

## DAILY CURRENT AFFAIRS (2024\_JULY\_29)

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# दिल्ली से भी बेहतर आपके शहर गोरखपुर में

## Patriotic IAS

### IAS/PCS wali Pathshala

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and Qualified 2 times for IAS mains and  
2 times for CAPF interview.

# Manu's historic bronze opens India's medal hunt

The 22-year-old is the first Indian woman shooter to be on the Olympic podium as she wins medal in the 10m air pistol event; she will now compete in 10m pistol mixed team and 25m pistol events

**Jonathan Selvaraj**  
PARIS

Three years ago, Manu Bhaker broke down in tears at the conclusion of a dismal campaign at the Tokyo 2020 Olympics where she finished medalless across three events.

On Sunday at Chateauroux, the 22-year-old, who is competing at her second Olympics, wiped away tears from her eyes once again. This time though they were of joy following the conclusion of the women's 10m air pistol event where she won a bronze medal, opening India's medal count at the Paris 2024 Games.

The medal was also the first won by an Indian woman shooter.

After qualifying for the



**The trailblazer:** Manu Bhaker celebrates with her bronze medal in women's 10 metre air pistol at the Paris Olympics, in the Chateauroux shooting range, on Sunday. RITU RAJ KONWAR

final in third place, Manu hit the ground running. Of the 22 shots she took, just 7 were in the '9' ring.

She was never out of medal contention and was in silver medal place until her final shot of the com-

petition where she was pipped by the narrowest of margins – 0.1 – by South Korea's Kim Yeji.

Another Korean Ye Jin Oh took gold.

Manu isn't done just yet. She will also be competing

in the women's 10m pistol mixed team event on Monday and the women's 25m pistol events later in the competition.

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gold medal.

## Manu's historic bronze opens India's medal hunt (29 July)

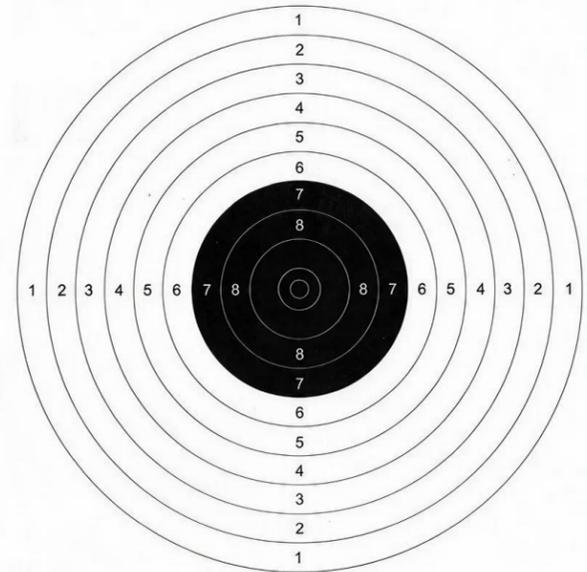
The 22-year-old is the first Indian woman shooter to be on the Olympic podium as she wins medal in the 10m air pistol event; she will now compete in 10m pistol mixed team and 25m pistol events

- Manu Bhaker won a bronze medal in the women's 10m air pistol event at the Paris 2024 Olympics.
- This was her second Olympics, and it marked the start of India's medal count at the Games.
- It was also the first medal won by an Indian woman shooter in the current Olympics.
- Bhaker qualified for the final in third place and performed consistently, with only 7 of her 22 shots in the '9' ring.
- She was in silver medal position until her final shot, where she was narrowly beaten by South Korea's Kim Yeji by 0.1 points.
- South Korea's Ye Jin Oh won the



Manu Bhaker. (ANI Photo)

10m pistol mixed team event and the women's 25m pistol events.



- Bhaker will also compete in the women's

## Centre scraps auction of three critical mineral blocks (29 July)

- The Centre cancelled the auction of three critical mineral blocks due to fewer bidders than expected.
- The cancelled blocks include:
  - Salal-Haimna lithium, titanium, and bauxite block in Jammu and Kashmir
  - Muskaniya-Gareriatola-Barwari potash block in Jharkhand
  - Kurunjakulam graphite block in Tamil Nadu
- The cancellation is part of the Centre's self-reliance push in critical mineral supplies.
- Previously, auctions for 14 blocks in the second tranche and 13 blocks in the first tranche were also cancelled due to low interest.

## Centre scraps auction of three critical mineral blocks

**Press Trust of India**  
NEW DELHI

The Centre has scrapped the auction of three critical mineral blocks notified under a third round of sales as there were fewer bidders than expected. The auction is part of the Centre's push towards self-reliance in critical mineral supplies.

The blocks are the Salal-Haimna lithium, titanium and bauxite block in Jammu and Kashmir, Muskaniya-Gareriatola-Barwari potash block in Jharkhand and Kurunjakulam graphite block in Tamil Nadu. "The auction was annulled as the required number of bids have not been received", said a Mines Ministry notice.

Auction of 14 blocks in the second tranche and 13 blocks in the first tranche were cancelled earlier due to lukewarm response.

## Army contingent in Mongolia for 21st Khaan Quest exercise

**The Hindu Bureau**  
NEW DELHI

An Indian contingent is part of the 21st edition of Khaan Quest, a multinational peacekeeping exercise, which commenced in Mongolia on Saturday. The Indian Army contingent includes 40 personnel from a battalion of the Madras Regiment.

The exercise has around 430 participants from 23 countries, including Australia, Canada, China, Japan, Türkiye, the United States, and the United Kingdom.

"On 27 July, Ambassador Atul Malhari Gotsurve participated in the inaugural ceremony of the 21st multinational military Exercise Khaan Quest-2024. He welcomed Indian troops from Madras Regiment to Mongolia and conveyed his best wishes for the exercise," the Indian Embassy in Mongolia said in a post on X.



The exercise has around 430 participants from 23 countries, including Australia, Canada, China, Japan, and Türkiye.

The exercise is scheduled to run from July 27 to August 9. One woman officer and two women soldiers are also part of the Indian contingent.

"Aim of Exercise Khaan Quest is to prepare Indian armed forces for peacekeeping missions while operating in a multinational environment," the Army said in a statement issued as the contingent departed.

## Army contingent in Mongolia for 21st Khaan Quest exercise (29 July)

- The 21st edition of the multinational peacekeeping exercise Khaan Quest started in Mongolia on July 27.
- The Indian contingent includes 40 personnel from the Madras Regiment.
- The exercise has around 430 participants from 23 countries, including Australia, Canada, China, Japan, Türkiye, the U.S., and the U.K.
- Indian Ambassador Atul Malhari Gotsurve attended the inaugural ceremony and welcomed the Indian troops.
- The exercise will run from July 27 to August 9.
- The Indian contingent includes one woman officer and two women soldiers.
- The aim of Khaan Quest is to prepare armed forces for peacekeeping missions in a multinational environment.

## Central body urges southern States to intensify energy efficiency efforts

**The Hindu Bureau**  
VIJAYAWADA

The Bureau of Energy Efficiency (BEE) has urged the designated agencies of all southern States to intensify their focus on energy efficiency and 'Mission LiFE' in order to realise the immense potential for attracting global investments in key sectors such as industry, urban development, agriculture and building.

BEE senior officers, including Deputy Director General Ashok Kumar and Secretary Milind Deora, made the appeal during a



The officials highlighted the economic and environmental benefits that could be gained through energy efficiency. V. RAJU

detailed discussion on the status and impact of BEE's energy efficiency programmes held on Sunday. They stated that the energy

efficiency programmes would play a crucial role in the development of Amaravati as the new capital city of Andhra Pradesh

which was poised to be the State's growth engine.

The officers emphasised the significant economic and environmental benefits that could be gained through energy efficiency across India.

Mr. Deora expressed gratitude to the Andhra Pradesh government's support under the leadership of Chief Minister N. Chandrababu Naidu for accelerating energy efficiency initiatives, and said A.P. was one of the best States with huge potential to attract sizeable investments in energy efficiency.

## Khaan Quest

**Khaan Quest** is a multinational peacekeeping exercise hosted annually by Mongolia, aiming to enhance the peacekeeping capabilities of the armed forces from participating nations. It includes various training activities focused on humanitarian assistance, civil-military cooperation, and operational preparedness for United Nations (UN) missions.

### Overview of Khaan Quest:

#### 1. Origin and Objectives:

Khaan Quest was initiated in 2003 and has since evolved into a significant event for multinational cooperation in peacekeeping. The exercise's primary objectives are to:

- Improve interoperability among different armed forces.
- Conduct training that improves the readiness of personnel for UN peacekeeping operations.
- Enhance understanding of international humanitarian assistance and disaster response.

#### 2. Participation:

The exercise features participants from numerous countries, including Mongolia, the United States, and various nations across Asia and Europe. This multinational approach fosters collaboration and strengthens global peacekeeping efforts.

#### 3. Activities and Training:

Khaan Quest typically involves a combination of:

- Classroom instruction covering peacekeeping protocols, rules of engagement, and civil-military cooperation.
- Field training exercises simulating real-life scenarios that participants might encounter in peacekeeping missions, such as humanitarian disasters, conflict resolution, and cooperation with local populations.

#### 4. Cultural Exchange:

The exercise encourages interaction and sharing of military practices among participating nations, fostering mutual understanding and collaboration across different cultures and military traditions.

## SP appoints Mata Pandey as Leader of the Opposition

PCS

The Hindu Bureau  
LUCKNOW



Mata Prasad Pandey

The Samajwadi Party (SP) on Sunday appointed seven-time MLA Mata Prasad Pandey as the Leader of the Opposition in the Uttar Pradesh Assembly. The SP made the announcement a day before the beginning of the Uttar Pradesh assembly session.

The 81-year-old Brahmin leader represents the Itwa Assembly constituency in Siddharthnagar district. He has served as Speaker of the Uttar Pradesh Assembly twice, including between 2012-2017, and was elected for the first time in the 1980 Assembly election.

Apart from Mr. Pandey, former Uttar Pradesh Minister and Kanth MLA Kamal Akhtar has been appointed chief whip of the SP in the State Assembly and Rakesh Kumar Verma, MLA from Raniganj, has been named deputy whip.

The appointment of a Brahmin leader to a key post holds significance as the SP continues its efforts to strengthen its base among the Backwards, Dalits and Minorities based on its PDA [Pichada, Dalit, and Alpasankhyak] plank. "Mata Prasad Ji, is a loyal soldier of socialist ideology. He has more than five decades of experience in active politics and has been elected MLA several times. He is the right choice for the post of Leader of Opposition," said Rajendra Choudhary, SP's chief spokesperson to *The Hindu*.

## SP appoints Mata Pandey as Leader of the Opposition (29 July)

- The Samajwadi Party appointed Mata Prasad Pandey as the Leader of the Opposition in the Uttar Pradesh Assembly.
- Pandey, an 81-year-old Brahmin leader, represents the Itwa constituency in Siddharthnagar.
- He has served as Uttar Pradesh Assembly Speaker twice and was first elected in 1980.
- Kamal Akhtar is appointed as the chief whip, and Rakesh Kumar Verma as deputy whip of the SP in the Assembly.
- The appointment of Pandey is significant for SP's strategy to strengthen its base among Backwards, Dalits, and Minorities.
- SP spokesperson Rajendra Choudhary praised Pandey's experience and loyalty to socialist ideology.

# CITES eases norms for agarwood export; move to benefit lakhs of farmers from the Northeast

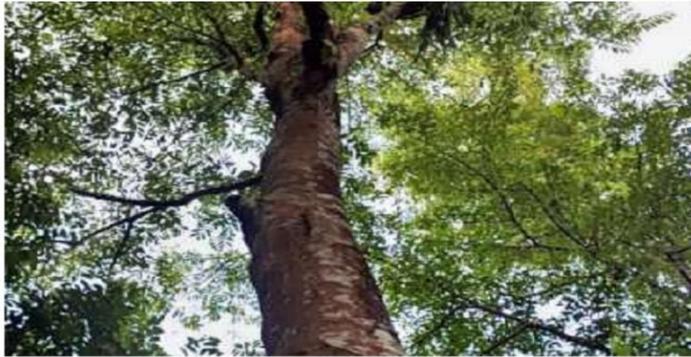
GS Paper III: Environment

**Shiv Sahay Singh**  
KOLKATA

India has successfully prevented the inclusion of agarwood (*Aquilaria malaccensis*) in the Review of Significant Trade (RST) of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The CITES also notified a new export quota of the highly valuable and aromatic resinous wood and oil of the tree from India from April 2024.

Since agarwood is cultivated in different parts of India, especially in the northeastern States, this development is going to benefit lakhs of farmers in certain districts of Assam, Manipur, Nagaland, and Tripura.



Agarwood extract is used in the preparation of incense, air fresheners, purifiers as well as medicines. SPECIAL ARRANGEMENT

*Aquilaria malaccensis* was listed in Appendix II of the CITES (a category of species that are not necessarily threatened but whose trade must be controlled) for the first time in 1995 based on India's proposal at CoP9 in 1994.

The removal of India

from the RST for *Aquilaria malaccensis* was achieved based on a non-detriment findings (NDFs) study of the plant species by the Botanical Survey of India (BSI) and the Ministry of Environment Forest and Climate Change (MoEFCC).

The NDF prepared by

the BSI suggested that the harvest of plants should be allowed from home, community gardens, plantations on leased/patta lands, private or community plantations, or any other types of small-scale or large-scale plantations.

However, the NDF added that "harvesting of plants or collection of seeds/seedlings/saplings and other propagules should not be allowed from the existing wild populations or plants in the protected areas and reserve forests".

The export quota recommended by the NDF for 2024-2027 for agarwood chips and powder/sawdust is 1,51,080 kg a year and agarwood oil is 7,050 kg a year.

"The absence of an ex-

port quota for a long period and other trade-related restrictions in India caused an increase in informal trade/export of agar chips, oil, powder etc. to the Middle East and other foreign countries. It also caused an increase in costs of agarwood chips and oil in the global market as India is a major agarwood trading nation with which most importing countries have long trade records," the NDF report said.

Despite the export ban, the illegal trade of agarwood and its derivatives has continued in India, with more than 1.25 tonne of chips and six litres of oil/derivatives reportedly seized in six States between 2017 and 2021, a report by TRAFFIC, an NGO, said.

## CITES eases norms for agarwood export; move to benefit lakhs of farmers from the Northeast (29 July)

- India has prevented agarwood (*Aquilaria malaccensis*) from being included in the CITES Review of Significant Trade (RST).
- A new export quota for agarwood and its oil from India will be set from April 2024.
- This will benefit farmers in Assam, Manipur, Nagaland, and Tripura where agarwood is cultivated.
- Agarwood was first listed in CITES Appendix II in 1995 due to India's proposal in 1994.
- India's removal from the RST was based on a non-detriment findings (NDFs) study by the Botanical Survey of India and the Ministry of Environment Forest and Climate Change.
- The NDF recommended agarwood harvest from home gardens, plantations, and private/community lands but prohibited harvesting from wild populations and protected areas.
- Recommended export quotas for 2024-2027: 151,080 kg per year of agarwood chips and powder/sawdust, and 7,050 kg per year of agarwood oil.
- Previous lack of export quotas led to increased informal trade and higher global prices for agarwood products.
- Despite the export ban, illegal trade continued in India, with over 1.25 tonnes of chips and six litres of oil/seeds seized between 2017 and 2021, according to TRAFFIC.

### CITES, or the Convention on International Trade in Endangered Species of Wild Fauna and Flora

- It is an international agreement aimed at ensuring that international trade in specimens of wild animals and plants does not threaten their survival.

#### Key Features of CITES:

1. **Objective:** The primary aim of CITES is to protect endangered wildlife and plants by regulating and monitoring their international trade. This helps to prevent the over-exploitation of species that are threatened or endangered.
2. **How it Works:**
  - CITES categorizes species into **three different appendices** based on their level of threat:
    - **Appendix I:** Species **threatened with extinction**; international trade is prohibited except under exceptional circumstances.
    - **Appendix II:** Species **not necessarily threatened** with extinction, but whose trade must be controlled to avoid utilization incompatible with their survival.
    - **Appendix III:** Species that are **protected in at least one country** and that country has requested the cooperation of other countries in controlling trade.
3. **Parties:** CITES is a **legally binding agreement** for its member countries (called "Parties"). As of now, there are 183 Parties to CITES, making it one of the largest environmental agreements in effect.
4. **Implementation and Enforcement:** Each Party is responsible for implementing CITES provisions domestically, which may include legislative and regulatory measures. They must also establish a Management Authority and a Scientific Authority to regulate the trade in wildlife and ensure compliance with CITES.
5. **Conferences of the Parties (CoP):** These are regular meetings where representatives from member countries come together to discuss and make decisions regarding the implementation of CITES and address emerging issues.

# Surprising 'dark oxygen' discovery could ensnarl deep-sea mining

Deep-sea mining is expected to be a major marine resource extraction activity in the coming decades. The International Seabed Authority has established at least two 15-year contracts with the Government of India to look for polymetallic nodules and polymetallic sulphides in the deep seabed

GS Paper III: S&T

The Hindu Bureau

An unknown process is producing oxygen deep in the world's oceans, where it is too dark for photosynthesis, scientists reported on July 22 in the journal *Nature Geoscience*. The finding has important implications because oxygen helps support life and the discovery implies the existence of previously unknown ecosystems.

Many governments are also bound to take notice since one explanation for the oxygen is that polymetallic nodules are transporting electric charges that split water molecules around them, releasing oxygen. Polymetallic nodules are lumps of iron, manganese hydroxides, and rock partially submerged in many parts of the ocean floor. If their concentration exceeds 10 kg per square metre, mining them is considered to be economically feasible – and many countries are planning to do so as a new resource.

On July 22, *Reuters* reported an unnamed "top government scientist" saying India is planning to "apply for licences to explore for deep-sea minerals in the Pacific Ocean". India's Ministry of Earth Sciences is also currently building a submersible vehicle that will look for and mine similar resources in the Indian Ocean as part of its 'Deep Ocean Mission'.

#### Where was the study conducted?

The oxygen discovery raises questions about how deep-sea mining to extract polymetallic nodules will affect marine ecosystems.

The scientists behind the study, from Germany, the U.K., and the U.S., were studying the Clarion-Clipperton Zone, a part of the ocean floor off Mexico's west coast. Covering an area larger than India, the Zone is considered to have the world's highest concentration of polymetallic nodules, including 6 billion tonnes of manganese and more than 200 million tonnes each of copper and nickel.

When the scientists were conducting experiments at a depth of 4 km, they noticed the oxygen concentration in some places rapidly increased instead of decreasing. They conducted follow-up studies in 2020 and 2021. In each case, they released a device from the surface that would land on the ocean floor, where it would isolate a small volume of the floor along with some sea water and measure the oxygen levels.

This underwater region is called the abyssal zone. It receives too little sunlight for photosynthesis to be feasible. Instead, life-forms here get oxygen from water carried in by a global circulation called



A study under way on the seafloor of the Clarion-Clipperton Zone to investigate the impact that potential manganese nodule mining in the deep sea would have on ecosystems there. ROV-TEAM/GEOMAR

the 'Great Conveyor Belt'. Still, the amount of oxygen is low and without any local production, the device should have measured the oxygen levels dropping as small animals consumed it. But the scientists found the opposite: it increased, sometimes tripling in just two days.

They double-checked the finding by recreating the conditions on the ocean floor in their lab, and found the oxygen levels to increase up to a point before dropping.

#### What is the source?

When they measured the physical characteristics of the nodules, they found their surfaces to have a voltage of up to 0.95 V. Splitting one water molecule requires 1.5 V, but the researchers have suspected the voltage could build up if many nodules are close together, like the cells of a battery.

Andrew Sweetman, an ecologist with the Scottish Association for Marine Science in the U.K. and a coauthor of the study, told *Nature*, "We have another source of oxygen on the planet, other than photosynthesis." His team is calling it 'dark oxygen'.

Oxygen sources are valuable because they allow life to survive. But as the lab experiment indicated, the nodules could only produce oxygen as long as they could muster a sufficient voltage. The nodules' own energy source is also not clear.

#### What is deep-sea mining?

Given the quantity of polymetallic nodules on the ocean floor, deep-sea



The finding has important implications because oxygen helps support life and the discovery implies the existence of previously unknown ecosystems

mining is expected to be a major marine resource extraction activity in the coming decades. The International Seabed Authority has established 15-year contracts with at least 22 contractors – including the Government of India – to look for polymetallic nodules, polymetallic sulphides, and cobalt-rich ferromanganese crusts in the deep seabed. China alone is expected to mine 17% of the Clarion-Clipperton Zone.

The new finding raises the possibility of such mining damaging ecosystems that require 'dark oxygen' to survive. Experts have found deep-sea mining itself could be harmful to the marine environment, 'dark oxygen' or not.

In 1989-1996, scientists from Germany conducted the Disturbance and Recolonisation (DISCOL) Experiment in the Peru Basin as the world's "first large-scale impact assessment" to assess the "environmental impacts originating from the mining of polymetallic nodules". They built a device that disturbed the sea floor like a deep-sea mining exercise might have and collected data about how the disturbances changed local oceanographic and sedimentological

profiles, among other things.

A 2019 study in the journal *Scientific Reports* reported that "the effects of simulated mining impacts induced during the DISCOL [Experiment] were still evident in the megabenthos of the Peru Basin after 26 years."

#### The affect on deep-sea mining

The same study also reported "significantly lower heterogeneity diversity in disturbed areas" and added that "if the results of this experiment ... can be extrapolated to the Clarion-Clipperton Zone, the impacts of polymetallic nodule mining there may be greater than expected, and could potentially lead to an irreversible loss of some ecosystem functions".

In November 2023, *Nature* reported based on a paper published then that deep-sea mining "for minerals could harm deep-sea jellyfish, according to the first study of mining impacts on animals living in the water column."

Scientists also know less about ecosystems in the abyssal zone than they do about many of those aboveground, which means the models scientists use to predict their fate and their role in global climate processes could be unreliable. With these and other issues in mind, on July 20, three major European insurance companies said they would exclude deep-sea mining from their underwriting portfolios.

'Dark oxygen' adds to these challenges. If deep-sea mining doesn't find sustainable ways to respond to them, it may be rendered altogether infeasible.

## THE GIST

Polymetallic nodules are lumps of iron, manganese hydroxides, and rock partially submerged in many parts of the ocean floor. If their concentration exceeds 10 kg per sq.m, mining them is considered feasible. Many countries plan to do so

When many nodules are close together they could generate enough voltage to split one water molecule. According to one researcher, 'We have another source of oxygen on the planet.' His team is calling it 'dark oxygen.'

The finding raises the possibility of mining damaging ecosystems that require 'dark oxygen' to survive. Experts have found deep-sea mining itself could be harmful to the ocean, 'dark oxygen' or not

## Surprising 'dark oxygen' discovery could ensnarl deep-sea mining ( 29 July)

Deep-sea mining is expected to be a major marine resource extraction activity in the coming decades. The International Seabed Authority has established at least two 15-year contracts with the Government of India to look for polymetallic nodules and polymetallic sulphides in the deep seabed

- Scientists discovered an unknown process producing oxygen deep in the ocean where there is no light for photosynthesis.
- The oxygen may be generated by polymetallic nodules that transport electric charges and split water molecules.
- Polymetallic nodules are valuable for mining if their concentration exceeds 10 kg per square meter.
- India plans to apply for exploration licenses for deep-sea minerals in the Pacific Ocean and is building a submersible vehicle for its Deep Ocean Mission to explore and mine resources in the Indian Ocean.

#### Where was the study conducted?

- The discovery of increased oxygen levels in the deep sea raises concerns about the impact of deep-sea mining on marine ecosystems.
- Scientists from Germany, the U.K., and the U.S. were studying the Clarion-Clipperton Zone, which has a high concentration of polymetallic nodules.

- At a depth of 4 km in this zone, they observed unexpected increases in oxygen concentration, contrary to the expected decrease.
- Follow-up studies involved releasing a device to measure oxygen levels in isolated samples from the ocean floor.
- In the abyssal zone, where sunlight is insufficient for photosynthesis, oxygen is usually low and not locally produced. However, the device detected an increase in oxygen levels.
- Laboratory experiments confirmed that oxygen levels can increase before eventually dropping.

#### What is the source?

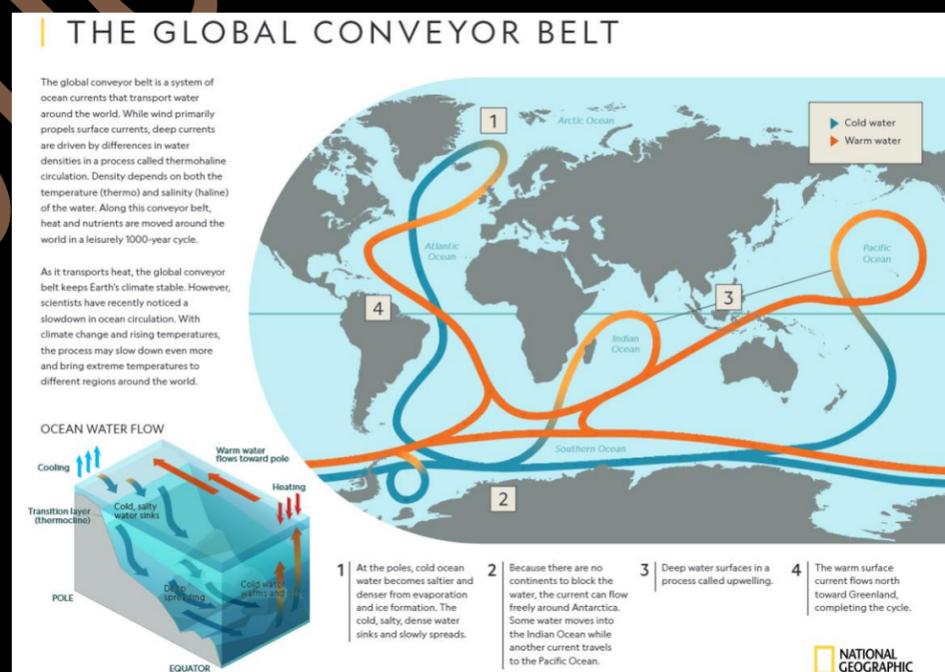
- Researchers found that the surfaces of polymetallic nodules have a voltage of up to 0.95 V.
- Water splitting requires 1.5 V, so the voltage might build up if many nodules are close together, similar to a battery.
- The study's coauthor, Andrew Sweetman, termed this phenomenon 'dark oxygen,' as it provides an alternative source of oxygen besides photosynthesis.
- While valuable for supporting life, the nodules' ability to produce oxygen depends on maintaining sufficient voltage, and the nodules' energy source remains unclear.

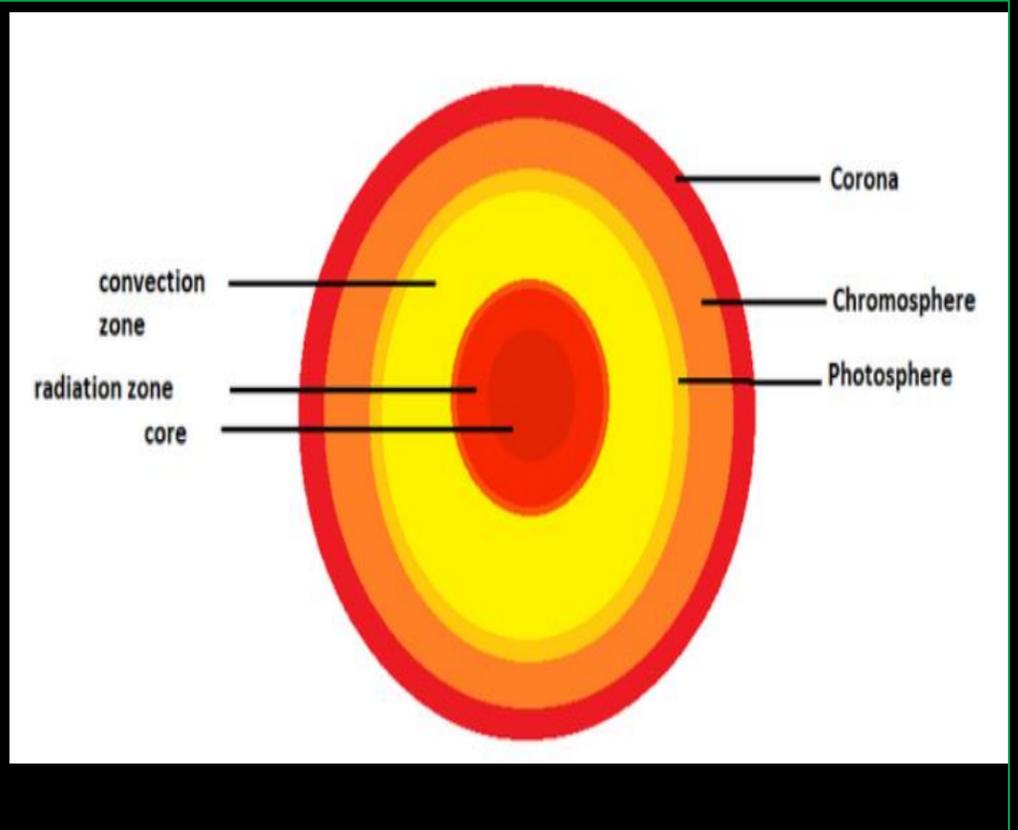
#### What is deep-sea mining?

- Polymetallic nodules have a surface voltage up to 0.95 V.
- Water splitting needs 1.5 V, so close-packed nodules might act like a battery.
- The term 'dark oxygen' was introduced for oxygen produced by this mechanism, aside from photosynthesis.
- The nodules' ability to produce oxygen depends on their voltage, and their energy source is still unknown.

#### The effect on deep-sea mining

- The study found lower biodiversity in disturbed areas and warned that polymetallic nodule mining could have severe and possibly irreversible impacts on ecosystems in the Clarion-Clipperton Zone.
- A November 2023 paper noted that deep-sea mining might harm deep-sea jellyfish and other water column animals.
- There is limited understanding of abyssal zone ecosystems, making predictions about their future and role in climate processes unreliable.
- On July 20, three major European insurance companies decided to exclude deep-sea mining from their portfolios.
- The discovery of 'dark oxygen' adds to concerns about deep-sea mining, which may face feasibility challenges if sustainable practices are not developed.





## Ariel: another watery moon? (29 July)

- The Solar System has many unresolved mysteries, such as why the Sun's corona is so hot and why Saturn's moon Titan has a thick atmosphere.
- Triton, Neptune's moon, rotates opposite to Neptune, possibly due to a shared origin with Pluto.
- Another mystery involves Uranus's moon Ariel, which has frozen CO<sub>2</sub> on its surface despite being far from the Sun, where CO<sub>2</sub> should typically vaporize.
- On July 24, NASA's James Webb Space Telescope (JWST) found evidence of a buried liquid ocean on Ariel, which may be supplying CO<sub>2</sub> to the surface.
- The presence of carbon monoxide on Ariel suggests it could have a subsurface ocean, with cracks and grooves potentially allowing icy slop and compounds to surface.
- JWST also detected carbonite minerals, which form when water interacts with rocks.
- Further studies and missions are needed to confirm these findings, potentially adding Ariel to the list of water-bearing moons.

PatrioticIAS

# Ariel: another watery moon?

GS Paper III: S&T

Vasudevan Mukunth

The Solar System has many mysteries. We don't know why the Sun's corona is so hot. We don't know why Saturn's moon, Titan, has such a significant atmosphere. We don't know why Triton rotates in the direction opposite to its host planet, Neptune, although a recent study found an answer: Triton and Pluto had a common origin before Neptune pulled Triton to itself.

Another mystery in the Solar System may be coming to a similar close. Astronomers have been curious why the surface of Uranus's moon Ariel has frozen carbon dioxide (CO<sub>2</sub>). At that distance from the Sun, the CO<sub>2</sub> should have already vaporised into space — yet the ice covers the moon's surface.

On July 24, NASA's James Webb Space Telescope (JWST) reported evidence of a liquid ocean buried under Ariel's surface, supplying CO<sub>2</sub> to the world above.

The people behind the finding came to this conclusion when they found carbon monoxide. If Ariel has to have this compound, it has to have a surface temperature around 18 degrees C less than what it is, or it could have a subsurface ocean producing carbon oxides. One side of Ariel has cracks and grooves through which icy slop and these compounds could be gushing out to



This image of the complex terrain of Ariel was taken by Voyager 2 in 1986. NASA

the surface. JWST also found signs of carbonite minerals, which could be formed when water interacts with rocks.

More studies and space missions will be needed to confirm these details. If there are, we'll have yet another water-bearing moon out there.

#### For feedback and suggestions

for 'Science', please write to [science@thehindu.co.in](mailto:science@thehindu.co.in) with the subject 'Daily page'

## Recasting care models for mental illness, homelessness (29 July)

- Homeless persons with mental illness are often seen as needing rescue.
- Rescue missions focus on moving them to mental hospitals, shelters, beggars' homes, or prisons.
- The assumption is that they must be taken off the streets due to risks, which can be contested.
- In the past, the focus was on shelter and treatment, not on the person's choice or agency.
- Social order can limit responses to safer, dominant narratives.
- Culture, freedoms, and safety can be experienced in non-typical ways.
- Engaging with lived experience experts can challenge traditional notions of care.
- Homeless persons often form local support circles, including fellow homeless individuals, local eateries, and pets.
- Homelessness involves issues like oppression, scarcity, abuse, bad weather, and worsening mental health symptoms.
- The problem should not be viewed in simple binaries; it requires a complex understanding.
- Efforts in India, such as collaborations between health missions, departments, institutes, and civil society organizations, help HPIMs reintegrate into communities.
- This collaboration has led to emergency care and recovery centers in district hospitals.

- Smaller, localized care units are better than large asylum-style spaces.
- These units provide immediate, last-mile care across different areas.
- Overcrowding and lack of personal attention in large facilities affect care quality globally.
- Smaller units should be well-staffed and offer personalized medical care, addressing common health issues among the homeless.
- Recent policy shifts are positive but require deeper engagement and long-term commitment.
- We need to examine when and why rights are removed and improve leadership and governance systems.
- For those who choose to stay on the streets despite available care, appearances (like matted hair or shaven heads) should be carefully considered.
- A shaven head can signify renunciation, not necessarily mental illness.
- Continuous engagement and respect for individual agency are crucial.
- Coercive care often leads to poor outcomes, despite the hardships of street life.

### Problems with institutional spaces

- About 37% of people in state psychiatric facilities and care homes have long-term needs, with a median stay of six years.
- Many have histories of homelessness and enter the system through police and judicial intervention.
- In 2017, the Supreme Court of India mandated state governments to undertake rehabilitative measures.
- The Department of Empowerment of Persons with Disabilities created guidelines for rehabilitation homes.
- Current community re-entry pathways for long-term psychiatric patients are limited to semi-institutional or trans-institutional options.
- These pathways often transfer custodial care from one place to another without truly integrating individuals into the community.
- Concepts of who is "cured" and "ready for discharge" are too rigid, affecting eligibility to live in the community.
- Institutional spaces often result in a lower quality of life and rights violations.
- Large-scale housing initiatives like Housing First and Tarasha provide comprehensive social and clinical care for people with disabilities.
- Over 700 people in India have accessed housing support through the 'Home Again' collaborative across nine states.
- The 'Home Again' program was first piloted in 2018 with support from Grand Challenges Canada and scaled up with the Rural India Supporting Trust.
- The program has been adopted by the Government of Tamil Nadu and other stakeholders.
- For those transitioning from hospitals with mild to moderate disabilities, hostel-like co-living facilities are preferable to rehabilitation homes.

### Reframe support measures

- Social protection for homeless people with mental illness needs a shift from paternalistic interventions to liberatory-focused strategies.
- A monthly disability or out-of-work allowance of ₹1,500 could be a critical support for marginalized individuals.
- Simplifying the process of obtaining Aadhar and banking access can help with financial inclusion and empowerment.
- These financial supports must be complemented by imaginative and holistic approaches.
- Structural issues like discrimination, violence, segregation, and deprivation need to be addressed.
- Social care and post-discharge support should be integrated within the District Mental Health Programme.
- Initiatives led by state and non-state actors have resulted in a 75% service engagement rate post-discharge for 800 mental health service users from ECRCs over three years, which is higher than the global average.
- Economic justice requires confronting systemic barriers, elevating insights from marginalized groups, and creating inclusive models.
- Workforce participation should be thoughtfully facilitated to reclaim economic space.
- Traditional employment and vocational training models often fail to account for individual agency, strengths, and aspirations.
- Social cooperatives, where individuals exchange their labor, offer meaningful engagement and foster a sense of community and purpose.
- Efforts should include cultivating social capital and implementing affirmative action policies for substantive socio-economic, cultural, and political inclusion of HPMI.
- Tamil Nadu will soon release a policy integrating these approaches.
- The goal is to challenge the view of HPMI as mere recipients of charity and instead honor their agency, respect their choices, and support their right to claim a place in society on their own terms.

## The right way to counter a poor Covaxin safety study (29 July)

- The Indian Council of Medical Research (ICMR) criticized the poor design of a long-term safety study of Covaxin by researchers from Banaras Hindu University (BHU).
- Bharat Biotech also pointed out major limitations in the study three days after its publication in the journal "Drug Safety" on May 16, 2024.
- The BHU study, based on a one-year follow-up, had significant limitations, including:
  - Lack of a control arm.
  - Absence of data on background rates of observed adverse events.
  - Reliance on participants' recall of adverse events 12 months after vaccination, introducing recall bias.
- Including a control arm is crucial for meaningful and reliable information about vaccine adverse effects.
- Studying vaccine safety in thousands of participants for one to three years is essential.
- Clinical evaluation of each adverse event is necessary to rule out causality.
- Random assignment to intervention or control groups is important to eliminate bias.
- A phase-3 randomized, controlled trial with a large number of participants is ideal for studying vaccine safety.
- Bharat Biotech and the ICMR conducted such a trial, which was randomized, placebo-controlled, and double-blind, involving nearly 25,800 participants.
- The trial began in November 2020, and interim results were first posted as a preprint on July 2, 2021, based on data as of May 17, 2021, with 130 cases reported.
- The safety data was captured only up to 56 days following vaccination.

### A publication failure that is glaring

- Three years after posting interim data, Bharat Biotech and ICMR have not published any long-term safety data from the Covaxin phase-3 trial.
- Bharat Biotech has a good track record of publishing clinical trial results, making this failure surprising.
- The phase-3 trial was supposed to last one year, meaning the safety data has been available for over two and a half years but remains unpublished.
- Despite publishing six papers on Covaxin after the phase-3 interim results, the long-term safety results have not been released.
- On January 3, 2021, the drug regulator granted emergency-use authorization for Covaxin under "clinical trial mode," requiring follow-up for safety.
- In March 2021, the "clinical trial mode" tag was removed after the first interim analysis of 43 COVID-19 cases in trial participants.
- Dr. V.K. Paul, Head of India's Vaccine Administration committee, reported that over 19 lakh people received Covaxin, with 311 cases of "side effects" noted by the time the "clinical trial mode" condition was lifted.
- Despite having these adverse effect instances, no detailed vaccine safety data has been published.

### On the Covishield study

- It is surprising that ICMR did not criticize the BHU authors for a similar study on Covishield, published in May 2023.
- The Covishield study had similar limitations as the Covaxin study.
- The study found people vaccinated with Covishield after developing COVID-19 had twice the risk of persistent adverse events compared to those vaccinated before getting COVID-19.
- The authors of the Covishield study cautioned against mass vaccination with Covishield and suggested an individualized vaccination strategy for better public health safety.

GS Paper II

## Planning better

### The NITI Aayog suffers from both structural and functional issues

With 10 State and Union Territory representatives skipping the ninth Governing Council meeting of the NITI Aayog chaired by Prime Minister Narendra Modi – seven of them boycotted it – the think tank's role has been called into question. The Chief Ministers of Tamil Nadu, Kerala, Karnataka, Telangana, Punjab, Himachal Pradesh and Jharkhand did so because of concerns with the perceived lack of allocations and projects to their States in the Union Budget. But the boycott and, later, the walkout by West Bengal Chief Minister Mamata Banerjee, suggest that the role of the think tank, limiting itself to an advisory body to the Union Government, has led to disenchantment among States, even if the protests were limited to leaders belonging to the political opposition. Constituted by the NDA government in its first term, the NITI Aayog was to replace the Planning Commission, doing away with the “top-down” approach of the earlier body, and to focus on “cooperative federalism”. But by limiting itself to an advisory body without any powers of resource distribution or allocation to States and other bodies and focusing on creating indices to evaluate States, it has led to the unintended consequence of “competitive federalism”; while the Finance Ministry has unfettered powers to decide on grants to States. In contrast, the Planning Commission, which too had its detractors, at least allowed for consultations with States in such matters.

It has not helped matters that the Bharatiya Janata Party has sought to seek votes in State elections on the basis of providing “double engine” governments, leading to complaints by Opposition-ruled States that the Centre has favoured those ruled by the BJP for investment projects. The fact that the NDA government now is crucially dependent upon the support of parties that rule Bihar and Andhra Pradesh – States that suffer varying developmental deficits – and the express intention of Finance Minister Nirmala Sitharaman to address their demands specifically in the Budget have not been lost on the government's detractors. Irrespective of the merit in this contention, the fact is that consultations with States on grants and projects have become limited after the end of the Planning Commission. While the 16th Finance Commission is tasked with the removal of a horizontal imbalance among States and the Finance Ministry's focus is on macro-economic stability and the financial system, the need to address growth through infrastructure and capital investments in States is something that requires institutional backing at the Centre as well. The NITI Aayog must be re-envisioned to bring back some of the responsibilities that the Planning Commission had for States for a truer “cooperative federalism”.

enforced through the Extended Producer Responsibility (EPR) rules and an online EPR trading platform.

- Under the EPR system, plastic packagers, importers, large users, and recyclers register with the Central Pollution Control Board (CPCB). Recyclers collect and recycle plastic waste, receiving certificates for each tonne recycled. These certificates can be purchased by companies that fall short of their recycling targets.

- It raises the question if ICMR's criticism of the Covaxin study was due to its role as a co-developer of the vaccine and involvement in clinical trials, rather than the study's limitations.
- ICMR demanded the journal retract the Covaxin study paper but did not disclose its conflicts of interest, setting a bad example.
- ICMR and Bharat Biotech should publish the long-pending phase-3 vaccine safety data to counter the BHU study findings effectively.
- ICMR's actions of demanding retraction can be seen as academic censorship.

## Planning better (29 July)

The NITI Aayog suffers from both structural and functional issues

- 10 State and Union Territory representatives skipped the ninth Governing Council meeting of NITI Aayog chaired by PM Narendra Modi.
- Seven of these representatives boycotted the meeting due to concerns about the lack of allocations and projects to their States in the Union Budget.
- West Bengal Chief Minister Mamata Banerjee boycotted and later walked out of the meeting.
- This situation suggests dissatisfaction with NITI Aayog's role as merely an advisory body to the Union Government.
- NITI Aayog was created by the NDA government to replace the Planning Commission and promote “cooperative federalism”.
- Unlike the Planning Commission, NITI Aayog does not have powers for resource distribution or allocation to States and focuses on creating indices to evaluate States.
- This has led to “competitive federalism”, where the Finance Ministry has full control over grants to States.
- The Planning Commission, despite its flaws, allowed for consultations with States on such matters.
- The BJP has sought votes in State elections by promoting “double engine” governments, leading to complaints from Opposition-ruled States that the Centre favors BJP-ruled States for investment projects.
- The NDA government relies on support from parties ruling Bihar and Andhra Pradesh, which face developmental deficits.
- Finance Minister Nirmala Sitharaman's intention to address these States' demands in the Budget has been noted by the government's critics.
- Consultations with States on grants and projects have reduced after the end of the Planning Commission.
- The 16th Finance Commission focuses on removing horizontal imbalances among States, and the Finance Ministry focuses on macro-economic stability and the financial system.
- There is a need for infrastructure and capital investments in States, requiring institutional support at the Centre.
- The NITI Aayog should be re-envisioned to take on some responsibilities of the former Planning Commission for true “cooperative federalism”.

## Plastic mess (29 July)

More efforts must be made to curb production and promote alternatives

- India generates about four million tonnes of plastic waste annually, but only 25% is recycled or treated. The rest ends up in landfills or is disposed of unsustainably.
- Since 2016, the Plastic Waste Management Rules have made plastic users responsible for collecting and recycling waste. This is

- In 2022-23, the CPCB estimated nearly 3.7 million tonnes of recycled plastic certificates were issued. However, about 600,000 certificates were found to be fraudulent, and some were stolen by hackers and sold.
- The CPCB is conducting an audit of about 800 firms and has improved the EPR platform's security, causing delays in filing returns for 2023-24. The CPCB views these issues as initial problems with the new system.
- The CPCB has the power to impose fines, but this process is slow and legally complex.
- While market-driven approaches to recycling are helpful, they have limits. More effort is needed to reduce plastic production and promote sustainable alternatives. Addressing the root causes of plastic waste and improving recycling systems are key to solving the problem.

# On reservations and the OBC creamy layer

What were the recommendations of the Mandal Commission? What is the criteria for exclusion of the 'creamy layer' of the Other Backward Class? Is the concentration of reservation benefits a concern? What can be done for a more equitable distribution?

GS Paper III: Reservation

## EXPLAINER

Rangarajan. R

### The story so far:

The allotment of Indian Administrative Service (IAS) to Puja Khedkar as an Other Backward Class (OBC) Non-Creamy Layer (NCL) candidate coupled with multiple disabilities has raised issues surrounding the creamy layer in OBC reservation.

### What is the history of reservation?

Articles 15 and 16 guarantee equality to all citizens in any policy of the government and public employment respectively. In order to achieve social justice, they also enable special provisions for the advancement of socially and educationally backward classes or OBC, Scheduled Castes (SC) and Scheduled Tribes (ST). Reservations for SC and ST are fixed at 15% and 7.5% respectively, in jobs, educational institutions and public sector undertakings (PSU) at the central level. It was in 1990, when V. P. Singh was Prime Minister, that 27% reservation for OBC was implemented in central government employment based on Mandal Commission (1980) recommendations. Subsequently in 2005, reservation was enabled for OBC, SC and ST in educational institutions including private institutions. In 2019, 10% reservation was enabled for the Economically Weaker Sections (EWS) among the unreserved category.

### What is the creamy layer?

The 27% reservation for OBC was upheld by the Supreme Court in the *Indra Sawhney case* (1992). It opined that caste is a determinant of class in the Indian context. However, in order to uphold the basic structure of equality, it fixed a cap of 50% for reservation unless there are exceptional circumstances. The court also provided for exclusion of creamy layer from OBC.



High stakes: Aspirants look for their roll numbers before the UPSC civil services exam, on June 16. PTI

The criteria for identifying a person as part of the creamy layer is based on the recommendations of the Justice Ram Nandan Prasad Committee (1993). It is determined by the position/income of an applicant's parents alone. The criteria for belonging to creamy layer is parental income, excluding income from salary and agricultural income, being more than ₹8 lakh in each year in the last three consecutive financial years. Further, the following categories of applicants are also considered as belonging to creamy layer : (a) parents, either of whom entered government service (centre or State) as Group A/Class I officer or parents, both of whom entered as Group B/Class II officers or father, who was recruited in Group B/Class II post and promoted to Group A/Class I before 40 years of age; (b) either of the parents employed in a managerial position in PSUs; (c) either of the parents

### holding constitutional posts.

### What are the issues?

The recent controversy has raised issues surrounding the inadequacies in the process. There are allegations that some applicants manage to obtain NCL or EWS certificate through dubious means. The same may also be true with respect to disability certificates in order to take benefit of the 4% of seats reserved for persons with disabilities in central government jobs. There are also allegations of applicants and their parents adopting strategies to get around the creamy layer exclusion like gifting of assets, taking premature retirement etc., since the applicant's or his/her spouse's income is not considered for such exclusion. Another contentious issue relates to concentration of reservation benefits. The Rohini Commission, that

was set up for providing recommendation on sub-categorisation among OBC castes, has estimated that 97% of reserved jobs and seats in educational institutions have been garnered by just around 25% of the OBC castes/sub-castes at the central level. Close to 1,000 of around 2,600 communities under the OBC category had zero representation in jobs and educational institutes. Similar issue of concentration of reservation benefits persists in the SC and ST category as well. There is neither any exclusion based on 'creamy layer' for these communities. The reservation at present stands at 60%, including the reservation for EWS. Considering societal realities, this higher percentage of reservation is required. It is pertinent to note that as per government replies in Parliament, 40-50% of seats reserved for OBC, SC and ST in the central government remain unfilled.

### What can be the way forward?

The foremost requirement is to plug the loopholes in the issue of NCL, EWS and disability certificates. There must be thorough scrutiny to ensure that only eligible applicants obtain these benefits. The vacancies for reserved communities should be filled without backlogs. Sub-categorisation of reservation may be essential to address the under representation or non-representation of various communities. Similarly, creamy layer exclusion in SC and ST category, at least for children of Group I/Class A government officials may be considered. These are sensitive matters in which for every argument in favour of such a proposal, there are valid counter arguments that can be advanced. Nevertheless, a discussion should begin on these aspects with all stakeholders to implement them. This would ensure that benefits of reservation reach the more marginalised among underprivileged in successive generations. Rangarajan. R is a former IAS officer and author of 'Polity Simplified'. Views expressed are personal.

## THE GIST

Articles 15 and 16 guarantee equality to all citizens in any policy of the government and public employment respectively. In order to achieve social justice, they also enable special provisions for advancement of socially and educationally backward classes or OBC, Scheduled Castes (SC) and Scheduled Tribes (ST). The 27% reservation for OBC was upheld by the Supreme Court in the *Indra Sawhney case* (1992). It opined that caste is a determinant of class in the Indian context.

Sub-categorisation of reservation may be essential to address the under representation or non-representation of various communities.

## On reservations and the OBC creamy layer (29 July)

What were the recommendations of the Mandal Commission? What are the criteria for exclusion of the 'creamy layer' of the Other Backward Class? are the concentration of reservation benefits a concern? What can be done for a more equitable distribution?

- Puja Khedkar, an IAS officer with multiple disabilities and OBC Non-Creamy Layer status, has raised questions about the creamy layer in OBC reservations.
- Articles 15 and 16 of the Indian Constitution ensure equality and allow special provisions for SC, ST, and OBC for their advancement.
- Reservations are set at 15% for SC and 7.5% for ST in central jobs, educational institutions, and public sector undertakings.
- In 1990, 27% reservation for OBCs in central government jobs was implemented based on the Mandal Commission recommendations.
- In 2005, reservations were extended to OBC, SC, and ST in educational institutions, including private ones.
- In 2019, 10% reservation was introduced for Economically Weaker Sections (EWS) among the unreserved category.

### What is the creamy layer?

- The Supreme Court upheld the 27% OBC reservation in the *Indra Sawhney case* (1992), stating caste is a key factor in class but set a 50% cap on total reservations, with exceptions allowed.
- The court also mandated the exclusion of the creamy layer from OBC benefits.
- The creamy layer criteria are based on the Justice Ram Nandan Prasad Committee (1993) recommendations.
- Criteria for creamy layer status:
  - Parental income (excluding salary and agricultural income) over ₹8 lakh per year for the last three years.

- Parents in government service as Group A/Class I officers, or both as Group B/Class II officers (or one promoted from Group B to Group A before age 40).
- Parents in managerial positions in public sector undertakings or holding constitutional posts.

**What are the issues?**

- There are allegations of fraudulent practices to obtain NCL or EWS certificates and disability certificates to access reserved seats in central government jobs.
- Applicants may use strategies to bypass creamy layer exclusions, such as asset gifting or premature retirement.
- The Rohini Commission found that 97% of reserved jobs and seats are occupied by about 25% of OBC castes/sub-castes, leaving many OBC communities underrepresented.
- Similar issues of reservation concentration are present in SC and ST categories, with no creamy layer exclusion.
- Current reservation stands at 60%, including EWS reservations.
- Government reports indicate 40-50% of reserved seats for OBC, SC, and ST in central government remain unfilled.

**What can be the way forward?**

- Address loopholes in NCL, EWS, and disability certificates to ensure only eligible applicants benefit.
- Fill vacancies for reserved communities without backlogs.
- Consider sub-categorization of reservations to address under-representation of various communities.
- Discuss the potential for creamy layer exclusion in SC and ST categories, especially for children of high-ranking government officials.
- Initiate discussions with all stakeholders to implement these changes and ensure reservation benefits reach the most marginalized groups.

# What is South Africa’s new law on climate change?

What are the features of the law? Does India have an omnibus legislation on climate change?

GS Paper III: Climate Change

**The story so far:**  
 South Africa’s President, Cyril Ramaphosa, signed into law a piece of legislation that will impose mandatory curbs on the emissions from large, fossil-fuel heavy industries and, require climate-adaptation plans from towns and villages. The President said this would enable South Africa to meet its emissions reduction commitments under the Paris agreement.

**What is the significance of this law?**  
 The Climate Change Bill was approved by South Africa’s National Assembly last November. South Africa relies on coal as its primary fuel source for electricity generation and is one of the world’s top 15 greenhouse gas (GHG) emitters. According to an official estimate, net emissions in 2017 were estimated at 512 million tonnes of carbon dioxide equivalent (Mt CO2e), an increase of 14% from 2000. In 2022, this fell to 405 Mt

CO2e, a 3% fall from 2021, according to Statista. It is unclear if these numbers are strictly comparable and if the fall was linked to the worldwide, temporary dip in emissions following COVID-19. The energy sector represents roughly 80% of gross emissions, with energy industries (-60%) and transport (-12%). Being an economy which is dependent on agriculture and tourism, South Africa has faced increasing Western pressure to accelerate its transition away from fossil fuel.

**What steps has South Africa taken?**  
 Every country submits Nationally Determined Contributions (NDC), which are time-bound commitments to lower emissions. South Africa submitted its first NDC in 2016 and its updated NDC in 2021. The updated NDC commits to 31% reduction and a fixed target for GHG emissions levels of 398-510 MtCO2e by 2025, and 350-420 MtCO2e by 2030. The NDC outlines an approach for a ‘just transition,’ – or the sustainable movement to jobs away from fossil-fuel

dependent industries – to achieve targets, focusing on agriculture, forestry and other land use, energy, industrial processes and product use, and waste sectors. South Africa has estimated that it requires \$8 billion per year by 2030. It has set an internal goal of reaching ‘net zero emissions’ by 2050 in its Low-Emission Development Strategy submitted in 2020. In addition, the Presidential Climate Commission released its Just Transition Framework in 2022, which aims to inform policy making at the nexus of climate and development to enable deep, just transformational shifts. These were the actions that preceded the signing of the Climate Change Bill.

**What about India?**  
 India does not have a comprehensive legislation on climate change. Priyanka Chaturvedi, the Rajya Sabha parliamentarian, had moved a Private Member’s Bill, called the Council on Climate Change Bill, most recently in 2022. This proposed setting up a Council,

chaired by the Prime Minister, for advising the Union government on all matters related to climate change but there has been no significant movement on this so far. However, climate change features in multiple Acts and subordinate legislation. These include the Environmental Protection Act, Forest Conservation Act, Energy Conservation Act, Water (Prevention and Control of Pollution) Act among others.

**Are these enough?**  
 In April this year, the Supreme Court ruled that citizens have a “right against the adverse effects of climate change,” and referred to the fact that India did not have an omnibus legislation on climate change. “Despite Constitutional guarantees that give the citizens equality before the law and right to life and personal liberty, it was now necessary, in the Court’s view, to explicitly link the impact of climate change as something which impedes these rights of liberty, life and equality.” Prior to the UN Conference of Parties in Dubai last year, India communicated that the intensity of its energy emissions had reduced by 33% from 2005-2019, 11 years ahead of target. It also committed to revising its emissions intensity to 45% by 2030 in the updated set of NDC. Emission intensity refers to the total amount of GHG emitted for every unit increase of GDP. It is different from absolute emissions. India has also committed to source 50% of its electricity in 2030 from non-fossil fuel resources.

**THE GIST**

- ▼ South Africa’s President, Cyril Ramaphosa, signed into law a piece of legislation that will impose mandatory curbs on the emissions from large, fossil-fuel heavy industries.
- ▼ South Africa relies on coal as its primary fuel source for electricity generation and is one of the world’s top 15 greenhouse gas (GHG) emitters.
- ▼ Climate change features in multiple Acts and subordinate legislation of India. These include the Environmental Protection Act, Forest Conservation Act, Energy Conservation Act, Water (Prevention and Control of Pollution) Act among others.

## What is South Africa’s new law on climate change? (29 July)

What are the features of the law? Does India have an omnibus legislation on climate change?

- South Africa’s President Cyril Ramaphosa signed a law to limit emissions from large industries and require climate-adaptation plans from towns and villages.
- The law aims to help South Africa meet its Paris Agreement emissions reduction commitments.
- South Africa, a major coal-dependent country and top 15 greenhouse gas emitter, had net emissions of 512 million tonnes of CO2e in 2017, which decreased to 405 million tonnes in 2022.
- The energy sector, including energy industries and transport, accounts for about 80% of South Africa’s emissions.
- The country faces pressure to speed up its transition away from fossil fuels due to its reliance on agriculture and tourism.

**What steps has South Africa taken?**

- Countries submit Nationally Determined Contributions (NDCs) to commit to lowering emissions.
- South Africa’s first NDC was submitted in 2016 and updated in 2021.
- The updated NDC targets a 31% reduction in emissions, with GHG levels of 398-510 MtCO2e by 2025 and 350-420 MtCO2e by 2030.
- It emphasizes a ‘just transition’ to sustainable jobs away from fossil fuels, focusing on agriculture, forestry, energy, industry, and waste.
- South Africa needs \$8 billion annually by 2030 and aims for ‘net zero emissions’ by 2050.

- The Presidential Climate Commission's Just Transition Framework, released in 2022, guides policy for climate and development transformations.
- These actions preceded the signing of the Climate Change Bill.
- What about India?
- India lacks comprehensive climate change legislation.
- Priyanka Chaturvedi proposed the Council on Climate Change Bill in 2022.
- The Bill suggested a Council chaired by the Prime Minister to advise on climate change, but no significant progress has been made.
- Climate change is addressed through various Acts such as the Environmental Protection Act, Forest Conservation Act, Energy Conservation Act, and Water (Prevention and Control of Pollution) Act.
- Are these enough?
- In April, the Supreme Court ruled that citizens have a "right against the adverse effects of climate change."
- The Court noted that India lacks comprehensive climate change legislation.
- The Court emphasized the need to explicitly address climate change's impact on fundamental rights.
- Before the UN Conference of Parties, India reported a 33% reduction in energy emissions intensity from 2005-2019, ahead of its target.
- India committed to a 45% reduction in emissions intensity by 2030 in its updated NDC.
- Emission intensity measures GHG emissions per unit of GDP, different from absolute emissions.
- India pledged to source 50% of its electricity from non-fossil fuel resources by 2030.
- Why job schemes should target women, agriculture, youth (29 July)
- India faces a jobs crisis with an estimated 500 million unemployed and an unemployment rate of 9.2%.
- 29% of graduates are unemployed.
- Creating 100 million new jobs quickly is a major challenge.
- The government employs about 14 million people and can add only around 1 million jobs per year.
- 40,000 MNCs in India could create 200,000 jobs, mostly through global capability centers (GCC).
- MNCs are downsizing due to AI and productivity measures.
- The question remains on how to generate 100 million new jobs.

#### Focus areas

- Prioritize job generation for women, agriculture, and youth (WAY).
- Women are under-represented, comprising only 38% of the employed workforce.
- Create low-skill, high-scale jobs in industries such as apparel manufacturing, footwear, light manufacturing, and value-added logistics.
- Agriculture employs 42% of the workforce, with challenges like fragmented holdings and rising farm loans.
- Rethink agricultural policies to attract private investment and incorporate technology for efficiency.
- Consider privatizing some agricultural activities and incentivizing companies to invest in value-added agriculture to create more jobs for women.

#### Hiring changes

- Youth seek steady jobs; shift focus from degree-based to skill-based hiring.
- Government should encourage companies to prioritize skills over degrees.
- Invest in skill-building at the educational level, using AI as an enabler.
- Essential skills include complex problem-solving, creativity, and critical thinking.
- MSMEs account for 25% of jobs and a third of GDP, with 64 million MSMEs employing about 128 million people.
- Simplify rules and provide a safety net for MSMEs; support the 'India for India' agenda along with export focus.
- With proper incentives, MSMEs could create 50 million jobs quickly.
- Jobs are traditionally classified as blue-collar or white-collar.
- With evolving technology, 'grey-collar jobs' are emerging, where roles blend manual work with technology.
- Examples include railway engine drivers, mechanics, lab technicians, and nurses.
- Identifying blue-collar jobs with potential to become grey-collar through technology is crucial.
- GDP growth depends on investing in education and skills, including private sector involvement.

## What are the various efforts being taken to mitigate caller ID spoofing? (29 July)

Caller ID spoofing is a technique with which the phone number that a call appears to originate from can be falsified. Spoofing techniques have been honed by enthusiasts, telemarketers, and fraudsters alike, over the years

- Friends and family received calls from a North American (+1) number with a pre-recorded message about a court summons.
- The calls are part of a known scam.
- The phone numbers were identical except for the country codes:
  - Indian number: +91 98199 69857
  - American number: +1 (981) 996-9857
- Caller ID spoofing is a technique to falsify the phone number that a call appears to come from.

- Technically easy to perform.
- Used by enthusiasts, telemarketers, and fraudsters.
- Helps shield identity during illicit activities.
- Used in social engineering attacks to exploit trust.
- Can bypass call blocking systems and exploit IVR system vulnerabilities.
- Caller ID spoofing is legal in many places.
- Companies offering caller ID spoofing services have emerged since the first one launched in 2004.

#### Tackling scam calls

- Caller ID spoofing is costly for telecom providers, defrauded users, and law enforcement.
- ITU is a UN agency that standardizes global communication technologies.
- ITU published a 2021 report suggesting PKI-based authentication to fix spoofing.
- TRAI recommended CNAP to show caller names based on KYC documents.
- A 2022 TRAI paper mentioned caller ID spoofing but did not offer a technical solution.
- DoT is piloting the CNAP project but without a technical fix for spoofing.
- In May 2024, DoT proposed a system to identify and block spoofed international calls.
- Effectiveness and implementation details of the DoT system are unclear.

#### Government inaction

- The Telecommunications Act, 2023, partially notified on June 26, allows the Union Government to control telecommunication services or networks during emergencies.
- Section 20 of the Act lets the Government temporarily take over telecommunication services or networks for public emergencies or safety.
- The Act is criticized for potentially increasing surveillance powers.
- Fixing caller ID spoofing is considered in the interest of public safety.
- Addressing caller ID spoofing will benefit consumers by reducing spam and fraud calls.
- Telecommunications providers will save revenue.
- The Government will gain revenue, contributing to the Indian economy.

# What are the various efforts being taken to mitigate caller ID spoofing?

Caller ID spoofing is a technique with which the phone number that a call appears to originate from can be falsified. Spoofing techniques have been honed by enthusiasts, telemarketers, and fraudsters alike, over the years

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Several friends and family members of mine received a call from a North American (+1) phone number which played a pre-recorded message informing them of a supposed court summons. I happened to receive a call from a +1 number too. I had also missed a domestic call shortly before the international one. While these automated calls are part of a well-known scam, looking at the phone numbers, I noticed that the Indian and North American phone numbers were identical to each other, save for their country codes. The Indian number was +91 98199 69857, and the American number was +1 (981) 996-9857.

#### What is caller ID spoofing?

Caller ID spoofing is a technique with which the phone number that a call appears to originate from can be falsified. On a technical level, caller ID spoofing is not difficult to perform. Spoofing techniques have been honed by enthusiasts, telemarketers, and fraudsters alike, over the years. Malicious individuals use caller ID spoofing primarily to shield their identity when engaging in illicit activity. At times, caller ID spoofing is used by these individuals to carry out social engineering attacks, where the spoofed caller ID is abused for the implicit trust that the receiving party associates with it. Caller ID spoofing can also be used to circumvent standard call blocking

systems, and even for exploiting vulnerabilities in insecure Interactive Voice Response (IVR) systems.

Caller ID spoofing in itself is perfectly legal in many jurisdictions, and as a result of this several companies offering caller ID spoofing services to customers around the world have popped up over the years, with the first commercial caller ID spoofing service launching in 2004.

#### Tackling scam calls

Caller ID spoofing is a costly affair for everyone involved. Telecommunication service providers lose revenue, users that are defrauded due to a scam call abusing a spoofed caller ID lose money, and law enforcement has a harder time investigating crimes where spoofed caller IDs are used. Caller ID spoofing is not a new phenomenon, and there have been several earnest technical efforts made for fixing the problem.

The International Telecommunications Union (ITU) is a special UN agency focused on improving and standardising global information and communication technologies. The ITU was originally established as the International Telegraph Union in 1865, much before the UN existed, and of which India has been a member since 1869 onward. In 2021, the ITU published a technical report on countering caller ID spoofing. While this report does not have any mandatory provisions, it does provide a reference using Public Key Infrastructure (PKI) based authentication which could be

implemented by Indian telecom operators to fix caller ID spoofing for good.

The Telecom Regulatory Authority of India (TRAI) had earlier recommended to telecom operators to integrate a system known as Calling Name Presentation (CNAP), with the idea of allowing consumers to know who is calling them in a way similar to how applications such as TrueCaller do it, except CNAP would be mandatory, and caller names would appear as per KYC documents. A 2022 consultation paper on the project makes only a few mentions of caller ID spoofing, and does not provide a plan or technical measures for tackling the issue. It merely acknowledges in one sentence that caller ID spoofing is a problem that exists. The Department of Telecommunications (DoT) is reportedly in the process of launching a pilot of the CNAP project. Though it is not known whether CNAP will (or should) be implemented, it can be said that introducing such a system without first implementing a technical fix for caller ID spoofing will be a mistake.

According to news reports from May 2024, the DoT has devised a system to “identify and block” international calls with a manipulated Calling Line Identity (CLI) and has issued directions to telecom operators to prevent such calls from reaching subscribers.

However, considering that the problem has still not been fixed, it is unclear whether the system (technical details of which have not been furnished) is effective, or if it has even been

implemented.

#### Government inaction

The Telecommunications Act, 2023 which was partially notified on June 26 of this year allows the Union Government to take over control and operation of any telecommunication service or network during times of “emergency.” Section 20 of the Act empowers the Government to take “temporary possession of any telecommunication service or telecommunication network from an authorised entity” for “any public emergency, including disaster management, or in the interest of public safety.” The Act has received criticism for being invasive and potentially increasing surveillance powers. That aside, it can be said that fixing caller ID spoofing would be “in the interest of public safety”; why then has the Government not taken action?

Fixing the technical and implementation problem of caller ID spoofing will have an outweighed impact for all stakeholders. For consumers, fixing caller ID spoofing will reduce spam and fraud calls, and will completely eliminate fraud that relies on false representation of one’s identity via phone number. For telecommunications providers, it will save revenue that would otherwise be lost, and for the Government and therefore the public, it would result in revenue that would contribute to the Indian economy.

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