

Hydrogen mission: Long way to go

Govt says purpose of this mission is to cut India's oil import and provide clean fuel

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IN January 2023, the government approved a whopping ₹19,744 crore for the implementation of National Green Hydrogen mission in the country. Considered as a future fuel, green hydrogen or ammonia is said to be a replacement of traditional fossil fuels. The government said the purpose of this mission is to reduce India's oil import and provide clean fuel to citizens. At the same time, to make India a global hub for using, producing and exporting green hydrogen.

"The National Green Hydrogen Mission will facilitate transition of the economy to low-carbon intensity and reduce dependence on fossil fuel imports. It will make the country assume technology and market leadership in this sector," said finance minister Nirmala Sitharaman, while presenting budget 2023-24.

The initial outlay for the scheme is ₹19,744 crore. The power and renewable ministry will be the nodal point and will formulate guidelines related to the scheme.

Why hydrogen energy?

Hydrogen is the most abundant chemical element in the world. India has a favourable geographic location and abundance of sunlight and wind for the production of green hydrogen. Therefore, the country targets to produce at least 5 MT (million tonne) per annum with an associated renewable energy capacity of about 125 GW by 2030. Its production capacity is likely to invite investment of ₹8 lakh crore and create over 6 lakh clean jobs.

Hydrogen is light, can be stored, is energy dense and doesn't generate direct polluting emission. Therefore, it is considered as the substitute for fossil fuels in heavy transport

GREEN HYDROGEN MISSION

5 MT

India's annual Green Hydrogen production likely by 2030.

₹8 lakh cr

Investments and 6 lakh jobs by 2030 through Green Hydrogen Mission.

28 MT

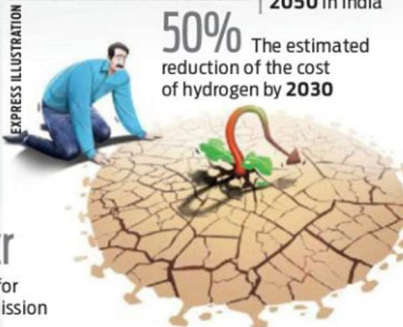
The demand for hydrogen expected by 2050 in India

50 MT

Annual CO2 emissions to be averted by 2030 due to use of Green Hydrogen.

₹19,744 cr

The initial outlay for Green Hydrogen Mission



sectors like maritime transport or aviation sector, where it is hard to decarbonise the fuel.

combined with carbon capture storage (CCS) or carbon capture use (CCU) technologies to reduce

How is it produced?

Hydrogen is the lightest element and most abundant element in the universe. It isn't found in nature in its elemental form, thus it has to be extracted from other hydrogen-containing compounds. Based on the method of extracting, hydrogen is divided into three categories -- Grey, Blue and Green. Green Hydrogen is produced using electrolysis of water with electricity generated by renewable energy. The carbon intensity ultimately depends on the carbon neutrality of the source of electricity -- the more renewable energy in the electricity fuel mix, "greener" the hydrogen produced. Grey Hydrogen is produced via coal or lignite gasification (black or brown), or via a process called steam methane reformation (SMR) of natural gas or methane (grey) and Blue Hydrogen is produced via natural gas or coal gasification com-

carbon emissions. This is the most environmentally sustainable way to produce hydrogen.

Current status in India

As per analysis by the Council for Energy, Environment and Water, Green hydrogen currently accounts for less than 1% of global hydrogen production due to it being expensive to produce. The government believes by 2030, the hydrogen costs will be down by 50%. Hydrogen demand is expected to see a five-fold jump to 28 MT by 2050 where 80% of the demand is expected to be green in nature.

The opportunity in the sector gave private firms an opportunity to invest. Reliance Industries (RIL) plans to become a net-carbon zero firm by 2035 and invest nearly ₹750 billion over the next three years in renewable energy. State-owned oil companies like Indian Oil (IOCL) are planning to set up India's first green hydrogen

unit in Mathura refinery which will be used to process crude oil. Similarly, National Thermal Power Corporation (NTPC), has recently issued a tender to establish a hydrogen refuelling station to be powered by renewables in Leh through a standalone 1.25 MW solar system. Two hydrogen refuelling stations have been established (one each at Indian Oil R&D Centre, Faridabad and National Institute of Solar Energy, Gurugram).

India is also planning to export hydrogen to Japan, South Korea, and Europe. Meanwhile, various hydrogen powered vehicles have been developed and demonstrated under projects supported by government that includes 6 Cell buses by Tata Motors, 50 hydrogen enriched CNG (H-CNG) buses in Delhi by IOCL in collaboration with Government of NCT of Delhi, 2 hydrogen fueled Internal combustion engine buses (by IIT Delhi

in collaboration with Mahindra & Mahindra). With proactive collaboration among innovators, entrepreneurs and government, green hydrogen has the potential to reduce CO2 emissions, fight climate change, and put India on a path towards net-zero energy imports. As per the government, it will help India export high-value green products, making it one of the first major economies to industrialise without the need to 'carbonise'.

What experts say?

Hydrogen and ammonia are envisaged to be the future fuels to replace fossil fuels but energy experts have some reservations about the scheme. They called the usage of green hydrogen as a still nascent stage all over the world. India can take a lead in the green hydrogen, but as per them, the country doesn't have required infrastructure to execute it yet.

Oil loses direction

CRUDE CHECK. Prices moving back and forth

Akhil Nallamuthu

bl. research bureau

The crude oil prices fell over the last week because of the fears of a fast paced tightening from the US Fed.

The Brent crude futures on the Intercontinental Exchange (ICE) posted a 3.6 per cent loss as it closed at \$82.8 a barrel. Similarly, the MCX crude oil futures (March contract) declined 3.1 per cent and ended the week at ₹6,299 per barrel.

MCX-CRUDE OIL (₹6,299)

Unable to sustain above the key level of ₹6,500, the March crude oil futures declined to post a weekly loss of 3.1 per cent. Nevertheless, this time too, the support at ₹6,150 helped the bulls to fight back and gain some ground.

Notably, the price band of ₹6,000-6,150 is a support band against which the contract has rebounded several times since the beginning of this year.

However, further rally from here can be difficult as the contract faces a series of resistances. The 20- and 50-day moving averages lie at ₹6,400 and ₹6,440 respectively, which are potential barriers.



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Just above these levels, there is a falling trendline resistance. The contract is expected to meet this trendline at around ₹6,500, which is already a considerable hurdle.

Therefore, the contract should breach either the resistance at ₹6,500 or the support at ₹6,000 for us to reasonably predict the next leg of trend.

Supports below ₹6,000 are at ₹5,850 and ₹5,550, whereas resistance above ₹6,500 are at ₹6,750 and ₹7,000.

Trade strategy: The crude oil futures fell short of our target for the longs at ₹6,700 as the contract fell after making an intra-week high of ₹6,583. It then hit our trailing stop-loss at ₹6,200. The trade was initiated at ₹6,150.

We recommend traders refrain from trading crude oil until we see a technical confirmation.



CRUDE WATCH

OIL PRICES RISE OVER 1%

Oil prices climbed more than 1% on Friday after better-than-expected US employment data, though both benchmarks fell more than 3% on the week on US interest rate hike jitters. **REUTERS**

