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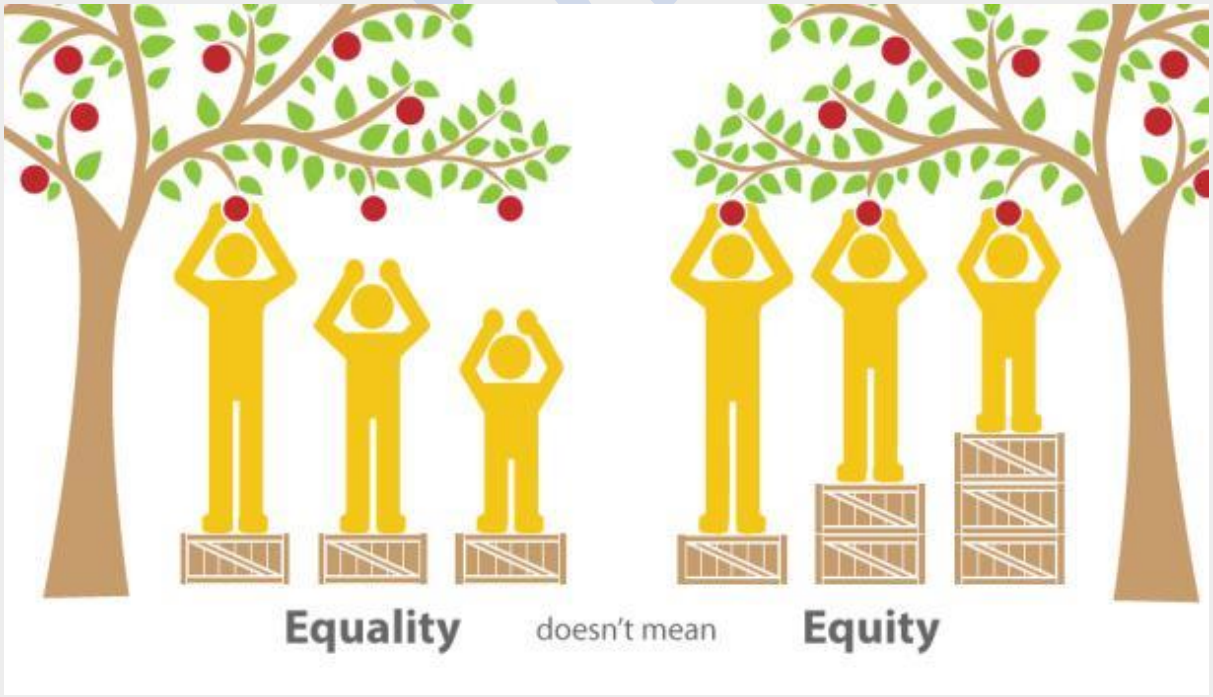
1. Supreme Court verdict on sub-classification: How CJI underlined Substantive equality

Why in News?

The Supreme Court's landmark verdict on sub-classification of the Scheduled Caste (SC) and Scheduled Tribe (ST) quota marked a milestone for equality jurisprudence. In this verdict, Chief Justice of India (CJI) D Y Chandrachud underlined the concept of "substantive equality" — the principle that the law must account for the different backgrounds and historical injustices faced by persons or groups.

"The Constitution…today advances a more substantive reading of the equality provision, expanding the sphere and the scope of the reservation to ensure that the benefits trickle down to those who need it the most," the CJI wrote (The State of Punjab v. Davinder Singh, 2024).

The concept of substantive equality is key to understanding how the court interpreted the law on reservations.



Over the years, the Supreme Court's view on reservation

In the sub-classification judgment delivered on August 1, the CJI traced the history of the ways in which the top court has interpreted affirmative action.

AS LIMITING EQUALITY: The SC initially took a formal and limiting approach, in which it viewed reservations as an exception to the principle of equal opportunity. Emblematic of this was the court's view in The State of Madras v. Champakam Dorairajan (1951) where it held that reservation of seats in educational institutions was unconstitutional — there was no express provision that allowed this, like Article 16(4) of the Constitution did for public employment.

In another ruling given in April 1951, B Venkataramana v. The State of Madras, the top court held that only Harijans and backward Hindus can be considered as "backward classes" for reservation in public jobs.

This led to Parliament enacting the first amendment to the Constitution in June that year, which inserted Article 15(4), which is essentially an exception to Article 29 that prohibits discrimination against any citizen on grounds of religion, race, caste, language, or any of them with respect to admission into educational institutions.

This formalistic reading was also in evidence in Indra Sawhney v. Union of India (1992) (Mandal judgment), in which the court observed that Articles 15(4) and 16(4) are special provisions — or, in other words, an exception to the principle of equality — while prescribing a cap of 50% on the total seats to be reserved.

AS A FACET OF EQUALITY: In 1958, the State of Mysore reserved 75% seats in educational institutions for all communities except the Brahmin community. This was challenged before the SC in M R Balaji v State of Mysore (1962), in which the court for the first time prescribed a 50% ceiling for reservation. This limit is contested — but it has endured, with the exception of the 10% Economically Weaker Section (EWS) quota introduced in 2019.

In its decision in State of Kerala v. N M Thomas (1975), the SC made an "expansive and substantive reading of the equality code", CJI Chandrachud said. The court upheld a Kerala law in which the qualifying criteria for government jobs was relaxed for SC and ST candidates. It held that the law was not an exception to the principle of equality of opportunity.

AS LIMITING EFFICIENCY: Article 335 of the Constitution, which provides for reservation for SCs and STs in services and posts, states that the reservation must be taken "consistently with the maintenance of efficiency of administration". In the discourse on reservation in the SC that put emphasis on "maintaining efficiency of service", reservation was effectively seen as being detrimental to "efficiency", while "merit" (unreserved posts) was equated with efficiency.

This view was reflected in a string of rulings in which the SC shot down reservations in promotions. In the 1992 Indra Sawhney judgment, the SC held that reservations in promotions would dilute efficiency in administration.

In 1995, a constitutional amendment was introduced to allow reservations in promotions and to undo the "catch-up rule" that was upheld in a string of rulings. The court had held that the practice was a constitutionally valid practice to maintain "efficiency".

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Under the catch-up rule, if a reserved-category person was promoted earlier over his superior in the general category due to reservation, the general-category person was allowed to regain seniority over — or "catch up" with — the reserved-category person.

The Constitution (Seventy-seventh) Amendment Act, 1995 inserted Article 16(4A) to allow "consequential seniority", which meant that the seniority attained by a reserved-category candidate over his peer in the general category by being promoted earlier would be retained for the next promotion. The law on consequential seniority was upheld in 2006 on the ground that the efficiency of administration was only relaxed, not "obliterated", by the rule.

"The understanding of the Courts at the end of this phase was that the scope of reservation must be expanded to ensure substantive equality in spite of its dilution of efficiency," the CJI said in his ruling.

Repudiation of the concept of a reservation-vs-merit binary

Drawing from observations and dissenting opinions in other rulings, CJI Chandrachud in his rulings has reframed the quota-versus-efficiency question. In essence, it sees reservation as reflecting the mandate of substantive equality enshrined in the Constitution, and not as a concessionary exception to the equality rule.

Addressing the criticism that the dilution of the evaluating standards or the qualifying marks for SCs/STs leads to "inefficiency," the CJI has argued that "securing higher marks in an examination does not contribute to higher efficiency and…securing a minimum mark (and not the highest) in the examination is sufficient to maintain efficiency of administration".

The CJI's majority opinion states that the stereotype that reservation leads to inefficiency in fact makes promotions inaccessible to SC/ST candidates — the reason why the state introduced reservations in promotions. The constitutional amendments "are an emphatic repudiation of the binary of reservation and merit", CJI Chandrachud has argued.

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express

2. What is a Bailey bridge, constructed in Wayanad after landslides?

Why in News?

The deadly landslides that hit Kerala's Wayanad district on July 30 have led to the deaths of more than 219 people, with 206 still missing. Rescue and relief operations began soon after the disaster struck, with teams of the army, the National Disaster Relief Fund (NDRF), the Coast Guard, the Navy, and others deployed in the affected areas.

A major challenge in the rescue efforts was the continued rains in the region, making the movement of men and materials difficult. To solve this problem, the Indian Army's Madras Engineer Group built a "Bailey bridge", which was assembled at Chooralmala, to reach Mundakkai village — one of the sites worst hit by the landslides.

The 190-foot Bailey bridge has been crucial in facilitating the movement of heavy machinery and ambulances. It has a weight-carrying capacity of 24 tonnes and will remain in use until a

permanent bridge is built. What exactly are these bridges and how are they assembled at such short notice? What makes them durable?

What is a Bailey bridge?
Simply, it is a type of modular bridge, one whose parts are pre-built so that they need minimal construction work and can be assembled quickly when needed. It was developed in 1940–1941 by the British for military use during the Second World War and saw extensive use by British, Canadian and American military engineering units.

How the Bailey bridge works
The pre-fabricated parts in a Bailey bridge include light steel panels linked through pins, which are big, screw-like objects. These help establish the guardrails of the bridge. Through the guardrails on either side, workers place beams to form the deck or path of the bridge. All beams were constructed such that they would lock in on the guardrails to ensure stability.

After that, the bridge can be extended, and the lightness of the parts allows it to be mobile. No heavy installation equipment is needed. In disaster relief situations, this is ideal because parts can be transported in small trucks — something also of use during wartime.

India and the Bailey bridge
Such bridges were used in the 1971 war with Pakistan for the liberation of Bangladesh. Bailey bridges have also been constructed in a strategically important village along the India-China border in Arunachal Pradesh, and in Uttarakhand in 2021 after flash floods hit the state.

Relevance: GS Prelims & Mains Paper III; Disaster Management
Source: The Indian Express

3. Are deep-sea metals a vital resource or an environmental disaster in the making?

Why in News?
The ocean floor holds vast quantities of metals and rare earths. But mining these valuable resources could permanently damage fragile marine systems.

Representatives from all over the world have spent most of the last month in Jamaica negotiating the future of deep-sea mining.

Based in Kingston, the International Seabed Authority, or ISA, is working on a set of rules to regulate the extraction of raw materials from the ocean floor. But despite weeks discussing the matter, many questions remain.

What is the current state of deep-sea mining?
By 2025, the ISA wants to define a set of legally binding rules to manage deep-sea mining — without these rules, any planned mining operation will not be able to get started. Discussions have been ongoing for several years, but these latest talks have laid bare the extent to which the new rules remain divisive, especially when it comes to the issues of underwater monitoring and avoiding environmental damage.

Several states, including Germany, Brazil and the Pacific island nation of Palau, have said they won't agree on the new rules until their environmental impact has been fully investigated. China, together with Norway, Japan and the microstate Nauru in the Central Pacific have pushed for a quick agreement so that mining companies can start putting their plans into action.

But that's looking increasingly unlikely. Of the 169 countries represented in the ISA, 32 are now in favor of suspending or even banning deep-sea mining outright, a stance supported by environmental organizations and many marine scientists.

Despite the concerns, however, the Canadian startup The Metals Company has already announced it plans to submit an application to the ISA for a commercial deep-sea mining operation in the coming months.

Who profits from deep-sea mining?
When it comes to deep-sea mining, the focus is primarily on manganese nodules and other minerals found on the ocean floor outside territorial waters. This is commonly called the high seas, and accounts for more than half of the world's oceans.

These areas are classified as the "common heritage of mankind," raw materials that belong to everyone, not one particular country. Managing and monitoring any potential mining activities in these regions would be the responsibility of the ISA, as outlined in the United Nations Convention on the Law of the Sea.

Many countries and corporations are interested in the commercial potential of deep-sea mining. The ISA has so far issued 31 exploration licenses for certain areas, five of which have gone to Chinese companies. But several other countries, including Germany, India and Russia, have also been exploring the seabed.

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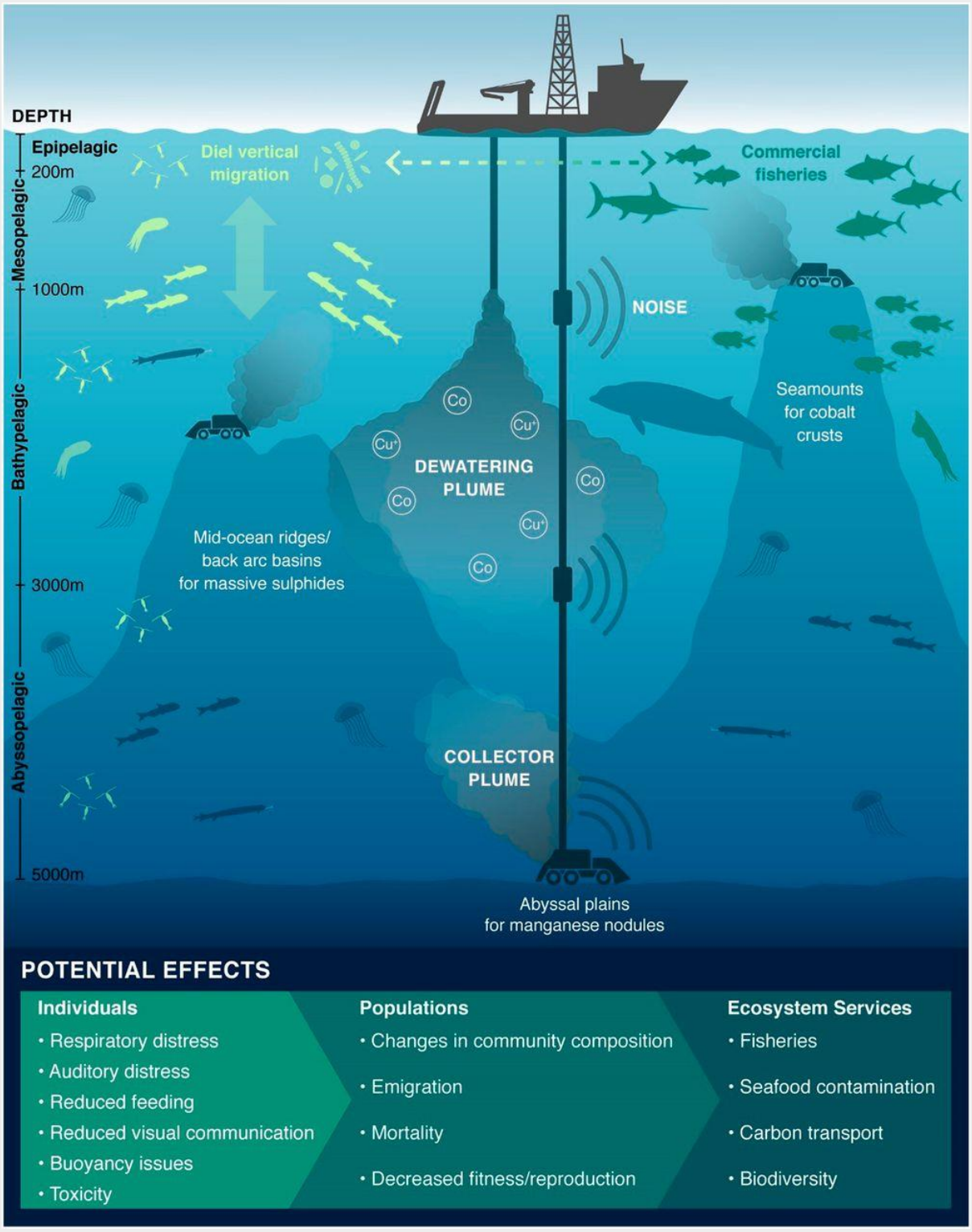
The UN's sea convention stipulates that any activities in the high seas must be equitably shared among states, and that would include profits from deep-sea mining. Critics like the Deep Sea Conservation Coalition, however, remain skeptical of whether this would even be possible.



What kinds of metals can found in the ocean floor?

Mining companies are particularly interested in polymetallic nodules, also known as manganese nodules. These potato-sized lumps, which form over millions of years from

sediment deposits, are composed mainly of manganese, cobalt, copper and nickel — raw materials which are a key component in electric car batteries. As the world makes the transition to renewable energy, the International Energy Agency expects the demand for these metals to double by 2040.

The ocean floor in what's known as the Clarion-Clipperton Zone between Hawaii and Mexico holds vast amounts of manganese nodules. Mining companies aim to harvest these prized metals from a depth of between 4,000 to 6,000 meters (13,100-19,700 feet) with automated vacuum robots, bringing them to the surface with hoses.

Other areas in the Pacific, the Indian and the Atlantic Ocean also hold significant deposits of these minerals. In addition to manganese nodules, mining companies are also targeting polymetallic sulfides, which contain large amounts of copper, zinc, lead, iron, silver and gold, and cobalt-rich ferromanganese crusts, which are especially hard to break up and recover from the ocean depths.

How could deep-sea mining harm marine ecosystems?

Manganese nodules and mineral crusts aren't dead rocks — they're an important habitat for many sea creatures. According to marine scientists, more than 5,000 different species, some of which have barely been researched, make these unhospitable areas their home. At this depth, conditions are extreme: food is scare, sunlight is nonexistent, and the water pressure is 100 times higher than at sea level.

For that reason, the seabed ecosystem — and species that have adapted to living in these conditions — are extremely fragile. Mining robots, which vacuum up huge expanses in their search for manganese nodules, would destroy the ocean floor and suck up countless sea creatures. Even marine life found kilometers away from these mining areas would be disturbed by light and noise pollution as well as the far-reaching, swirling clouds of sediment. Fishing activity above the mining areas could be permanently disrupted.

To date, researchers have explored only around 1% of the deep sea area and its potential. A study released in July, for example, showed that the minerals present in manganese nodules are able to produce oxygen through electrolysis, in the complete absence of sunlight. Until now, scientists assumed that this only happened in nature through photosynthesis. Research is ongoing.

Marine scientists have warned that beginning deep-sea mining without sufficient knowledge of the potential consequences could be catastrophic for biodiversity and the as-yet little-known sea ecosystems. The necessary research could still take another 10 to 15 years, in part because the area is so difficult to reach.

Is deep-sea mining even worth it?

Countries like China are hoping for huge profits and a secure, independent source of raw materials, and expect to be mining for important minerals for decades to come. Mining companies have said deep-sea mining is less destructive than mining on land, and would eliminate many concerns of human rights abuses.

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But a study from the German nonprofit Öko-Institut, commissioned by Greenpeace, has revealed that the raw materials found in manganese nodules aren't actually needed to fuel the energy transition, highlighting instead the development of new battery technologies like lithium-iron-phosphate accumulators.

Critics have also pointed out that mining companies have underestimated the costs and technical risks of commercial deep-sea mining. The technology has not yet been fully developed, and the extreme water pressure at such depths will make it difficult to repair robots and other mining equipment.

A growing number of major companies, including SAP, BMW, Volkswagen, Google and Samsung SDI have already pledged not to use any raw materials recovered from the seafloor, and have said they would not support mining activities. Several insurance companies, among them Swiss RE, have also ruled out underwriting such risky projects, which could also dent their profitability.

When could deep-sea mining begin?

So far, any potential mining areas have only been explored, not exploited. The Metals Company, however, has said it wants to apply for its first commercial mining license from the ISA by the end of 2024. Along with its subsidiary in Nauru, it plans to start operations in the Clarion-Clipperton Zone in 2026. When, and if, the ISA will approve the license remains unclear. Norway aims to start its own mining operation as soon as possible, in the North Atlantic between Greenland and the Svalbard archipelago, after getting the go-ahead from parliament in January. The 281,000-square-kilometer (108,570-square-mile) area, slighter smaller than Italy, is at a depth of 1,500 meters on the continental shelf. The ocean floor in this region belongs to Norway, meaning it's not controlled by the ISA. The country wants to start granting licenses for exploration next year, with mining operations planned for 2030.

However, environmental organization WWF has taken legal action against Norway's mining plans, with scientists warning of irreversible damage to the Arctic ecosystem and fisheries. Japan is also making plans to begin deep-sea mining operations in its underwater territory.

Relevance: GS Prelims & Mains Paper II; International Organisations
Source: Indian Express

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