

# India, Take a Deeptech Breath



**Hardeep S Puri**

The India Energy Week, which will have its third edition in February, began in 2023 as a novel initiative to leverage India's increasing prominence in the global energy landscape through collaborative dialogue. Startups especially made their presence felt in the first two editions with their inventive solutions.

In green hydrogen (GH), some PSUs showcased new electrolyser technologies, even as startups have reached out to GoI to demonstrate their membrane-less electrolyser tech. Other firms have focused on building carbon capture, utilisation and storage (CCUS) technologies, including direct air capture and enhanced oil recovery methods. Much progress has been made in advanced battery storage solutions, including solid-state batteries, lithium-ion improvements and flow batteries, which promise better efficiency, longevity and reduced costs.

All major oil and gas MNCs have their GCCs in India, where Indian engineers are conducting cutting-edge design, engineering, data processing and

decision analytics for major drilling operations, refinery operations and seismic data processing globally. A gradual journey of reforms and schemes to promote the entrepreneurial spirit has resulted in a tech boom, India's reputation as 'IT nation' giving way to that of a 'deeptech hub'.

GoI has launched various initiatives like India Semiconductor Mission and PLI scheme in electronics and battery storage, National Quantum Mission to seed and scale quantum computing research, NIDHI PRAYAS (National Initiative for Developing and Harnessing Innovations — Promoting and Accelerating Young and Aspiring Innovators and Startups) programme, and IndiaAI Mission.

Establishment of 10,000 Atal Tinkering Labs (ATL) since 2016 has fostered entrepreneurship at the grassroots. Anusandhan National Research Foundation (ANRF), launched in 2023, has a budget outlay of ₹50k cr to initiate research across universities. National Deep Tech Startup Policy lays out a roadmap aimed at spurring innovation in critical domains such as semiconductors,

AI and space tech.

Investors are responding to these nudges. Nasscom's 'Indian DeepTech Startup Landscape Report 2023' states that there were over 3,600 deeptech startups worth \$14 bn in 2023. Nearly \$350 mn of investments flowed into growth and late-stage deeptech startups last year. Since 2019, assets under management (AUM) for India-focused private capital funds have doubled, reaching \$124.3 bn in December 2023. VCs are investing deeply in startups in AI, chip design, space, advanced battery technologies, battery recycling, biosciences, green hydrogen, chip design, robotics and genomics.

AI is so widespread in India's software services now that it borders on ubiquity. A recent EY-Nasscom report notes that 99% of Indian B2B SaaS companies have embraced deeptech innovations, mostly in AI. Considerable resources to initiate deeptech programmes in India are being leveraged, focusing particularly on AI and IoT technologies to future-proof businesses.

In the last five years, Indian entrepreneurs filed more than 1,400 patents in deeptech. Across startups, the number of patents granted grew 8x, from 4,226 in 2013-14 to 34,134 in 2022-23, while patent applications more than doubled in the same period,

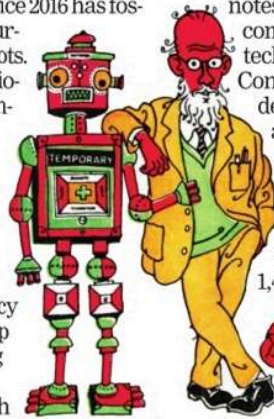
crossing 1 lakh filings last year. India now has the third-largest startup ecosystem, with more than 1 lakh startups and nearly 120 unicorns, compared to 442 startups and 4 unicorns in 2016.

Reforms such as GST, IBC, asset monetisation, labour law reforms and Startup India have brought regulatory clarity. By end-2023, GoI had done away with more than 25,000 compliances, and repealed more than 1,400 laws. Creditable improvements in global rankings in Logistics Performance Index (38th in 2023 vs 54th in 2014), and WIPO's Global Innovation Index rankings (39th in 2023 from 81st in 2014) underscore the progress made.

Advantages like our human capital, massive data economy, top-notch digital public infrastructure and the ongoing 5G and imminent 6G rollouts will accelerate data-driven innovation. These will further deepen our intellectual capital and translate to economic complexity, enhancing India's influence internationally.

We need to continue adding to our digital and computing infra to support deeptech R&D, while strengthening policies and also simplifying processes related to data regulation, IP protection and procurement. Indian talent in deeptech domains now needs nurturing to hasten the reversal of 'brain drain'.

*The writer is minister of petroleum and natural gas, GoI*



**Lean hard on R&D**



## US Looks into JPMorgan's Ties to Iranian Oil Kingpin

The US Treasury Department is examining JPMorgan Chase & Co.'s relationship with a hedge fund that's said to be part of a network overseen by Iranian oil trader Hossein Shamkhani.

The probe is at an early stage as the agency scrutinizes whether the New York-based bank complied with all rules and regulations when it took on Ocean Leonid Investments Ltd. as a client, according to people familiar with the matter, who requested anonymity as the information isn't public. The entity was recently suspended by Dubai's financial free zone.

Bloomberg News reported on Oct. 24 about Ocean Leonid's role as a hedge fund with offices in London, Dubai and Geneva that's overseen by Shamkhani. JPMorgan, ABN Amro Bank NV and Marex Group Plc were among the lenders that have offered the firm leverage, Bloomberg reported.

Spokespeople for JPMorgan, the US Treasury and Ocean Leonid declined to comment. Shamkhani didn't respond to a written request for comment sent to his lawyer.

An Ocean Leonid representative previously said in response to the Bloomberg News investigation that the company categorically rejects the allegation that Shamkhani is involved in or oversees the entity. A lawyer for Shamkhani also previously denied that his client had any relationship with Ocean Leonid.

People familiar with the matter said there's no obligation for JPMorgan to exit the client relationship because neither Shamkhani nor the company appear on any sanctions lists. The US Treasury is primarily interested in Shamkhani's activities, though the possibility of bank compliance gaps is also a consideration, the people said. **Bloomberg**



— AN ICIJ-THE INDIAN EXPRESS INVESTIGATION —

# Before Russia-Ukraine war, Western oil firms ‘cut deals’ to favour Moscow’s allies

Inflated budgets, rigged bids, lucrative contracts: trail of dodgy transactions marked oil flows through 1500-km Caspian Pipeline Consortium, used by Russia, Kazakhstan

**SUKALP SHARMA  
& RITU SARIN**

NEW DELHI, NOVEMBER 22

FOR ALL the current discourse on global sanctions and censure, before the Russian invasion of Ukraine in 2022, Western oil giants, including affiliates of Chevron, Shell and Exxon Mobil, signed off on allegedly inflated budgets, rigged bids, and gave lucrative contracts worth hundreds of millions of dollars to allies of Russian President Vladimir Putin and the Kazakhstan elite.



This is one of the key revelations of Caspian Cabals, an investigation by the International Consortium of Investigative Journalists, of which *The Indian Express* is a partner, into the 1500-km Caspian Pipeline Consortium (CPC), one of the

world’s largest crude oil pipeline systems used by both Russia and Kazakhstan.

The CPC takes crude from large oil fields in western Kazakhstan and also from Russian producers to Russia’s Black Sea port of Novorossiysk, from where it is transported to buyers globally through tankers.

In 2023, CPC carried 63.5 million tons of oil to international markets — around 10 per cent of CPC crude is Russian, the rest is from Kazakhstan’s large oil fields Kashagan and Karachaganak.

Since the start of the Ukraine  
**CONTINUED ON PAGE 2**

## • Western oil firms 'cut deals' to favour Moscow's allies

war in 2022, CPC paid at least \$816 million to shareholders Transneft and Rosneft, Russia's biggest oil company – and \$321 million in taxes to Russian authorities.

The key findings of the investigation:

■ Western companies, led by Chevron Corp, made payments to subcontractors who didn't perform the work. In one case, they authorized a \$48-million advance payment for work – including building electricity lines to a new pumping station in southern Russia – that went missing as soon as it was paid.

■ Western oil companies – affiliates of Chevron, ExxonMobil, Italy's Eni S.p.A. and Shell – sought to curry favor with Putin allies and the politically influential Kazakh elite by granting them hefty contracts.

■ CPC cut corners on safety and downplayed the severity of a 2021 oil spill that didn't just lead to environmental damage but also to allegations of financial corruption. The consortium ultimately lost a Russian court case and paid a \$98.7-million fine for environmental damage.

■ At least five whistleblowers alleged that Western oil companies' dealings in Russia or Kazakhstan included improper payments in violation of the Foreign Corrupt Practices Act, a US law that prohibits bribes to foreign officials.

■ Although the Russian government effectively controls the pipeline, since the war on Ukraine, Kazakhstan hired a US lobbying firm for a nearly \$4-mn annual contract, to help the pipeline remain sanctions-free.

In a statement to ICJ, Sally Jones, a senior media adviser for Chevron, said Chevron and international oil companies "have sought to provide critical technical support to enable safe and reliable operations of the Caspian Pipeline Consortium."

"Chevron is committed to ethical business practices, operating responsibly, conducting its business with integrity and in accordance with the laws and regulations of each of the jurisdictions in which it operates," she said.

She did not respond directly to questions about Chevron's role in the pipeline or complaints about overpriced contracts, alleged kickbacks or conflicts of interest.

Exxon did not respond to requests for comment, nor did the governments of Kazakhstan or Russia.

A spokesman for Shell said the company does not tolerate bribery in any form. An Eni spokesperson said, "We are committed to upholding the highest standards of transparency, ethical conduct and environmental responsibility."

Eni referred questions about the pipeline to CPC, which did not respond to multiple requests for comment.

Notably, India did not feature on the destination map for CPC oil – Kazakhstan as well as Russian – until early 2022.

Now, India has emerged as the biggest market for CPC-Russia (CPC-R) oil, followed by Turkey and China.

Tanker data from commodity market analytics firm Kpler shows that nearly 67 per cent of CPC-R crude made its way to India in the first nine months of 2024, while the figure for 2023 was even higher at 83 per cent.

Consider this: Between March 2022 and March 2024, 82 of the 117 oil tankers carrying CPC-R oil, that set sail from the Black Sea loading terminal, discharged the oil at Indian ports.

Between January 2021 and February 2022, just five of the 72 tankers hauling CPC-R had undertaken the long journey to Indian ports. The reason, industry insiders and experts say, is rather simple.

When Russian oil was allowed to flow freely globally, it made little sense financially and logistically for Indian refiners to buy crude from a faraway geography like Russia. The discounts, however, have turned that argument on its head.

While India's private sector refining giant Reliance Industries (RIL) has been the biggest buyer of CPC-R crude, public sector players Indian Oil Corporation (IOC), Bharat Petroleum Corporation (BPCL), Hindustan Petroleum Corporation (HPCL), and Mangalore Refinery and Petrochemicals (MRPL) have also been buying this oil, vessel tracking data shows.

In the first nine months of 2024, Indian refiners cumulatively imported over 30 million barrels of CPC-R crude, with shipments coming in every month, vessel data shows.

In all, 45.56 million barrels of CPC-R crude were shipped globally during the period, the other notable importers being Turkey and China, while some volumes went to Pakistan. CPC-R accounted for over 6 per cent of India's overall oil imports from Russia for the period. Russia accounts for over 40 per cent of India's total oil imports.

In contrast, the CPC-Kazakhstan (CPC-K) crude purchases by Indian refiners have been few and far between, with isolated cargoes coming to India sporadically, just as the case was with CPC-R oil before Russia invaded Ukraine.

"The Kazakh part (of CPC oil going to India) is still minimal. The CPC-K is really mostly traded in the Mediterranean region. So, it would be going towards the Mediterranean refiners," said Viktor Katona, head of crude analysis at Kpler.

RIL, IOC, BPCL, HPCL, and MRPL did not respond to The Indian Express's request for comments.

But officials in the Indian government and refining sector The Indian Express spoke to underlined that Indian oil and gas companies are neither part of the CPC project nor its stakeholders, but they are its customers.

"We buy oil from many countries and many companies. As customers, we can only ensure that our deals are clean. What happened or what may happen internally in a supplying company or country is something beyond our control and most often also beyond our knowledge," an oil industry source in India said.

India is the world's third-largest consumer of crude oil and depends on imports to meet over 85 per cent of its requirement. New Delhi has time and again emphasised that its priority is to secure its energy supplies and that the country is willing to buy oil from any country or company that is not under sanctions.

Russian oil is technically not under any sanction by the US or its allies, and is only subject to the price cap.



# After CNG rate increase, autos want fare hike



On Friday, Mahanagar Gas Limited hiked the price of CNG from ₹75/kg to ₹77/kg.

HT PHOTO

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**MUMBAI:** Auto rickshaw unions wrote to the state transport department on Friday evening seeking a ₹3-hike in the base fare in order to offset the ₹2 per kilogram hike in compressed natural gas (CNG) prices. While the base fare currently stands at ₹23, the unions want it raised to ₹26 so they can absorb the impact of the CNG price hike. They also anticipate a further hike of ₹2-4 per kg in CNG prices and have urged the transport department to raise the per-kilometre fare, which currently stands at ₹15.33.

Earlier on Friday, a day before the declaration of assembly poll results, Mahanagar Gas Limited (MGL) hiked the price of CNG from ₹75/kg to ₹77/kg. The company attributed the hike to a reduction in allocation of domestic gas by around 18% effective November 16, which forced it to source additional natural gas at market prices.

"MGL is constrained to increase the price of CNG by ₹2 per kg to partially offset the increase in gas cost," said a statement released by MGL on Friday. The company had last raised CNG prices by ₹1.50 per kg in July 2024, taking the total cost to ₹75 per kg.

"We have already sent our representation to various government authorities regarding the need for a fare hike. As per our calculations, there is a need



The CNG price hike will severely impact auto drivers' earnings as they fill at least 2-3 kg gas in their vehicles everyday

## AUTO RICKSHAW UNIONS

to increase the base fare by ₹3," said Thampi Kurien, an auto rickshaw union leader. There are over 400,000 auto rickshaws in the Mumbai metropolitan region, of which 260,000 autos ply in the eastern and western suburbs. The base fare for autos was last hiked in October 2022, from ₹21 to ₹23.

The CNG price hike will severely impact auto drivers' earnings as they fill at least 2-3 kg CNG in their vehicles everyday, said union representatives. The hike will raise the cost of running an auto to ₹17.08 per kilometre while it is currently a little below ₹16 per kilometre, the union representatives noted.

Given the impact of the CNG price hike on running costs and the anticipation that MGL may further hike prices by ₹2-4 per kg in the coming days, the unions have urged the transport department to raise the per kilometre fare, which currently stands at ₹15.33.



## **MAHANAGAR GAS HIKES CNG PRICE IN MUMBAI BY ₹2/KG**

**FC CORRESPONDENT  
MUMBAI, NOV. 22**

Mahanagar Gas Limited (MGL) has announced a ₹2 per kilogram increase in the price of compressed natural gas (CNG) in Mumbai and its surrounding areas, effective immediately. The company has raised the CNG price from ₹75 to ₹77 per kilogram.

The price increase is driven by rising input costs, including the procurement of natural gas and other operational expenses.



## **CNG up by ₹2/kg; to cost ₹77/kg**

**Mumbai:** Mahanagar Gas Limited (MGL) has hiked the price of Compressed Natural Gas (CNG) by Rs2 per kg from November 22. The new price in Mumbai and its surrounding areas will be Rs77 per kg, up from Rs75 per kg. CNG prices were last raised in July by Rs1.50 per kg.

The price revision is attributed to the increase in the cost of natural gas procurement and other rising expenses. Despite the hike, CNG users in Mumbai will still save 49% compared to petrol and 14% compared to diesel at current price levels.

MGL has stated that the allocation of APM (administered price mechanism) gas to the company has reduced by around 18% effective November 16. To meet the shortfall, MGL is sourcing additional market-priced natural gas, resulting in higher gas costs.



मिलेनियम सिटी में प्रदूषण बढ़ने से परेशानी, दो कंपनियों के स्टेशन होने के बाद भी लग रही लंबी लाइन

# खपत बढ़ने से सीएनजी नहीं मिल रही

## परेशानी

गुरुग्राम, कार्यालय संवाददाता। मिलेनियम सिटी में प्रदूषण बढ़ने से वाहनों में सीएनजी की खपत बढ़ गई है। स्टेशनों पर वाहनों को सीएनजी नहीं मिल रही है। इसमें हरियाणा सिटी गैस (एचएसजी)के 40 और आईजीएल के 18 सीएनजी स्टेशन बने हैं। इन स्टेशनों पर सीएनजी के लिए वाहनों की लाइनें लगी रही है। एचसीजी के स्टेशनों पर पर्याप्त गैस नहीं होती है। डेढ़ लाख किलोग्राम की खपत बढ़ने से वाहन चालकों को गैस मिलने में परेशानी होने लगी है।

**दो तरह के रेट:** टैक्सी एसोसिएशन के अध्यक्ष अनिल हांडा ने कहा कि गुरुग्राम में दो कंपनियों के सीएनजी स्टेशन पर दो तरह के रेट से गैस मिलती है। एचसीजी के स्टेशन पर 83.80 रुपये और आईजीएल के स्टेशन पर करीब 81 रुपये प्रति किलो मिलती है। यानी दो रुपये महंगी सीएनजी लेने के बाद भी लाइनें लगानी पड़ता है। इन स्टेशनों पर सीएनजी के लिए लग रही कतार सोहना रोड पर बने सीएनजी



गुरुग्राम स्थित सीएनजी स्टेशन। • हिन्दुस्तान

स्टेशन पर सुबह-शाम वाहनों की लंबी कतारें लग जाती हैं। इसके अलावा सेक्टर-37, 22, सेक्टर-46, 56, 62 में सीएनजी के लिए वाहन चालकों को इंतजार करना पड़ता है। जिले के लोग लंबे समय से नए सीएनजी स्टेशनों की मांग कर रहे थे।

**केंद्र सरकार से कम मिलती:** एचसीपी के अनुसार केंद्र सरकार के

कोटा से छह लाख किलोग्राम रोजाना सीएनजी मिलनी चाहिए। लेकिन ढाई लाख किलोग्राम सीएनजी मिल रही है। यानी साढ़े तीन लाख किलोग्राम है। पहले कोटा अनुसार 80 प्रतिशत गैस मिलती थी। जिसे घटाकर 37 प्रतिशत कर दिया गया है। बाहर से गैस लेकर स्टेशनों पर मांग के अनुसार पूरा किया जाता है। इसके बाद भी

सीएनजी की कमी से वाहन चालकों परेशानी होती है।

**डायरेक्टर पॉलिसी का फायदा नहीं:** एचसीजी समूह के अध्यक्ष कपिल चोपड़ा ने बताया कि वर्ष 2005 में गैस के लिए डायरेक्टर पॉलिसी बनी थी। इसके तहत गुरुग्राम को छोड़कर बाकी अन्य जिलों में गैस मिलती है। लेकिन गुरुग्राम में मिलने वाली गैस का

## रोजाना छह लाख किलो सीएनजी की खपत

एचसीजी कंपनी के गुरुग्राम में 40 सीएनजी स्टेशन हैं। इन सीएनजी स्टेशनों से वाहनों में साढ़े चार लाख किलो रोजाना सीएनजी भरवाई जा रही थी। प्रदूषण बढ़ने पर वाहनों में अब रोजाना छह लाख किलोग्राम खपत हो रही है। एक आंकड़े के मुताबिक जिले में हर साल 25 हजार सीएनजी वाहनों की संख्या बढ़ रही है। इस कारण सीएनजी स्टेशनों पर लंबी-लंबी कतारें लग रही हैं और वाहन चालकों एक से दो घंटे का इंतजार करना पड़ रहा है। इसमें ट्रक, निजी बस, ऑटो, टैक्सी आदि शामिल हैं।

पांच प्रतिशत राशि जीआईएल को देने पड़ते हैं। इससे गैस महंगे दाम पर मिलती है तो दो रुपये प्रति किलो महंगा उपभोक्ताओं पर अधिक भार पड़ता है। इसलिए गुरुग्राम में एससीजी पर सीएनजी महंगी है। इस बारे में केंद्र सरकार को कई बार लिखित में देकर डायरेक्टर पॉलिसी का लाभ देने की मांग कर चुके हैं।



# पीएनजी जनरेटर पर सब्सिडी मिलेगी

नोएडा/ग्रेटर नोएडा, वरिष्ठ संवाददाता। औद्योगिक सेक्टरों में डीजल जनरेटर को सीएनजी में बदलवाने पर सरकार द्वारा 50 फीसदी तक सब्सिडी दी जाएगी। इसके लिए उद्यमियों को न्यूनतम पांच लाख रुपये से लेकर अधिकतम 20 लाख रुपये तक की सब्सिडी दी जाएगी।

उद्यमियों के हित में योजना का नवीनीकरण करके सब्सिडी की राशि भी बढ़ा गई है। अभी तक जिले में 50 से अधिक उद्यमियों को पांच-पांच लाख रुपये तक की सब्सिडी दी जा चुकी है। अभी 15 से अधिक उद्यमियों ने योजना के तहत सब्सिडी के लिए आवेदन किया है। शहर में छोटी-बड़ी मिलाकर 16 हजार से अधिक औद्योगिक इकाइयां हैं। इसमें उद्यमियों ने अपनी जरूरत के अनुसार 10 किलोवाट से लेकर एक हजार किलोवाट तक के डीजल जनरेटर लगा रखे हैं। हर वर्ष सर्दी के

## छह से सात लाख रुपये आता है खर्च

एनईए के अध्यक्ष विपिन मल्हन ने बताया कि 100 किलोवाट के डीजल जनरेटर को सीएनजी जनरेटर में परिवर्तित कराने में छह से सात लाख रुपये का खर्च आता है। ऐसे में उद्यमियों पर डीजल जनरेटर को सीएनजी में परिवर्तित कराने में अतिरिक्त बोझ पड़ेगा।

मौसम में प्रदूषण का स्तर बढ़ने पर उद्यमियों को डीजल जनरेटर बंद करने पड़ते हैं। ऐसे में उद्यमियों को अनेक चुनौतियों का सामना करने साथ ही आर्थिक नुकसान भी झेलना पड़ता है। वहीं, उद्यमियों ने कहा कि डीजल जनरेटर को सीएनजी में परिवर्तित कराने में अधिक लागत आती है। जिला उद्योग केंद्र की सहायक आयुक्त स्वीटी

**६६** उद्यमियों की सुविधा के लिए डीजल को सीएनजी में बदलवाने पर सब्सिडी दी जा रही है। पिछले तीन सप्ताह में 15 उद्यमियों ने सब्सिडी के लिए आवेदन किया है। अब तक 50 से अधिक उद्यमियों को सब्सिडी दी जा चुकी है। -अनिल कुमार, उपायुक्त, जिला उद्योग केंद्र

उपाध्याय ने बताया कि उद्यमियों की समस्याओं को देखते हुए सरकार सब्सिडी दे रही है। योजना के तहत सूक्ष्म विनिर्माण इकाइयां और लघु विनिर्माण इकाइयों को ही योजना के तहत सब्सिडी दी जाएगी। इसमें सूक्ष्म इकाइयों को अधिक सब्सिडी दी जाएगी। उद्यमी [msme.up.gov.in](http://msme.up.gov.in) पर जाकर ऑनलाइन आवेदन कर सकते हैं।