security and support the increasing needs of a rapidly developing economy.

The meeting also addressed the integration of advanced technologies and the importance of indigenous development to bolster the country's energy security. Singh highlighted the government's efforts in promoting joint ventures and increasing cooperation to leverage next-generation technologies. "Our priority should be promoting energy security through indigenous technology development," he remarked.

Significant progress in key projects was noted, including advancements in the 220MW Pressurized Heavy Water Reactor (PHWR), which is being adapted to use a Bharat Small Reactor (BSR) for more localized power generation needs. Additionally, the development of the Bharat Small Modular Reactor (BSMR) 220 MW is underway, employing light water-based technologies to enhance safety and efficiency.

Another critical development discussed was the Prototype Fast Breeder Reactor by BHAVINI, which is nearing its initial fuel loading phase and is expected to reach criticality in the coming months. This reactor is notably designed to produce more fuel than it consumes, representing a significant innovation in nuclear reactor technology.

Singh also urged the department to utilize nuclear technology across various sectors including health, agriculture, and food preservation to maximize its economic and societal benefits.

The review meeting, attended by Ajit Kumar Mohanty, Chairman of the Atomic Energy Commission, and other senior officials, set a forward-looking agenda for India's nuclear energy policy, aiming for a significant increase in capacity and technological advancement by 2029.

Steam generators installed in design position of Kudankulam reactor 4

The steam generators meant for reactor 4 of Kudankulam Nuclear Power Project (KKNPP), each weighing about 307 tonnes, was assembled and installed in the design position recently.

All four steam generators meant for nuclear reactor 4 of KKNPP were assembled with Open Top method, which makes it possible to install oversize equipment prior to closing the dome of the reactor building with the help of external high-capacity crane. This method has already been successfully implemented at reactor 3 and has proven its effectiveness in reducing the construction time and accelerating the start of welding of the reactor coolant pipeline.

"The installation of steam generators at Unit 4 by our Indian partners was carried out under normal conditions quickly and efficiently. The Open Top installation technology, proposed by the Russian engineers for the installation of steam generators of nuclear reactor 3, has again confirmed its

effectiveness during this installation, especially when performing all the installation procedures with such high quality as demonstrated by the contractors during KKNPP construction," said Anton Chistyakov, Deputy Director for Projects in India, Head of Construction Division of ASE JSC at KKNPP site.

The key equipment of Unit 4 was manufactured at Atommash Plant – the manufacturing site of AEM-technology company, which is part of Atomenergomash, Machine Building Division of Rosatom State Corporation.

The Russian and KKNPP engineers employed the Open Top method for installing the 317-tonne reactor pressure vessel, the heart of the nuclear reactor, of reactor 4 in January last in record-breaking time. Buoyed by the results, this method is being employed for installing heavier equipment of the nuclear reactors.

The steam generator is a component of the reactor plant primary circuit and is designed for production of dry saturated steam from the heat transferred to the reactor core by the primary circuit coolant. Dry saturated steam produced by the steam generator is used in the turbine plant where the thermal energy of the steam is converted into electric energy. The weight of each steam generator is 307 tonnes.

"The technical solutions implemented in KKNPP characterize ways of further evolutionary development of VVER high power reactor and transition to creation of a new, reliable, safe and economically efficient power unit. The new power units of KKNPP comply with the most up-to-date requirements of IAEA in the field of safety," said a senior of Nuclear Power Corporation of India Limited, the project proponent.

For Clear Air, Go Nuclear

Amit Garg, Professor, IIM Ahemedabad,
Saritha Sudharmma Vishwanathan, Asst Prof,
Kyoto University, Japan,
R. B. Grover, Member, AEC, GoI

Globally, nuclear energy will play an important role in decarbonizing and achieving the net-zero targets. Under the 2015 Paris Agreement, 14 countries have assigned a significant role to nuclear energy in their nationally determined contributions (NDC), and 20 countries have included nuclear power in their long-term strategies (LTS). Also, 30 countries are considering commencing nuclear power programmes, while another 20 have expressed an interest to initiate nuclear programmes.
According to the International Energy Agency Report, 'Renewables 2022: Analysis and Forecasts to 2027', nuclear energy would play a significant role in providing stable base-load power to India's future energy mix toward achieving net-zero emissions. India, with its indigenous nuclear programme, is poised to significantly increase its nuclear capacity. GoI has demonstrated its commitment to this growth.

However, due to trade bans on the import of uranium prior to 2008 and shortage of indigenous uranium, momentum for energy production from nuclear sources was hindered. Relaxation of guidelines by Nuclear Suppliers Group regarding nuclear trade with India, the scenario has now changed this scenario.

India's LTS, India's now estimate a threefold rise in the installed nuclear capacity by 2032, with plans to explore a greater role for nuclear energy and increase support for R&D. An April 2024 IIM Ahmedabad study, "Synchronising Energy Transitions Towards Possible Net-Zero for India: Affordable and Clean Energy for All', has explored India's national pathways under three economic growth scenarios and four net-zero scenarios (at a medium growth rate) to achieve clean and affordable electricity.

Each of the first three Net Zero scenarios emphasize the thrust on nuclear power (NZ1), fossil fuels with carbon capture and utilisation (NZ2), RE (NZ3) and the fourth is an integrated scenario (NZ4). The nuclear generation capacity can save 240–550 MTCO2 (million tons of CO2-equivalent) under NDC scenarios and about 605–1995 MTCO2 under net-zero scenarios.

Nuclear generation capacity in 2070 will be in the 78 to 331 GW (with a share in the supply mix of around 12-50%). The nominal levelised cost of electricity – a measure of average net present cost of electricity generation for a generator over its lifetime – for NZ1 2070 stabalises around 40% below that for the 2020 NDC medium growth scenario at INR 2.76/kWh.

Simultaneously, investment needs for NZ1 are lower than the other three NZ scenarios. However, additional investments required in NZ1 are approximately 43% above those in NDC medium-growth scenario, but could be partly met through carbon markets.

Economies of scale could provide further savings. Its variable costs are low as compared to fossil with carbon capture, utilization and storage, or RE with storage technologies. So nuclear could be the winner with almost zero GHG emissions, and the lowest landed price of electricity for the end consumer.

As a viable alternative to coal and gas, nuclear energy offers a host of benefits:

- Provides grid stability,
- Reduces air pollution,
- Diversifies fuel sources,
- Creates new well-paying jobs,
- Requires low land compared to RE sources.

To fully harness these benefits, India needs to develop a strategy to build nuclear capacity, including a strategic reserve of nuclear fuel to ensure steady supply over the lifetime of its reactors.

While this will help to strengthen energy security, scaling up required nuclear capacity and generation in the next couple of decades will be challenging. Despite having the lowest investment needs among all net zero scenarios, the nuclear option is perceived as a high-cost option due to the prevailing narrative that looks at costs only at the generator end.

Barriers include the investment required to develop the nuclear facilities and social challenges such as the “not in my backyard” viewpoint. Despite India pursuing a closed fuel cycle that gives rise to the lowest waste per unit of electricity generated, the narrative from countries pursuing an open-cycle approach is thought to apply to India.

India has a declared strategic programme and follows stringent rule-based export controls. Proliferation concerns from expansion of nuclear energy in India is not an issue. India has mastered Pressurized Heavy Water Reactor Technology and is about to deploy its first indigenously developed fast breeder reactor. Conscious of its fuel resource profile, India continues to develop advanced concepts to ensure that nuclear can play an important role in India’s net-zero scenarios for a long time.

Financing nuclear growth in India will become crucial for achieving its net-zero targets. Scaling up of nuclear energy will require investments, and further evolution of policies and regulations., India needs to include nuclear energy in its sustainable finance taxonomy to mobilize financial flows.

This was first published in the Economic Times, 6 May 2024 and is republished here after permission.

8th Roundtable Conference on Coal

12th April, 2024 New Delhi

Theme: Role of Coal in Energy Transition

PROCEEDINGS

Starting the proceedings, **Shri N. N. Gautam, Chairman, Coal Group, IEF** welcomed all dignitaries on the dais and all Guests and Participants who had graced the conference with their presence. He invited Shri Alok Perti, IAS (Retd.), Former Secretary, Ministry of Coal and Patron, Organizing Committee of the conference to deliver his welcome address.

Inaugural Session

Shri Alok Perti, Former Secretary, Ministry of Coal: He welcomed and introduced the dignitaries on the dias - Shri Alok Kumar, IAS (Retd.) Former Secretary, Ministry of Power, Shri S. K. Srivastava, IAS (Retd.), Former Secretary, Ministry of Coal, Shri R. V. Shahi, Former Secretary, Ministry of Power and President, India Energy Forum. Shri U Kumar, Co-Chairman of the Organizing Committee of the Conference and Former CMD, NCL/SECL, Shri P. S. Upadhyaya, President, MGMI-DC and Shri N. N. Gautam, Chairman, Coal Group, IEF and Former Advisor, Ministry of Coal. He also welcomed Shri C. Balakrishnan, IAS (Retd.), Former Secretary, Ministry of Coal and Officers from different Ministries, Captains of Indian Coal Industry, Research Scholars, Academicians, Delegates, Guests and Representatives from the Media.

Referring to the theme of the Conference -" Role of Coal in Energy Transition", he stated that this theme is very topical and has become a centre of debate and discussion across the world in light of the fact that global warming and climate change had already started having major impact on life and livelihood of masses across the world. He also referred to the recent developments in the global coal industry and the fact that even today coal was a major source of energy across the world and coal usage was having such a major impact on the globe that coal producers from different countries had formed World Coal Association to debate and discuss the adverse impact of coal- use on environment and to look for abatement measures. He also referred to the recent change in the name of World Coal Association and the shift in its focus to entire coal chain from production to end -use and ways & means of combating the adverse impact of coal use on environment and making it more efficient and environment-friendly.

Continuing to dwell upon importance of coal as an Energy source, he stated that coal becomes more important for a country like India which was not blessed with sizeable resource of other fossil-fuels like Oil and Gas.

He referred to the fact that the energy requirement in India is growing and will continue to grow and this could be met only by increasing coal production since, as stated above, we are not happily placed in matters of reserves of other fossil fuels like Oil and Gas. Naturally, Coal production as well as consumption was bound to have a rising trend. In this connection, he also referred to the ambitious programme that the country had undertaken for building facilities for power generation from Renewables for a capacity of 500 GW which would result in coal use for power generation going down, of course in percentage terms in absolute terms, however, the col consumption will continue to grow for the coming few decades. But, then we cannot have the luxury of continuing things in Business as Usual (BAU) manner and we will have to take all possible measures to produce and use coal in the most efficient and environment-friendly manner. In this connection, he also referred to the concept of Carbon Capture and Sequestration/Utilization (CCSU) which can effectively ensure that increase in coal consumption will not necessarily result addition to GHG Emissions and will not contribute to global warming and climate change.

He concluded with the hope that the Speakers in the coming sessions would share their views on this important issue and will enable preparation of an actionable road-map in this regard.

Shri U. Kumar, Former CMD, NCL/SECL, while introducing the theme of the conference stated that it can be rather confusing is as much as it is coal which is blamed as the major source of global warming and at the same time, as per the theme the world is called upon to depend on coal for bringing about the energy transition. But then,this transition has become so urgent that if we continue to use coal in "Business As Usual Manner" manner there will be no space available to accommodate GHG Emissions from Coal Combustion after only a few years.

In simplistic terms, it can be stated that the problem of global warming, to the extent it is caused by coal combustion can be effectively managed if we stop using coal but unfortunately it is not possible since the world has been depending upon coal for centuries and this situation is likely to continue, albeit in smaller measure, for meeting the ever-increasing energy needs of mankind for many more decades to come.

In this situation, solution lies in using coal in a manner that it does not cause any further damage to the environment.

He referred to Shri Perti's remarks wherein he had made a mention of World Coal Institute. This organization (It has changed its name to World Coal) has clearly stated that research efforts have proved that if clean coal technologies are used for Coal burning and the coal consuming plant are equipped with Carbon Capture and Sequestration/ Utilization facilities, GHG emissions can be reduced by 90%.

He concluded that coal would always have a role in the global energy scenario and if coal is used properly with CCS/U facilities, it will not cause damage to the environment as Coal is being accused of doing, now.

Shri P S Upadhyaya, President, NCR Chapter of MGMI welcomed all the dignitaries, delegates and participants to the Conference. He expressed great happiness over a being given opportunity of being a co- organizer of the conference with India Energy Forum and ISMAADC. Tracing the history of MGMI, he stated that it is one of oldest technical organizations operating since 1906 and it has been doing yeoman service to the mineral industry for which it deserves compliments and congratulations.

He stated that the seminars, paper meetings, R&D works and training facilities organized by MGMI have contributed a great deal to the well-being and progress of Indian Mining Industry. He hoped that the highly experienced and knowledgeable speakers in the upcoming technical sessions will address the various important aspects of the theme of the conference and this will help in drawing a future road-map for progress of Indian Coal Industry.

Shri S K Srivastava, Former Secretary, Ministry of Coal – Shri Srivastava stated that Coal in India had seen many ups and downs in the past but today it is like Indian stock market. We Look at the industry with hope and expectation and it was moving in positive rising trend. The industry has gone through several lean periods and overcome a lot of challenges to reach the current position.

Talking about his personal experience he stated that when he took over as Secretary (Coal), he got an interesting legacy from his predecessor, Shri Alok Perti. That was the time when the CAG Report had come out that the country had suffered huge losses on account of irregular allocation of coal blocks by Ministry of Coal. In that atmosphere, it appeared that everything was wrong with the coal sector. The reports also made out that everything with coal industry was wrong. The matter had already reached Hon'ble Supreme Court and the hearing was in progress. Ministry of Coal fought very hard and saved the few blocks which were already in operation or else on the verge of starting operation. Unfortunately, however, more than 200 coal blocks which had been allotted for captive mining got cancelled because of Hon'ble Supreme Court's observations that their allocation was arbitrary and wrong.

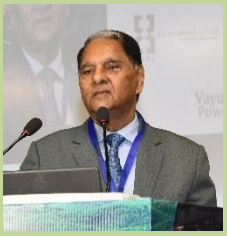
At that time, the captive blocks were producing about 50 MT per annum and moving forward they were to

produce 150 MT per annum. However, this was not to be.

He referred to the Ordinance by Government of India which changed the system of allocation of coal blocks and prescribed the system of auction for allocation.

He asserted that India has huge coal resources and coal is practically the only indigenous source of fossil fuel that is available in the country. He therefore felt that India should not be dictated or led by countries which have other resources of energy and were not primarily dependent on coal.

India should devise its own policy on coal production and usage and he felt that coal was going to stay for many more years and even by 2070 when we had targeted to achieve Net-Zero, coal would continue to be an important energy source for India though in percentage terms power generated from coal will be lower than 75% which it is generating now.



Shri R V Shahi, President, IEF welcomed the dignatories on the dais and dignatories off the dias and all the delegates. He particularly thanked Shri S K Srivastava, Former Secretary (Coal) and Shri Alok Kumar, Former Secretary (Power) to be with us on the dias as Shri Amrit Lal Meena, Secretary Coal, the Chief Guest of today's function could not come due to some emergency in the family. He said that Coal and Power have a very close relationship of interdependence on each other. Coal depends on power for its 80 per cent of its production and power depends 70 per cent on coal. He pointed out that now there is a firm consensus not only in the country but also globally that coal is going to be there for many decades to come. India depends on coal for its commercial energy as this is the only indigenous fuel that we have in abundance. We have something cheer that last year India has reached a milestone of 1 billion tonne of coal production and by the year 2025-26 Coal India itself will produce 1 billion tonne of coal. However, due to addition of lot of renewable energy capacity coal production is likely to plato. We have to make serious efforts to utilize this coal in a more environment friendly manner by improving coal quality through coal beneficiation.

We have also to have a technological improvement in coal combustion through introduction of coal gasification, coal to hydrogen and introduction of carbon capture storage and utilization (CCSU). Lastly, he said that we have put the coal shortage as a story of the past and now enough coal is available to fulfill our needs. But we have to face to take up the challenges of making the use of coal greener and environment friendly.

Shri Alok Kumar Former Secretary (Power) thanked India Energy Forum and Shri Shahi for giving him opportunity to speak to this august gathering. He agreed with all that has been said my earlier speakers on coal being the main stay of the commercial energy of the country and because of rising production of coal the country will be in a position to sustain a rising economy. However, he pointed out that use of coal will increase our GHG Emission and will make India the second highest polluter after China. Because of High GHG Emission climate change is happening and it is going to impact food production and likely to cause serious crisis. So therefore, we have to also, other than having large capacity addition of renewable energy have greener use of coal production and coal combustion by using modern technologies. Otherwise, there will be tremendous global pressure on us not to use coal. We need coal for sustaining our rising economy for having affordable energy and energy security. He empahsised that there has to be a parallel action of improvement of coal logistics, along with increase of coal production.

Shri N N Gautam, thanked all the eminent speakers for sharing their valuable views on the role of coal in energy transition. He also thanked the audience for being very attentive and patient.

Technical Session - I : Coal Production - Meeting The Demand

Shri Birendra K. Thakur, Director (Technical), Ministry of Coal: The first paper on this subject was presented by Shri Birendra K. Thakur who did it on behalf of Advisor (Projects), Ministry of Coal. The

presentation was full of important data and information as to how Indian Coal Industry is moving forward which gives confidence that the country would become self-sufficient, at least in respect of its requirement of Power Grade Coal.

Shri Pramod Kumar, GM (Mining), CMPDI: The 2nd presentation came from Shri Pramod Kumar who dealt with underground Coal Production and stressed on Exploration for locating coal seams below the lowest coal seams identified till date. He felt that these coal seams would be of better quality and these will be suitable for Underground Mining. He advocated strategic initiatives; policy supports and technological advancement for improving Underground coal production in the country.

Shri Randip Singh, GM(OC), CMPDI: He advocated multi-pronged approach focusing on regulatory framework, implementation of stringent, environmental safeguards, investment in advanced technologies on human and technical fronts and fostering greater team engagement, undertaking social responsibility projects, prioritizing workers' safety and training on human development side.

Shri Himanshu Singh, Director (Strategy), Vedanta: Shri Singh spoke on Commercial Mining and highlighted the following:

a. Parity between CIL and commercial miners in pricing
b. Government to take a critical look on revenue sharing as high as 80% since at such high rates commercial mining becomes unviable.
c. Incentives for UG mining.
d. Reduction of royalty on UG mining
e. Removal of Rs 400/- per ton GST compensation cess
f. Fixed timeline of 180 days for grant of all approvals from state and centre.
g. Land records in states to be digititalized
h. Improvement and expansion of Rail Infrastructure for coal transport
i. Intention to"" Ease of doing business by simplification of processes.

Shri Kapil Dhagat, Executive Vice President – Head BU Coal & Mining, JSPL: Shri Dhagat made out that the assessment of the Government that about 500 MT of coal will be available annually for commercial mining requires a fresh look.There will be, in fact only a swipe in a way that about 70% to 80% of coal produced by the Commercial Miner would be consumed internally by them with the result that equivalent quality of coal produced by CIL and presently being consumed by these commercial miners would become available in the market.

He also felt that the Commercial Miners producing low grade (G11-G17) coal may not survive since they will not be ab le to compete with these grades of coal produced by Coal India Ltd.

He therefore advocated that Government should review the re-bundling of baskets and dynamics of NCI so that RP has upper capping. He also referred to serious anomalies like price of G16 coal currently being almost equal to that of G7 grade.

He also contended that with increase in production for CIL, there will be increase in availability of coal in the market and this will result in low premium – even 0 premium in coal auction. This will reduce the competiveness of commercial mining further. He cited the example of April'24 when Coal India had pit-head stocks 90 MT and it issued directions to its subsidiaries to auction 25% of production and supply more coal to non-regulated sector.

He therefore felt that the current trend of captive consumption by commercial miners would continue and that the mines which had been won on the basis that the coal produced from there would be sold in the market would have greater difficulty in selling their coal. This, however would not be the situation

in case of higher grades of coal where availability fromCoal India would be lower and imported coal of that quality would be costlier.

Technical Session II : Application of Modern Mining Technologies:

Mr. Chandra Shekhar Singh, Technical Secretary to Director (Technical), Coal India Ltd.- Making a presentation on behalf of Director (Technical), CIL Shri Singh. identified the following key enablers and policy initiatives for making Underground Mining viable:

1. UG mining may be re-categorized as a B2 project for EC, considering its minimal environmental impact and EC process therefore should be streamlined without necessity for public hearing.

2. Once Stage-I FC and EC are obtained, concerned State Governments may grant permission for commencement of UG operations against full payment of compensatory levies without insistence on land for compensatory afforestation.

3. The extra cost on sand stowing/backfilling in underground mines should be reimbursed to the mining companies for incentivizing underground production.

4. Provision of financial support may be considered for indigenous manufacture of UG machinery under Make in India initiative to address cost and spares availability issues.

5. Large-scale underground mining may be incentivized by offering a rebate in revenue share (bid price in auction) for coal produced through UG mining.

Mr. Sitansu Nandi, Head (Mining), Gainwell: Shri Nandi spoke on "Towards Sustainable Mining: Exploring Alternative Fuels for Dump Trucks in the Indian Mining Industry"

He made out the following points :

a. Major Original Equipment Manufacturers (OEMs) have shifted their focus towards developing fully battery-electric driven large mining dump trucks, indicating a promising shift away from traditional trolley-assisted systems.

b. There should be more focus and deeper collaboration among the GOI and scientific bodies for developing battery electric powered 100 Tonne class dump truck which are widely used in the Indian mining industry.

c. Additionally, among alternative fuels, liquefied natural gas (LNG) emerges as a highly viable option, presenting significant potential for substituting diesel through dynamic gas blending

i. Trials conducted in Indian coal mines on dynamic LNG blending have yielded promising results, showcasing improvements in safety and sustainability when compared to fully diesel-powered dump trucks.

ii. Further trials across diverse operating conditions are necessary to validate and optimize these findings.

d. With the support from mine owners and regulatory bodies, manufacturers can develop the infrastructure for on-site LNG production to ensure a continuous, safe, and cost-effective supply for dump truck usage.

e. Collaboration will be required for scientifically substantiated solutions and methodologies for assessing technical and economic indicators for adoption of alternative fuels in mining dump trucks.

Mr. Suresh Behera, Chief Manger (Systems), CMPDI: He spoke on "Application of IT in Mining". He advocatedthe following:

1. Big Data Analytics Centres must come up to establish a Data Analytics ecosystem. This shall help in Predictive and Prescriptive Analytics for the mining companies. Mining companies need to smartly capture, smartly store and smartly use data in a big way to address ESG issues.

2. AI and Automation need to play bigger roles. Curated chatbots, for example, can make life simpler for new players intending to enter the mining sphere.

3. Decision making systems need to incorporate spatial data for more accurate and informed decisions.

4. Cybersecurity needs to be given absolute importance. Companies need to have dedicated cybersecurity cells.

Shri Avinash Kumar Mishra, ED (Coal), Railway Board: Shri Mishra gave past statistics of movements of coal by Rail, Road, and other mode of transport.

He stated that massive addition in coal-based power generation capacities from 2008 onwards took place. In thepast due to many reasons, the power generation did not reach its targeted goal due to domestic coal production lagged behind the capacity additions in the power sector. There were other factors in the logistics network like first mile connectivity, paucity of trunk routes and feeder lines.

The draw backs have been overcome by development of infrastructure to cater to the increasing demand for transportation of coal and also development of coalfields sidings and ports.

He stated that now there is an evacuation strategy in place as given below:

Railway transportation capacities had been built according to the traditional movement of coal from Eastern / East Central mines to Northern and western plants, Mines to Ports and then to Southern states and Ports to the Steel Plants located in East India. Further, evacuation infrastructure is being developed by construction of Dedicated Freight corridors, Multitracking of Trunk routes, Junction Bypasses through Y-connectivity and Rail Flyovers and Rolling Stock Addition. Also, there is Network Capacity Addition through 3300 Km of DFC on Two Highly Density Trunk Routes, Identified Coal and Mineral Corridor Projects, Tripling and Quadrupling of Highly Utilised Busy Routes, Doubling and Automatic signalling on Feeder Routes, Bypass, Flyovers and ROR on busy Junctions, Upgrading Track and Bridge Structure for 25T axle Ld, Specific Coal Connectivity Projects on Coal Routes and Joint venture Projects for connectivity to New coal production areas.

However, he pointed out that we have a long way to go and we are facing quite a bit of future challenges such as Railways is forced to continue with Mix traffic of 1. Passenger and Freight, 2. Minerals and Finished Goods, 3. Essential Items and Normal Cargo and 4. Priority Schedules.

He finally emphasized that the huge investments made on coal and mineral corridors for Tripling/Quadrupling, Junction Bypasses, Rolling Stocks DFC needs to be utilized for its full potential.

Long Term Planning for capacity creation needs predictability in Sourcing of coal and Utilisation by Plants.

Session III: New Trends in Coal Usage

Shri Rajeew Lochan, Prabha Energy Pvt. Ltd.: He spoke on "CBM Current Status & Prospects in India" and made out the following:

CBM is a cleaner fuel-a Natural Gas which in addition to its use as a fuel, it can also be used in manufacture of fertilizer and steel in cement industry etc.

The country is shifting towards Gas-based economy. The share of natural gas will increase to 15% by 2030 in India's Energy mix.

With 5th largest coal resources, India has significant CBM Potential (160BCM). CBM contribution in domestic Natural gas will enhance from 2% to 8% by 2029.

Since gas has big market, it is essential to conduct Reservoir Studies and actions are being taken in that direction. CBM production will lower the emission of GHGs, while ensuring energy supply.

Shri Debasis Maity, Executive Vice President, Coal Gasification, JSPL: Shri Maity spoke on Coal Gasification and stated that Gasification is the process to convert any carbon containing material into Synthetic gas composed primarily of CO & Hydrogen and that JSPL had adopted SLTC, S. Africa & Lurgi, Germany Fixed Bed technology with non-coking coal as a feed stock for 34-35% High Ash coal. For this purpose, high ash coal produced from their own commercial coal mine near Angul was beneficiated to supply consistent quality to the gasifier units. He also stated that JSPL has adopted the technology which enable use of non-coking coal for steel making. In the process, bye-products like Tar, Oil, Phenol, Ammonia were produced which improved the viability of the products.

Salient specifications of JSPL's Angul Plant are as under:

- Gasifiers- 7(6+1)
- Coal Required 2.4 MMTPA
- Syn-gas Production- 225,000Nm3/hrs
- Syn-gas Utilization-
  - a) DRI- 160,000Nm3/hrs
  - b) Fuel gas- 65,000Nm3/hrs
- Liquid Co-products- 125,000MTPA

Dr. Rasesh Kotdawala, Sr Manager (Clean Energy System), BHEL: He spoke on Coal to Chemicals Projects of BHEL which has been involved in development of Alternative usage for high Ash Indian coals, Coal Gasification and Clean Solution as an import substitution for Chemicals, LNG, Coking Coal etc.

High Ash Indian coals produce Syngas (Co+H2) which is gateway for production of Synthetic Natural Gas, Methanol, DRI Dimethyl Either, Ammonia. From these products lot of other chemicals like Urea, Acetic Acid, Olefin, Ammonia Nitrate etc are produced.

Basically, BHEL has used Fluidized Bed Gasifiers for Indian Coals. They have set up 168TPD Coal Gasification facility at Trichy.

Agreement between CIL & BHEL for Coal to 2000TDP Ammonium Nitrate Project to be set up in Talcher has been signed with the total Capital Cost of 11,782 Crs. GOI has also granted sum of Rs 1350 Crs for this Project under National Coal Gasification Mission with the objective of achieving 100 million tes Coal Gasification by 2030.

Dr. Peeyush Kumar, GM, Business Dev. Coal India Ltd: Dr. Kumar spoke on Coal Gasification - Initiatives, Opportunities & Challenges. He stated that there is huge demand of Synthetic Natural, Di-Methyl Ether, Ammonium Nitrate etc. and with abundant non-coking coal reserves in India we need to work out alternative usage of coal for Steel making and production of Ammonia, Urea and lot of other chemicals via Coal Gasification. This also helps as an import substitute for oil and gas. For high Ash Indian Coals Fixed Bed Gasifiers are preferred options.

He informed that MCL, Subsidiary of CIL along with BHEL is in the process of setting up 0.66MPA Ammonium Nitrate Plant in Talcher Coalfield of Orissa with annual coal consumption of 1.30 million tons.

He further informed that another Subsidiary of CIL-ECL alongwith BHEL is planning to set up SNG Plant of 1.89 MMSCMD in Sonepur Bazari mine in West Bengal with annual coal consumption of 1.90 million tons

Dr. R K Malhotra, Former DG, FIPI: Dr. Malhotra spoke on Production of Hydrogen from Coal - Is it an option for India? He stated that:

I. For economy to grow to $10 Trillion by 2030 India needs to re-invent the energy basket to ensure Energy Security, Affordability and Sustainability. By 2030 India plans to reach its non-fossil fuel energy capacity to 500GW. Hydrogen is the answer for meeting the stringent norms and mitigating climatic change. Presently more than 95% of the total Hydrogen production is from fossil sources- mostly by Natural gas.

II. Currently under production are:

a) Brown H2 from Coal/Lignite with high level production of CO2 upto 18Kg/Kg H2. Grey Hydrogen from Methane/ NG with production of 9-11 Kg CO2/ Kg H2 Turquoise Hydrogen from pyrolysis of Methane to produce H2 & elemental Carbon thus avoiding Co2 emission.

b) Green Hydrogen by splitting water by electrolysis into Hydrogen & Oxygen.

III. India's current Hydrogen demand is (6.7 Mte per annum which is equivalent to 7-8% of Global demand) and will grow to 13-14 Mte per annum by 2030.

IV. Currently cost of Hydrogen production is cheapest from Coal Gasification route. With the abundant coal reserves till reliable and economical technology for production of Hydrogen is established India need to focus on Hydrogen production from Coal Gasification route while planning to use Green Hydrogen for future growing needs and to have gradual transition to low Carbon/ Green Hydrogen.

V. NITI Aayog has entrusted CSIR-CIMFR & CMPDI Gasification Potential Mapping for Indian Coals. Such Roadmap for Coal Gasification may be for setting up commercial plants of 7500 to 25000 tes per day plants at different Pit-heads locations for utilizing 100 MMTPA Coal for production of various value-added products.

VI. High Ash Indian Coals washed and/or blending with Petcoke to reduce ash content shall be suitable for Entrained Flow Gasifier or Moving Bed Gasifier.

He informed that in Talcher Coalfield at Angul in Talcher Coalfield JSPL has set up Moving Bed Gasifier for low ash (<30%>) coal (high ash coal washing or blending with imported coal) for capacity of 3000TPD Coal. He concluded that Hydrogen can economically be produced as of now from Coal, Petcoke, NG and so we need to focus on that till sufficient Green Hydrogen is available at affordable cost.

PANEL DISCUSSION:

Shri P. S. Bhattacharyya, Former Chairman, Coal India Ltd chaired the Panel Discussion Session and made the following remarks:

a. In order to meet the climate challenge most countries are pursuing transition from fossil fuel-based energy to Renewables. In developed nations where the energy consumption is saturated or growth is miniscule, any addition to renewable capacity causes corresponding phasing out of fossil fuel-based capacity. India stands out as an exception to this where addition to renewable capacity compliments addition to fossil fuel-based capacity.

b. This is because, India is low in terms of per capita power consumption being at one fifth of China - a comparable country in terms of population and one tenth of the developed World. This position is sure to undergo change as the country develops. In other words, the growth of energy consumption will rise exponentially which can be met by growth in both renewable and fossil fuel, albeit slower for the latter.

c. As India's roadmap to meet the domestic energy demand stands out in sharp contradiction to global trends, strong international headwinds are inescapable. India needs to develop a strategy to mitigate the issue and prevent it from becoming a derailer to the great Indian Growth Story.

d. As a corollary, this will call for concerted action to mitigate the environmental impact of rising use of coal for power generation.

e. While absorbing CO2 emission from coal usage by adopting CSS and CSU technology needs a lot of thrust for which India has to depend for availability of cost-effective technology on developed nations, these are not forthcoming due to inadequate research funding by those countries. The other major initiative that India can take on its own is extensive washing of coal before usage.

f. As recent experiments in MCL has demonstrated, State -of- the- art technology for coal washing reduces the energy content in rejects to a level where it cannot be used for any purpose other than landfilling or backfilling in mines. The yield of washed coal is over 85%. Tests held at NIAS, Bangalore indicates that use of washed coal, besides reducing Ash substantially, is able to bring down SOx, NOx and P2.5 particles. The technology is capable of recirculating water for washing thus reducing input of water significantly. It's also power efficient.

g. Hence large scale use of this new technology should be implemented across the country to ensure complete avoidance of supply of as- mined coal within a limited time frame.

h. However, to make the process commercially viable, it is important to correct a long pending discrepancy in the price structure of coal.

i. Internationally, the coal price in Rs/tonne moves exponentially higher @ 2.5-3% for 1% rise in Calorific Value (CV). In Rs/GCal terms - the price unit considered more relevant by consumers - the price moves upward @ 1.5 to 2% for 1% rise in CV. This allows the coal producers to undertake all necessary measures for processing and washing of coal. The price differential adequately takes care of the capex & opex incurred for quality improvement. No wonder that internationally, coal washing is practiced almost universally.

j. In complete contrast, the coal price in the Indian situation is flat in Rs/GCal terms and is modestly linear in Rs/tonne particularly with power grade coal (G9-G14). Coal washing is thus rendered commercially unattractive. Actually, the situation is more detrimental for coal consumers than producers. In Rs/GCal terms, the consumer at the destination end pays a higher price for lower grade coal and vice versa. This is primarily due to components like rail freight and GST compensation cess being fixed in Rs/tonne, thereby declining with rise in GCV of the coal supplied.

k. Hence the price structure needs to be aligned with the trend prevailing internationally in terms of percentage rise/fall in price with each 1% variation in GCV.

The following Panelists discussed various aspects relating to the theme of the Conference:

- **Shri Manoranjan Hota**, Former Director, MoEFCC
- **Shri Deep Krishna** – Founder DKG Labs Pvt Ltd
- **Shri Manish Singla**, Associate Director, CRISIL

The outcome of the discussion of the Panelists as follows:

- Investment Incentives: Provide financial benefits like tax breaks and grants to encourage coal mining companies to adopt advanced technologies such as Gen AI, IoT, LoraWAN, software solutions, wearables, and AI drones, contingent on achieving efficiency, safety, and sustainability goals, thus facilitating coal's responsible integration into the energy transition process.

- Training and Education Programs: Develop specialized training initiatives to equip coal mining workers with the skills needed to effectively utilize advanced technologies like IoT, software solutions, and wearables, ensuring a smooth transition for coal-dependent communities in the evolving energy landscape.

- Environmental Stewardship Initiatives: Mandate environmental conservation measures as part of technology adoption efforts, such as land reclamation and emission reduction, leveraging technologies such as IoT and AI drones to minimize the environmental footprint of coal operations while supporting its role as a transitional energy source.

- Monitoring and Evaluation: Establish mechanisms to monitor and evaluate the impact of

technology adoption on coal mining operations, safety, environmental outcomes, and energy transition goals, incorporating technologies like IoT, software solutions, and AI drones to assess the effectiveness of coal's role in facilitating the broader energy transition.

- Research and Development Funding: Allocate funds for research aimed at improving technologies for coal mining operations, fostering collaboration between academia, industry, and government.

- Regulatory Framework: Establish clear regulations that support the adoption of advanced technologies while ensuring adherence to safety and environmental standards.

- Public-Private Partnerships: Facilitate partnerships between government, industry, and technology providers to pilot, share, and scale innovative solutions.

- Data Sharing and Collaboration: Encourage coal mining companies to share data and collaborate on industry-wide standards and best practices for technology adoption.

- Long-Term Planning and Transition Support: Provide support for coal mining communities to transition to new industries and employment opportunities, including economic diversification and infrastructure investments.\

- International Cooperation: Engage in international collaboration to leverage global expertise and experience in technology-driven solutions for coal mining.

- In conclusion it emerges that embracing advanced technologies such as Gen AI, IoT, LoraWAN and other cutting-edge innovations presents a transformative opportunity to redefine the role of coal in the energy transition. By strategically integrating these technologies into our coal mining operations, we can unlock unprecedented efficiencies, enhance safety standards, mitigate environmental impacts, and ensure the sustainability of our energy landscape. It is imperative for policymakers to recognize the immense potential of technology-driven solutions and enact policies that incentivize their adoption, fostering a seamless transition towards a cleaner, more sustainable energy future.

Valedictory Session:

Shri C K Mishra IAS (Retd), Former Secretary, MoEF&CC: He said that the theme of the Conference today which relates to a subject which is full of contradiction. It is a reality that we have to use coal for rising energy needs for improvement of quality of life of our citizen and to have fuel energy security and at the same time coal being a big contributor for GHG gases for heavy impact on climate change we have to fulfill our responsibility to reduction of carbon emission to protect the world from the global warming. He said that this contradiction also become a very interesting as it provides a space to think to balance the contradicting situation moving the available space and innovate.

He said he is not going to repeat all that has been said on the subject of role of coal in energy transition. This goal of energy transition is to reach net zero emission which is really very challenge and tough call to reach. However, it is indeed important that we continue think about it and moves towards achieving the same.