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1. How is India's hunt for critical minerals going?

Why in News?

In late June, the Centre declared the winning bidders for mining rights in six blocks of critical minerals, including graphite, phosphorite and lithium, for which India largely relies on imports. These are the first private players awarded such rights under the revamped Mines and Minerals law.

Why are critical minerals important?

Minerals such as copper, lithium, nickel, cobalt are known as critical minerals, as they along with some rare earth elements, are essential for the world's ongoing efforts to switch to greener and cleaner energy.

In its Global Critical Minerals Outlook 2024 report, the agency has flagged that the world's goal to limit global warming to 1.5 degrees Celsius in the net zero emissions scenario, would translate into very rapid growth in demand for these minerals.

By 2040, the demand for copper is expected to rise 50%, double for nickel, cobalt and rare earth elements, quadruple for graphite and eightfold for lithium, which is crucial for batteries. The development of sustainable supply chains for such minerals is, therefore, an unavoidable task.

In India, the lack of ready reserves of critical minerals has resulted in 100% import dependence for minerals like lithium, cobalt, and nickel. Late last month, Union Mines Minister G. Kishan Reddy highlighted that 95% of India's copper requirements are met through imports. China is a key supplier or processor of many of these items.

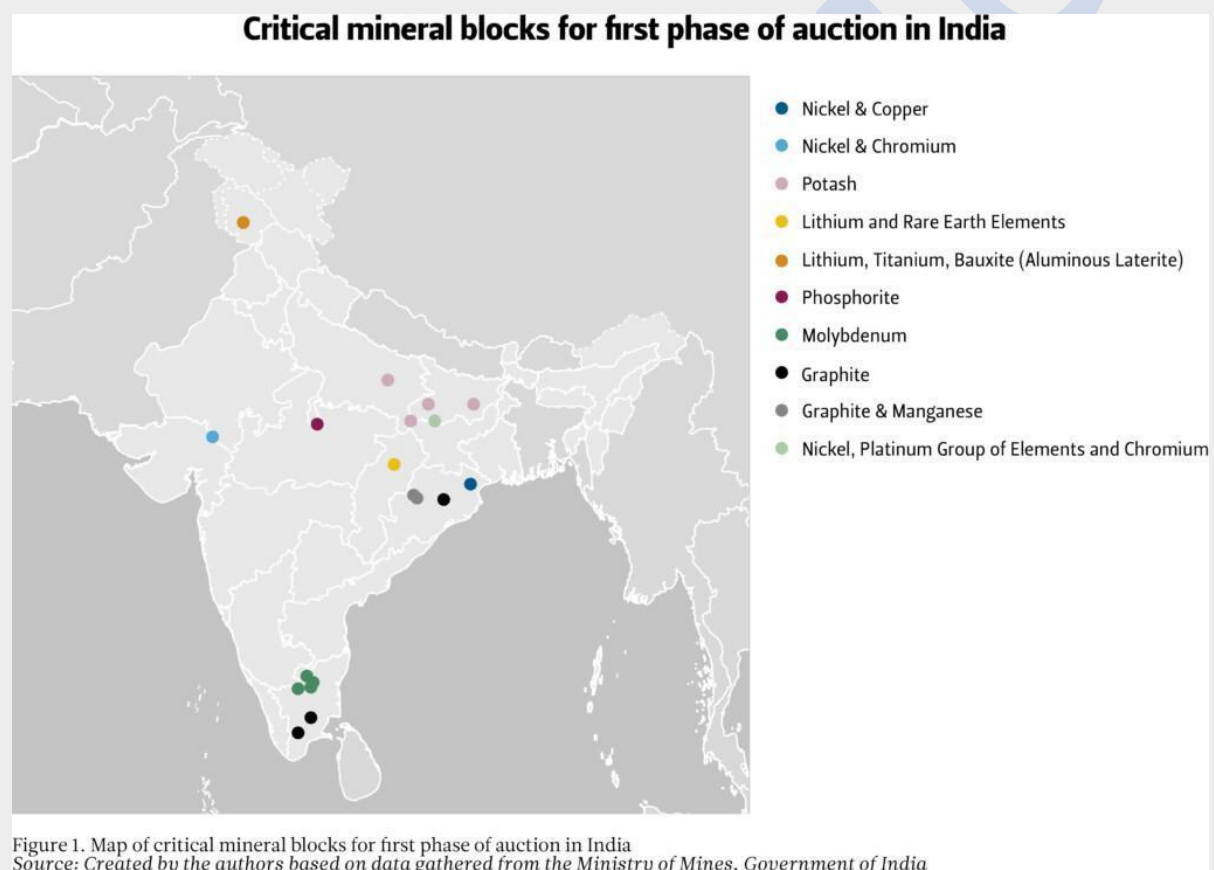
What is being done to spur production?

1. While India has natural reserves of some of these minerals, they haven't been explored or tapped fully. For instance, India holds 11% of the world's deposits of ilmenite, the main source of titanium dioxide used in many applications, but still imports a billion dollars of titanium dioxide a year.

2. Then there is the "lucky" discovery of lithium reserves in the Union Territory of Jammu and Kashmir (J&K) while the Geological Survey of India (GSI) was exploring the State's terrain for limestone, which triggered hope of some self-sufficiency in the mineral. Announced as the first discovery of lithium in the country last February, these reserves were pegged at 5.9 million tonnes, enthusing the government to expedite its tapping.

3. The central government amended the Mines and Minerals (Development and Regulation) Act, 1957 in August 2023 to enable it to grant mining concessions for 24 critical and strategic minerals.

4. By November, the first auctions of 20 critical mineral blocks, with the lithium block identified in J&K's Reasi district on the list, were launched, followed by two more tranches with 18 more blocks offered this February and March. However, investor interest has been tepid — the auction of most of the first 20 blocks was scrapped for lack of adequate bidders. After a delayed process, the Mines Ministry on June 24, announced six winners from the maiden auction tranche for three blocks in Odisha, and one each in Tamil Nadu, U.P. and Chhattisgarh. The outcomes of the second and third round of auctions are still awaited, while the Ministry has initiated a fourth tranche, which includes 10 blocks that are being offered for the second time.



When is domestic production likely to begin?

Given the preliminary stage of exploration for most of the domestic blocks being auctioned, their commercialisation and associated benefits are unlikely to fully accrue in the current decade ending 2030, ICRA said. "India's manufacturing is thus likely to remain exposed to potential future supply shocks of these minerals till then," it concluded. Apart from spurring exploration and attracting more miners, the Centre is looking to acquire overseas assets from key resource-rich regions as a parallel measure to bolster mineral security. The first such mine, for lithium brine, was acquired in Argentina this year by Khanij Bidesh India Limited, a joint venture of NALCO, Hindustan Copper, and Mineral Exploration Company. While it scouts for

more assets, India has also joined the U.S.-led Mineral Security Partnership, a block consisting of large buyers and sellers of critical minerals.

Relevance: GS Prelims & Mains Paper III; Economics

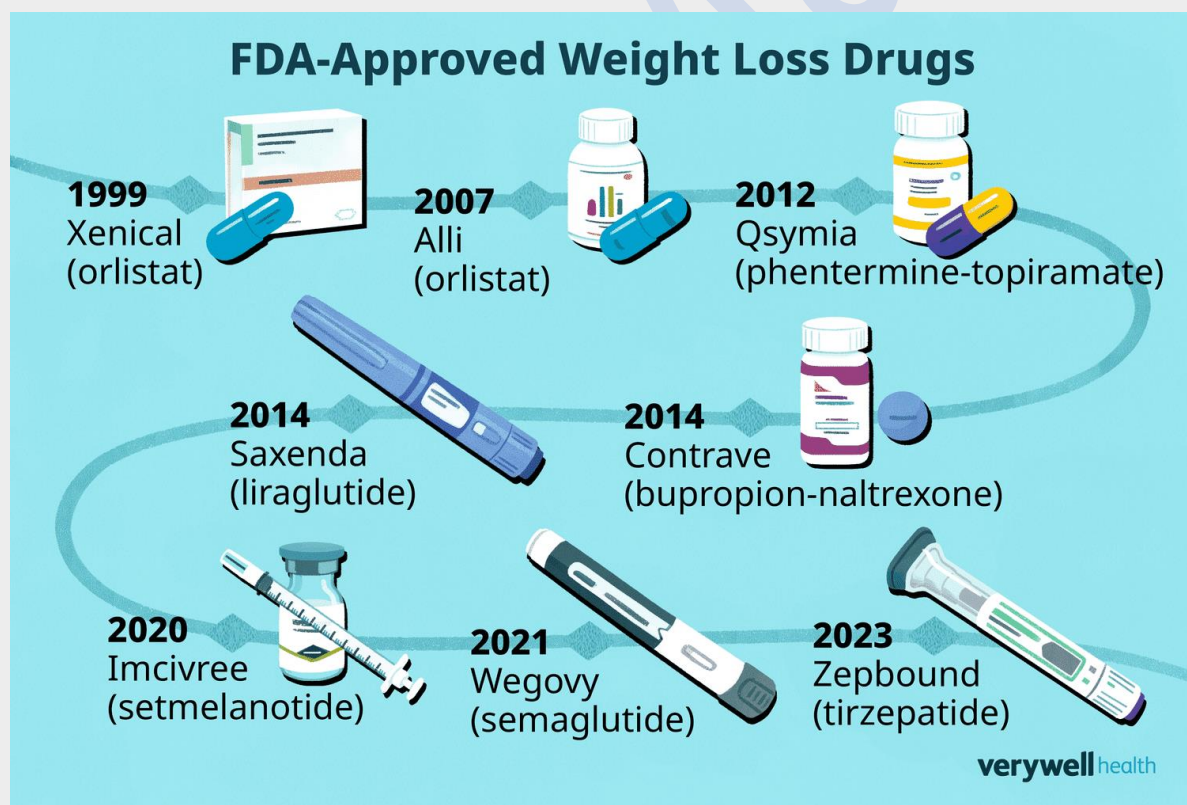
Source: The Hindu

2. India could soon allow 'game-changing' weight-loss drug tirzepatide: How it works, its side effects

Why in News?

The development of various weight loss drugs has been a game changer for obesity treatment in recent years, especially in the US and Europe. But these drugs are yet to be commercially available in India, with pending regulatory clearances and high demand abroad delaying their arrival in the country.

But this might soon change. Last week, in a first, an expert committee of India's drug regulator gave the green light to the drug tirzepatide. Following a review of this recommendation, the drug will be given final approval by the regulator, allowing its manufacturer, Eli Lilly, to launch the product in the Indian market.



Diabetes drug for weight loss

In 2017, the US Food and Drugs Administration (FDA) approved Danish pharma giant Novo Nordisk's Ozempic, with the active ingredient semaglutide, to manage type 2 diabetes. Soon, doctors in the US saw an interesting side-effect — weight loss.

They started prescribing Ozempic off-label (the practice of prescribing a drug for a different purpose than what has been approved) to treat obesity. A social media frenzy followed, with influencers flooding TikTok and Instagram with posts about their dramatic weight loss transformations, all courtesy Ozempic.

This made Novo Nordisk explore semaglutide as a weight loss drug for people without diabetes. In 2021, the company released Wegovy, a semaglutide injection, as an FDA-approved obesity treatment. The key difference between Ozempic and Wegovy: the maximum approved dose of semaglutide is slightly higher with Wegovy than Ozempic. Currently, there is a global shortage of both drugs amid soaring demand.

In November 2023, Eli Lilly, another US pharma major, got FDA approval for the drug Zepbound to treat obesity. This came just over a year after its type 2 diabetes medication, Mounjaro, was launched. Like Ozempic, Mounjaro too led to weight loss among users, and began to see rampant off-label use. Zepbound and Mounjaro contain tirzepatide as the active ingredient. Both face shortages in the global market.

Semaglutide vs tirzepatide

The FDA has approved Wegovy (semaglutide) and Zepbound (tirzepatide) for chronic weight management in adults. These drugs can be prescribed to those who are obese (with a body mass index of over 30), or overweight (with a BMI between 27 and 30), and have at least one other health condition related to their weight (such as high blood pressure, high cholesterol, or type 2 diabetes).

Both are administered as under-the-skin injections, and are intended to be used alongside a reduced-calorie diet and increased physical activity. The dosage is increased gradually, reaching a maximum dosage of 2.4 mg for semaglutide and 15 mg for tirzepatide. This does not, however, mean that the latter is 'stronger' than the former.

Semaglutide and tirzepatide are polypeptides, small proteins that boost the levels of naturally-occurring hormones in the body, including that of glucagon-like-peptide 1 (GLP-1), which control weight through the brain and digestive tract.

Higher GLP-1 levels, released in the gut, spark a reaction by stimulating neurons that alter gut function, leading to a sense of fullness. This process also taps into a brain mechanism that lights up neural pathways, triggering the sensation of satiety — the feeling of being satisfied and having had enough to eat.

They also help manage glucose levels, making them an effective treatment for diabetes. Semaglutide only targets GLP-1 receptors. On the other hand, tirzepatide also boosts a second hormone: glucose-dependent insulinotropic polypeptide (GIP). The GIP also regulates weight through receptors in brain and fat cells. Eli Lilly claims that the combined action of GLP-1 and GIP enhance each other's effects.

Weight back if drug is stopped

Obesity drugs are also not one-time miracle solutions for weight loss — data from trials indicate that these drugs need to continue to be taken for their weight loss and other effects

to last. Improvements in heart and metabolic health seen during the treatment period also tended to revert to baseline levels once the treatment was stopped.

Relevance: GS Prelims; Science & Technology

Source: Indian Express

3. Former President Trump escapes assassination bid. There is a disturbing history of targeting top US leaders

Why in News?

Former US President and current frontrunner in the 2024 race for the White House, Donald Trump, was shot at in an election rally in Butler County, Pennsylvania. Trump sustained an injury to the ear but is not seriously hurt.



There is a history of political violence in the US targeting those in the highest office. Four US Presidents have been assassinated so far.

1. Abraham Lincoln (1865)

The 16th President, Abraham Lincoln, was assassinated on Good Friday, April 14, 1865, days after the American Civil War (1861 to 1865) had come to an end. Lincoln was seated to watch the play *Our American Cousin* at Ford's Theatre in

Washington DC when John Wilkes Booth, the assassin, slipped into the Presidential box and shot him in the head. Booth was a sympathiser of the Confederates, the losing side of the Civil War. He was also a well-known actor at the time and disapproved of Lincoln's intent to extend equal voting rights to Black Americans. Lincoln died of his injuries the next morning.

2. James A Garfield (1881)

Barely six months after taking office, the 20th President of the United States, James A Garfield, was shot in the back and shoulder at the Baltimore and Potomac Railroad Station in Washington, D.C. on July 2, 1881. The President was on his way to deliver a speech at his alma mater Williams College, and had to pass through the station. The shooter, Charles J. Guiteau, was a supporter of Vice-President Chester A Arthur and wished to see him ascend to the Oval Office. Garfield died of his injuries two months later.

3. William McKinley (1901)

The 25th President, William McKinley, was six months into his second term when he was shot twice in the abdomen at close range while attending the Pan-American Exposition in Buffalo, New York on September 6, 1901. McKinley died of gangrene from his wounds eight days later, aged 56. Leon Czolgosz was charged with his murder. This incident supposedly expanded the mandate of the US Secret Service to Presidential protection.

4. John F Kennedy (1963)

The 35th President, John F Kennedy, was fatally shot in the head while riding with his wife and First Lady Jacqueline Kennedy in an open convertible in Dallas, Texas on November 22, 1963.

He was gearing up to announce his re-election campaign. Lee Harvey Oswald was arrested for the shooting, and the police claimed he was motivated by personal reasons and disillusionment with the establishment. Several conspiracy theories continue to surround the case to date.

Relevance: GS Prelims & Mains Paper II; Governance

Source: Indian Express

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