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India Inc's green hydrogen pilot gathers steam; economics yet to add up

AMRITHA PILLAY
Mumbai, 24 August

The current financial year (2023-24, or FY24) is emerging as one in which multiple Indian companies are setting their green hydrogen ambitions in motion, albeit at a pilot stage. However, industry executives and experts state that demand and financial closures are still elusive.

Top executives from Adani Enterprises informed analysts earlier this month that work on their electrolyser manufacturing unit is likely to commence in the current or next quarter.

The conglomerate is not alone in kick-starting its green hydrogen pilot. Among others, Larsen & Toubro (L&T), Indian Oil Corporation, and ReNew are expected to form a joint venture (JV) company in the next few weeks, according to Subramanian Sarma, whole-time director and senior executive vice-president (energy), L&T.

The three companies initially announced plans in April 2022 to form a JV to develop the nascent green

hydrogen sector in India.

According to another executive familiar with the matter, "All the required approvals for the tripartite JV are now in place, with the JV formation under process."

Construction is underway at Reliance Industries' giga complex in Jamnagar, which will also house the planned electrolyser manufacturing unit, according to insiders.

Sandeep Kumar Gupta, chairman of state-owned GAIL (India), informed shareholders on Wednesday that the company's 10 megawatt green hydrogen production unit, the largest in India with a capacity of 4.3 tonnes per day in Vijajpur (Madhya Pradesh), is expected to be commissioned by December.

"Several Indian companies are in the process of commissioning commercial-scale green hydrogen plants in India in 2022-23 through FY24 and beyond. As with most large-scale fuel manufacturing units, these will take time to scale up to full capacity due to a combination of market demand, technological barriers, and regulatory conditions," says Dipankar Ghosh,

ILLUSTRATION: BINAY SINHA



partner & leader/sustainability & ESG, BDO India.

Ghosh expects most Indian green hydrogen manufacturers should be able to produce green hydrogen for \$1-2 by 2030. Not everyone shares this

view. Pranav Master, senior practice director-consulting at CRISIL, remains sceptical about achieving \$1 per kilogram (kg) even with the head start seen in FY24. "Hitting \$1 per kg by 2030 would be very challenging; significant

scale-up, technological developments, and further incentives are crucial. From where we are in 2023, that cost seems unlikely by 2030," he says.

Sarma points out: "A technological breakthrough has to happen in storage,

electrolyser efficiency has to improve, and finally, demand has to be generated for economies of scale. Today, it's a Catch-22 or chicken-and-egg situation — unless the price comes down, demand will not go up."

Master adds that on the funding side, significant project finance closure is yet to be seen.

A company executive from a state-run entity also noted that some of those planning green hydrogen units are considering various options to ensure the lowest possible cost of the electrolyser before proceeding. Those taking these early steps are aware of the missing piece of the puzzle — demand.

When it comes to seeking clients for the initial output from the Hazira (Gujarat) electrolyser manufacturing unit, the executive says, "We are focusing on manufacturing; I think we will first use it for our own use, and simultaneously, we will also begin marketing." L&T plans to establish a gigawatt-scale manufacturing facility for electrolysers in India.

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India's intent to trim fuel output investments threatens supply security

5 DINAKAR
Amritsar, 24 August

India's energy supply security is threatened by New Delhi's overdrive to slash new fossil fuel production facilities, while lagging behind on electric vehicle (EV) proliferation. The move also seems out of sync with evolving realities of energy use in a post-pandemic, post-Ukraine world.

UK Prime Minister Rishi Sunak recently announced that the government would grant at least 100 new North Sea oil and gas licences, a stark turnaround for a nation which was an early proponent of clean energy measures. His policy shift echoes the turnaround in the stance of European oil majors, which are veering away from lower-return renewables to focus on their core fossil fuel businesses.

bp this year scaled back plans to cut oil output to 25 per cent, from 2019 levels compared with previous plans for a 40 per cent cut. Shell plans to spend around \$40 billion on upstream and trading between 2023-2025, while scrapping projects on offshore wind, hydrogen, and biofuels.

The lower dependency on fossil fuels is understandable. Last year, Exxon, Shell, Total, Equinor, Chevron, and bp made adjusted earnings of a combined \$233 billion, 6 per cent of India's GDP. Shell's new chief has said it will maintain oil output

into 2030 and focus "on the highest returns that play to our strengths".

While India may not focus on returns like corporations, energy security and affordability is elemental to rapid, equitable, and cheap economic growth, but the oil ministry's latest plans involve a rapid exit from fuels without considering its implications on supply security. Late last month, in reply to a question in the Parliament, Rameswar Tell, minister of state in the oil ministry said that India's refining capacity is projected to increase from its current level of around 5.1 million barrels per day (bpd) to 6.2 million by 2028. "This capacity is likely to be adequate to meet projected demand," Tell said, citing a report by Centre for High Technology, a technical wing of the oil ministry. The refining capacity of Indian refineries is projected to increase by 1.12 million barrels per day by 2028 to 6.2 million bpd from 5.08 million bpd today, Tell said. The numbers he cited amount to a capacity increase of just 22 per cent over the next five years.

The meagre addition under the latest oil ministry forecast also leaves little room for exports after barely meeting domestic fuel needs. Oil product is one of India's biggest export earners — at \$37.3 billion in 2022-23, and a key contributor to the economy and foreign exchange reserves.

"To continue being a refining hub and

SLIPPERY SLOPE

- The addition under the latest oil ministry forecast leaves little room for exports after barely meeting domestic needs
- The oil ministry's projections will trail domestic demand, which will probably make India import fuels



exporter of petroleum products, Indian refining capacity should be more than 400 million tons a year (8 million bpd) by 2030," said Sourav Mitra, a director at CRISIL.

The oil ministry's projections will trail domestic demand, leave little for exports and probably make India import fuels. Calculations by Business Standard reflect a shortage of fuels if India pursues a conservative investment strategy for refining. Oil demand is expected to grow at a little over 4 per cent and reach 7 million bpd by 2030, CRISIL estimated.

Diesel demand, which constitutes around 40 per cent of total oil use, grew by 12 per cent in the 2022-23 fiscal from a year earlier, and the role of transport in diesel usage has grown to 81 per cent in 2021, with trucks accounting for the biggest chunk, a

segment that cannot be easily converted to electric. India's oil demand may reach 87 million bpd in 2040, the largest increase of any country, the International Energy Agency has said.

"As India's middle classes grow, demand for cars will increase," said Tilak Doshi, a London-based energy expert, who has worked for Saudi Aramco, Arco, and Unocal in senior positions. "EVs, biofuels, and hydrogen are all side shows with little impact. Biofuels are wasteful and expensive as it requires large agricultural resources to create ethanol at the expense of food," Doshi said.

At the India Energy Week in February, Prime Minister Narendra Modi exhorted Indian refiners to boost refining capacity by 4 million bpd. That statement was more

in line with an oil ministry report in 2018, which projected refining capacity at 5.18 million bpd by 2020, 8.3 million bpd by 2025 and 8.8 million bpd by 2030.

What Modi prescribed for the oil sector also falls in line with India's need for affordable fuels to meet a 7 per cent plus growth rate en route a \$10 trillion economy. "We expect oil demand to remain strong in India given the growth in economy coupled with the growing population. While the peak oil demand in developed countries could come in by 2028-2030, India's peak oil demand may be reached by around 2040-45 indicating a continued increase in usage," said Bhanu Patni, associate director, India Ratings & Research.

After adjusting for exports at current levels of around 61 million tons, India will need around 2.5-3 million bpd in additional refining capacity to meet consumption growth; alternatively, India may need to import fuels.

Ongoing additions include IndianOil adding 540,000 bpd a year by 2025, including a 180,000 bpd greenfield refinery in Tamil Nadu. Hindustan Petroleum may complete a similar sized refinery in Barmer by 2026, while its Vizag refinery expansion of 300,000 bpd will be ready this year. The Numaligarh refinery in Assam will add 120,000 b/d by 2025 and Bharat Petroleum will add 80,000 bpd at Bina in five years.

Upcoming capacity of 1.1 million bpd may yield only around 600,000 bpd of fuels because around 25 per cent of the capacity from new refineries will be dedicated to petrochemicals, and another 10 per cent used to run the refinery, said Mukesh Surana, former chairman, HPCL, and head of state-run Ratnagiri Refinery.

India's downward revision of refining additions seems more in sync with the country's first Energy Transition Report, prepared by an advisor to the Prime Minister, and issued in May, which recommended an aggressive phasing out of fossil fuels. The report, which is yet to be accepted by New Delhi, asked to eliminate diesel vehicles by 2027, and transition to clean-fuel public transport in 10 years.

"Based on the long term growth trends in consumption of gasoline and diesel and increasing adoption of CNG, Bio fuels and EVs, this (refining) capacity is likely to be adequate to meet projected demand," Tell said. But India's EV penetration rate as a share of new vehicle sales at 1.5 per cent is well behind UK's 23 per cent, Europe's 21 per cent and China's 29 per cent, according to ICRA, a Moody's affiliate.

India's clean energy space is growing slower than expected. Renewables lag targets, while coal still fills in for 70 per cent of generation, and the first fuel on call to power EVs this decade.

Oil companies clash on retail outlet at Boduppall

L. RAVICHANDER
HYDERABAD, AUG. 24

Justice S. Nanda of the Telangana High Court reserved her order on a battle of wits between Indian Oil (IOCL) and Bharat Petroleum (BPCL). The judge was hearing a writ petition filed by Bhommak Chandrashekar who was allotted a retail outlet at Boduppall, Medchal district, by IOCL.

While IOCL send the intimation in February 2020, it issued the letter of intent (LoI) two years later. In the meanwhile, BPCL issued a LoI to a person 55 metres away. Chandrashekar was denied a licence on the ground that the proximity of petrol bunks was contrary to the regulations of the Indian Roads Congress (IRC). Challenging this, Chandrashekar filed the petition.

The oil companies claimed parallel rights to have a retail centre as allotted by them. The BPCL allottee is a widow who was offered a one-time transfer from her original place of licence in Gujarat. IOCL contended that the rules made by the IRC were directory and not mandatory. It also contended that the area was allotted to the company in 2018, and it could not be faulted.

POLYCLINIC LICENCE REMOVAL CHALLENGED

Justice Chillakur Sumalatha of the Telangana High Court granted time to a private citizen to engage counsel in a case where the cancellation of the licence of a polyclinic in Wanaparthi is under challenge.

The cancellation of the licence was the outcome of a marital dispute between Dr Laxmi



Kumari who along with her husband Dr Pramod Kumar runs Sri Balaji Polyclinic at Wanaparthi. She complained that the district medical and health officer (DMHO) had cancelled the licence on the ground that a complaint had been made by Dr Kumar, her estranged husband.

She complained that she was running the polyclinic, the notice ought to have been given to her. Dr Kumar appeared before the court on Thursday.

POLICE TOLD TO PRODUCE KID IN COURT

A two-judge bench of the Telangana High Court on Wednesday directed the police to secure custody of a seven-year-old and produce her in court on September 5.

The bench of Justice K. Lakshman and Justice K. Sujana was hearing a habeas corpus petition filed by the mother. Petitioner's counsel T. Swetcha said the couple was married in 2014 and had two children, one of them seven years old and the other two years old. Differences cropped up between the couple and that the husband forcibly sent his wife out of the matrimonial house and deprived her of the custody of her minor children.

On the persistent request of the elders, the husband gave the custody of the two-

year-old male infant to the mother. Another meeting was to be held but the husband blocked the contact number, changed his residential address and absconded with the seven-year-old daughter. The petitioner approached the Malkajgiri police and registered a case of domestic violence against the husband and his family members. She approached the Lalaguda police to trace her missing daughter.

The petitioner used to wait at her daughter's school but the husband on coming to know of this changed the school. Swetcha stated that the child needed care and affection of the mother and asked that she be produced before the court.

HC DIRECTION ON STRAY DOG MENACE

A two-judge bench of the Telangana High Court on Thursday directed the GHMC to take measures to vaccinate stray dogs, and file a report by October 5.

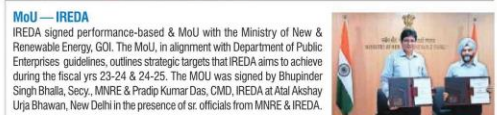
The bench of Chief Justice Alok Aradhe and Justice T. Vinod Kumar was hearing a public interest litigation filed by Vikramaditya, a student from Vanasthalipuram, who alleged that the Greater Hyderabad Municipal Corporation was not taking measures to vaccinate street dogs and was not providing the strays sufficient food for survival. Greater Hyderabad Municipal Corporation counsel said that of the 2.18 lakh stray dogs, 50,000 had been vaccinated and sterilised.

It said measures were in progress with the help of five animal welfare organisations and dog care centres.

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VISIT — EIL
A delegation led by CMD EIL, Varika Shukla visited the Mongol Refinery Project, Mongolia, where the team met Mongolia's Deputy PM, Khurelbaatar Chimed, Deputy Speaker of State Great Hural (Parliament) of Mongolia, Munkhbaatar Lkhayva & the Chairman of Citizens' Representative Khural of Dornogobi Province, B. Ganzorig.



MoU — IREDA
IREDA signed performance-based & MoU with the Ministry of New & Renewable Energy, GOI. The MoU, in alignment with Department of Public Enterprises guidelines, outlines strategic targets that IREDA aims to achieve during the fiscal yrs 23-24 & 24-25. The MoU was signed by Bhupinder Singh Bhatta, Secy, MNRE & Pradip Kumar Das, CMD, IREDA at Atal Akshay Urja Bhawan, New Delhi in the presence of sr. officials from MNRE & IREDA.



MoU — RITES
RITES Ltd. signed an MoU with NHPC Ltd. to collaborate on comprehensive consultancy services for rail infrastructure facilities for NHPC's hydropower projects. The collaboration will encompass consultancy services for new rail connectivity, logistics camp; allied infrastructure, including RLS/SILO & conveyor systems, at Pasighat for NHPC's 2880-MW Dibang Multipurpose Project in Arunachal Pradesh.



AWARD — THDCIL
RK Vishnoi, CMD, THDCIL informed that the organization been conferred with Prestigious CSR Times Award for its outstanding achievement in Corporate Social Responsibility Initiatives with a focus on "Water Conservation & Management". The Award ceremony was presided by MoS, Health & Family Welfare, Prof. SP Singh Baghel. Dr. Laszlo Makk, Deputy Head of Mission.



VISIT — INDIAN COAST GUARD
Director General Indian Coast Guard, Rakesh Pal, PTM, TM, along with President Tatrakshika, visited Mumbai recently to review the operational preparedness and infrastructure development post taking over the helm of the Indian Coast Guard. DGICG also engaged in interactive sessions with officers, men & civilian staff of the Western Seaboard.



SANRAKSHIKA DAY — CISF
"Sanrakshika", the CISF Wives Welfare Association has been playing a significant role for the empowerment & betterment of the families & wards of CISF personnel through various activities & thereby empowering them to contribute in growth of their family & society at large. Sanrakshika derives its name from CISF motto "Sanrakshak & Suraksha".



DEDICATED — PNB
PNB dedicated its Air Force Station Palam Branch in Delhi recently as part of the bank's commitment to the Indian Armed Forces. The branch is dedicated to Wg Cdr Clarence Joseph Dima, VM who made the supreme sacrifice while saving the lives of Late PM Moraji Desai and his entourage during a catastrophic aviation crash in Jorhat on November 4, 1977.



EXHIBITION — BANK OF BARODA
An exhibition was organized by BoB Dehradun Main Branch on Aug. 14, 2023, on the occasion of "Partition Horrors Remembrance Day" to pay tribute to the people who lost their lives due to the partition of India. Dy Regional Head Dehradun, B Dutt, chief manager of the branch Bramhanand Mishra, sr. citizens, customers & members of families who suffered of this partition took part in the event.

CORPORATE BRIEFS



WORKSHOP — SCOPE
SCOPE in association with the Institute of Chartered Accountants of India (ICAI) organized an Interactive Workshop on 'Treasury & Financial Risk Management of PSEs'. Atul Sobti, Director General, SCOPE; Rakesh Kumar Jain, Director (Finance), GAIL; CA (Dr) Anuj Goyal, Chairman, Research Committee, ICAI; Lokesh Kumar Aggarwal, Director (Finance), TDC & Member, SCOPE Executive Board and Dr. Amit Kr. Agrawal, Secretary, Research Committee, ICAI addressed the inaugural session. The workshop aiming to equip participants about treasury management strategies and effective financial risk mitigation techniques was attended by many senior officials from various CPSEs across the country.



EXHIBITION'S INAUGURATION — CENTRAL COTTAGE INDUSTRIES EMPORIUM
Piyush Goyal, Union Minister of Commerce & Industry, Consumer Affairs, Food & Public Distribution & Textiles, Govt. of India, inaugurated the "NAVARATAN" Exhibition organized by the Ministry of Textiles in Collaboration with NIFT and Central Cottage Industries Emporium at G-20 (TMM) Jaipur recently. Ajay Gupta, Joint Secretary, Ministry of Textiles & MD CCIC, Vipul Bansal, Joint Secretary, Ministry of Commerce & Industry and Director of NIFT were also present. The theme revolved around the concept of "NAVARATAN" symbolizing the nine precious stones in different colours and their influence on the jewellery, traditional crafts, and vibrant textiles of Rajasthan, thus, contributing to the diverse heritage of the region. The Minister and the visiting delegates were seen interacting with the artisans & weavers and appreciating the products.



INAUGURATION — GSL
The Damage Control Simulator (DCS) "Amogh" constructed by Goa Shipyard Ltd for Indian Navy was inaugurated at Andaman & Nicobar Command, Port Blair on 18 Aug 2023. The inauguration ceremony was presided by Vice Admiral Sanjay Mahindru, AVSM, NM, Deputy Chief of Naval Staff in the presence of Air Marshal Sujay Balakrishnan AVSM, VM, Commander-in-Chief, Andaman Nicobar Command. Senior high ranking Officers from the Indian Navy & Sunil Bag, Director (Finance) GSL. This Damage Control Simulator is the fourth such facility being commissioned for the Indian Navy by GSL. The earlier Simulators were installed at Naval Training establishments situated at Visakhapatnam, Lonavala and Kochi.



MILESTONE IN MANUFACTURING — BHEL
Bharat Heavy Electricals Limited has successfully manufactured India's first set of Catalysts for Selective Catalyst Reactors for limiting NOx emissions from thermal power plants. Notably, these catalysts were hitherto being imported and this is a significant milestone under the 'Make in India' initiative of the government of India. The first set of indigenously manufactured SCR catalysts for the 5x6000 MW Yadadi Thermal Power Station in Telangana was flagged off by Renuka Gera, Director (Industrial Systems Camp; Products), BHEL, from the company's Solar Business Division unit in Bengaluru. Pankaj Gupta, ED, SBD; Anil Joshi, Executive Director, Industry Sector and other employees of SBD were present on the occasion. BHEL has been committed to environment protection and offers a complete bouquet of environment-friendly technologies for thermal power plants.



LAUNCH — PUNJAB NATIONAL BANK
On World Senior Citizen's Day, PNB introduced the Pensioner's Lounge, a dedicated space within the branch that serves pensioners & sr. citizens with all their banking needs. As part of the celebration, the bank honoured pensioners for their accomplishments & contributions to society at its Bhikaji Cama Place branch in Delhi. The inauguration ceremony was held in the presence of the Bank's MD&CEO, ED, CGMs, Zonal Managers, other bank officials and customers. As an additional gesture of gratitude, the bank also conducted health check-up camps for PNB's pensioners at 121 centres.



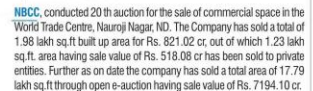
CAMP — BSES RAJDHANI
Artificial Limbs Manufacturing Corporation of India, in partnership with BSES Rajdhani Power Ltd., organized a camp, recently, to distribute aids and appliances to over 650 elderly persons and people with disabilities from society's disadvantaged sections. The camp was inaugurated by the MoS for External Affairs & Culture, Meenakshi Lathi. Sr. BRPL officials were present at the event. The beneficiaries were handed over appliances & aids, including wheelchairs, crutches, walking sticks, spectacles, chairs (with Commode), hearing aids, walkers, knee brace kits, etc.



77TH INDEPENDENCE DAY — WEST CENTRAL RAILWAY
The 77th Independence Day celebration was celebrated at Jagriti Bal Greh, under the aegis of the WCR Women Welfare Organisation, Jabalpur, with Swaroopa Malimath, the wife of the Chief Justice of MP High Court, as the Chief Guest, under the guidance and with the support of Dr. Sandhya Gupta, President of West Central Railway Women Welfare Organisation. Vandana Saxena, Vice President, Amrita Sharma, Secretary; Suvarna, Treasurer; & other West Central Railway Women Welfare Organisation members were present on the occasion. During the programme, the Children of Jagriti Bal Greh presented cultural performances.



KRI BhCO The Home & Cooperative Minister, Amit Shah, conducted a meeting with the Board of Directors at the KRI BhCO headquarters in Noida. During this insightful interaction, the Home & Cooperative Minister shared his vision to bolster the cooperative movement & address its developmental gaps in collaboration with KRI BhCO. He emphasized the expansion of KRI BhCO's Rural Development Trust as a mechanism to rectify these deficiencies. The Minister proposed that KRI BhCO undertake the responsibility of adopting 1,000 Primary Agricultural Cooperative Societies to facilitate fertilizer distribution, common service center operations, & food storage for PACS. He urged the creation of at least 200 model PACs per year coupled of implementing new initiatives introduced by the Ministry of Cooperation. The Minister visited the soil & seed-testing laboratory, where he witnessed the meticulous testing procedures. In his address, he emphasized strengthening the cooperative structure & fostering its growth, particularly in the export domain. He inaugurated the latest edition of KRI BhCO's in-house half-yearly magazine, "KRI BhCO News". During the visit, Chairman KRI BhCO assured him that KRI BhCO would act as per his directions & implement all his visions.



NBCC, conducted 20 th auction for the sale of commercial space in the World Trade Centre, Naurajoy Nagar, ND. The Company has sold a total of 1.98 lakh sq. ft. built up area for Rs. 821.02 cr, out of which 1.23 lakh sq. ft. area having sale value of Rs. 518.08 cr has been sold to private entities. Further as on date the company has sold a total area of 17.79 lakh sq. ft through open e-auction having sale value of Rs. 7194.10 cr.



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Centre focused on green growth: FM



FINANCE MINISTER NIRMALA Sitharaman on Thursday said the Centre is focused on driving green growth through a range of green reforms, reports **fe Bureau**. "Green hydrogen has a pivotal role to play in enabling a low-carbon and self-reliant economy," Sitharaman said. ■ PAGE 3

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Govt focused on green growth: FM

FE BUREAU
New Delhi, August 24

FINANCE MINISTER NIRMALA Sitharaman on Thursday said the government is focused on driving green growth through a range of green reforms.

“This will provide a roadmap towards reducing carbon intensity in the economy and enable the creation of green job opportunities. Green hydrogen has a pivotal role to play as we counter climate change and work towards enabling a low-carbon and self-reliant economy,”



Finance Minister
Nirmala Sitharaman

Sitharaman said.

The minister added that the government was aiming to make India a global hub for production, utilisation and export of green hydrogen. She was speaking at the launch of HSBC India’s strategic partnerships towards enabling

innovation in Green Hydrogen.

HSBC India has partnered with IIT (Indian Institute of Technology) Bombay and Shakti Sustainable Energy Foundation (SSEF) to pursue technological advancements to make green hydrogen more efficient, cost-effective, and scalable. These two partnerships, with total grant support of ₹15 crore, will focus on innovation projects that will help prioritise green hydrogen as a strategic alternate fuel, help in building a robust, green hydrogen economy, and achieve the government’s vision of an energy-independent nation.

Sitharaman welcomed the efforts and partnership of HSBC India, IIT Bombay and SSEF in addressing the challenges in this segment and working on solutions to make green hydrogen scalable and commercially feasible.

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'India's net-zero transition offers \$12.7 tn opportunity'

New Delhi: India's ambitious path toward a net-zero economy by 2050 presents an unprecedented investment opportunity estimated at \$12.7 trillion, according to the New Energy Outlook: India report released by BloombergNEF. The report highlights both the challenges and opportunities that lie ahead. **SAURAV ANAND**





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Mandatory green hydrogen plan may go to cabinet soon

Industries such as refineries and fertilizer makers may soon have to follow a green hydrogen consumption mandate, with the ministry of new and renewable energy (MNRE) set to approach the Union cabinet with a proposal. >P2

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Mandatory green hydrogen plan may go to cabinet soon

Energy ministry in talks on consumption levels; move follows incentive scheme for sector

Rituraj Baruah
rituraj.baruah@livemint.com
NEW DELHI

Industries such as refineries and fertilizer makers may soon have to follow a green hydrogen consumption mandate, with the ministry of new and renewable energy (MNRE) set to approach the union cabinet with a proposal.

Addressing the BloombergNEF summit here, minister for new and renewable energy R.K. Singh however said that talks are still underway on the green hydrogen consumption mandate level, which is yet to be decided.

"We amended the Energy Conservation Act, which gives power to government to lay down mandates for changing the feedstock from fossil to non-fossil. So I can mandate fertilizer, petroleum etc. for instance. I can ask fertilizers and petroleum (refineries) that you are using grey hydrogen or grey ammonia and a certain percentage of that has to be green from this year onwards, gradually escalating it so that 100% of that is green," Singh said.

"We have had discussions with the concerned ministries on this. Basically, that mandate-fixing is in process. By and large, we have had the discussions and we have come up with some figures, and we will go to the cabinet soon."

The plan to boost demand for green



RK Singh, minister for new and RE, says the mandate-fixing is in progress. MINT

hydrogen comes a couple of months after the ministry rolled out incentive schemes worth ₹17,000 crore for production of green hydrogen and manufacturing electrolyzers.

The mandate was expected to be announced with the rollout of the mission, but was delayed amid disagreements over the level. The minister said 5.8 million tonnes of green hydrogen manufacturing is already in different stages of installation and that India's "low cost" of renewable energy would lead to production of the cheapest green hydrogen globally. Recently, the ministry rolled out the

standard for green hydrogen produced in the country.

The government mandated that manufacturing units cannot emit more than 2 kg of carbon dioxide per kg of hydrogen.

Earlier this year, the union cabinet had approved the National Green Hydrogen Mission with an aim to produce 5 million tonnes of green hydrogen annually, with an associated renewable energy capacity addition of about 125 GW in total.

In June, the government notified the Strategic Interventions for Green Hydrogen Transition Programme

(Sight), under which ₹13,050 crore would go for incentivizing production of green hydrogen, and another ₹4,440 crore for electrolyzer production.

The government has allocated ₹19,744 crore for the Green Hydrogen Mission. Apart from the Sight scheme to support production of electrolyzers and green hydrogen, the government will allocate ₹1,466 crore for pilot projects, ₹400 crore for research and development, and ₹388 crore for other mission components.

Under the ambitious mission, the Centre aims to make India a global hub for production, usage and export of green hydrogen and its derivatives.

Green hydrogen would be used in a number of sectors including petroleum refineries, fertilizer and steel, which are called "hard-to-abate" sectors in terms of carbon they emit.

The use of green hydrogen gains significance as several export-oriented industries including steel are preparing to face the disruption which may be caused with the implementation of Carbon Border Adjustment Mechanism (CBAM), a carbon tax proposed by the EU.

India is exploring tariff and non-tariff measures to counter the EU measure, which proposes to put a tax on embedded carbon imports from various sectors, including steel, aluminium, cement, hydrogen, electricity and fertilizers from 2026.

₹17kcr
incentive for green hydrogen and electrolyzers

5 mt
green hydrogen to be produced per year by 2030



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Total spending on fuel subsidies topped \$7 trillion in 2022, says IMF

Global subsidies for fossil fuels rose by \$2 trillion over the past two years to reach a record \$7 trillion in 2022, according to new estimates from the International Monetary Fund (IMF). "Subsidies for oil, coal and natural gas are costing the equivalent of 7.1% of global gross domestic product," the IMF said. "That's more than governments spend annually on education (4.3% of global income) and about two thirds of what they spend on healthcare (10.9%)."

REUTERS



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Tata Power, Zoomcar join hands for EV adoption

Tata Power EV Charging Solutions on Thursday said it has tied up with car-sharing platform Zoomcar to promote electric vehicle adoption. The collaboration aims to promote Tata Power's EV Charge points on the Zoomcar platform and will focus on supporting existing and aspiring EV owners along with Zoomcar's existing customers.



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**Suzlon bags 31.5-MW
wind energy project**

Renewable energy solution provider
Suzlon Group on Thursday announced
that it has bagged an order from
Integrum Energy Infrastructure for the
development of a 31.5-MW wind energy
project. The company did not disclose
the value of the order. Suzlon will
execute the project with a scope of
supply, installation, and commissioning,
the company said in a statement.

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India needs \$13 trillion to hit net zero emissions by 2050

Bloomberg

India will need to invest \$12.7 trillion in its energy system, or more than three times its gross domestic product, to reach net zero emissions by mid-century and help the world avert disastrous planetary warming, according to BloombergNEF.

Hitting that target early — ahead of India's official goal of 2070, which lags the world's largest economies — will require moving swiftly to clean-up the country's vast and coal-dependent electricity sector, according to BNEF's New Energy Outlook for India, published on Thursday.

That means grid investments to handle variable renewable power, and scaling up the cash going into green energy.

The world's third-biggest emitter of greenhouse gases now produces about 70 per cent of its electricity from coal, and the same fossil fuel under-



BIG MONEY. Hitting the 2050 spending target in line with global climate goals means \$438 b of investment every year

pins a range of heavy industries, such as steel, cement and aluminium. That's despite rapid expansion in renewable energy, with a record 16 GW of utility-scale solar installed in 2022.

Hitting the 2050 spending target in line with global climate goals means \$438 billion of investment every year until the deadline, according to BNEF data, a massive jump for a country that invested \$17 billion in energy transition technologies last year. Cu-

mulative investments to expand power generation capacity alone will have to reach \$2.8 trillion by 2050 — \$2.7 trillion of that would be low-carbon, or more than \$90 billion a year.

GLOBAL CAPITAL

"Building all the necessary infrastructure would require investments at an unprecedented scale and speed, which the Indian banks alone may not be able to meet," said Shantanu Jaiswal, head of India

research at BNEF. Global capital has been cautious. Eight of the global top 10 pension and sovereign wealth funds are yet to invest in India's renewable-energy sector, according to BNEF, while India's own pension and life insurance funds face restrictions.

Under BNEF's ambitious 2050 scenario, power-related emissions in the country would peak in 2024.

Transport sector emissions would top out in 2028 with a rapid deployment of electric vehicles, while industrial emissions are seen reaching a maximum in 2031 followed by a sharp decline.

The only lower-middle-income nation among the very largest emitters, India aims to reduce the emissions intensity of its GDP by 45 per cent from 2005 levels by 2030, and to have half of its power generation capacity run on clean sources — solar, wind, nuclear and hydropower — by the end of this decade.

Discom health key to meeting economy's power needs

Saloni Sachdeva Michael
Vibhuti Garg

Electricity distribution companies (Discoms) are the backbone of the country's power sector. Their poor financial health can have a ripple effect on the efficient functioning of the electricity generation and transmission sector. For India's growth momentum to stay intact, the effective functioning of all three is crucial. The Central Electricity Authority's (CEA's) Optimal Generation Mix report for 2029-30 projects a peak electricity demand of 334.8 gigawatts (GW) and electrical energy requirement of 2,279.7 billion units (BU) for 2029-30. To meet this demand, India needs to add 777.1 GW of capacity, including 251.7GW of coal and lignite, 292.7 GW of solar photovoltaic, 99.9 GW of wind and 53.8 GW of hydro.

Given the uncertainty around Discoms being able to effectively cater to demand, Indian consumers, especially commercial and industrial

(C&I), installed 77 GW of captive installed capacity as of June 2022. Further, most residential consumers have backup power, which either runs on battery or diesel, adding to carbon emissions. In rural areas, people stack fuel like kerosene, solar home systems and solar pumps, in addition to the grid, to deal with erratic power supply.

The political economy is critical in determining the electricity tariff, with most States providing subsidies to agricultural and residential consumers. However, these subsidies are poorly targeted, adding to the financial woes of Discoms.

In the last couple of years, the government has announced several measures to instil financial discipline in Discoms — improved cash flows, a streamlined accounting process, differential time-based tariffs and strengthened demand projections.

The recent amendment to the Electricity (Second Amendment) Rule 2023 aims to improve subsidy payments to Discoms by streamlining the accounting, reporting and billing



SUBSIDY. Must be streamlined

processes. Moreover, the government's decision to implement Time of Day (ToD) tariffs for C&I consumers from 2024 onwards and smart prepaid meters' installation will not only ease the strain on the grid during peak hours but also encourage responsible electricity consumption patterns and optimise costs. Shifting the power demand from evening to daytime can help reduce tariffs by tapping into solar power, and such measures can promote greater deployment of clean energy.

With the help of the July 2023 CEA guidelines on power demand

projections, Discoms can plan and optimise their operations, resulting in reduced losses and improved efficiency.

The Finance Ministry has earmarked ₹1.4 trillion (\$17.3 billion) under additional borrowings in FY24 for States to undertake power sector reforms. This includes transparency in the reporting of financials, timely rendition of financial/energy accounts and auditing, providing subsidies through direct benefit transfer (DBT) to consumers and achieving targets for reduction in Aggregate Technical and Commercial (AT&C) losses.

These government initiatives are already creating a positive impact. AT&C losses have reduced from 23.7 per cent in FY16 to 15.8 per cent now, according to the Ujjwal Discom Assurance Yojana (UDAY) dashboard. The government aims to reduce losses by improving the billing and collection ratio through smart metering.

The writers are with Institute for Energy Economics and Financial Analysis

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With 7-MW solar power plant, Pune CME is India's first carbon negative garrison

SUSHANT KULKARNI
PUNE, AUGUST 24

PUNE-BASED College of Military Engineering (CME) said on Thursday that with the commissioning of a 5-megawatt (MW) solar power plant — taking its solar power generation capacity to 7 MW — it has become India's first carbon negative garrison or military formation.

The CME, which was established in 1948 as a premier institute of the armed forces, trains all ranks of Indian Army, Navy and Air force, including those from friendly foreign countries in various technical and tactical aspects with changing character of warfare.

A plethora of projects has been undertaken in the recent past at CME by the Military Engineering Services (MES) through the office of Garrison Engineer (CME), Khadki, in order to reduce the institute's carbon footprint. The biggest project is implementation of the 7-MW solar power plant in



College of Military Engineering campus in Pune. Express

CME in two phases, apart from multiple important pilot projects such as solar steam cooking plants for community cooking for troops at CME and installation of Retrofitting Emission Control Devices (RECDs) on diesel generator sets to curb emissions.

The first phase of the 7-MW solar power plant was undertaken with the commissioning of a 2-MW solar power plant in 2021 fulfilling the daytime energy requirements of the CME. The commissioning of the 5-MW

plant in the second phase has been key in achieving the objective of National Solar Mission under Government of India. Success of the project has paved the way for other formations and tri-services establishments to become carbon negative in the future, officials said.

The CME said in a press statement on Thursday that apart from annual fiscal savings of Rs 6.5 crore to the national exchequer, the 5-MW plant connected to the Maharashtra State Electricity Grid

makes it possible for the power generated at CME to be consumed at National Defence Academy at Khadakwasla, Command Hospital Pune, Military Hospital Khadki and Bombay Engineer Group and Centre, Khadki, spread across the city of Pune, thus further ensuring achieving of 'National Clean Air Programme' by reducing dependency on conventional thermal power plants.

"With commissioning of a 5-MW solar power plant, the CME has become a completely carbon negative garrison — a first in India which is an impressive feat," the press statement said.

The carbon negative refers to an entity emitting less than zero carbon dioxide and carbon dioxide equivalent (CO₂e) greenhouse gasses, effectively. Emitting a negative amount of carbon being carbon negative refers to the net emissions of the entity by offsetting more carbon, through processes like carbon capture, sequestration and avoidance, than the entity contributes to the environment.