

DAILY PT POINTERS

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The Hindu-Governance(GSII)-Page 1

State has no right to acquire every private property, asserts SC

Krishnadas Rajagopal
NEW DELHI

A nine-judge Constitution Bench of the Supreme Court, in a majority judgment, held on Tuesday that not every resource owned by private players can be considered a “material resource of the community” to be used by the government to serve the “common good”.

The decision dismissed such a power of acquisition by the state while noting that it reminded of a particular “rigid economic dogma” of the past. The court noted that the Indian economy has already transitioned from dominance of public investment to co-existence of public and private investments.

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2 judges refer to CJ's remarks on V.R. Krishna Iyer

NEW DELHI

Two SC judges quoted a “harsh” observation made by Chief Justice D.Y. Chandrachud about Justice V.R. Krishna Iyer in a “proposed judgment”, which said “the Krishna Iyer doctrine does a disservice to the broad and flexible spirit of the Constitution”. » PAGE 12

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The Hindu-Governance(GSII)-Page 1

SC upholds validity of U.P. Madrasa Act, also confirms State's regulatory powers

Krishnadas Rajagopal

NEW DELHI

The Supreme Court on Tuesday partially upheld the constitutional validity of the Uttar Pradesh Madrasa Education Board Act of 2004 while confirming that the State can regulate madrasa education to ensure standards of excellence.



Maulana Khalid Rasheed Firangi Mahali, Imam of Eidgah, celebrates the Supreme Court verdict with madrasa students in Lucknow.

Kamil and Fazil levels, was “consistent with the positive obligation of the State to ensure that students studying in recognised madrasas attain a minimum level of competency that allows them to effectively participate in society and earn a living”.

He observed that the Act, which allowed the Board to prescribe the cur-

- The Supreme Court on Tuesday upheld the constitutional validity of the Uttar Pradesh Board of Madarsa Education Act 2004, except for its provisions allowing the Board to award higher degrees like Fazil and Kamil.
- The court said that the awarding of higher degrees was unlawful since it is in conflict with the provisions of the University Grants Commission Act, 1956.
- The Supreme Court dismissed the High Court's view that the 2004 Act violated secularism, emphasizing that secularism must be grounded in specific provisions of the Constitution and not used as a broad basis for invalidating laws.
- The Court stressed that the State must balance educational standards with protecting minority rights under Article 30, ensuring madrasas impart secular education of required quality while retaining their minority character.

The Hindu-Environment(GSIII)-Page 18

If tardigrades crowd-sourced their remarkable genes, can humans?

These remarkable creatures inhabit some of the more extreme ecosystems on the planet, from the frigid expanses of deep-sea floors to scorching deserts and the vacuum of space. Researchers have identified more than 1,300 tardigrade species to date, each one adapted to conditions deadly to most other life forms

Illustration: Shashiba Hood/SciArt

Tardigrades are one of the most resilient as well as adaptable life forms on the earth. These organisms, also called water bears and moss piglets, are microscopic eight-legged creatures without a backbone.

They require none with their remarkable ability to survive in extreme environments, including ones so very inhospitable that they are easily lethal to humans. They can live without starvation, without food and water, and without oxygenation.

In another life form clinging to a planet of their own (or theirs), these remarkable creatures inhabit some of the more extreme ecosystems on the planet, from the frigid spaces of the Arctic and deep sea floors to scorching deserts and even the vacuum of space. Researchers have identified more than 1,300 tardigrade species to date; each species is uniquely adapted to conditions that would be deadly to most other forms of life.

For instance, the tardigrades are an ancient species. The earliest known fossils are from around 90 million years ago, in the Cretaceous Period. Molecular dating suggests they originated at least 600 million years ago.

When facing hostile conditions, tardigrades can enter a state called cryptobiosis, effectively pausing almost all their biological processes and lingering in a state of suspended animation. This peculiar state allows them to tolerate extreme dryness, intense radiation, and freezing. Tardigrades' ability to survive without food is due to specialised mechanisms that can shield their genetic material from damage. In fact, they don't need to survive otherwise hazardous conditions; they are able to recover and return to normal life.

Some of the tardigrade life features have rendered tardigrades a subject of intense scientific study. Researchers hope unlocking the secrets of their specialised survival mechanisms will pave the way to advances in human medicine, space exploration, and others. Research has indicated the presence of many mechanisms that help tardigrades, and insights into them are expected to hold great biomedical and industrial value. For example, scientists have been discussing the role of a specific class of proteins, new proteins have flexible bodies and can have an indefinite amount of time.



A fish-like colour image of a tardigrade, via Wikimedia Commons.

discovered proteins.

One subgroup of these is secretory abundant heat-soluble proteins. Researchers recently attempted to synthesise these proteins in other microbes by cloning the underlying genes and transferring them to the latter. Their work suggested such a method is capable of enhancing the tolerance of the microbes against desiccation (especially drying up). This work was published in *Nature Communications Biology* in May.

Survival begins in the cell

More recently, researchers from China reported a new tardigrade species, *Hypsibius Nanyangensis*. Their findings, reported on October 25 in *Science*, included a chromosome-level genome assembly that revealed many details about the genes that give tardigrades the ability to withstand radiation. They

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the lethal limit for humans and tracked which genes were expressed using genomic tools.

The researchers found thousands of genes upregulated when the tardigrades were exposed to extreme radiation. Further analysis suggested that the radiation resistance is likely modulated by genes that can be acquired by horizontal transfer, i.e., from other species in their environment. The researchers also discovered some tardigrade-specific genes, as well as genes similar, yet not identical, to ones in other organisms.

In fact, horizontal gene transfer outnumbered more than 0.5% of the tardigrades' genes, which is a significant fraction that signifi-

that could be protecting the tardigrades' cells against radiation damage. The creatures probably acquired it from a bacterial species.

A second class of genes involved in radiation resistance is unique to the tardigrades themselves. One of them is TRIM1, which plays a role in repairing damaged DNA mediated by phase separation. Another is SMC339, associated with mitochondrial function. The researchers identified them to be crucial to the species' ability to survive extreme conditions by likely helping maintain the stability of cells and sustain their energy production even under high radiation stress. Effectively, the tardigrades' survival advantage begins at the cellular level.

Applications on the horizon

Tardigrade biology may seem exotic at this time, and the research exploring it may seem curious. But a lot of biology makes sense in the light of evolution (to adapt the world of *Tardigrades*). Biologically, and in looking the eyes of the tardigrade may quickly translate to breakthroughs in real-world challenges with far-reaching implications. *Next-Gen Science* developed

CRISPR-Cas9 based on a unique mechanism in a bacterium to repair its DNA.

Consider protein stability in tardigrades. We are using biological therapies such as protein vaccines, antibodies, and enzymes to treat a variety of diseases more often. If we can find a way to stabilise the proteins involved in these technologies, we can increase their biological efficacy as well.

As the field of cell therapies continues to grow, researchers are looking for technologies to protect these therapeutic products in harsh conditions they may encounter during storage, transport, and administration. Tardigrades possess unique adaptations to resist or even sidestep cellular damage, and researchers can learn from them to find ways to stabilise cells in research and biotechnology.

Taken together, tardigrades provide a unique blueprint for the developing robust biological systems and materials. Their exceptional survival mechanisms could inspire new strategies in medicine, biotechnology, and beyond, leaving critical therapies and technologies more resilient, effective, and crucially, widely accessible.

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THE GIST

Tardigrades can induce cryptobiosis and linger in suspended animation. This allows them to tolerate dryness, radiation, and freezing.

Researchers are attempting to synthesise secretory abundant heat-soluble proteins used by tardigrades to enhance tolerance against desiccation. This research has implications for medicine and space exploration.

When tardigrades were exposed to gamma rays, 1,000 times greater than the lethal limit for humans, thousands of genes upregulated in response. Radiation resistance is likely modulated by genes acquired by horizontal transfer.

Scientists work to protect cell-based therapies in harsh conditions encountered during transport and administration. Tardigrades possess unique adaptations to resist or even sidestep cellular damage, and researchers can learn from them to find ways to stabilise cells in research and biotechnology.

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Indian Express – Governance(GSII)-Page 2

Chalo India drive: Free visa for friends of diaspora at World Travel Mart in UK

DIVYAA
NEW DELHI, NOVEMBER 5

THE MINISTRY of Tourism will launch its Chalo India campaign on the sidelines of the ongoing World Travel Mart in London.

Chalo India is a first-of-its-kind initiative to bring more foreign tourists to India, wherein the government will allow “friends” of diaspora members to get free visas. Five foreign nationals nominated by each Overseas Citizen of India (OCI) cardholder on a special portal will be eligible for a gratis e-visa (visa granted without fees).

There are about five million OCI card holders, as per government records. While each OCI holder can nominate up to five people, the total number of free e-visas to be granted under the said initiative is one lakh, officials said.

As the special portal goes live, the OCI cardholders will need to register on the same and key in the details of their nominated friends; they will be assigned a unique code after due verification. The designated friends can

EXPLAINED
E Why sudden push to tourism?

THE FOREIGN tourist footfall to India has been severely hit in the wake of the pandemic and numbers haven't returned to pre-pandemic levels. Around 6.19 million and 1.52 million foreign tourists arrived in India in 2022 and 2021 respectively, compared to 10.93 million in 2019.

The focus of this year's India pavilion is MICE, Mahakhumbh and wedding tourism, said the statement. A special mock Mandapam in the Pavilion has been created to give the look and feel of an Indian wedding. The India pavilion was inaugurated by High Commissioner Vikram Doraiswami and Director General, Ministry of Tourism, Mugdha Sinha, in the presence of Tourism Ministers of

- The Ministry of Tourism will launch its Chalo India campaign on the sidelines of the ongoing World Travel Mart in London.
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- The UK is the third largest source market for inbound tourists to India. At almost 1.9 million, it also has one of the biggest Indian diaspora.

Indian Express – Economy(GSIII)-Page 15

How Dedicated Freight Corridors are adding to GDP growth, boosting Rail revenues

DHEERAJ MISHRA
NEW DELHI, NOVEMBER 5

DEDICATED FREIGHT Corridors are improving India's GDP and adding significantly to the Indian Railways' revenue, a recent study by Australia's University of New South Wales has said.

The study said that reduction in freight cost and travel time due to the DFCs has helped reduce prices of commodities by up to 0.5 per cent, and the corridors have contributed to 2.94 per cent of the revenue growth realised by the Railways between FY 2022-23 and FY 2018-19.

The study was published in the journal *Esvier*. It analysed the Western Dedicated Freight Corridor (WDFC) data for FY 2019-20, and came up with its findings by using a Computable General Equilibrium model initiated by the central government.

What are Dedicated Freight Corridors?

Dedicated Freight Corridors (DFCs) are specific routes for

THE DEDICATED FREIGHT CORRIDORS

WESTERN CORRIDOR (1,506 KM)

Rewari-Makarpura	Dadri-Rewari	Makarpura-JNPT
949 km	127 km	430 km

EASTERN CORRIDOR (1,337 KM)

Ludhiana-Khurja	401 km
Khurja-Dadri	46 km
Khurja-Bhaupur	351 km
Bhaupur-DDU	402 km
DDU-Sonnagar	137 km



Why were DFCs needed?

The need for the Dedicated Freight Corridors was felt for two reasons. First was the over utilisation of the Railways' golden quadrilateral linking the four metropolitan cities of Delhi, Mumbai, Chennai and Howrah, and its two diagonals (Delhi-Chennai and Mumbai-Howrah). This stretch comprises only 16 per cent of the route, but carried more than 52 per cent of the passenger traffic

and 58 per cent of freight traffic, which is more than last year. The freight trains on DFC are faster, heavier & safer. Since inception, the DFCs have carried over 232 billion Gross Tonne Kilometres (GTKMs) and 122 billion Net Tonne Kilometers (NTKMs) payload.

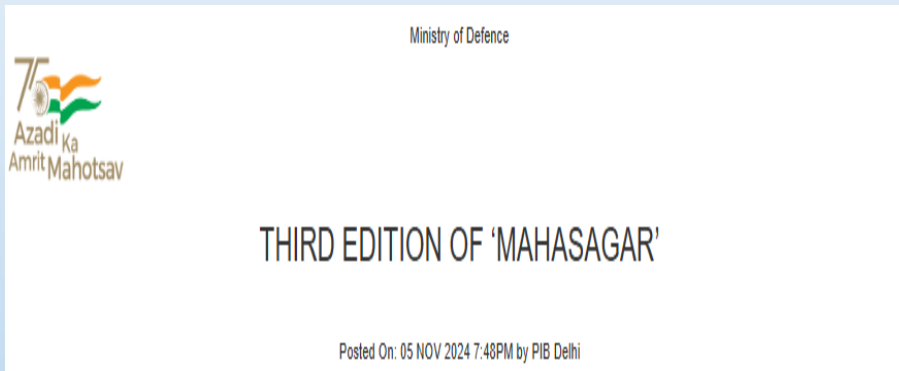
According to the DFCCIL, more than 10 per cent of freight running of Indian Railways is now handled by DFC. A DFCCIL official said that a comprehensive and holistic study of the impact of the DFCs on the Indian Economy is underway

- Dedicated Freight Corridors (DFCs) are specific routes for freight transportation, which offer higher transport capacity due to the faster transit of freight trains, running of double stack container trains, and heavy haul trains. This improves the supply chain for the industries/logistics players located at economic centres along the way, leading to growth of export-import traffic too. The Ministry of Railways took up the construction of two DFCs — the 1,337-km Eastern Dedicated Freight Corridor (EDFC) from Sonnagar in Bihar to Sahnewal in Punjab; and the 1,506-km Western Dedicated Freight Corridor (WDFC) from Jawaharlal Nehru Port Terminal in Mumbai to Dadri in Uttar Pradesh — back in 2006. The need for the Dedicated Freight Corridors was felt for two reasons. First was the over utilisation of the Railways' golden quadrilateral linking the four metropolitan cities of Delhi, Mumbai, Chennai and Howrah, and its two diagonals (Delhi-Chennai and Mumbai-Howrah). This stretch comprises only 16% of the route, but carried more than 52% of the passenger traffic and 58% of revenue-earning freight traffic for the Railways.

HEADLINES OF THE DAY



PIB –Defense(GSIII)



- The third edition of the high-level **virtual** interaction *MAHASAGAR* was conducted by the Indian Navy on **05 Nov 24**,
- The interaction's theme was '***Training Cooperation to Mitigate Common Maritime Security Challenges in IOR***', which highlights the present and necessary imperatives for Training Corporation towards mitigation of common maritime challenges in the Indian Ocean Region.
- ***MAHASAGAR*** which stands for vast ocean in Hindi, is the Indian Navy's flagship outreach for high-level virtual interaction between **Maritime Heads for Active Security And Growth for All in the Region. The initiative, started by the Indian Navy, is conducted **bi-annually** and has garnered wide acceptance among the participating nations ever since its **inception in 2023**.**

HEADLINES OF THE DAY



PIB: Space(GSIII)

Ministry of Science & Technology

75
Azadi Ka
Amrit Mahotsav

India to Launch European Union's Solar Observatory Satellite Proba-3, in December, announces Dr. Jitendra Singh

EU Sees India as a 'Natural Partner' in Space Exploration and Security: EU Ambassador

3rd India Space Conclave Highlights India's Rising Role in Global Space Collaboration

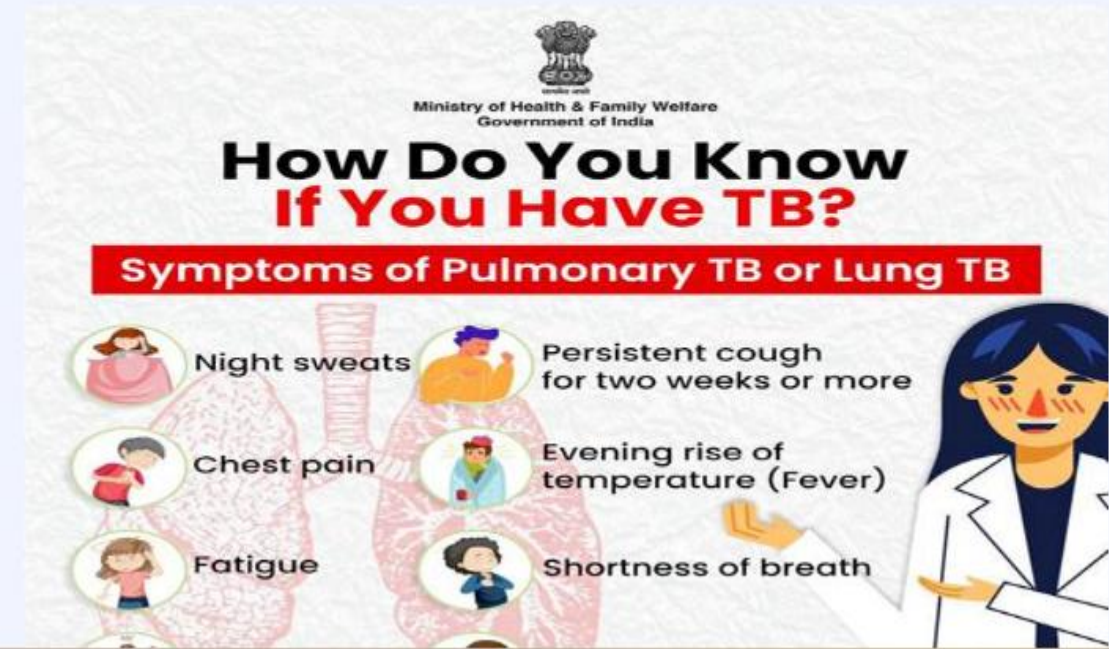
Posted On: 05 NOV 2024 4:31PM by PIB Delhi

- India will launch the European Union's Proba-3 Space Satellite in the first week of December, marking another milestone in India's growing space leadership.
- The Proba-3 mission, focused on solar observation, reflects the deepening partnership between India and the EU in space research and exploration.
- This will be India's third launch for the EU, following earlier missions for the Proba-1 and Proba-2 satellites.

HEADLINES OF THE DAY

Air: Health(GSII)

Towards A TB-Free India: 17.7% Decline In TB Incidence From 2015 To 2023



- India's journey towards tuberculosis (TB) elimination has been recognized globally, with a noteworthy 17.7 percent decline in TB incidence from 2015 to 2023. As per the World Health Organization's Global Tuberculosis Report 2024 the rate is twice the global average decline of 8.3 percent.
- India, as a signatory to the United Nations Sustainable Development Goals had pledged to achieve the "End TB" targets by 2025, five years ahead of the SDG deadline of 2030. The achievement highlights the impact of India's National Tuberculosis Elimination Programme. There has been an 80 percent reduction in the TB incidence rate and a 90 percent reduction in the TB mortality rate compared to the 2015 levels.

HEADLINES OF THE DAY

Air: IR(GSII)

India And Nigeria Discuss And Identify Specific Areas Of Cooperation In Fight Against Terrorism

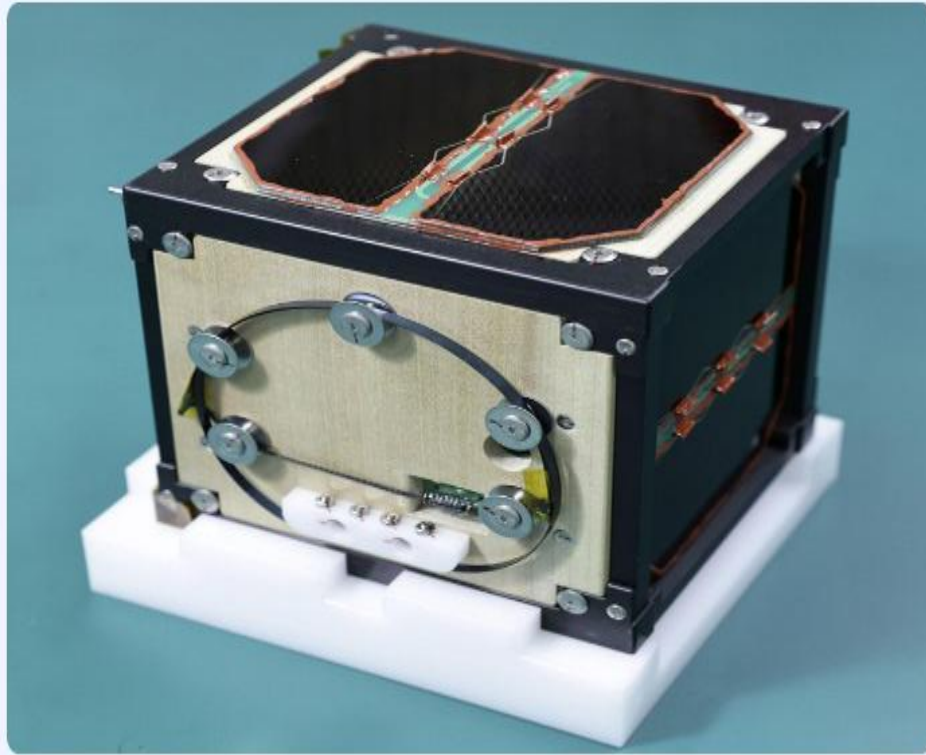


- The Second Strategic and Counter-Terrorism Dialogue between India and Nigeria concluded today in New Delhi. During the two day long Dialogue, National Security Adviser Ajit Dova and his Nigerian counterpart Nuhu Ribadu held in-depth discussions within the framework of the strategic India-Nigeria partnership on threats and challenges emanating from terrorism, extremism, radicalization, including through cyberspace, as well as from international crime, arms and drug smuggling.
- The two sides identified specific areas of cooperation to enhance their fight against all forms of terrorism, reiterating their firm belief that there can be no justification for terrorism in any form or manifestation

HEADLINES OF THE DAY

Air: Space(GSIII)

Japan Launches World's First Wooden Satellite, LignoSat, To Test Space-Grade Wood



- In Japan, the world's first wooden satellite was launched into space today aims to prove that wood is a space-grade material.
- The satellite LignoSat is scheduled to orbit the Earth for six months. According to media reports, designed by researchers at Kyoto University in Japan, LignoSat is made of honoki, a kind of magnolia tree that was traditionally used to make sword sheaths. The Japanese researchers conducted a 10-month experiment aboard the International Space Station (ISS) and found that honoki was the timber most suited for space applications.