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UPSC ESSENTIALS

November 2025 Issue

Nobel Prizes 2025

The Indian EXPRESS

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LETTER TO ASPIRANTS

Dear Aspirants,

Reading articles written by subject experts is essential for UPSC preparation, as they provide deeper analysis, multiple perspectives, and clarity on complex issues beyond standard textbooks. Such readings strengthen critical thinking and analytical abilities —two skills indispensable for both Prelims and Mains. This month's magazine, as in previous issues, offers the same.

This month's magazine features a crisp Nobel Prize 2025 overview as the *Cover Story*, along with *Express Edge* topics spanning History, Society, Polity, IR, Economy, Science & Tech, and Environment. Highlights include political consolidation post-independence, e-governance, globalisation, trickle-down economics, and emerging tech like Vikram 3201.

Our *UPSC Focus* section simplifies the topic on cyclones, offers essay-prep FAQs, an ethics case on medical integrity, October's current affairs pointers, and MCQs for quick revision.

Aspirants, concluding from where we started, engaging with expert-authored articles remains central to effective UPSC preparation. These readings deepen understanding, sharpen analysis, and enhance answer quality across both stages of the exam.
With this magazine bringing you the month's most insightful articles, are you ready to make them part of your UPSC journey?

We would love to hear from you. What topics should we cover next?

Please share your thoughts at **manas.srivastava@indianexpress.com**.

Think Smart
Work Hard
Conquer Your Goal!

Until next month,

Manas Srivastava

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COVER STORY

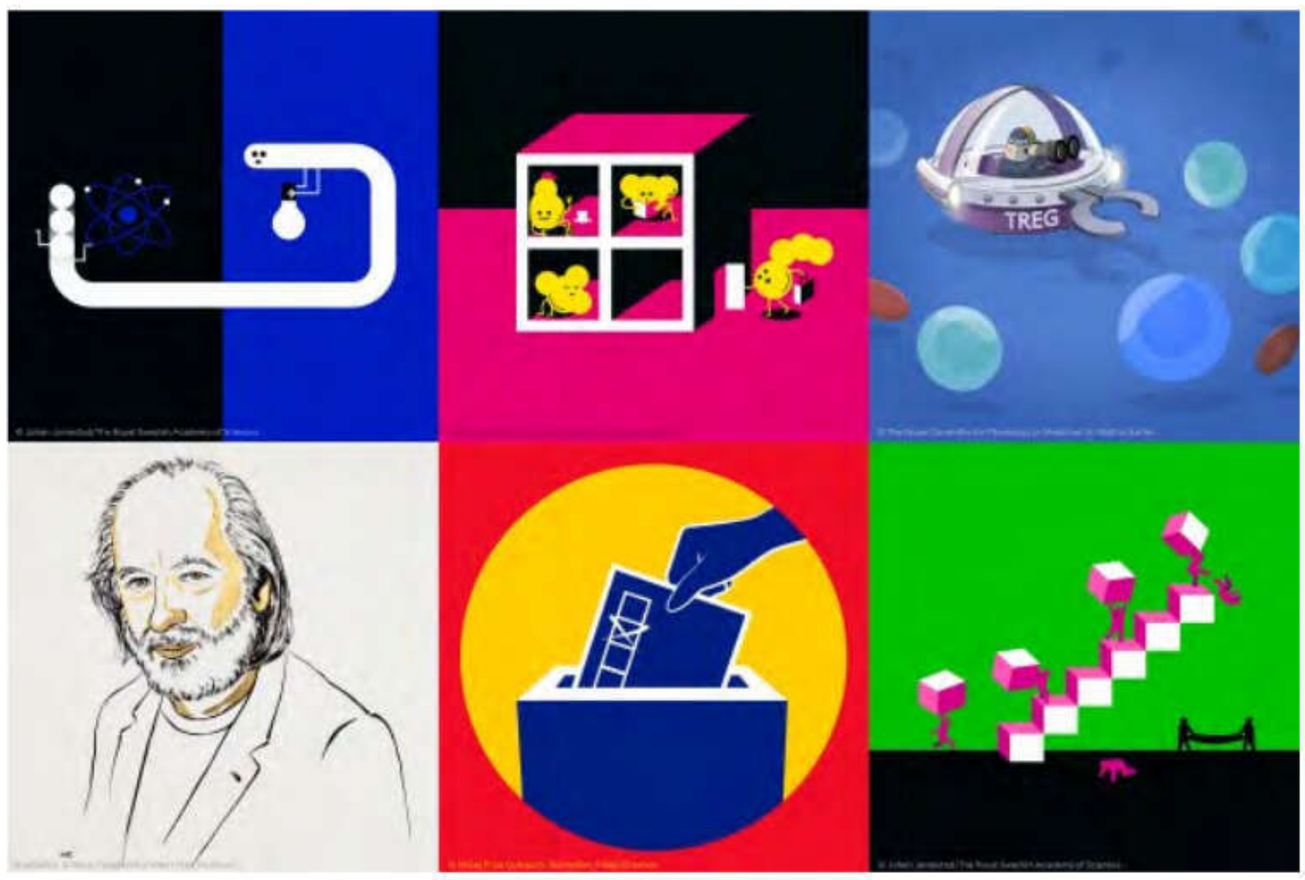
Nobel Prize 2025 Overview: Winners, Themes and Key Takeaways

Written by **Roshni Yadav**

The Nobel Prize is one of the most prestigious awards in the world.

INTRODUCTION

The beginning of October 2025, like every year, meant Nobel Prize season. The announcement of six prizes to new faces from around the globe, consisting of the world's most elite roster of scientists, writers, economists, and human rights leaders, does not just mean facts to remember. With the changing nature of UPSC Examinations, aspirants must prepare themselves for analytical questions and make the best use of news and editorials around Nobel Prizes, directly or indirectly, in essays, ethics, personality tests, and other GS Papers. In this context, let's take an overview of the Nobel Prize 2025.



This year's Nobel Prizes have awarded discoveries and achievements that have benefitted humankind in a myriad of ways. (Image: @NobelPrize/X)

(Relevance: UPSC Syllabus Mains Examination - General Studies-II, III: Important International institutions, agencies, Science and Technology- developments and their applications and effects in everyday life, Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology.)

Before diving into the list of winners of the Nobel Prize this year and their discovery, let's take a brief look at what the Nobel Prize is and some important facts associated with it.

Understanding the Nobel Prize: Essential Facts Before Looking at the 2025 Winners

Alfred Nobel, a Swedish chemist, engineer, industrialist, and the inventor of dynamite, in his last will and testament in 1895, gave the largest share of his fortune to a series of prizes in physics, chemistry, physiology/medicine, literature, and peace, to be called the "Nobel Prizes".

In 1968, the sixth award, the Prize in Economic Sciences, was started by Sweden's central bank, the Sveriges Riksbank.

The Nobel Prize consists of a Nobel Medal and Diploma, and a document confirming the prize amount. The monetary award for Nobel Prizes changes depending on the fund's income. In 2025, each Nobel Prize carries a reward of 11 million Swedish kroner (SEK) (around $1.2 million). The Nobel Peace Prize is presented in Norway while the other awards are handed out in Sweden. That's how Alfred Nobel wanted it.

Though Nobel died in 1896, the first Nobel prizes were awarded in 1901. The inaugural winners included Wilhelm Röntgen (Physics) and Jacobus van 't Hoff (Chemistry).

The Nobel Committees of the prize-awarding institutions are responsible for the selection of the candidates. The institutions are:

Nobel Prize in Physics	The Royal Swedish Academy of Sciences
Nobel Prize in Chemistry	The Royal Swedish Academy of Sciences
Nobel Prize in Physiology or Medicine	The Karolinska Institute
Nobel Prize in Literature	The Swedish Academy
Nobel Peace Prize	A five-member Committee elected by the Norwegian Parliament
Prize in Economic Sciences	The Royal Swedish Academy of Sciences

Notably, the names of nominees and other details of the selection process are kept confidential for 50 years, ensuring the integrity and privacy of the process.

What breakthrough earned the 2025 Nobel Prize in Physics for the three scientists, and how is it significant?

The Royal Swedish Academy of Sciences has awarded the 2025 Nobel Prize in Physics to three US-based scientists—

John Clarke, Michel Devoret, and John Martinis "for the ***discovery of macroscopic quantum mechanical tunnelling and energy quantisation in an electric circuit.***"

This is the second time in three years — after 2022— that the Physics Nobel has been given for work in the field of quantum mechanics. Last year's physics prize went to John Hopfield and Geoffrey Hinton for breakthroughs in machine learning that helped drive the artificial intelligence revolution.

Amitabh Sinha of The Indian Express explains how the winners revealed quantum physics in action: Very small particles, on the scale of an atom or smaller, behave in ways that are very different compared to objects we encounter in our everyday lives. The behaviour of small particles, extremely counter-intuitive at times, is described by the laws of quantum mechanics.

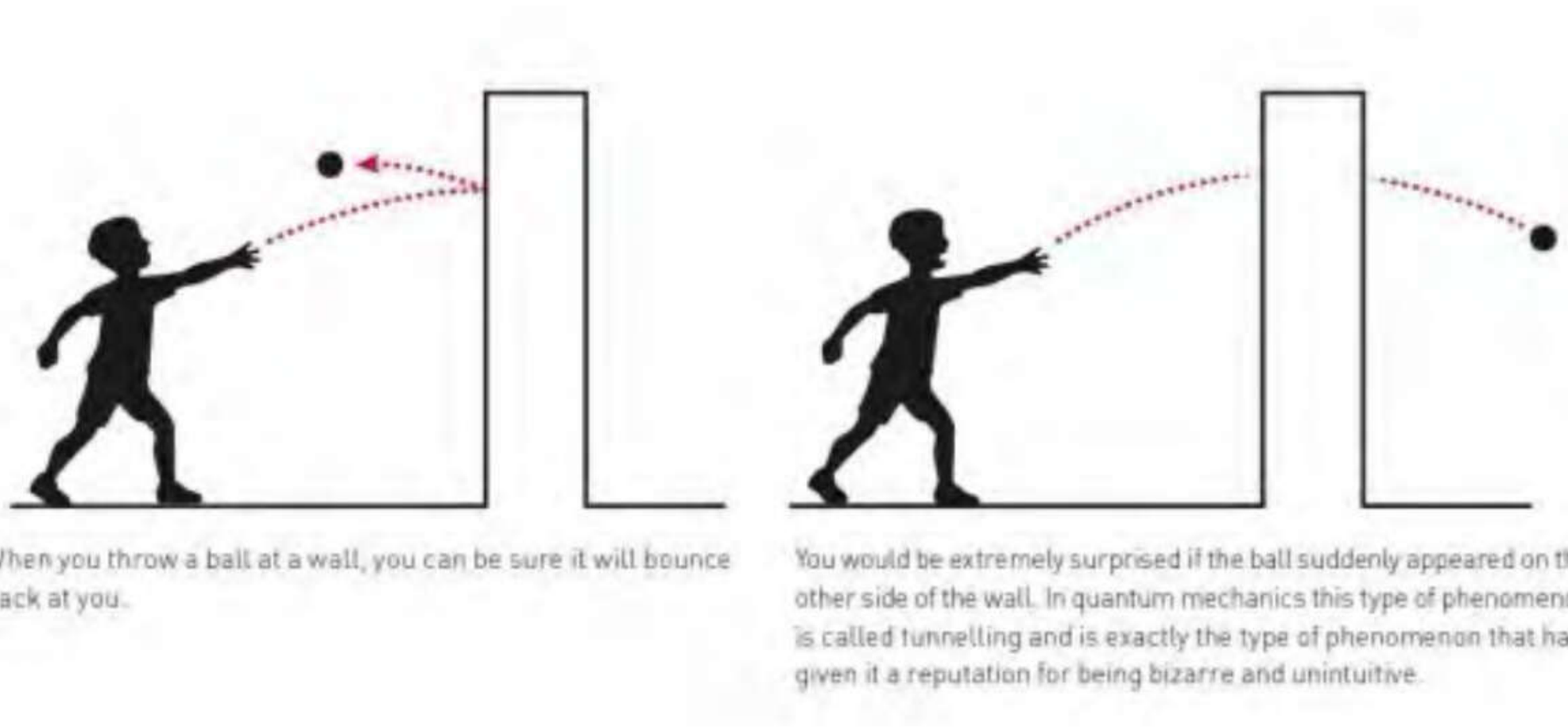
These individual particles seemingly exist at multiple places at the same time (superposition) or appear to pass magically through physical barriers like a wall (tunnelling). These properties are normally not exhibited by large objects, even though they comprise the same small particles.

This year's Nobel Prize in physics has gone to three scientists who showed that it was possible even for large systems, made up of billions of these small particles, to exhibit quantum behaviour under carefully controlled conditions. John Clarke, Michel Devoret and John Martinis's work, done in the mid-1980s, set the stage for the development of quantum computers, which is one of the most active areas of scientific research right now.

Quantum Tunnelling and Energy Quanta

Shravan Hanasoge Explains: To understand what they achieved, imagine throwing a ball at a wall. Classically, it either bounces back or stops. But in the quantum world, a particle can sometimes "tunnel" straight through. That's tunnelling — one of quantum mechanics' strangest predictions.

Another hallmark of the quantum realm is quantisation: energy isn't continuous but comes in fixed amounts. Atoms, for instance, can only absorb or emit certain "chunks" of energy.

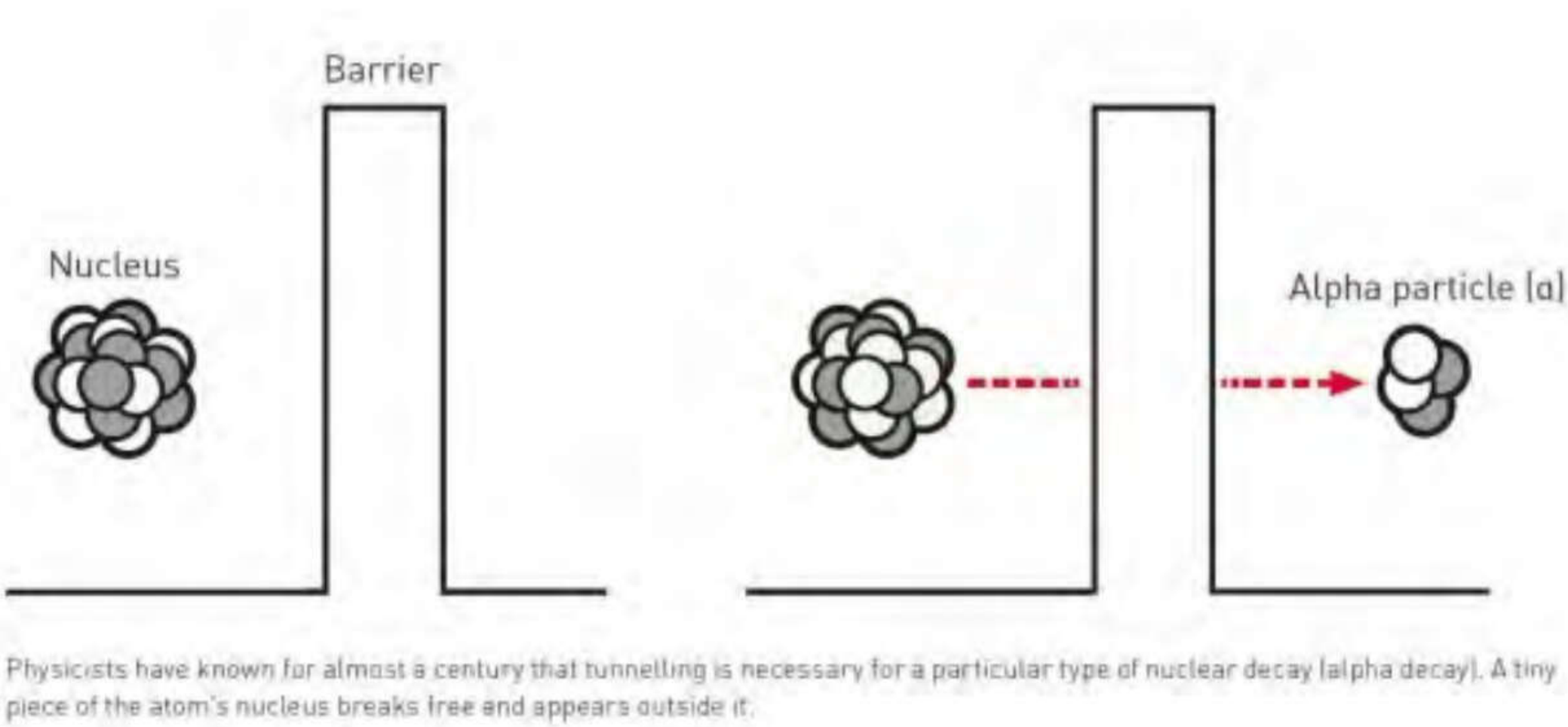


(Illustration: Johan Jarnestad/The Royal Swedish Academy of Sciences)

In the mid-1980s, Clarke, Devoret, and Martinis used superconducting circuits cooled to near absolute zero, where electric current flows with zero resistance. At the heart of their setup was a Josephson junction — two superconductors separated by a thin insulating layer. Under these conditions, pairs of electrons (called Cooper pairs) can tunnel across

the barrier, behaving as a single quantum system.

When they passed a current through such a circuit, the entire system acted like a macroscopic particle. It could "escape" from one quantum state to another — tunnelling through an energy barrier and producing a tiny measurable voltage. They also found that the system absorbed and released energy only in discrete steps, confirming energy quantisation in a man-made circuit.



(Illustration: Johan Jarnestad/The Royal Swedish Academy of Sciences)

Bridging the quantum and the everyday

For decades, physicists wondered how big a system could be and still show quantum effects. Normally, when many particles are involved, quantum behaviour fades. The laureates demonstrated that, with the right materials and extreme precision, even a chip visible to the naked eye can display unmistakable quantum signatures.

Notably, macroscopic quantum circuits are more than scientific curiosities. They form the backbone of technologies like quantum computing, quantum cryptography, and ultra-precise sensors. John Clarke, Michel Devoret and John Martinis's experiments helped scientists learn how to preserve quantum coherence — the fragile property that allows quantum systems to remain in superpositions without collapsing into classical states.

That same technology is now being developed into practical applications. In Martinis's lab at UC Santa Barbara, for instance, similar circuits evolved into the Sycamore processor, which Google used to demonstrate "quantum advantage" in 2019. Quantum computers are something the scientific world is very excited about. India, too, in 2023 set up a Rs 6,000 crore National Mission on Quantum Technologies and Applications.

Express View on Physics Nobel: Small is big

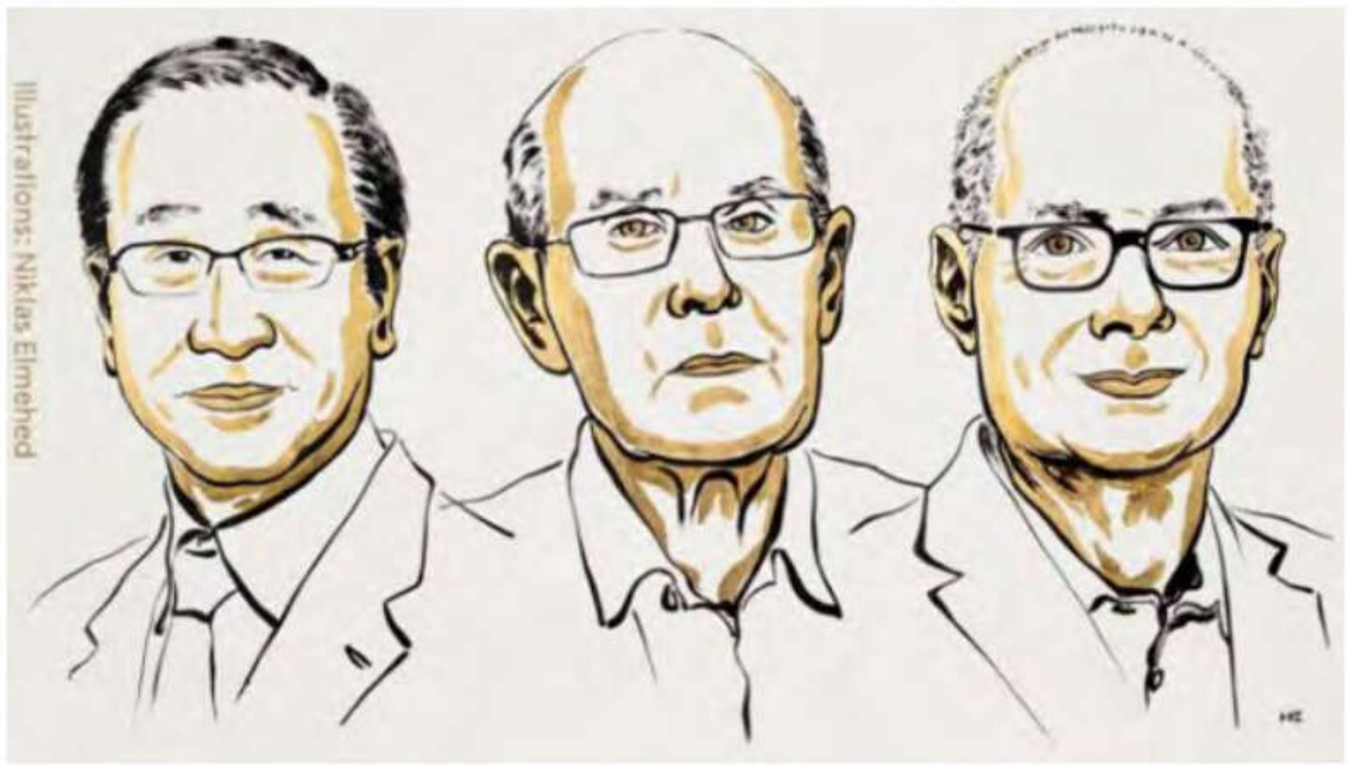
This year's Nobel Prize winners in Physics are among the scientists who have chipped away at the indeterminacy of sub-atomic particles. Over the last four decades, John Clarke, Michel Devoret and John Martinis have led a "series of experiments to demonstrate that the bizarre properties of the quantum world can be made concrete in a system big enough to be held in the hand"....The discovery paved the way for experiments that tested precise quantum physics on a silicon chip, and laid the ground for next-generation digital technology. As the Nobel Committee noted, their experiments "revealed quantum physics in action".

What are the major contributions of the three 2025 Nobel Prize in Chemistry winners, and what are the real-world applications of their work?

Susumu Kitagawa, Richard Robson, and Omar M. Yaghi have been awarded the 2025 Nobel Prize in Chemistry for pioneering the ***development of metal–organic frameworks (MOFs)***.

In most materials, atoms and molecules are packed tightly together, leaving little or no empty space between them. These scientists have been awarded for creating novel materials in which atoms and molecules are linked in a way that leaves large, neatly arranged open spaces inside the molecular structure.

These spaces are extremely useful for storing or trapping other substances, making these materials—called Metal-Organic Frameworks—highly valuable in many situations. The Nobel Prize in Chemistry 2025 recognises the work of three scientists creating these special molecular constructions, made by linking metal atoms with carbon-containing molecules.



The Royal Swedish Academy of Sciences has decided to award the 2025 Nobel Prize in Chemistry to Susumu Kitagawa, Richard Robson, and Omar M. Yaghi. (Image: @NobelPrize/X)

Metal-Organic Frameworks

MOFs are a class of materials composed of metal ions connected by organic molecules, forming a three-dimensional network with large, porous cavities. This design allows gases and liquids to flow through, making MOFs highly adaptable for various applications.

Metals can form bonds in multiple directions, and thus metal ions are the anchors here, like joints in a scaffolding. Organic molecules link them together. Organic molecules are flexible, can form rings and chains, and can be designed to have chemical groups with specific properties.

Metal–organic frameworks contain large cavities in which molecules can flow in and out. (Illustration: Johan Jarnestad/The Royal Swedish Academy of Sciences)

To understand all this better, let's quickly recap chemistry lessons from school —bonds are formed because atoms want to be stable, which often means having eight electrons in their outer shells. Those that have less than four electrons generally lose them, those with more than four try to gain the missing electrons (the number of electrons available for bonding is called valency of an atom). Organic compounds contain carbon atoms, and carbon's unique bonding ability allows it to form chains and rings.

Real-world applications of MOFs

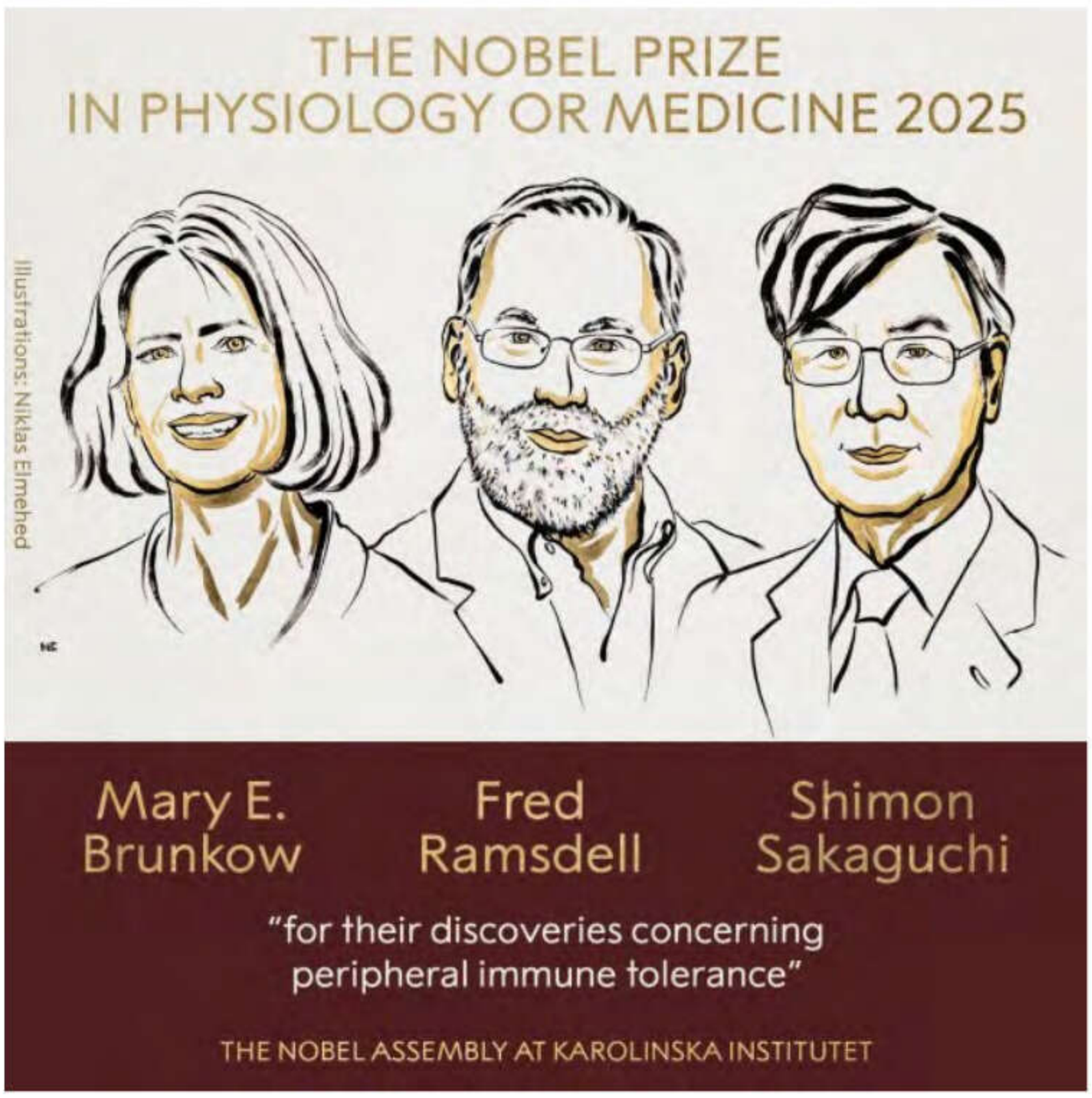
Different kinds of MOFs can be used for applications like harvesting water from desert air, capturing carbon dioxide, or storing toxic gases. The great utility of MOFs lies in their ability to temporarily hold other substances in the empty spaces they contain, like a foam or sponge is able to hold air or water, and release it when needed.

Express View on Nobel Prize in Chemistry: Celebration of molecular innovation for environmental solutions

The very idea of engineering empty space — to design the voids in which molecules may wander, interact or be captured — stands as a conceptual turn, especially in an era beset by climate-induced crises. In championing the re-engineering of molecular space as crucial to environmental and technological redress, the award signals a pivot. As tools for carbon sequestration, pollutant removal, and water extraction from air, metal-organic frameworks built from metals and organic (carbon-based) molecules hold out promise for what the Nobel Committee termed as "new opportunities for solving some of the challenges we face".

What have the 2025 Nobel Prize in Medicine winners achieved, and why does their work matter?

The Nobel Prize in Physiology or Medicine is awarded to Japanese scientist Shimon Sakaguchi and American scientists Mary E. Brunkow and Frederick Ramsdell for ***their discoveries on peripheral immune tolerance***, which have been essential for understanding how the immune system functions and key to developing therapies for cancers and autoimmune diseases.



Mary E Brunkow, Fred Ramsdell and Shimon Sakaguchi are awarded this year's Nobel Prize in Medicine or Physiology. (Image: @NobelPrize/X)

Last year's medicine prize was awarded to U.S. scientists Victor Ambros and Gary Ruvkun for their discovery of microRNA and its key role in how multicellular organisms grow and live, helping explain how cells specialise into different types.

The discovery

The human body has a powerful and complex immune system, which not just fights off various bacteria and viruses but also knows what cells should not be attacked.

According to the Nobel Prize's official press release, "Mary Brunkow, Fred Ramsdell and Shimon Sakaguchi are awarded the Nobel Prize in Physiology or Medicine 2025 for their fundamental discoveries relating to peripheral immune tolerance. The laureates identified the immune system's security guards, regulatory T cells, which prevent immune cells from attacking our own body."

Notably, the immune system's work is done by T cells. While helper T cells patrol the body and raise an alert when they detect an attack, the killer T cells attack the invader (virus or any other pathogen).

For a long time, it was believed that the thymus, an organ just behind our sternum, played a central role in how the immune system worked. The thymus is especially active in babies and children. The T cells travel to the thymus. If they are found attacking our own cells — basically can't tell apart invaders from the body's constituents — the thymus does not release them into the bloodstream. Thus, it was understood that passing through the thymus was a kind of exam T cells had to clear to enter the bloodstream and do the job of protecting.

The three Nobel laureates proved that the picture is more complicated than that, and there is a third category of T cells.

Sakaguchi identified a special group of T-cells, called regulatory T-cells, or Tregs, that suppresses the activity of other T-cells if they have a propensity to attack the body's own tissues. Brunkow and Ramsdell later discovered the FOXP3 gene that enables some T-cells to function as Tregs. Together, they complete the picture of the immune system.

Impact of the discoveries on medical treatment

The discoveries of regulatory T cells and the FOXP3 gene have launched a new field of immune-regulation research, with significant implications for human health.

In cancer, tumours are often surrounded by many regulatory T cells, which protect them from immune attack. Researchers are investigating how to dismantle this "protective wall" so that the immune system can better reach and destroy cancerous cells.

Conversely, in autoimmune diseases, strategies aim to boost regulatory T cells so that they can stop the attacking cells from destroying the body. Better understanding of the immune system can also help in making sure the body does not reject transplanted organs.

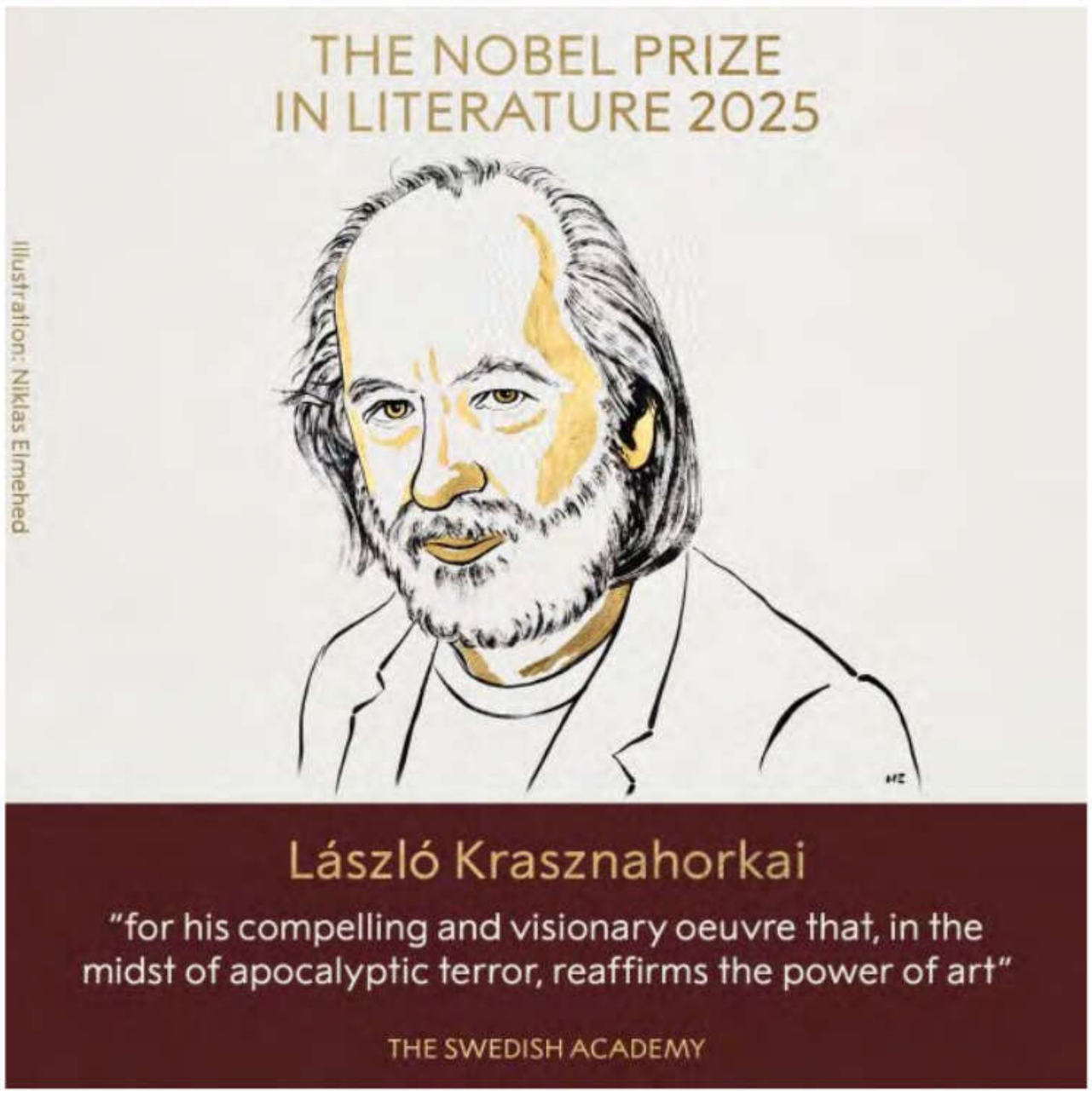
Express View: Medicine Nobel laureates' work is key to understanding immune system

Mary Brunkow, Fred Ramsdell and Shimon Sakaguchi have been honoured for their work on deciphering the intricacies of the immune system, in particular, the mechanism that prevents it from attacking the body's own cells while fighting foreign pathogens trying to enter the body...Their discovery has important implications in the treatment of auto-immune diseases. Organ transplants get complicated because the immune system identifies them as foreign, and begins to attack them. Scientists hope that regulation of Tregs activity could smoothen this process..

Who won the 2025 Nobel Prizes in Literature and Peace, and what were the main reasons for their recognition?

Hungarian novelist and screenwriter **László Krasznahorkai** has won this year's **Nobel Prize in Literature.** The award is "***for his compelling and visionary oeuvre that, in the midst of apocalyptic terror, reaffirms the power of art.***" He is the first Hungarian to win the Nobel Prize in Literature since Imre Kertész in 2002, joining an illustrious lineage that includes Ernest Hemingway, Toni Morrison and Kazuo Ishiguro.

South Korean writer Han Kang won the prize last year "for her intense poetic prose that confronts historical traumas and exposes the fragility of human life".



László Krasznahorkai is the first Hungarian to win the Nobel Prize in Literature since Imre Kertész in 2002, joining an illustrious lineage that includes Ernest Hemingway, Toni Morrison and Kazuo Ishiguro. (Image: @NobelPrize/X)

Theme of Krasznahorkai's work

Often called the "*writer of the apocalypse*", Krasznahorkai's work captures humanity on the brink — of collapse, transcendence, and revelation. From *Satantango to The Melancholy of Resistance and Baron Wenckheim's Homecoming*, his fiction unfolds in long, hypnotic sentences that mimic chaos itself, spiralling through despair, faith, and absurdity.

Paromita Chakrabarti writes, "Krasznahorkai interrogates moral collapse, institutional rot, spiritual drift, how individuals confront history, how society dissolves, how memory falters, how hope flickers. His vision is not sentimental. It is unsparing, rigorous, exacting. But that intensity also stands witness to and guard over human dignity."

Important Facts Related to the Nobel Prize in Literature

French poet Sully Prudhomme was the first laureate in 1901, while Sweden's Selma Lagerlöf became the first woman to win in 1909. The Prize was not given in 1914, 1918 and between 1940 and 1943 because of the two World Wars. In 1935, the Prize wasn't given out because no suitable candidate was said to be found.

Has any Indian won the Nobel Prize in Literature?

Rabindranath Tagore won it in 1913 for his collection of poems, Gitanjali. He was the first Indian and the first non-European to be conferred the prize.

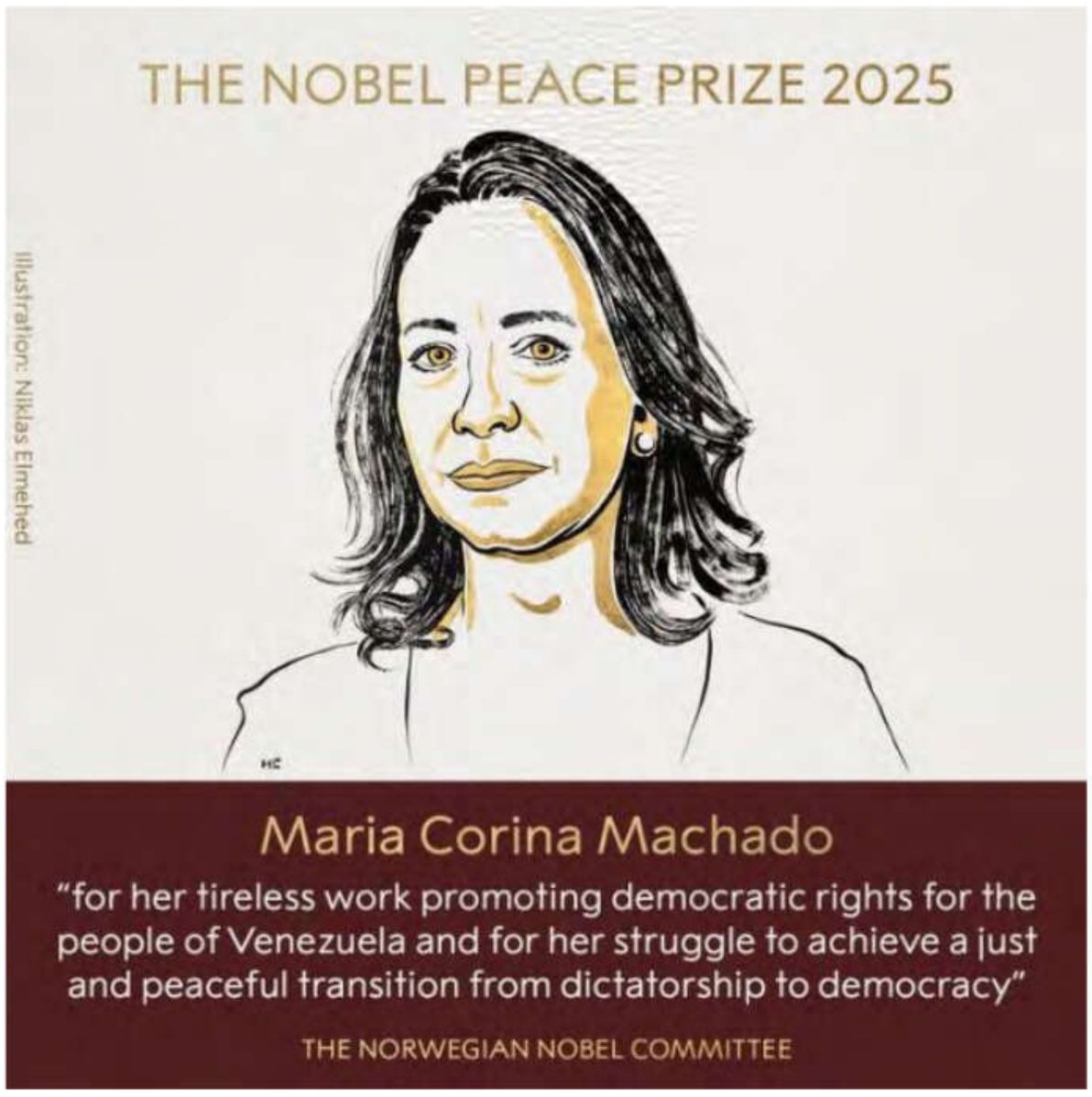
Notably, France leads with the most laureates (16), while only 18 women have received the award in its 124-year history. Some greats — Leo Tolstoy, Virginia Woolf, James Joyce — were never honoured, while others, like Jean-Paul Sartre and Boris Pasternak, refused or were forced to decline.

Nobel Peace Prize 2025

The **Nobel Peace Prize** was awarded to **Maria Corina Machado**, a Venezuelan politician who has for decades fought for democracy and civil liberties in the Latin American country.

"As the leader of the democracy movement in Venezuela, Maria Corina Machado is one of the most extraordinary examples of civilian courage in Latin America in recent times," the Norwegian Nobel Committee's announcement stated.

Last year, Japanese organisation Nihon Hidankyo received the award for its "efforts to achieve a world free of nuclear weapons and for demonstrating through witness testimony that nuclear weapons must never be used again".



(Image: @NobelPrize/X)

Express View: Nobel to Maria Corina Machado shows democracy is a work in progress

At a time of deepening authoritarianism around the world, this year's Peace Prize acknowledges that the work of democracy is never done, that it must be defended as much against tyranny as against cynicism and indifference. Democracy, as the Nobel Committee has said, "depends on people who refuse to stay silent, who dare to step forward despite grave risk and who remind us that freedom must never be taken for granted"...The honouring of Machado's tireless efforts to restore democracy in her country is an endorsement of the fact that the work of peace is not just conducted at the high diplomatic table; it happens in the trenches of the everyday struggle for justice and in the labour of all those who resist tyranny at every level.

Interesting Facts Related to Nobel Peace Prize

Mahatma Gandhi was nominated five times for the Nobel Peace Prize but was never awarded the prize. In 1937, 1938, and 1939, he was nominated by Ole Colbjørnsen, a Labour member of the Norwegian Storting (Parliament). In 1947, Gandhi was nominated by B G Kher, G V Mavalankar and G B Pant. In January 1948, there were six nominations on his behalf, including from the 1947 and 1946 Laureates, The Quakers and Emily Greene Balch.

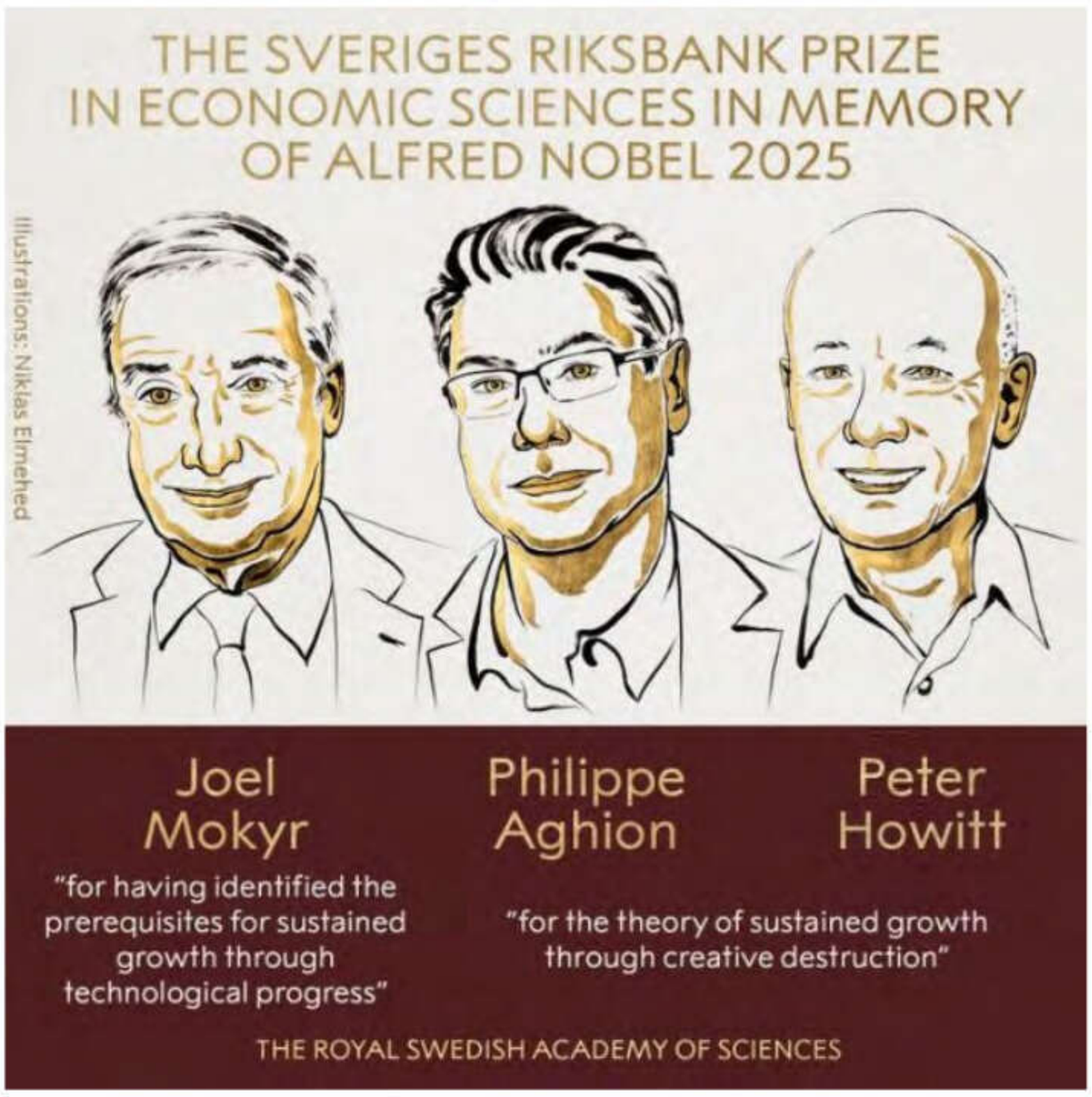
India's **Kailash Satyarthi** received the **Nobel Peace Prize in 2014** sharing it with Pakistan's Malala Yousafzai, the youngest-ever Nobel laureate, for their work on promoting child rights in the troubled sub-continent.

How have the winners of the 2025 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel (popularly known as the Nobel Prize for economics) explained the concept of economic growth as the "new normal"?

The Royal Swedish Academy of Sciences awarded the Nobel Prize in Economic Sciences to Joel Mokyr, Philippe Aghion and Peter Howitt for their pioneering research explaining how innovation fuels long-term economic growth. The Academy said one half of the prize goes to economic historian Joel Mokyr, while the other half is shared between Philippe Aghion and Peter Howitt.

Their work, the Academy noted, has deepened understanding of how technological change, knowledge creation, and the constant cycle of innovation and obsolescence drive prosperity. Together, Mokyr, Aghion, and Howitt have provided a framework that links economic history with modern growth theory explaining not just why economies grow, but how they sustain that growth over centuries.

Mokyr found the causes behind sustained growth becoming the new normal. Citing historical sources, he emphasised how important it is for society to be open to new ideas and changes to sustain growth. He



The Economic Sciences Prize, established in 1968 by Sweden's central bank, is the last of the Nobel awards to be announced each year.
(Image: @NobelPrize/X)

noted that the Industrial-Revolution-driven growth came to a halt owing to the lack of scientific explanations for why innovations work.

Aghion and Howitt, in a article in 1992 unfurled a mathematical model for "creative destruction," the phenomenon where "new and better products" enter the market, leading to companies selling older products and losing out. The two illustrated how creative destruction creates conflicts that must be managed in a constructive manner, otherwise established companies and interest groups could comprise the process.

Express View: Lesson from Economics Nobel- Innovation needs shepherds

At a moment when the world is on the cusp of a tech revolution that could upend conventional notions of labour and creativity, raising optimism and creating disruption, the Nobel Committee has honoured three economists who have shone a light on why innovations enhance human well-being. Together, the work of Joel Mokyr, Philippe Aghion and Peter Howitt explains why the world began growing at an unprecedented pace over the last two centuries, how societies sustained growth, and what happens when innovation is stifled...The three laureates show the importance of managing the turbulence that usually follows far-reaching technological changes...Their work carries another message — progress is not guaranteed and requires nurturing innovative mechanisms.

JUST FYI: The Nobel Prize and India

The following Indians or individuals of Indian origin/resident in India have been honoured with the Nobel Prize: Rabindranath Tagore (Literature, 1913); C. V. Raman (Physics, 1930); Hargobind Khorana (Physiology or Medicine, 1968); Mother Teresa (Peace, 1979); Subrahmanyan Chandrasekhar (Physics, 1983); the 14th Dalai Lama (Peace, 1989); Amartya Sen (Economic Sciences, 1998); Venkatraman Ramakrishnan (Chemistry, 2009); Kailash Satyarthi (Peace, 2014); and Abhijit Vinayak Banerjee (Economic Sciences, 2019).

Post Read Questions

(1) John Clarke, Michel Devoret and John Martinis have been awarded the 2025 Nobel Prize in Physics for:

(a) the discovery of macroscopic quantum mechanical tunnelling and energy quantisation in an electric circuit.

(b) the development of the theory of superconductivity at room temperature.

(c) the invention of the quantum dot laser and its applications in optical communication.

(d) the discovery of graphene and its unique two-dimensional properties.

(2) He writes sentences that stretch like eternity — long, looping, relentless — and stories that linger at the edge of ruin. His debut, Sátántangó, crawled across a dying farm; his cinema collaborator made it a seven-hour dirge. Critics call him the "Hungarian master of apocalypse." This year, Stockholm agreed. Who won the 2025 Nobel Prize in Literature?

(a) Olga Tokarczuk

(b) László Krasznahorkai

(c) Orhan Pamuk

(d) Haruki Murakami

(3) 2025 Nobel Prize in Physiology or Medicine has been awarded for:

(a) discoveries of receptors for temperature and touch

(b) discoveries concerning peripheral immune tolerance

(c) discovery of cancer therapy by inhibition of negative immune regulation

(d) discovery of Hepatitis C virus

(4) The Nobel Peace Prize 2025 is awarded to the laureate for:

(a) for her fight against the oppression of women in Iran and her fight to promote human rights and freedom for all

(b) for over six decades contributed to the advancement of peace and reconciliation, democracy and human rights in Europe

(c) for her contribution to sustainable development, democracy and peace

(d) for her tireless work promoting democratic rights for the people of Venezuela and for her struggle to achieve a just and peaceful transition from dictatorship to democracy

Prelims Answer Key
1. (a) **2.** (b) **3.** (b) **4.** (d)

(**Sources: Articles referred from The Indian Express-** How winners revealed quantum physics in action, How the Physics Nobel-winning experiment shaped quantum computing, Express View on Physics Nobel, Making ‘room’ for new uses of Chemistry, Nobel Prize 2025 Chemistry Winners, Nobel Prize in Medicine out: What exactly have the winners done, Nobel Prize in Literature 2025 Highlights, What makes László Krasznahorkai’s writing stand out, Nobel Prize for Economics)

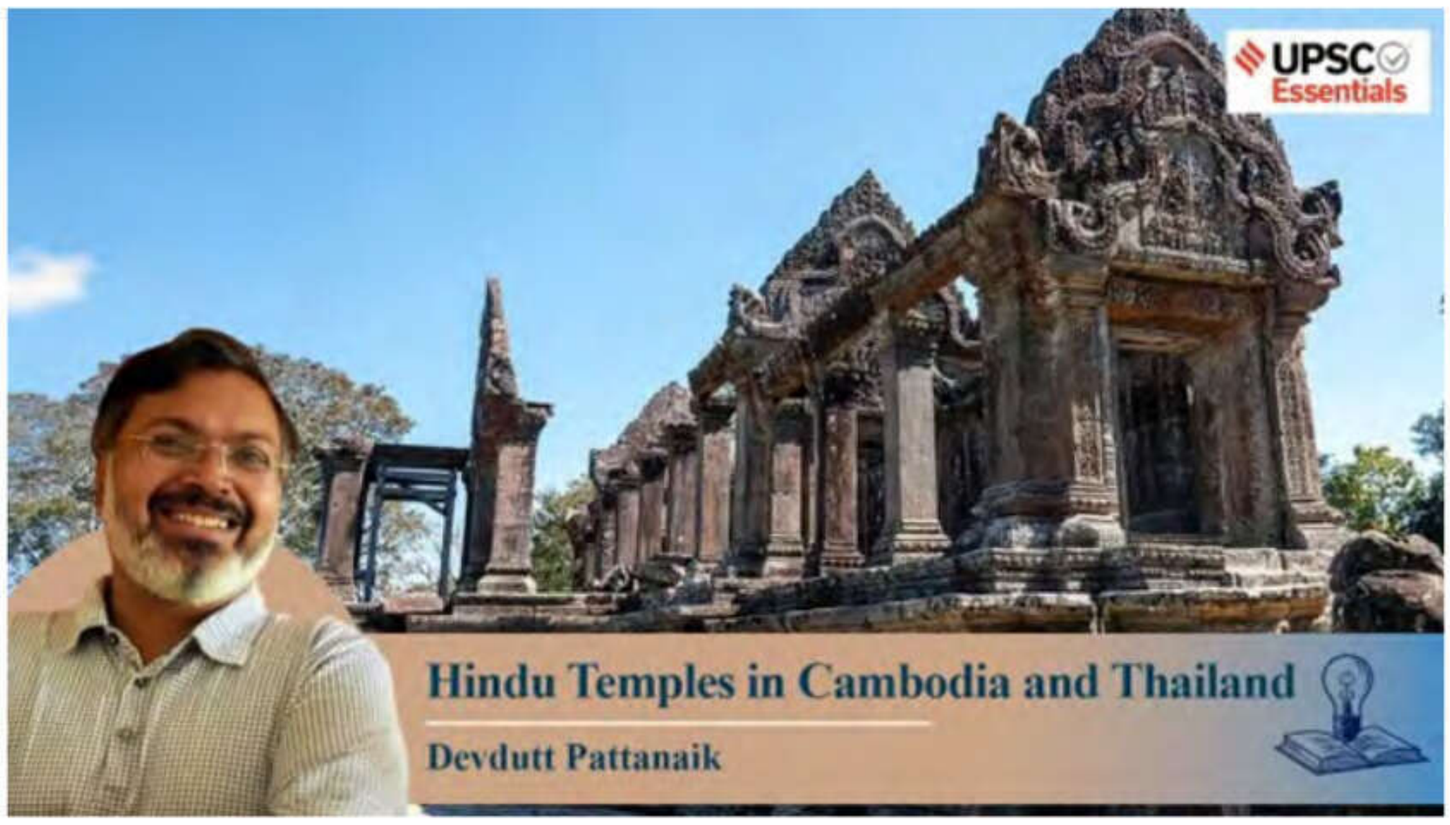
EXPRESS EDGE

History & Culture

Cambodia-Thailand border temple that once knew no nations

One of the great cultural currents that travelled eastwards after the 7th century CE was the cult of Shiva, which played a pivotal role in the rise of the great Shaiva temples of India and Southeast Asia. The temple on the Cambodia-Thailand border is part of this tradition.

Written by **Devdutt Pattanaik**



The temple, known as Preah Vihear, is a grand Shaiva temple built between the 9th and 12th centuries on a clifftop in the Dangrek Mountains along the Thailand-Cambodia border. (Wikimedia Commons)

The recent skirmish between Cambodia and Thailand caught Indian attention not because of Buddhist politics but because the fight was over a Hindu temple perched on the border of two Buddhist nations. The temple, known as Preah Vihear, is a grand Shaiva temple built between the 9th and 12th centuries on a clifftop in the Dangrek Mountains.

In 1962, the International Court of Justice ruled that it belonged to Cambodia. But Thailand and Cambodia have clashed repeatedly over the surrounding land, reminding us how old ritual centres still shape modern politics and national pride. But why is there a Hindu temple here at all? To answer this, we must follow the trail of the monsoon and the ships it carried across the Indian Ocean.

For over two thousand years, monsoon winds shaped the rhythm of trade. Ships from Arabia and Africa came to India's western coast before the rains, and returned after the monsoon had passed. On the eastern coast, ships sailed before the monsoon towards the lands we now call Myanmar, Thailand, Cambodia, Vietnam, and Indonesia, and came back once the winds reversed. Cotton textiles from India flowed east, and in return came gold, rubies, sapphires, spices, and fragrant woods that dazzled Indian courts.

Spread of cultural currents through river and sea

As early as the 3rd century CE, Chinese records speak of Indian merchants, dancers, and scribes in the Mekong delta, the land then known as Funan. Stories are told of an Indian named Kauṇḍinya who married a Naga princess and brought with him the Indian way of living – its rituals, writing, and cosmology. Funan became a major hub, linking inland Mekong trade to the sea.

Such hubs arose wherever rivers met the ocean: the Mahanadi delta of Kalinga, the Godavari and Krishna deltas of Andhra, the Cauvery and Vaigai of Tamil Nadu, the rivers of Sri Lanka, Burma, Thailand, and Java. River mouths

became cultural cauldrons where goods, stories, and gods exchanged hands.

One of the great ideas that travelled eastwards after the 7th century was the cult of Shiva. This was the great Shaiva age – from the 7th to the 12th centuries – when Shaiva gurus taught kings that Shiva's power could be invoked in the body of the king himself. A king infused with Shiva-tattva was said to command the rains, charm the people, attract talent to his court, and strike fear into enemies. He would become the axis around which a mandala kingdom arose – a world of prosperity, music, dance, and abundance.

But for this to happen, elaborate rituals had to be performed as described in the Shaiva Agamas – texts that claimed to reveal secrets even the Vedic Brahmins had forgotten. These rituals required sacred precincts, and thus arose the great Shaiva temples of India and South-East Asia. We see Prambanan in Java, the shrines of My Son in Vietnam, and the grand Angkor complex in Cambodia.

Some temples installed Vishnu images instead of Shiva, for the two deities were seen as complementary forces – Harihara images, half Vishnu and half Shiva, became popular both in Odisha and in South-East Asia.

Cult of Shiva and Preah Vihear temple

The temple on the Cambodia-Thailand border is part of this tradition. Built on a mountain, it was not a *bhakti* temple where ordinary people came for *darshan*. It was a royal ritual centre, where kings performed ceremonies to activate their divine aura and transform their kingdom into a cosmic paradise.

This was the theatre state, a polity where kingship depended less on war or welfare and more on performance – performances timed to the rhythm of the monsoon, mirroring sowing and harvest cycles, ensuring prosperity. Through these rites, the king transformed himself into Indra, the king of heaven, ruling a garden of delight, *swarga*, on earth.

This was not feudalism. The king was not just a landlord but a god-king or Dev-raja, holding together nature and culture. This idea seeped even into Buddhism, giving birth to tantric forms of Buddhism that spread not only to Cambodia and Java but also to Tibet.

Thus, the temple fought over by Cambodia and Thailand is a fossil of a time when kings sought not just power but cosmic legitimacy, when monsoon trade brought Indian gods to distant shores, and when kings dreamed of making their kingdom not just rich but radiant, a paradise on earth.

There were no borders or nation-states when these temples were built. There was no Cambodia or Thailand then. But today sanctuaries of old gods and their royal patrons are tourist attractions as well as matters of pride. The resulting economic and political tensions result in wars. It has nothing to do with the faith of people.

Post read questions

1. **What role did monsoon winds play in shaping trade and cultural exchange between India and Southeast Asia?**
2. **What does the spread of the Śaiva and Tantric traditions tell us about the cultural interactions between India and Southeast Asia?**
3. **What does the term "theatre state" mean, and how does it describe the functioning of Southeast Asian polities?**
4. **In what ways do ancient monuments like Preah Vihear continue to shape modern political identities and conflicts?**

(Devdutt Pattanaik is a renowned mythologist who writes on art, culture and heritage.)

How India achieved political consolidation and national unity after independence

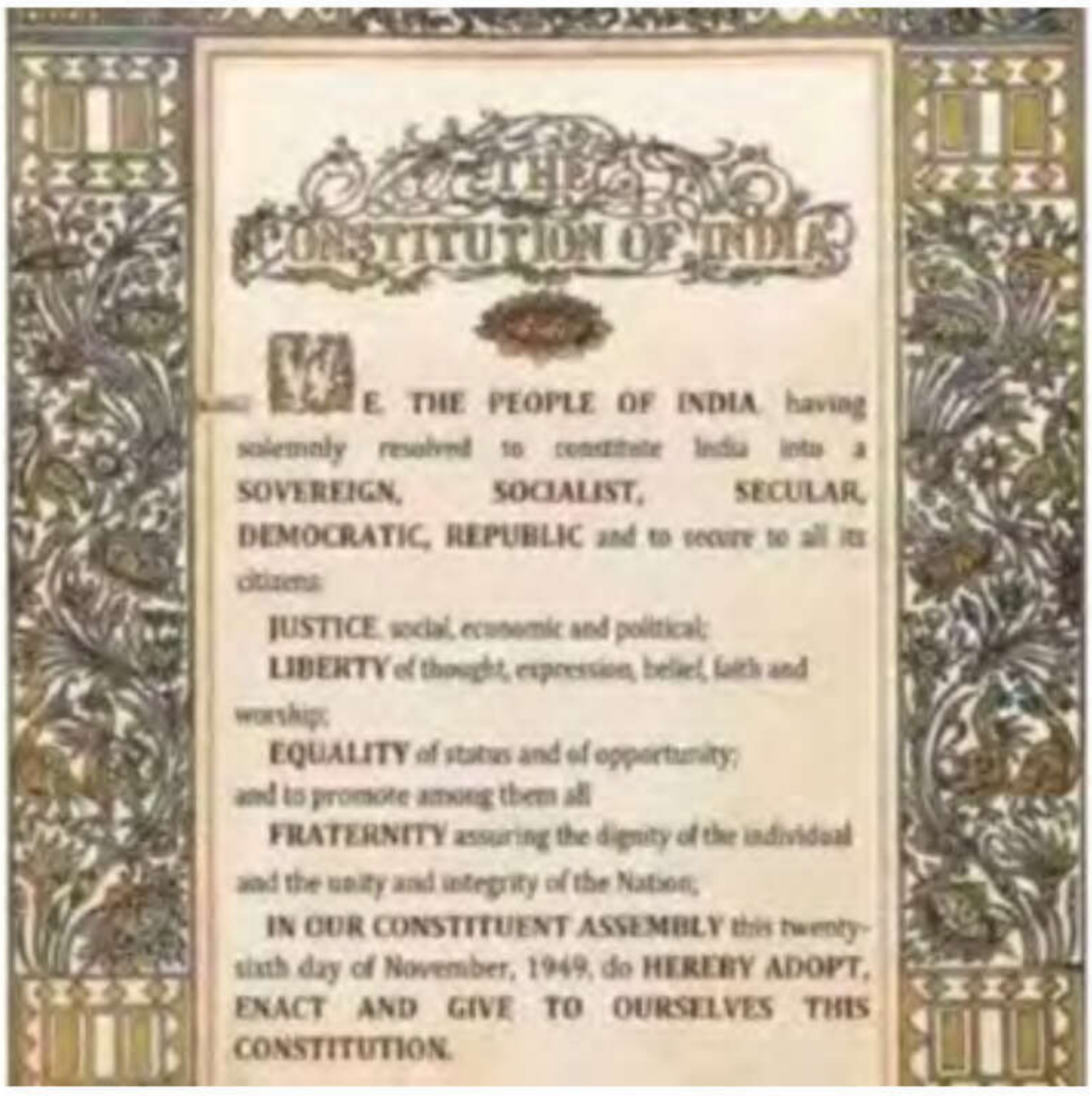
From building a democratic structure and completing national integration, to framing a sovereign Constitution, reshaping education, and redefining foreign relations, India has come a long way since independence. But how was this journey shaped, and what hurdles did independent India overcome along the way?

Written by **Dileep P Chandran**

In 1947, India commenced its long journey to overcome the legacies of colonial rule, such as centuries of economic stagnation, weak political institutions, undemocratic governance, fragmented polities, widespread illiteracy, westernised education, social inequalities, and pervasive poverty.

In addition, the partition of British India and the communal tensions that accompanied decolonisation further compounded the challenges of nation-building, as well as fulfilling promises made during the freedom struggle.

The first and foremost task for the leaders of independent India was to consolidate and strengthen the nation's unity by recognising the regional, linguistic, cultural, and social diversity of its vast population and by preparing the country for social transformation, economic development, and political unity.



The first and foremost task for the leaders of independent India was to consolidate and strengthen the nation's unity. How did they do this? (Photo: Wikimedia Commons)

In doing so, building a democratic structure with robust institutions for national integration warranted urgent attention. This was to defy the pessimism of sceptics who had predicted that independent India would collapse and disintegrate sooner or later.

The making of a sovereign Constitution

To shape the destiny of its people, independent India required a Constitution framed without any external interference – an idea for which its leaders had bargained with the British even during the colonial period. As early as 1921,

Mahatma Gandhi asserted that Swaraj must spring from the will of the people expressed through their freely chosen representatives.

M N Roy was the first national leader to demand a Constituent Assembly to draft the Constitution for independent India in 1934. The following year, the Indian National Congress made this part of its official demands. Despite differences over specific proposals, the Constituent Assembly was constituted in 1946 under the scheme formulated by the Cabinet Mission Plan. The Assembly's members were partly elected and partly nominated.

It held its first meeting on December 9, 1946, which was attended by 207 of 389 members originally envisaged. The process of Constitution-making extended over two years, eleven months, and eighteen days. The draft Constitution, prepared under the chairmanship of B R Ambedkar, was debated for 114 days in the Constituent Assembly before it was finally adopted on November 26, 1949.

The original Constitution, comprising a Preamble and 395 Articles, came into force on January 26, 1950 – commemorating the Purna Swaraj day first observed on January 26, 1930. Through this long and meticulous process, the framers envisioned India as a sovereign, democratic republic, adopting a parliamentary model of government within a federal structure.

How Patel and Menon integrated a fragmented India

Alongside the Constitution drafting, unifying a fragmented polity with more than five hundred large and small princely states after the partition of British India was yet another test of the statesmanship of leaders of independent India.

Many of the large princely states wanted to remain independent, claiming that their paramountcy couldn't be transferred to independent India or Pakistan. This sentiment was further encouraged by British Prime Minister Clement Atlee, as he granted them the freedom to become independent states. Sardar Vallabhbhai Patel and V P Menon were tasked with integrating these hundreds of princely states into the Indian Union.

Patel warned Menon, "the situation held dangerous potentialities and that if we did not handle it promptly and effectively, our hard-earned freedom might disappear through the States' door." Patel also offered the rulers of princely states privy purses and other privileges in exchange for their accession to the Union.

Political strategies and diplomacy of Patel and Menon persuaded all except Hyderabad, Junagadh, and Jammu and Kashmir to accede to the Indian Union by August 14, 1947. Subsequently, Junagadh joined the Indian Union through a plebiscite, Hyderabad was integrated after military action, and Jammu and Kashmir acceded to India through an Instrument of Accession.

India's territorial integration completed

The process of territorial integration was completed when the French authorities handed over Pondicherry in 1954 and Goa was liberated from Portugal following a military intervention ordered by then Prime Minister Jawaharlal Nehru in 1961.

The political turmoil surrounding the process of integration compelled the leaders of free India to set aside the formation of linguistic states, which was promised during the national freedom movement. However, Potti Sriramalu's martyrdom after a 58-day hunger strike demanding a separate state for Telugu-speaking people triggered mass protests, and eventually forced Nehru to announce the formation of Andhra Pradesh in 1952.

Following the recommendations of the Fazl Ali Commission, the government enacted the State Organisation Act,

1956, which established 14 states and 6 Union Territories. This reorganisation helped avert the fear of disintegration and preserve national unity.

Political scientist Rajni Kothari observed, “In spite of the leadership’s earlier reservations and ominous forebodings by sympathetic observers, the reorganisation resulted in rationalising the political map of India without seriously weakening its unity.”

Shaping foundations of future education

Together with process of Constitution-drafting and political integration, attention was also paid to India’s education system. The introduction of colonial education not only sidelined India’s traditional educational system, but it was primarily meant to serve the commercial interests of the East India Company and the clerical needs of the British administration.

The colonial education largely concentrated educational opportunities among the urban upper and middle classes and was heavily focussed on producing clerks and administrators. In doing so, it jeopardised mass education, research potential, and technical and vocational training.

The British administration’s inadequate investment in education and research was also criticised by Indian leadership. After independence, India’s leadership sought to address these issues by establishing robust institutional mechanisms, particularly in the higher education sector. The Constitution, under Article 45, mandated the State to provide free and compulsory education for all children until they complete the age of fourteen years.

Reforming higher and technical education

The University Education Commission (1948-49) under the chairmanship of Sarvapalli Radhakrishnan was the first education commission of independent India. It recommended a comprehensive reconstruction of the university education system. Similarly, the Mudaliar Commission (1952) recommended developments in the secondary education system.

The establishment of the University Grants Commission (UGC), inaugurated by then Education Minister Maulana Abdul Kalam Azad in 1953 was a major milestone in this regard. Since becoming a statutory body in 1956, the UGC has been responsible for the coordination, determination, and maintenance of standards of university education across India.

To address the gap in technical education, Nehru pioneered the establishment of Indian Institutes of Technology (IITs), beginning with IIT Kharagpur in 1950, followed by four more within the next decade – IIT Bombay (1958), IIT Madras (1959), IIT Kanpur (1959), and IIT Delhi (1961). These institutions of higher education and research were designed to build the strong technological and scientific foundations of modern India.

Formative phase of foreign relations

In addition to strengthening internal foundations, the leadership paid attention to India’s relations with other countries. Notably, India began to engage seriously with British India’s relations with other countries during World War I. It was the original member of the League of Nations and played an active role in the governing body of the International Labor Organisation (ILO). The Indian National Congress articulated a vision for international relations through a resolution in 1921, which later became independent India’s foundational principles of foreign policy.

By the late 1920s, the Congress had a separate foreign policy department headed by Nehru, whose extensive foreign travels and keen interest in international politics considerably shaped the course of India's future external relations. His leadership in the Afro-Asian Conferences and the Non-Aligned Movement (NAM) marked the emergence of India's significant voice in international politics.

Building upon this historical legacy, the foundational principles of free India's foreign policy came to be shaped by anti-colonialism, anti-racism, non-alignment, Afro-Asian unity, peace, nonviolence, disarmament, democratic dialogue, cooperation with international organisations, and respect for human rights.

Article 51 of the Indian Constitution directs the State to promote peace and security and maintain just and honourable relations with other nations. The Panchsheel Agreement, signed with China in 1954, further guided India's peaceful coexistence with other countries.

Post read questions

1. **Trace India's consolidation process during the early phase of independence in terms of polity, economy, education and international relations?**
2. **Discuss the major challenges faced by India in the immediate aftermath of independence in achieving political consolidation and national unity.**
3. **Examine the role of Sardar Vallabhbhai Patel and V P Menon in integrating the princely states into the Indian Union.**
4. **Evaluate the significance of the Indian Constitution in laying the foundation for a democratic and inclusive polity.**
5. **How did colonial education affect India's indigenous systems of learning and research? Discuss the major recommendations of the University Education Commission (1948–49) and their relevance to modern India.**

Reading recommendations

India Since Independence (2000) by Bipan Chandra, Mridula Mukherjee, and Aditya Mukherjee.

Indian Constitution: Cornerstone of a Nation (1966) by Granville Austin.

(Dileep P Chandran is an Assistant Professor at the Department of Political Science in P M Government College, Chalakudy, Kerala.)

Society

How fast food is fuelling India's health crisis

The easy availability of processed, packaged, and fast foods is increasingly linked to India's public health crisis, marked by rising rates of non-communicable diseases and overnutrition. What multi-pronged approach can help address this challenge?

Written by **Rituparna Patgiri**

Rising consumption of fast food and ultra-processed foods is among the major factors contributing to India's public health crisis. (Source: Freepik)

In India, the causes of death are shifting from infectious diseases to non-communicable diseases, such as heart disease, stroke and diabetes, which also account for nearly two-thirds of the world's total mortality and morbidity, according to the latest Global Burden of Disease report launched at the World Health Summit, Berlin, and published in *The Lancet*.

The growing cases of food adulteration and rising consumption of fast food and ultra-processed foods are among the major factors contributing to India's public health crisis marked by rising rates of non-communicable diseases and overnutrition.

According to a report by the National Restaurants Association of India (2010), the fast food industry in the country was estimated to be valued between Rs 6,750 to Rs 8,000 crores, with an annual growth rate of 35 per cent to 40 per cent. Multiple factors contributed to the boom in the fast food industry, including economic liberalisation, fast food culture, changing lifestyle preferences and social structure.

Rise of fast food culture

The liberalisation of the Indian economy in the 1990s contributed to a boom in the restaurant industry, particularly in urban spaces. Historically, India did not have a tradition of public dining, which changed with the growth of fast food entries and other restaurants. The expansion of cities, growth of the middle-class and increase in their incomes, and changing work patterns further contributed to this shift. Eating out became a part of public life as middle-class families began to socialise outside homes, with cinema halls, shopping malls, restaurants, etc. emerging as popular hangouts.

Political scientist Leela Fernandes in her book, *India's New Middle Class: Democratic Politics in an Era of Economic Reform* (2006), has shown how the middle-class ethos became connected to consumerist activities like eating out. Closely connected to these social trends is the fact that more urban upper-caste women began entering the workforce.

Such changes in the broader social structure facilitated the rise of fast food, ultra-processed and packaged foods.

For instance, Tulasi Srinivas in her article, '*As Mother Made It': The Cosmopolitan Indian Family, 'Authentic' Food and the Construction of Cultural Utopia*, published in the *International Journal of Sociology of the Family* in 2006, argues that the rise of packaged foods enabled migrant Indian women to cook their traditional foods even outside the country. Processed, packaged and fast foods are marketed as convenient, time-saving, easy to cook and affordable. For people with hectic work schedules, such foods are seen as saviours.

Shift in consumer culture and lifestyle preferences

The fast food industry has also been able to capture the market through cultural adaptation and local innovation. For instance, McDonald's has India-specific items like the aloo tikki and McPaneer burgers on their menu to cater to the vegetarian population. They also have specific food items for festivals like Navaratri. Celebrating special occasions like birthdays and anniversaries in fast food outlets and restaurants has become a youth aspiration.

The rise of these outlets coincides with India's growing consumerist culture, rooted in a neo-liberal economic shift. Celebrity endorsements of such foods also fuelled this trend. For instance, beverages like Pepsi and Coca-Cola have been promoted by some of the leading Bollywood actors. Beverage companies also sponsor the Indian National Men's Cricket Team. Such associations have had a huge impact on how young people perceive and consume these products.

There is a significant information gap even amongst India's educated youth about the health hazards of consuming such foods. This was evident in the resistance to a government directive that street food sellers should indicate calories count next to food items like samosas and jalebis. This was largely driven by emotional and nostalgic attachments to such food items.

At the same time, corporate lobbying complicates efforts to promote healthy eating habits. For instance, in 2008, biscuit manufacturers and ready-to-eat food companies proposed to supply either biscuits or pre-cooked meals to school children under the Mid Day Meal (MDM) scheme. Although the proposal got the support of 29 Members of Parliament, the Ministry of Human Resource Department (HRD) rejected it after consultations with nutrition experts. This episode underscores the need for efficient state policies to counter the corporate profit-driven lobbying that compromises public health.

Health hazards and regulation of fast food

The public health crisis is also exacerbated by the easy availability of processed, packaged, and fast foods. India is often called the 'diabetes capital of the world'. A growing number of young people are affected by obesity and non-communicable diseases like diabetes, hypertension and thyroid. According to the World Health Organisation (WHO), an estimated 77 million people above the age of 18 suffer from diabetes (type 2) in India. Most people remain unaware of their diabetic status, which leads to health complications.

A 2024 study by the Indian Council of Medical Research (ICMR) has found that ultra-processed and fried foods high in Advanced Glycation End-products (AGE) are significantly fueling India's escalating diabetes crisis. The study also says that certain cooking methods, like frying, further exacerbate the problem.

The WHO recommends diets that exclude ultra-processed foods. It advises consuming less than 5 per cent of the daily diet as free sugar, less than 10 per cent as saturated fats, less than 1 per cent as trans fats, and less than 5 grams of salt per day. The state may consider adopting the NOVA classification of foods as a policy. The NOVA classification groups foods into four categories: unprocessed or minimally processed, processed culinary ingredients, processed

foods, and ultra-processed foods.

This classification helps evaluate the impact of food on health and, if adopted at a policy level, could be used to guide citizens about better nutritional practices. In addition, appropriate food labelling displaying ingredients and calorie counts is essential, alongside stricter laws on adherence by companies.

Moreover, special attention needs to be paid to India's youth and children. Mid-day meals in government schools and canteen food in colleges and universities should be nutritionally balanced. There is a need for legislation that clearly defines junk food and restricts its marketing, particularly to children and adolescents. The proposed 'fat tax' on junk foods would be a welcome step.

Some examples of how other countries have dealt with similar concerns merit a mention here. For instance, Mexico imposed higher taxes on sugar-sweetened beverages in 2014. South Korea placed restrictions on television advertising of energy-dense and nutrient-poor (EDNP) foods targeting children through the Special Act on Safety Management of Children's Dietary Life in 2010. Such policies would help India regulate its fast food, packaged and processed foods industries and address the growing non-communicable diseases.

Post read questions

1. **How do you account for the growing fast food industries given that there are increased health concerns in modern society? Illustrate your answer with the Indian experience.**
2. **In what ways has India's growing middle class contributed to the rise of fast food consumption? How do fast food and processed food industries adapt to local cultures to expand their market in India?**
3. **Discuss how gender roles and women's participation in the workforce have influenced the rise of processed and convenience foods in urban India.**
4. **Examine the relationship between neoliberal economic reforms and the growth of India's fast food industry.**
5. **Evaluate existing regulatory mechanisms governing the fast food industry. What multi-pronged approach could help effectively address health issues posed the growing consumption of processed, packaged, and fast foods.**

(Rituparna Patgiri is an Assistant Professor at the Indian Institute of Technology (IIT), Guwahati. In the second part of this article, the author will examine the legal framework around marriage.)

Polity & Governance

How e-governance reimagines relationship between state, technology, and citizens

The foundations of e-governance in India were laid long before the term came into common parlance in many other countries of the Global South. But how has it evolved from the use of technology as a back-end tool to becoming a deeply embedded digital ecosystem that creates entirely new possibilities for governance and citizen empowerment?

Written by **Shamna Thacham Poyil**

At airports across India, the DigiYatra now whisks passengers past queues with a quick face scan. This shift from counters and files to tap-and-go platforms is more than a matter of convenience. Such a transformation from long queues and an endless trail of paperwork to instant digital services represents not just technological progress but a fundamental shift in the way the Indian state interacts with its citizens.

Prime Minister Narendra Modi at the launch of mobile app 'BHIM'. (Source: PTI Photo)

The evolution of digital governance in India represents one of the most ambitious technological transformations undertaken by any developing nation. India laid the foundation of e-governance long before the term came into common parlance in many other countries of the Global South.

The calibrated intersection of technology and governance has transformed the isolated computerisation efforts undertaken in the 1970s into a comprehensive digital ecosystem that now serves more than 1.4 billion citizens.

The advancement of technology in Indian governance is best understood through four distinct phases from the 1980s to the present, with each phase reflecting how the Indian state has reoriented its relationship with citizens through digital infrastructures.

Technology making bureaucratic process swift

The initial phase, between 1980 and 2000, saw the technology emerging as a supporting interface for the existing governance system of the time. The establishment of the National Informatics Centre (NIC) in 1976 laid the foundation of India's digitisation trajectory, with the modest goal of acquainting the government departments and institutions with computers, which then were a novelty for a large number of Indians.

In its attempt to spearhead "technology-driven solutions" by enhancing communications across various government departments at national, state, and district levels, NIC even established a nationwide satellite-based network called NICNET in 1987. There was a systematic effort to introduce technology as a back-end tool in government offices to enhance administrative efficiency.

The result was first visible in the introduction of the computerised reservation system of Indian Railways, which streamlined a long and unwieldy manual process into a forthright, systematic practice. This success encouraged the Income Tax department to digitize tax records and the Election Commission to move to computerised electoral rolls.

However, these initiatives brought under the aegis of NIC, though revolutionary, were largely invisible to citizens. Just as a supporting actor behind the curtains, technology made the bureaucratic process swift and prompt, but it did not yet change anything about how citizens interacted with the government.

The observable shift began in the 1990s with the wave of economic liberalisation that swept across the country, bringing an increased focus on efficiency and transparency in governance. The e-governance initiatives launched by various state governments became watershed moments and marked the movement of technology from back-office computerisation to front-end service delivery.

Notably, it was the individual state leadership of Andhra Pradesh, Karnataka, Madhya Pradesh, and Kerala that first embraced the potential of technology to directly serve citizens. Projects like e-Seva in Andhra Pradesh, brought in 1999, facilitated the provision of multiple government services through a single window.

Similarly, Gyandoot, launched in Madhya Pradesh in 2000, created rural cyber kiosks for bringing government services to tribal areas. The Bhoomi project, initiated in Karnataka in 2001, digitised land records of farmers, thereby revolutionising property documentation and making governance visible at the local level, even in rural areas with limited infrastructure.

The FRIENDS project in Kerala and Lokvaani in Uttar Pradesh further demonstrated that e-governance would work across India's diverse socio-economic landscape, optimising the ability of digital tools to bridge gaps in service delivery, even if in fragmented ways.

However, these pioneering initiatives also revealed systemic limitations. For instance, many kiosks in the Gyandoot project became non-functional due to poor connectivity and unsustainable revenue models, exemplifying the "pilot project syndrome", where successful demonstrations failed to scale.

Technology as backbone of modern governance

The second phase of India's e-governance journey from 2005-2014 was built on the earlier state-level initiatives, during which technology had evolved from being a mere back-end supporting tool to an active interface between government and citizens, though within the traditional governance framework. With the launch of the National e-governance Plan (NeGP) in 2006, the second phase systemically integrated technology as the core infrastructure for governance.

The establishment of State Wide Area Networks (SWANs) for connectivity, Common Service Centres (CSCs) as rural access points, and State Data Centers (SDCs) for hosting applications created the physical and digital infrastructure necessary to scale e-governance across central, state and integrated services.

A real pivotal moment in India's digital push came with the launch of Aadhaar in 2010, which redefined governance around a verifiable digital identity. By collecting the biometric details of over a billion citizens, it established a unified

identity framework capable of authenticating individuals across a wide range of services.

The Unique Identification Authority of India (UIDAI) not only assigned numbers but also developed an authentication architecture that ensured welfare transfers, banking access, and broader financial inclusion, instituting the backbone for subsequent digital initiatives.

However, Aadhaar's mandatory linkages also raised concerns about privacy, exclusion errors from biometric failures, and the creation of a surveillance architecture. Nevertheless, during this period, technology had become the infrastructure on which modern governance operated.

From public service to platform governance

The third phase from 2015-2019 embedded technology as an ecosystem, characterised by the creation of platforms that didn't just digitise existing services but also created entirely new possibilities for governance and citizen empowerment. The launch of Digital India in 2015 symbolised a philosophical shift: technology was no longer just infrastructure but an interconnected environment where different platforms could seamlessly interact.

Platforms like JAM trinity (Jan Dhan, Aadhaar, Mobile), DigiLocker, and BHIM positioned digital infrastructures as interoperable ecosystems that could deliver welfare, financial inclusion, and documentation seamlessly. The essence of 'platformisation' lay in creating interoperable digital infrastructures that transcended individual services. The India Stack exemplified this approach, where a set of open APIs (Aadhaar authentication, e-KYC, e-Sign, and UPI) transformed into digital rails on which both public and private entities could build.

Seen in this light, UPI's explosive growth – from 0.01 million transactions in 2016 to 18 billion monthly by 2025 – was not just about convenience of payment from the user side. It demonstrated how platform architecture could spawn an entire ecosystem of innovation, from merchant payments to credit delivery.

This platform logic extended across governance domains such as UMANG, which aggregated 1,745 government services not merely for convenience but to create network effects where user data and authentication could flow seamlessly across departments.

Similarly, the Government e-Market's public procurement platform didn't just digitise tenders but created a marketplace dynamic where transparency and competition became embedded in the platform architecture itself. Hence, in this phase, the government was no longer just providing digital services but creating programmable infrastructure that enabled third parties to innovate atop it, making technology the very ecosystem within which modern governance operated.

Dilemma of platform governance

However, 'platformisation' also concentrated unprecedented data power. For instance, Aadhaar's authentication logs had the potential to create detailed citizen profiles, raising various concerns. Moreover, Aadhar's underlying technological sophistication couldn't fix the Direct Benefit Transfer (DBT) exclusions due to authentication failures that left genuine beneficiaries without their much needed welfare access.

The shift from a public service to platform logic, thus, carried a deeper tension: citizens risked being treated less as rights-bearing individuals in governance and more as data-generating users. But how has e-governance evolved further, and what major challenges hinder its effective implementation in enhancing governance efficiency? This will be explored in the second part of this article.

Post read questions

1. **What are the major phases of e-governance evolution in India, and what are the defining characteristics of each phase?**

2. **Discuss the objectives and key components of the National e-Governance Plan (NeGP) launched in 2006.**

3. **How did initiatives such as e-Seva, Bhoomi, and Gyandoot contribute to India's early e-governance experiments?**

4. **e-governance, as a critical tool of governance, has ushered in effectiveness, transparency and accountability in governments. What inadequacies hamper the enhancement of these features?**

5. **e-governance projects have a built-in bias towards technology and back-end integration than user-centric designs. Examine.**

(Shamna Thacham Poyil is a Doctoral Research Scholar in the Department of Political Science, University of Delhi.)

What structural factors hinder effective implementation of e-governance

Transformation of governance through digitisation has helped eliminate traditional forms of exclusion through corruption and discretion. But does techno-centrism in e-governance also risk producing exclusion?

Written by **Shamna Thacham Poyil**

India's e-governance journey evolved through distinct phases (between the late 20th century to around 2019), wherein the use of technology evolved from a back-end tool to becoming a deeply embedded digital ecosystem.

Biometric authentication systems, designed to ensure authenticity and prevent fraud, face challenges when deployed at scale in a country like India where people have multiple and diverse vulnerabilities. (File photo)

The COVID-19 pandemic then catalyzed a paradigmatic shift, ushering in the fourth phase in which technology has transitioned from being a service-delivery tool to constituting the epistemic framework shaping both policy objectives and implementation modalities. This transformation manifests across three interconnected dimensions.

Evolving role of technology in governance

First, technology's role expanded to integrate health surveillance and public safety systems. Platforms such as Aarogya Setu and CoWIN marked a shift to large-scale digital public-health infrastructure, while Smart City command centers now integrate AI-driven analytics for traffic optimisation and resource deployment.

Second, technology became fundamental to targeted welfare delivery more than ever. Systems like the Aadhaar enabled Public Distribution System (AePDS) employ biometric authentication, and the Ayushman Bharat Digital Mission has created a comprehensive digital health ecosystem.

Third, there was a shift towards anticipatory governance through data analytics. Platforms like the National Data Analytics Platform exemplify how real-time monitoring pre-emptively shapes policy choices.

Unlike earlier phases that created enabling infrastructure, the current phase witnesses a growing role of technology as it anchors the very framework of legitimate governance. Digitisation has become a precondition for policy formulation and implementation. While this evolution has eliminated traditional forms of exclusion through corruption and discretion, it has simultaneously created new architectures of marginalisation.

Three structural challenges particularly hinder the effective implementation of this fourth-phase e-governance vision.

Digital literacy and infrastructure deficit

One of the significant barriers to inclusive e-governance is digital literacy, as many individuals, especially in rural areas and among older populations, lack the skills to use e-governance services effectively. Only 38 per cent of Indian households are digitally literate, with 25 per cent in rural areas compared to 61 per cent in urban areas. Digital literacy among agricultural casual workers, who form the largest segment of the informal workforce, stands at just 13 per cent, compared to 53 per cent for non-agricultural wage workers.

In view of India's linguistic diversity, providing e-governance services in multiple regional languages remains resource-intensive and technically challenging, yet 98 per cent of internet users access content in regional languages. Many areas still lack reliable internet access and stable power supply, which are essential for e-governance platforms to function smoothly.

The e-Shram portal, which is distinctively the world's largest database of informal labour, exemplifies how technocratic, top-down design processes that prioritise backend data aggregation over user experience can sometimes overlook accessibility challenges.

While 30.48 crore informal workers are registered, approximately 13.5 crore remain unaccounted for on the platform. The platform required smartphones, stable internet, functional bank accounts, and digital navigation skills, but there were few participatory mechanisms to understand users' lived contexts or gather feedback during design.

Bureaucratic resistance, fear of job displacement, and lack of awareness additionally affect the adoption of many such e-governance initiatives. These challenges show how even well-intended e-governance schemes often overlook the structural constraints at the grassroot level.

Systemic factors requiring attention

India's e-governance initiatives have pursued ambitious goals – reducing leakages through technological authentication and ensuring welfare benefits reach intended beneficiaries efficiently. The vision of using biometric systems to prevent leakage in welfare delivery and creating integrated digital platforms for seamless service access reflects well-intentioned efforts to modernise governance. However, implementation experiences reveal structural gaps that require addressing to fully realise these objectives.

Biometric authentication systems, designed to ensure authenticity and prevent fraud, face challenges when deployed at scale in a country like India where people have multiple and diverse vulnerabilities. For instance, high rates of verification failure have been recorded in states, like 49 per cent in Jharkhand and 37 per cent in Rajasthan, due to factors like worn fingerprints among labourers or changed iris patterns among elderly citizens.

These authentication challenges emerge from gaps between technological design assumptions and ground realities, and affect eligible beneficiaries' access to social welfare schemes.

In addition, citizens facing authentication failures often end up visiting centres multiple times to get their data corrected, while these authentication platforms do not have inbuilt accountability systems or grievance mechanisms for deficient biometric capture. Hence, strengthening alternative authentication pathways would help balance technological efficiency with human variability such that the system becomes more user-centric.

Making e-governance more citizen-centric

Despite sustained efforts towards digital integration, coordination remains difficult because over 31 central e-governance schemes operate independently, with limited interoperability and overlapping administrative mandates.

These institutional arrangements can require citizens to navigate multiple platforms with different interfaces. When authentication fails, the reasons are not always clearly communicated to citizens, and alternative pathways may need to be strengthened.

Here techno-centrism in e-governance risks producing exclusions by privileging machine accuracy over human variability. Developing robust alternative mechanisms would ensure that technological requirements do not inadvertently create barriers to accessing entitled welfare benefits, particularly for vulnerable populations whose biometric patterns may naturally vary or who have less capacity and awareness to contest these issues.

Post read questions

1. **e-governance projects have a built-in bias towards technology and back-end integration than user-centric designs. Examine.**
2. **Reforming the government delivery system through the Direct Benefit Transfer Scheme is a progressive step, but it has its limitations too. Comment.**
3. **e-governance, as a critical tool of governance, has ushered in effectiveness, transparency and accountability in governments. What inadequacies hamper the enhancement of these features?**
4. **Transformation of governance through digitisation has helped eliminate traditional forms of exclusion through corruption and discretion, but it has simultaneously created new architectures of marginalisation. Comment.**

(Shamna Thacham Poyil is a Doctoral Research Scholar in the Department of Political Science, University of Delhi.)

International Relations

How realism, not liberal optimism, now explains the UN's predicament

Realism posits that international institutions live only at the behest of the leading power. Does the weakening of the UN, both politically and financially, suggest the withering away of the US-centric world order?

Written by **Ajay Darshan Behera**

The UN's inability to stop wars or handle crises has rekindled old scepticism. Is it still relevant? Can it be reformed? (Source: AP)

The United Nations General Assembly's 80th session played out in an atmosphere of crisis. The institution that symbolised a cooperative world order now struggles with financial collapse and political irrelevance. Its failure to halt two ongoing wars in Ukraine and Gaza exposed what Secretary-General António Guterres called "a dangerous erosion of trust in multilateralism".

Guterres set the tone in his opening remarks. "We are facing a world of cascading crises," he warned, calling on countries to rebuild trust in collective efforts. But his appeal met a divided audience. The official theme, *Better Together for Peace, Development and Human Rights*, was less a call to action than a cry for help.

The mood in New York was sombre. One world leader after another acknowledged that the post-1945 international system no longer holds. From Brazil's President Lula da Silva to Finland's President Alexander Stubb, the message was the same – the UN is still needed, but it can no longer deliver what it promises.

The financial crisis and institutional paralysis

The UN's financial collapse is the single most overt indicator of its decline. The Trump administration has blocked almost all US contributions, leaving the organisation strapped for cash and forcing Guterres to reduce UN staff by a fifth and relocate hundreds of jobs to less expensive offices. Key agencies such as the World Food Programme have had to reduce operations, jeopardising relief operations in Gaza, Sudan and Ethiopia.

This crisis exposes an old paradox – the UN is most dependent on the member least willing to support it. Under President Donald Trump, the US has boycotted meetings on climate and development, refused even to pay obligatory dues. China, now the second-largest contributor, has acted cautiously, delaying payments and exploiting a vacuum to seek more influence, but without filling the shortfall. The upshot is paralysis. An institution that is too weak to lead and also too deeply embedded in global governance to be abandoned.

There is more to the issue than money; it is also structural. Realist scholars have long argued that international institutions live only at the behest of the leading power. When that power retreats or turns inwards, the system starts to collapse. The shift from a US-centric world order to one with multiple power centres has fundamentally altered the foundation upon which the UN was established.

Multipolarity that shatters consensus of the 1990s

The "age of multilateralism" that continued to operate even under US unipolarity post-1991 is over. Realism, not liberal optimism, now explains the UN's predicament. Institutions reflect the balance of power, and as power spreads across multiple centres — Washington, Beijing, Brussels, and the Global South, cooperation becomes more difficult.

The Security Council, which has remained the same since 1971, is evidence of this stalemate. Calls for reform — to enlarge its membership and restrain the veto power of the five permanent members of the UN Security Council — echoed throughout the General Assembly's 80th session. But of course, everyone knows nothing will change, because those who would have to approve it are also the ones who benefit from the status quo.

The multipolarity of the present has shattered the consensus of the 1990s. Russia and China are blocking the West over Ukraine. The US vetoes resolutions on Gaza. Middle powers like India and Brazil call for change but tread cautiously. The UN is, then, stuck in the middle, between the Realist logic of power balancing and Liberal belief that institutions can bind it. But for now, it is Realism that has the upper hand.

Wars in Gaza and Ukraine — and beyond

It was the wars in Gaza and Ukraine that set UNGA80's tone and revealed anew the UN's inability to act. President Trump's speech was blunt and confrontational. He said the UN was offering "empty words" and derided its failures in peacekeeping, and claimed that "the world's problems are being solved outside these walls". Ukrainian President Volodymyr Zelensky and several European leaders echoed a similar frustration, denouncing it as an organisation that "issues statements but takes no action".

The Gaza crisis, meanwhile, yielded a symbolic breakthrough and not much more. France and Saudi Arabia convened a conference that reiterated the two-state idea and led to the New York Declaration. It had more than 150 countries backing it, and some — including the UK, Canada and Australia — recognised the State of Palestine. But neither Israel nor the US were in attendance at the gathering, and Prime Minister Netanyahu rejected a Palestinian state. For Palestinians, it was a moral victory with no tangible outcomes. Whether President Trump's 20-point peace plan will give the Palestinians a state and security is still to be seen.

Yet the General Assembly was not entirely subsumed by war. On its sidelines, the Climate Summit drew representatives from 121 countries. China has pledged to reduce its emissions by 2025 and cut them by 7 to 10 per cent, but the mood was cautious. Many have warned that the Paris Agreement was losing momentum in the absence of US commitment.

Other major concerns discussed were artificial intelligence, nuclear proliferation and the debt crisis in the developing countries. A women-led initiative on disarmament endeavoured to link nuclear risks with climate change and technology governance — an effort to bring some coherence to global policymaking.

In theory, such efforts are representative of what constructivist scholars emphasise — that institutions continue to matter as spaces for the shaping of ideas and norms. But in practice, as Realists are quick to note, real power lies with those who own the resources and the arms.

India's voice: Reform and responsibility

There was a measured assertiveness in what India's External Affairs Minister S. Jaishankar said at the UNGA80. His message was clear – if the UN wanted to restore credibility, meaningful reform was necessary, and the Global South deserved a stronger voice in shaping global decisions.

Without naming Pakistan, he criticised selective approaches to terrorism, saying, "The world cannot fight terrorism selectively. Those who shelter, fund, and justify it must be held accountable." The remark reflected India's growing frustration with the UN's failure to act on its own counterterrorism resolutions.

Jaishankar also reiterated India's call to expand the Security Council, proposing permanent seats for Asia, Africa, and Latin America. "The world of 2025 cannot be governed by the institutions of 1945," he said, echoing a sentiment shared by Brazil and Nigeria.

India's position at this year's session balanced realism with principle. It urged that global institutions should mirror today's power realities while maintaining faith in the idea of collective action. India's growing diplomatic role — through the G20, BRICS, and regional forums — strengthens its argument. It now presents itself as a bridge between the developed and developing worlds, a role that combines moral purpose with strategic interest.

From disarray to reinvention

The UN's inability to stop wars or handle crises has rekindled old scepticism. Is it still relevant? Can it be reformed? Or has it devolved into a forum for speeches rather than solutions? Theory provides explanation, not answers:

Realism explains why the UN struggles to enforce peace — power, not principle, often decides outcomes.

Liberal institutionalism makes the case for its survival — even flawed cooperation is better than anarchy.

Constructivism reminds us that symbols still matter — meeting, speaking, contesting keep alive the idea of a shared world, even when practice falls short.

This, then, is the UN's enduring paradox. It is both indispensable and ineffective. It often fails, yet the world cannot do without it. The UN may have lost its relevance, but it is not yet entirely irrelevant. It remains the only forum where every state has a voice and where diplomacy endures even when power politics prevail. For smaller states, it is still a shield against irrelevance.

The 80th anniversary of the UN was less a celebration than a reckoning. The body created in 1945 to prevent another world war now struggles to remain solvent and relevant. Its crisis is both financial and moral — a shortfall of funds and a collapse of shared purpose. Realists may predict its decline, but the persistence of global interdependence ensures that even weakened institutions matter.

As Secretary-General Guterres said in his closing remarks, "Our task is not to restore a lost order, but to imagine cooperation anew." The challenge for the UN's ninth decade is to survive not through nostalgia for 1945 but by rethinking what multilateralism means in a divided world.

The UN may be weakened, but history suggests it isn't withering away. Its continued existence rests on whether the great powers still believe, or can be convinced to believe, that there are some problems which cannot be solved by force or wealth alone. And so for now, the UN remains what it has long been — an imperfect but indispensable mirror of the world it represents, reflecting its divisions and a continuous hope that diplomacy still matters.

Post read questions

1. **At the UNGA80, External Affairs Minister S. Jaishankar asserted that restoring the UN's credibility hinges on meaningful reform and greater representation for the Global South. Assess this stance in light of India's growing diplomatic role.**

2. **The reform process in the UN remains unresolved because of the delicate imbalance of East and West and the entanglement of the US vs. Russo-Chinese alliance. Examine and critically evaluate the East-West policy confrontations in this regard.**

3. **The shift from a US-centric world order to one with multiple power centres has fundamentally altered the foundation upon which the UN was established. Comment.**

4. **Realist scholars have long argued that international institutions live only at the behest of the leading power. When that power retreats or turns inwards, the system starts to collapse. How does this reflect on the UN's predicament?**

5. **Do you think that the challenge for the UN in its ninth decade is to survive not through nostalgia for 1945 but by rethinking what multilateralism means in a divided world?**

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Is the waning of globalisation giving way to sovereign nationalism?

The financialisation of the global economy in the 1970s gave a significant impetus to globalisation. Paradoxically, this very impetus has also contributed to a growing backlash against it over the last decade, triggering debates whether the post-Cold War world is becoming a site of sovereign nationalism. How did this reversal unfold?

Written by **Amir Ali**

US President Donald Trump's tariffs have renewed debates about growing protectionism, the decline of globalisation, and, perhaps most significantly, the resurgence of nation-states. These contemporary shifts are closely anchored in the perceived excesses and failures of globalisation.

US President Donald Trump's tariffs have renewed debates about the resurgence of nation-states.(AP Photo)

The process of globalisation is as old as the development of capitalism and its extension into parts of the world that became peripheral colonies tied to their metropolitan capitalist centres in Northwestern Europe.

However, the pace of globalisation was especially accelerated throughout the 20th century, especially towards its end, with the financialisation of the global economy in the 1970s. This financialisation imparted a major impetus to globalisation – an impetus that, paradoxically, has contributed to a growing backlash against it over the last decade.

Financial impetus to globalisation and India's economic reforms

This financial impetus to globalisation was in the form of enhanced flows of trade and investment across the borders of nation-states. However, when it comes to the movement of labour and migration, there can be noticed a contrast in terms of resistance to such flows.

As far as the enhanced flow of trade and investment was concerned, this was evident in the lowering of tariff barriers and the vast increase in cross-border financial transactions. Meanwhile, the revolution in communications technology through satellite links and the internet further accelerated the process of globalisation.

The sheer magnitude of these flows led many people to believe that nation-states, with their well-defined boundaries, would become obsolete. The fall of the Berlin Wall and the end of the Cold War in the late 1980s and early 1990s further fuelled this belief.

An indicator of this confidence was found in a popular book by the *New York Times* columnist Thomas Friedman, *The Lexus and the Olive Tree* (1999), which seemed to interpret globalisation as an irreversible and unstoppable force.

At the same time, the 1991 economic reforms under Prime Minister PV Narasimha Rao, with Manmohan Singh as the Finance Minister, represented India's adoption of and adaptation to globalisation. These reforms brought an end to the infamous 'license permit raj' that tended to stifle entrepreneurship. Rates of direct taxation were lowered as they were perceived to act as a disincentive to individual initiative.

The economic reforms entailed a combination of liberalisation, privatisation, and globalisation, summed up by the acronym LPG. As the reforms continued throughout the decade of the 1990s and into the early and mid-2000s, the Indian economy gained remarkable momentum and achieved growth rates close to 10 per cent.

The 2008 financial crisis sounded the alarm on globalisation

But the troubling signs for globalisation became evident with the 2008 financial crisis. It all began with the sub-prime mortgage crisis in the US, when banks started giving housing loans to borrowers who lacked the capacity to repay them. The adverse effects rapidly spread to the Eurozone. The 2008 financial crisis was not just a failure of the banking system but also of the unregulated free market thinking closely linked to globalisation.

Responses to these failures – from governments of major countries in North America and Western Europe, as well as those of international institutions such as the International Monetary Fund (IMF), the World Bank, and the European Central Bank (ECB) – tended to be on the lines of adjusting the distortions of the free market, rather than questioning the free market model itself. In other words, the solution to market failure was more free markets. This approach was captured in the famous rationale behind bailing out banks – they were 'too big to fail'.

One of the major fallouts of the accelerated globalisation since the 1980s was the deindustrialisation of hitherto industrialised areas in many parts of countries like the US and the UK. Many of the manufacturing jobs that were created by an earlier phase of industrialisation vanished as deindustrialisation set in. In this way, deindustrialisation appears to be a negative side-effect of globalisation in the first world.

This led to resentment among the working class of advanced capitalist economies of the West. The unemployment accompanying globalisation was seen as denying the working class the very essential activity that defines the class itself – work and employment. Jobs that have been created to replace these earlier manufacturing jobs are often far more precarious and contractual, forming part of what is called the 'gig economy', marked by long working hours and lack of social security.

The Brexit referendum in the UK in 2016 and the election of Trump as the President of the US in the same year are seen as manifestations of the discontent against globalisation and its perceived failures.

Globalisation's fallout and growing assertion of nationalism

What we are witnessing today is greater trade protectionism, especially in the world's largest economy, the US, which has recently slapped 50 per cent tariffs against Indian goods. Protectionism represents a reaction against globalisation, often in the form of high tariff barriers. This is just one instance of the return with strength and vengeance of the nation-state.

The reaction to globalisation has also manifested as a reassertion of the sovereignty of the nation-state. During the prolonged Brexit process – Britain's withdrawal from the European Union, considered to be the largest and most successful trading block created in the 20th century – we could see reassertion of the UK's sovereignty, captured in the slogan, 'Let's take back control'.

The revival and reassertion of the nation-state's sovereignty in the wake of the decline and rolling back of globalisation has also taken the form of opposition to refugees and economic migrants. There is an attempt to close and tightly regulate borders to prevent the infiltration of foreigners, who take away jobs and other opportunities from citizens who are said to have first claim over them.

Hence, Trump has talked about building a wall across the US-Mexico border. In Europe, immigration is such a major issue that it tends to dominate elections. Overall, the revolt against globalisation can be seen in the growing assertion of nationalism across nation-states – an assertion that is seen as an antidote to the perceived failures of globalisation.

Post read questions

1. **With the waning of globalisation, the post-Cold War world is becoming a site of sovereign nationalism. Elucidate.**

2. **The financialisation of the global economy in the 1970s imparted a major impetus to globalisation – an impetus that, paradoxically, has contributed to a growing backlash against it over the last decade. Evaluate.**

3. **Post-liberalisation, what structural changes enabled the Indian economy to achieve near double-digit growth rates?**

4. **Has globalisation led to the reduction of employment in the formal sector of the Indian economy? Do you see increased informalisation as detrimental to the development of the country?**

5. **The 2008 financial crisis was not just a failure of the banking system but also of the unregulated free market thinking closely linked to globalisation. Comment.**

(Amir Ali is an Assistant Professor at the Centre for Political Studies, Jawaharlal Nehru University, New Delhi)

Economy

How to understand development in this this era of uncertainties

The issue of development has increasingly become a shared concern in this era of uncertainties marked by rising tariffs, trade wars, and geopolitical instability. But how is the very notion of development best understood?

Written by **Ritwika Patgiri**

Prime Minister Narendra Modi virtually attends the 22nd ASEAN-India Summit 2025, in Kuala Lumpur on Sunday. (@MEAIndia X/ANI Photo)

In this era of uncertainties, the India-ASEAN partnership is "emerging as a robust foundation for global stability and development", said Prime Minister Narendra Modi during the 22nd ASEAN-India Summit.

The issue of development has increasingly become a shared concern due to a number of factors, such as trade war, rising tariffs, and geopolitical instability. This context invites a deeper inquiry into the very idea of development: does it merely signify economic growth, is it an evolutionary process of social change, or is it best understood through different development models? Let's explore.

What is development?

In the 1950s and 60s, the term "development" referred to economic growth, understood primarily in quantitative terms. Economist Walt Rostow viewed development as an evolutionary process of social change, where regions progress through five distinct "stages of development".

Economist Simon Kuznets, on the other hand, hypothesised an inverted U-shaped relationship between inequality and economic growth. He posited that as countries develop, inequality initially increases but begins to reduce after a certain point. In this view, as a country transitions from an agrarian to an industrial economy, inequality rises with urban jobs offering higher wages and leading to rural-urban biases.

For development economist Michael Lipton, such development policies with "urban bias" disproportionately favour the urban middle class while neglecting the rural poor. On the other hand, feminist economists like Claudia Goldin suggest that women's labour force participation follows a U-shaped curve historically – being higher in pre-industrial agrarian societies, and declining during early industrialisation as it created more jobs for men.

The 1987 Brundtland Report introduced a key concept of "sustainable development", referring to growth "that meets

the present needs without compromising the needs of the future". The concept emerged in response to concerns that the rate of economic growth was unsustainable as it was depleting arable land, water, and other natural resources.

Thus, the concept of development has many facets – economic, social, regional, class, gender, etc.

Definition of development model

A development model can be defined as a framework that outlines the stages or phases of growth. But there is no single model of development that countries have followed.

For example, capitalist development in countries like England in the 1840s was characterised by rapid industrialisation that led to mass urbanisation, rise in factory employment, introduction of new machinery and steam power, and an increase in industrial production. This process generated substantial profits for capitalists, and facilitated capital accumulation. But wages for workers were kept low.

In the 1960s, the East Asian Tigers of Singapore, Hong Kong, Taiwan, and South Korea saw rapid industrialisation and economic growth, with export-oriented policies and significant government intervention in promoting development.

India, however, followed a development model of mixed economy through its Five-Year Plans. The economic reforms in the early 1990s saw a shift to market-oriented economy, privatisation, and competition.

State's role in developing economies

After World War II and the establishment of the Bretton Woods system, the newly independent countries of Asia, Africa, and Latin America faced the challenge of weak industrial foundations. These economies were dependent on the exports of primary commodities or agricultural products.

Empirical evidence suggests that, over the long run, the price of primary commodities declines relative to that of manufactured goods, thereby deteriorating the terms of trade – defined as the ratio of export prices to import prices – of these countries.

In development studies, the Prebisch-Singer hypothesis posits that the terms of trade move against the developing countries, prompting them to export large amounts of primary products to import manufactured goods from industrially developed countries. Hence, the role of the state became significant in the development policies of the newly independent countries.

Similarly, the infant industry argument suggests that temporary protectionist policies, such as tariffs and subsidies, are important in protecting new domestic industries from foreign competition. The post-colonial state-led development model, thus, placed the state at the core of nation-building through intervention, planning, protection, and the expansion of the public sector.

However, developing economies often experience market failures, inaccurate information, weak competitive structures, and incomplete markets (that are either underdeveloped or do not exist). From the 1980s onwards, the Bretton Woods institutions advanced a new policy framework – known as the Washington Consensus – which prescribed a set of market-oriented reforms for these developing countries. These policies focused on trade liberalisation, privatisation, and financial liberalisation.

Centralised and non-centralised development models

Two other concepts that are also important in understanding development models are centralised and non-centralised approaches. In a centralised model, decision-making power, resource allocation, and planning rest with the central government.

India's Five-Year Plans, China's centrally-planned economy, and the Soviet Union's Five-Year Plans help us understand how centralised models operate. For instance, China's Sixth Five-Year Plan (1981-1985), under Deng Xiaoping, established Special Economic Zones (SEZs) to promote trade, attract foreign investment, and achieve an average annual growth rate of 5 per cent in industrial and agricultural products.

Interestingly, the centralised model was also effective in China in diffusing industrial and agricultural technologies. In contrast, decentralised models of development shift decision-making, planning, and resource allocation to local governments.

Nevertheless, many developing countries over the past four decades introduced reforms to decentralise development planning. China's healthcare reforms during the Cultural Revolution present an earlier example of decentralisation, when urban hospitals and medical schools established clinics and centres in rural communes. Mobile medical teams and "barefoot doctors", familiar with local conditions, provided grassroots healthcare, medical education, and treatment for common illnesses.

India's three-tier system of local self-governance

The 73rd and 74th Constitutional Amendments in 1992 also provide a good example of decentralisation reforms, as it conferred the constitutional status upon rural local bodies (panchayats) and urban local bodies (municipalities). The three-tier system of local self-governance at the village, intermediate, and district levels through the establishment of Panchayati Raj Institutions (PRI), these amendments sought to decentralise decision-making, promote local participation, and strengthen grassroot democracy.

Such models of development and governance encourage transparency, community ownership, as well as inclusivity like like greater representation of women in the decision-making processes.

However, structural challenges often persist even within decentralised models of governance and development. It has also been argued that local governments, driven by growth and revenue incentives, may distort markets for self-interest and subsidise specific industries to attract investment or expropriate land for industrial projects. In such cases, local autonomy may undermine the national integration of markets.

But contemporary development models recognise that development is a complex process. For instance, India's development agenda aimed at achieving Sustainable Development Goals (SDGs) reflects a blend of both centralised and decentralised approaches.

The National Nutrition Mission, or the Poshan Abhiyaan – aligned with SDG 3 – good health and well-being – launched in 2018, seeks to improve nutritional outcomes for children, pregnant women, and lactating mothers by reducing malnutrition, stunting, and anemia. The programme was later merged with the Saksham Anganwadi and Poshan 2.0 initiative to create an integrated nutrition support programme.

While Poshan 2.0 is a centrally-sponsored programme, its implementation is carried out through state governments. The key drivers of the initiative at the grassroots levels are the Anganwadi or community-based, predominantly female frontline workers who deliver services focused on health, nutrition, and early childhood education. Despite being

underpaid, these workers have emerged as the backbone of child and women's healthcare in rural India.

Reimagining development

Contemporary development models, thus, integrate centralised policy-making with decentralised execution. However, decision-making and problem-solving responsibilities often remain detached from the source of local information and execution.

For instance, the decision-making apparatus to address the Covid-19 in India was considerably centralised, even though the frontline health workers played a crucial role during the pandemic. The procurement and distribution of vaccines were largely centralised, with key decisions, such as the identification of priority groups and the requirement of nationwide registration, taken at the central level.

At the same time, local health workers carried out door-to-door vaccination drives in remote areas, like Kargil. While the execution remained decentralised, mandatory registration through the CoWIN portal excluded many citizens lacking digital access or even literacy. It revealed a gap between centralised designs and local realities.

Decentralisation may help reduce these structural barriers by granting local governments greater decision-making autonomy and resources to tailor policies to local needs. However, the effectiveness of such policies depends on the capacity of local institutions, and the alignment of local interests with national development goals.

While the centralised decision-making and local execution remain an important part of contemporary development models, it is equally crucial to strengthen local institutional autonomy in the decision-making processes, as well as budgetary control. Furthermore, local capacity-building through training and infrastructure development can also provide an efficient way of delivering and monitoring development programmes.

Post read questions

1. **In contemporary development models, decision-making and problem-solving responsibilities are not located close to the source of information and execution defeating the objectives of development." Critically evaluate.**
2. **Explain a country's transition from an agrarian economy to an industrial economy through Kuznets Curve.**
3. **Bretton Woods institutions advanced a new policy framework – known as the Washington Consensus – which prescribed a set of market-oriented reforms for developing countries, focussing on trade liberalisation, privatisation, and financial liberalisation. How did this shape the development trajectories of the Global South?**
4. **Decentralisation can help reduce structural barriers by granting local governments greater decision-making autonomy and resources to tailor policies to local needs. But how could the effectiveness of such policies be ensured?**

(Ritwika Patgiri is a doctoral candidate at the Faculty of Economics, South Asian University.)

Trickle-down economics and implications for development and displacement

The theory of "trickle down" of wealth to the poor underlies policies aimed at boosting business investment through tax cuts, deregulation, subsidies, etc. But does the trickle-down economic approach overlook the social costs, particularly the displacement of vulnerable communities?

Written by **Ritwika Patgiri**

The economics of "trickle-down growth" suggests that rapid economic growth automatically brings benefits to all sections of society, including the most vulnerable and deprived groups. The theory of "trickle down" of wealth to the poor underlies policies aimed at boosting business investment through tax breaks and cuts, deregulation, subsidies, etc. This is done with the expectation that such measures will eventually lead to a long-term increase in output, employment generation, and increased consumer spending.

Why both displacement and rehabilitation have become a major part of the broader development narrative, largely shaped by the trickle-down approach to growth. (Source: AP)

Proponents of trickle-down economics believe that more investment in the corporate sector means more factories, and, as a result, more employment opportunities. Many economists also argue that the rise in economic growth rates is associated with a decline in poverty.

However, after the 1970s, it was seen that despite high economic growth, hundreds of millions of people in the developing countries remained in abject poverty. It underscored the need for development policies that are more targeted towards employment creation, better distribution of resources, and reduction of poverty.

Economic growth and poverty reduction

In India, the trickle-down economic approach in recent years is evident in its policies that prioritise corporate incentives over welfare spending. For instance, the government has reduced spending on welfare programmes like:

— Nutritional social assistance programme.

— School mid-day meal programme.

— Price stabilization fund scheme.

— Liquified petroleum gas (LPG) direct benefit transfer.

— Skill development scheme.

— Pradhan Mantri Awas Yojana.

— Schemes targeted at farmers like interest-subsidy on short-term credit, fertilizer subsidies, and procurement of food grains.

However, empirical evidence suggests that a reduction in corporate taxes does not create desired corporate investment. Rather, such tax reductions often lead to widening income as well as consumption inequalities. Moreover, it has also been pointed out that the population belonging to the most socially and economically disadvantaged groups, like Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs), minority groups, women, and children, have benefited the least from high economic growth.

Expropriation of natural resources

Another facet of such trickle-down growth policies is "land grabbing". In this context, the term "land grab" refers to the expropriation of natural resources, including land and forest, characterised by various forms of property rights including de jure ownership and de facto possession. In India, land grabbing is often accompanied by displacement and land alienation.

Historically, the Nehruvian model of development, with its focus on modernisation, large-scale infrastructure, and institutional transformation, has created a process of "development-induced displacement", especially in the tribal belt of India. The Indian State has pursued numerous development-oriented projects since its independence. These include irrigation and power projects, industrial projects, mining projects, forest and wildlife conservation projects, etc. Such projects displace the local indigenous people from resource-rich areas.

For instance, P. Sainath in his book, Everybody Loves a Good Drought, cited that 1 in every 10 Indian tribals is a displaced person. Moreover, over 40 per cent of people displaced by development projects are tribals, despite constituting only around 8.6 per cent of India's population.

The case of Jharkhand

The case of Jharkhand illustrates the problem. Around 26 per cent of the state's population belongs to tribal communities. The state is also rich in key minerals like coal, bauxite, iron ore, copper ore, gold ore, limestone, and graphite.

Coal mines are located in 12 out of its total 24 districts, and more than 75,000 hectares of land have been acquired for coal mining alone. Private companies have been allocated several of these coal blocks, while bauxite and iron ore mining remain equally intensive. The development of such mining projects goes hand-in-hand with the displacement of the local people.

The only form of compensation provided to displaced people is largely monetary, which is calculated on the basis of the market value of the land at the time the government declares its intent to acquire it, rather than at the time of actual acquisition. But this monetary compensation is often not enough, as it does not take into account the loss of identity, natural resources, forests, and other non-material things.

Moreover, displacement also leads to homelessness, joblessness, food insecurity, the loss of common property, social disintegration, and increased morbidity and mortality. Further, the factories and the employment opportunities generated by such projects often exclude the very people who are displaced by them.

Special Economic Zones

The Special Economic Zone (SEZ) Act of 2005, enacted by the central government, is another case in point. The SEZs constitute economic enclaves with minimal taxes, tariffs, and regulations in order to promote exports, attract Foreign Direct Investment (FDI), generate employment, and develop better infrastructure.

Both Indian as well as foreign multinationals have made financial investments in the SEZs, while the State has transferred large tracts of land and mineral rights to them in return. Land was thus allotted for industrial purposes, building of residential complexes, shopping malls, hotels, and golf courses.

However, the displacement and dispossession of people who previously lived on these lands is a flip side of this development narrative. The Land Acquisition Act of 1894 served as an important instrument in this process, granting the state the legal power to acquire private land for public purposes, while largely disregarding personal grievances or objections.

In 2013, the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement Act sought to address this issue. But despite its progressive intent, the Act faces issues such as weak implementation, inadequate rehabilitation and livelihood support, poor land records, dilution through state amendments, exclusion of tribal and women's rights, and the lack of comprehensive land-use planning.

Need to strengthen welfare policy implementation

Moreover, India's rehabilitation policies have also been criticised for the absence of protection for people who have been displaced before. The 2013 Act specifies that previously displaced people should either not be displaced again or should be awarded double compensation. However, data on displacement and rehabilitation across India show that displaced people are very rarely rehabilitated or resettled, leading to the migration of the indigenous people to other parts of the country in search of jobs.

Thus, both displacement and rehabilitation have become a major part of the broader development narrative, largely shaped by the trickle-down approach to growth. The displacement of indigenous and tribal groups for development projects may or may not benefit the affected people, with studies pointing out that they often do not.

The Scheduled Tribes in India constitute a higher proportion among the rural poor and the agricultural labourers. Health and education indicators also highlight their vulnerabilities. The government has introduced several schemes and policies for improving the welfare of tribal communities across health, education, and other development sectors. However, scholars, like Virginius Xaxa, have argued that these policies and schemes remain "alien" to the communities.

The absence of support mechanisms and guidance makes this largely ineffective. Consequently, while displacement and rehabilitation of marginalised communities remain important aspects of India's growth story, inaccessible and poorly implemented welfare measures further exacerbate the problems faced by marginalised communities.

Post read questions

1. **Does tribal development in India centre around two axes, those of displacement and of rehabilitation? Give your opinion.**

2. **Examine how the model of "trickle-down growth" has contributed to the displacement and dispossession of tribal communities in India.**

3. **To what extent has the Nehruvian model of development shaped the patterns of "development-induced displacement" among India's indigenous populations?**

4. **Discuss how Special Economic Zones (SEZs) have transformed the nature of land ownership and livelihoods among tribal communities in India.**

5. **How have mining and industrial projects in resource-rich states like Jharkhand contributed to both economic growth and social dislocation?**

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Science & Technology

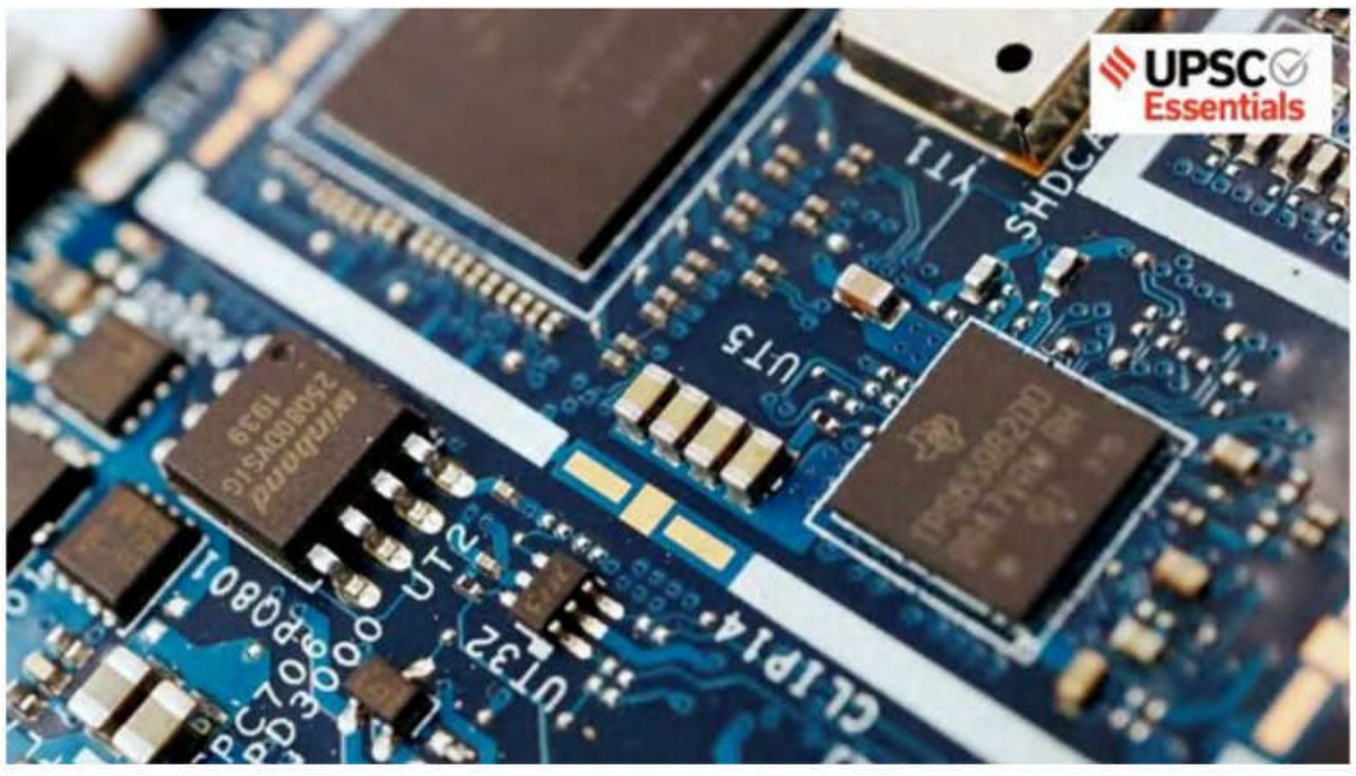
Why Vikram 3201 marks a turning point in India's quest for technological self-reliance

The Vikram Microprocessor bolsters the objective of Atmanirbhar Bharat by seeking to reduce the dependence on foreign technologies. Despite ambitious policies and vision for semiconductors, several hurdles remain. What challenges does India need to overcome to position itself as a global player in chip manufacturing?

Written by **Renuka**

Just a month after the unveiling of India's first fully indigenous microprocessor – a type of semiconductor chip called Vikram 3201 – a spat has erupted over the setting up of the semiconductor facilities in Assam and Gujarat instead of Karnataka.

Notwithstanding the feud, the first "Made-in-India" chip marks a significant technological breakthrough, with Prime Minister Narendra Modi asserting that "the day is not far when India's smallest chip will drive the biggest change in the world".



Semiconductor chips are seen on a circuit board of a computer. (Photo: Reuters)

Developed by the semiconductor laboratory of the Indian Space Research Organisation (ISRO), the Vikram Microprocessor stands as a symbol of India's preparedness to transition from a global consumer of advanced technologies to a credible producer of the same. It bolsters the country's national objective of Atmanirbhar Bharat by reducing dependence on foreign technologies.

India is making strides towards joining the global semiconductor chip revolution. Between 2023 and 2025, 10 projects of more than 1.6 lakh crore were approved in six states, signifying India's entry into high-value semiconductor manufacturing.

In 2024, the global sales of semiconductors amounted to $630 billion, while India's consumption stood at $52 billion, which is expected to cross $100 billion by 2030. However, India's domestic manufacturing currently meets only about 10 per cent of its total requirement, with the remaining demands met by imports. It underscores the need for having a comprehensive strategy that focuses on long-term capacity development.

Semiconductors as building blocks of modern technologies

Semiconductors are made of materials such as silicon and possess a degree of electrical conductivity between that of a conductor and an insulator. The electrical conductivity can be controlled and varied over a wide range by controlling temperature. This flexibility allows the semiconductors to perform specific functions, making them fundamental to the

modern electronic devices.

They are the basic building blocks in an array of technologies, from smartphones, laptops, computers, smart devices, to electric cars, systems of renewable energy and military equipment. They play a crucial part in communication, data centres, and global connectivity. Their ability to integrate complex functions within a single chip has made technologies like personalised healthcare, smart manufacturing and autonomous vehicles a reality. The constant effort to create faster and more efficient semiconductor devices has driven the growth of the global chip industry and opened new possibilities for technology.

However, the worldwide supply chain for semiconductors remains highly concentrated. While Japan and the Netherlands lead in semiconductor equipment manufacturing, countries like Taiwan, South Korea, and the US dominate chip fabrication – transforming raw materials into tiny chips.

The fragility of this supply system became increasingly clear during the COVID-19 pandemic, when global chip shortages disrupted production in a number of industries. Hence, semiconductors have become not only technological essentials but also strategic assets.

Semiconductor mission for a robust tech ecosystem

Recognising the significance of semiconductors in achieving technological self-reliance and economic growth, India launched the India Semiconductor Mission (ISM) in 2021 with a financial outlay of Rs 76,000 crore. The mission aimed to strengthen India's strategic position in the global value chain.

Launched under the Ministry of Electronics and Information Technology (MeitY), the ISM aligns with the vision of Atmanirbhar Bharat and seeks to position India as a reliable alternative in global Semiconductor production amid the ongoing US-China tensions and supply chain realignments. The ISM also aimed at building a robust ecosystem for semiconductor and display electronics and positioning India as a global hub for electronics manufacturing and design.

Under this mission, the government has also introduced schemes like the Modified Scheme for setting up of Semiconductor Fabs in India, the Modified Scheme for setting up of Display Fabs in India, etc. The Design Linked Incentive scheme offers financial grants and infrastructure support to domestic companies, start-ups and MSMEs who are engaged in semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), and IP Cores, over a period of five years.

Protecting IP in India's chip industry

To promote competition and protect the intellectual property in the semiconductor sectors, the Semiconductor Integrated Circuits Layout-Design Act was enacted in 2000. This act facilitates the protection of intellectual property rights related to the layout-design of integrated circuits.

It also encourages creativity and innovation in chip design within the overall objective of preventing unauthorised copying or commercial exploitation of the work. The law provides for the registration of semiconductor designs, and also prevents any unauthorised reproduction and encourages research and innovation.

Further, the Semicon-India conference is a flagship event that brings together government leaders, global manufacturers, researchers and investors. First held in 2022, it serves as a key platform to showcase India's vision, and through this, India has strengthened international collaborations with countries like China, Japan and the US.

Some hurdles that India needs to overcome

Despite its ambitious policies and vision for semiconductors, India has some hurdles to overcome. Foremost among

these is the very nature of the semiconductor industry, which requires a huge capital investment and long gestation periods for execution of the plans. Also, its deep integration into the global supply chain is needed. The necessary industrial infrastructure in India for semiconductor manufacturing is also in its early stages and not yet fully equipped to support large-scale fabrication.

The other requirement for scaling up of semiconductor manufacturing is skilled manpower that is proficient in high-end micro-electronics, material sciences, etc. However, India still lacks sufficient targeted academic programmes and training, which has created a skill gap. The government has started focusing on training the manpower through programmes like Chip to Start, etc. but building deep technical expertise will take time.

Yet another set of challenges includes slow policy execution, issues around regulatory approvals, and lack of adequate coordination among different stakeholders, which may deter investors. In addition, India faces competition from countries like Taiwan, South Korea, Japan, etc., which already have the necessary tech ecosystem and strong research institutions. The relatively small market for advanced chips makes India dependent on imported materials and technology. This, in turn, makes the ISM susceptible to geopolitical tensions and supply-chain disruptions.

India's semiconductor roadmap

The unveiling of Vikram 3201 marks a significant moment in India's quest for technological self-reliance. It demonstrates the growing capability of Indian research institutions and industries to innovate and enter the core domain of chip manufacturing. The trend reflects that India's strategy of combining policy incentives, global collaboration, and skill development is beginning to pay off.

However, this achievement needs to be viewed as the beginning of a journey rather than its culmination. India still has a long way to go, and it certainly has a number of stumbling blocks to overcome. For sustaining growth, constant long-term policy support, enhanced investment in research and development, and strong industry-academia partnerships are essential.

The development of advanced fabrication facilities would require not only fiscal incentives, but also a reliable power supply, efficient logistics, and regulatory stability. Simultaneous emphasis on research and development and the upskilling of manpower would further complement such efforts. If India can align its policy ambition with effective execution and sustained investment, it can emerge as a credible player in the global semiconductor value chain.

Post read questions

1. **What are the challenges faced by the semiconductor industry in India? Mention the salient features of the India Semiconductor Mission.**
2. **The Vikram 3201 Microprocessor bolsters India's objective of Atmanirbhar Bharat by reducing dependence on foreign technologies. Evaluate.**
3. **In what ways does the India Semiconductor Mission (ISM) seek to position the country as a reliable alternative in global Semiconductor production amid the ongoing US-China tensions and supply chain realignments?**
4. **Despite its ambitious policies and vision for semiconductors, what are the major hurdles that India must overcome to achieve technological self-reliance and position itself as a global player in chip manufacturing?**

(Renuka is a Doctoral researcher at the Himachal Pradesh National University, Shimla.)

Environment & Disaster Management

How to harness technology for effective disaster management

As climate change drives increasingly erratic and extreme precipitation events, how can technologies like Remote Sensing (RS) and Geographic Information Systems (GIS) transform efforts to manage and mitigate their impact?

Written by **Abhinav Rai**

In recent years, India has faced growing vulnerability to the rising frequency and intensity of extreme weather events, such as more frequent and severe floods, landslides, cloudbursts, and mudslides. These disasters cause significant loss of lives and livelihoods, damage infrastructure, and affect ecology and public health.

India has faced growing vulnerability to the rising frequency and intensity of extreme weather events in recent years, such as more frequent and severe floods, landslides, cloudbursts, and mudslides. (Express photo by Nirmal Harindran)

The Intergovernmental Panel on Climate Change in its sixth Assessment Report (AR6) has projected that in the coming years, India will experience intensified summer monsoons, increased heavy rainfall events, more frequent floods, and prolonged, intense heatwaves.

A report by the Centre for Science and Environment (CSE) has already revealed a disturbing trend: India experienced extreme weather events on 322 days in 2024, 318 days in 2023, and 314 days in 2022. These extreme events include heavy rain, floods, landslides, heat and cold waves, cyclones and lightning.

According to the India Meteorological Department (IMD), at least 1,528 casualties occurred during June-September monsoon season, with Madhya Pradesh, Himachal Pradesh, and Maharashtra being among the worst-affected states. In 2024 alone, 3,472 people lost their lives, 67,399 livestock perished, 4.07 million hectares of cropped land were affected, and 2.9 lakh houses were damaged due to extreme events.

These extreme weather events and their impact draw attention to India's climate resilience, especially through the integration of modern technologies such as Remote Sensing (RS) and Geographic Information Systems (GIS), which have become essential for effective management, adaptation, and mitigation efforts.

First, let's have a brief spatial overview of extreme events and their impact.

Spatial overview of extreme events

The IPCC defines extreme weather events as ‘an event that is rare at a particular place and time of year’. The spatial distribution of these extreme events has been staggering. The monsoon season this year brought catastrophic events like the Wayanad landslide, flash floods in Himachal Pradesh and Jammu, and cloudbursts and mudslides in Dharali, Uttarakhand, claiming multiple lives. States like Punjab, Bihar and Assam experienced severe floods, while cities like Mumbai, Delhi and Bengaluru faced waterlogging.

Marathwada region, which has historically been characterised by drought conditions, received 128 per cent of its normal monsoonal rainfall between June and September this year. The heavy rains have led to loss of lives, crops, and livelihoods. Meanwhile, the intensity and frequency of heatwaves continue to escalate, especially across the heat core zone that encompasses the northern plains and central India. This heterogeneity in spatial distribution stems from complex interactions between local topography, atmospheric patterns, and global climate drivers.

Causes and consequences

A good monsoon is critical for India’s agricultural production, replenishment of surface and groundwater reserves, and hydro-electricity generation. About 75 per cent of the country’s total rainfall comes during the monsoon season (June-September). However, in recent years, the temporal and spatial distribution of rainfall has been unusually intense and unpredictable in most parts of the country.

Climate change and recent warming are causing these erratic and extreme precipitation events, resulting in more frequent and severe floods and other extremes. The adverse impact of these events is further exacerbated due to unplanned urbanisation, deforestation, local topography, inadequate infrastructure, and poor socio-economic conditions of some communities.

Flash floods and landslides are wiping out years of investment in public infrastructure like roads and hydropower. Beyond losses of life and property, these disasters inflict psychological trauma on affected communities, which is usually overlooked in policy discussions. Moreover, rising temperatures and heatwave-like conditions directly affect labour productivity and increase energy demands. Our healthcare infrastructure requires special attention in the wake of increasingly warming conditions.

But there are various challenges in monitoring and mitigating these extreme events. These include inconsistent standards for reporting these events across states and Union Territories, fragmented information, and gaps in loss and damage assessment, resulting in significant underreporting of climate impacts.

Further, the inadequate number of weather monitoring stations, especially in the Himalayan regions and the limited availability of high-resolution satellite data for researchers hinder the accurate disaster assessment and spatial coverage.

Need for integrating technologies

Against this backdrop, the integration of modern technologies such as Remote Sensing (RS) and Geographic Information Systems (GIS) becomes essential for effective disaster management.

Remote sensing (RS)

RS is the process of acquiring information about the Earth’s surface without being in direct physical contact, generally through satellites, drones, or aircraft-based sensors. The process operates on the principles of electromagnetic

radiation, as all matter which has a temperature higher than absolute zero (-273 degrees Celsius) radiates continuously.

Through RS, we can capture data in various spectral bands, even those beyond the visible range in thermal, infrared, and microwave ranges.

Geographic Information Systems (GIS)

These are computer-based systems that help us organise, store, interpret, and analyse the spatial data. Historical data from remote sensing satellites, such as from Landsat and LISS satellites, can be integrated with GIS to track environmental changes over time, identify trends and patterns of land use and land cover changes, which is also crucial for predictive modelling.

These technologies have a range of applications, including hazard susceptibility and vulnerability zone mapping, detecting heat anomalies, flood extent, forest fires, vegetation health, cryosphere monitoring, and urban expansion, among others.

Modern disaster management strategies

Together, RS and GIS act as the eyes and brain of modern disaster management strategies. They can provide real-time locational intelligence, which is crucial in monitoring efforts. Drones are also an RS instrument which are helpful for spatial insights of local or specific areas.

Initiatives like Mission Mausam also aim to integrate next-generation radars and satellite systems with a GIS-based automated Decision Support System for real-time data dissemination. This integration will increase accessibility to environmental data and help governments to formulate evidence-based policies and plans for disaster mitigation.

Recently, NASA and ISRO jointly launched the NISAR satellite, which will provide free data worldwide. NISAR's radar systems will scan nearly all the planet's land and ice surfaces twice every 12 days, tracking shifts as slight as a centimetre, marking a breakthrough in predicting natural disasters and tracking climate change impacts.

Building climate resilience

Despite the recurring nature of such extreme events, our policy response remains largely reactive. Therefore, there is an urgent need to shift from disaster response and post-disaster relief towards an approach focussed on risk reduction, preparedness, and community resilience-building. This also aligns with the Sendai Framework for Disaster Risk Reduction (2015-2030), which encourages "a shift from managing disasters to managing disaster risks".

Moreover, there is a need for more satellites with higher spatial resolution and frequent revisit capabilities for better early warning systems and real-time monitoring. Currently, data on these extreme events is fragmented, underlining the need for an integrated data structure that not only provides the number of events but also enables real-time monitoring of loss and damage.

As these disasters transcend administrative boundaries, policies need to be framed around the larger geographical realities. To manage and mitigate the adverse impacts of climate change, India needs a comprehensive and inclusive adaptation plan that encompasses all regions and sectors. Integration of technologies like RS and GIS and AI would certainly play a transformative role in this.

Only through such comprehensive integration can India build the resilience necessary to protect its citizens and economy from the mounting challenges of climate change.

Post read questions

1. **What trends have been observed in the frequency and intensity of extreme weather events in India in recent years?**
2. **Why is it important to shift India's disaster management approach from post-disaster relief to risk reduction?**
3. **Discuss the role of data integration and accessibility in improving early warning and disaster response systems.**
4. **How can RS, GIS, and AI together revolutionize climate adaptation and disaster resilience planning?**
5. **How can initiatives like Mission Mausam and NISAR enhance India's capacity for real-time disaster response?**

(Abhinav Rai is a Doctoral candidate at the Department of Geography, Delhi School of Economics, University of Delhi.)

UPSC FOCUS

Issue at a Glance

Decoding Cyclones: Formation, Naming and Climate Change Linkages

Cyclone Montha leaves a trail of destruction in Andhra, Telangana, and Odisha. As cyclones are among the most devastating natural phenomena that India faces each year, let's decode their formation, naming system, and how climate change is intensifying them — with insights relevant for UPSC Prelims and Mains.

Written By **Roshni Yadav**

What is the issue?

Cyclone Montha, which crossed the Andhra Pradesh coast past midnight on October 28, left three people dead, damaged standing crops across 1.50 lakh acres, and disrupted power and transportation. Earlier this month, Cyclone Shakti developed off the Gujarat coast in the Arabian Sea, but it moved away from the Indian coast. Cyclones are reported in the news each year, making it essential to understand this significant geographical phenomenon from a broader perspective.

Tropical cyclones have different names depending on their location and strength. (Image: Abhishek Mitra)

(**Relevance: UPSC Syllabus General Studies-I, III:** Important geophysical phenomena such as earthquakes, tsunamis, volcanic activity, cyclones, etc., and disaster management.)

What will you learn from this article?

1. *What is a cyclone? How is it formed and what happens during its landfall?*
2. *How are cyclones named and what is the significance of this naming system?*
3. *What makes the Bay of Bengal so prone to frequent cyclones?*
4. *How is climate change influencing the frequency and intensity of cyclones?*

Question 1: What is a cyclone? How is it formed and what happens during its landfall?

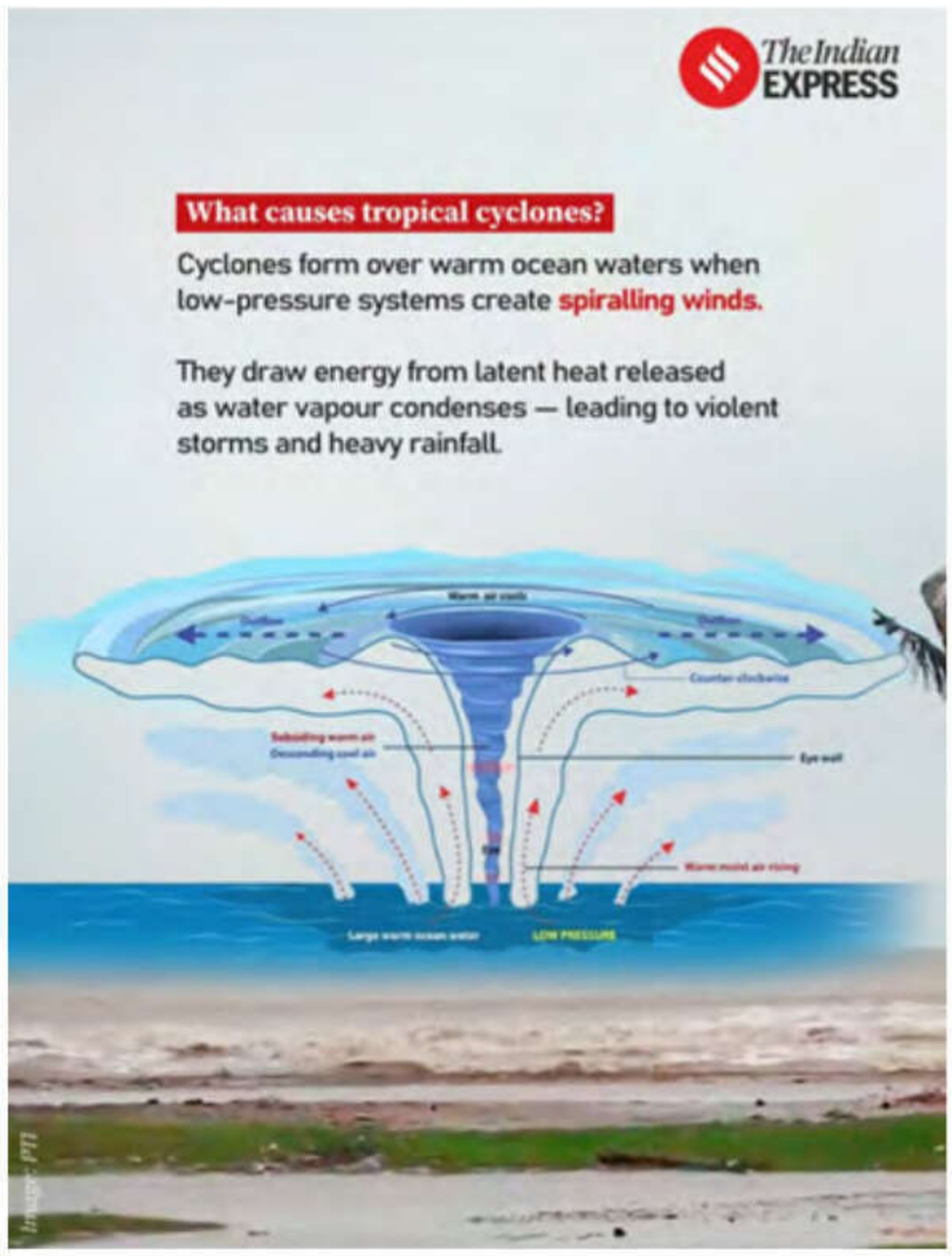
A cyclone is a large-scale system of air that rotates around the centre of a low-pressure area. It is usually accompanied by violent storms and bad weather. As per the National Disaster Management Authority (NDMA), a cyclone is characterised by inward spiralling winds that rotate anticlockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere. The NDMA classifies cyclones broadly into two categories: extratropical cyclones and tropical cyclones.

Tropical cyclones

Tropical cyclones are those which develop in the regions between the Tropics of Capricorn and Cancer. They are the most devastating storms on Earth. Such cyclones develop when "thunderstorm activity starts building close to the centre of circulation, and the strongest winds and rain are no longer in a band far from the centre," NOAA noted.

The core of the storm turns warm, and the cyclone gets most of its energy from the "latent heat" released when water vapour that has evaporated from warm ocean waters condenses into liquid water, the agency added. Moreover, warm fronts or cold fronts aren't associated with tropical cyclones.

Tropical cyclones have different names depending on their location and strength. For instance, they are known as hurricanes in the Caribbean Sea, the Gulf of Mexico, the North Atlantic Ocean and the eastern and central North Pacific Ocean. In the western North Pacific, they are called typhoons.



Extratropical cyclones

Also known as mid-latitude cyclones, extratropical cyclones occur outside of the tropic. They have "cold air at their core, and derive their energy from the release of potential energy when cold and warm air masses interact", according to the US National Oceanic and Atmospheric Administration (NOAA).

Such cyclones always have one or more fronts — a weather system that is the boundary between two different types of air masses. One is represented by warm air and the other by cold air — connected to them, and can occur over land or ocean.

'Landfall' of a cyclone

Simply put, landfall is the event of a tropical cyclone coming onto land after being over water. As per the India Meteorological Department (IMD), a tropical cyclone is said to have made landfall when the centre of the storm – or its eye – moves over the coast.

Crucially, a landfall should not be confused with a 'direct hit', which refers to a situation where the core of high winds (or eyewall) comes ashore but the centre of the storm may remain offshore. As per the US NOAA, because the strongest winds in a tropical cyclone are not located precisely at the centre, it is possible for a cyclone's strongest winds to be experienced over land even if landfall does not occur.

The damage caused by the landfall depends on the severity of the cyclone, marked by the speed of its winds. If the

cyclonic storm is “very severe”, the impact may include extensive damage to kutcha houses, partial disruption of power and communication lines, minor disruption of rail and road traffic, potential threat from flying debris and flooding of escape routes. The factors behind this kind of damage include extremely strong winds, heavy rainfall and storm surges, which cause devastating floods on the coast.

Landfalls can last for a few hours, with their exact duration depending on the speed of the winds and the size of the storm system. Notably, cyclones lose their intensity once they move over land because of a sharp reduction in moisture supply and an increase in surface friction. This means that while landfalls are often the most devastating moments of cyclones, they also mark the beginning of their end.

Question 2: How are cyclones named and what is the significance of this naming system?

In 2000, a group of nations called WMO/ESCAP (World Meteorological Organisation/United Nations Economic and Social Commission for Asia and the Pacific), which comprised Bangladesh, India, the Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand, decided to start naming cyclones in the region on a rotational basis. After each country sent in suggestions, the WMO/ESCAP Panel on Tropical Cyclones (PTC) finalised the list.

The WMO/ESCAP expanded to include five more countries in 2018 — Iran, Qatar, Saudi Arabia, United Arab Emirates and Yemen. The list of 169 cyclone names released by IMD in April 2020 were provided by these countries — 13 suggestions from each of the 13 countries.

Worldwide, there are six regional specialised meteorological centres (RSMCs) and five regional Tropical Cyclone Warning Centres (TCWCs) mandated for issuing advisories and naming of tropical cyclones. IMD is one of the six RSMCs to provide tropical cyclone and storm surge advisories to 13 member countries under the WMO/ESCAP Panel. RSMC, New Delhi is also mandated to name the Tropical Cyclones developing over the north Indian Ocean (NIO), including the Bay of Bengal (BoB) and the Arabian Sea (AS). So, the tropical cyclones forming over different Ocean basins are named by the concerned RSMCs & TCWCs.

There are some conventions too, some rules are to be followed while naming cyclones, such as:

- The proposed name should be neutral to (a) politics and political figures (b) religious believes, (c) cultures and (d) gender.
- Name should be chosen in such a way that it does not hurt the sentiments of any group of population over the globe.
- It should not be very rude and cruel in nature.
- It should be short, easy to pronounce and should not be offensive to any member.

- The maximum length of the name will be eight letters.

Apart from helping the general public, naming cyclones helps the scientific community, the media, disaster managers etc. With a name, it is easy to identify individual cyclones, create awareness of its development, rapidly disseminate warnings to increase community preparedness.

Question 3: What makes the Bay of Bengal so prone to frequent cyclones?

The Bay of Bengal, the world's largest bay, covering an area of 2,600,000 sq km, is one of the most cyclone-prone regions on Earth. According to research published by Dr Jeff Masters, hurricane scientist and meteorologist who documents extreme weather, in the Yale Climate Connections platform, 22 of the 30 deadliest tropical cyclones in world history have been recorded in the Bay of Bengal and during the past two centuries.

A research paper published in 2009 noted that more tropical cyclones are formed in the Bay of Bengal than in the Arabian Sea, and the frequency of storm surges is also greater. The Bay of Bengal is prone to large storm surges, in part because of its funnel-like shape and topography where it is shallow for a large distance from the coast. This unique geographical shape has contributed to the region witnessing some of the deadliest disasters in world history.

The northern part of the Bay of Bengal is very shallow, where the coast is landlocked on three sides. When a very severe cyclonic storm approaches the coast, the enormous storm surge generated by the wind pressure submerges the coastal belt when the storm passes through the region.

Another unique feature of this coast along the West Bengal-Bangladesh belt is that it is crisscrossed by several rivers and rivulets, where the elevation of the islands is 4 to 5 metres above sea level. The sea-dykes and embankments are not strong enough to resist strong wind-driven waves and cave in during a depression or a cyclonic storm. The frequency of storms crossing this belt is also high, all of which contributes to the severity of the impact of the cyclones that impact this region.

An academic paper titled 'Effect of landfall location and coastal topography on surge response in the Northern Bay of Bengal', published in 2020, mentions that the destruction caused by storm surges also depends on the **shape of the coastline**. "A storm surge is highly dependent on local features and barriers that affect the flow of water. The Bay of Bengal has a complex coastal geometry, including estuary deltas, pocket-like bays, and straight coasts."

Another important factor is **temperature**. Warmer the water, more intense the cyclone, and the Bay of Bengal has generally recorded higher temperatures than the Arabian Sea. Although, due to climate change-related disruptions of late, the western coast of India is also witnessing more frequent and stronger cyclones.

Historically, the Bay of Bengal has been known for tropical cyclones. But over the years there has been an increase in cyclones forming in the Arabian Sea, as well. An analysis of past data of cyclones over the North Indian Ocean from 1891–2020 indicates that the frequency of extremely severe cyclonic storms has increased in recent years over the Arabian Sea since 1990.

Question 4: How is climate change influencing the frequency and intensity of cyclones?

There is no dearth of reports highlighting the consequences of climate change, including droughts, water scarcity, severe wildfires, rising sea levels, etc. The impact of climate change on the frequency and intensity of cyclones is also evident.

The average global temperature on Earth has increased by at least 1.1 degree Celsius since 1850, primarily due to human activities that have released unprecedented levels of greenhouse gases into the atmosphere. The spike in the temperatures has resulted in more frequent and more intense cyclones.

There is a growing body of evidence that soaring temperatures are also making cyclones stronger and more frequent. A 2023 study suggested that major hurricane landfalls in the eastern Pacific could become up to 30% more frequent in case global temperatures soar by at least 2 degree Celsius. The rising surface temperatures of the oceans are the main reason behind such hurricanes.

The oceans have absorbed 90% of the additional heat generated by the greenhouse gas emissions in recent years. Due to this, global mean sea surface temperature has gone up by close to 0.9 degree Celsius since 1850 and around 0.6 degree Celsius over the last four decades. Higher sea surface temperatures cause marine heat waves, an extreme weather event, which, in turn, makes storms like hurricanes and tropical cyclones more intense.

Post Read Questions

Prelims

(1) Consider the following statements: (UPSC CSE 2020)

1. Jet streams occur in the Northern Hemisphere only.

2. Only some cyclones develop an eye.

3. The temperature inside the eye of a cyclone is nearly 10ºC lesser than that of the surroundings.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3 only

(c) 2 only

(d) 1 and 3 only

(2) The 2004 Tsunami made people realise that mangroves can serve as a reliable safety hedge against coastal calamities. How do mangroves function as a safety hedge? (UPSC CSE 2011)

(a) The mangrove swamps separate the human settlements from the sea by a wide zone in which people neither live nor venture out

(b) The mangroves provide both food and medicines which people are in need of after any natural disaster

(c) The mangrove trees are tall with dense canopies and serve as an excellent shelter during a cyclone or tsunami

(d) The mangrove trees do not get uprooted by storms and tides because of their extensive roots

Mains

1. What is sea surface temperature rise? How does it affect the formation of tropical cyclones? (UPSC CSE 2024)

2. Tropical cyclones are largely confined to the South China Sea, Bay of Bengal and Gulf of Mexico. Why? (UPSC CSE 2014)

3. The recent cyclone on the east coast of India was called "Phailin". How are tropical cyclones named across the world? Elaborate. (UPSC CSE 2013)

Prelims Answer Key
1. (c) 2. (d)

(**Sources: Articles referred from The Indian Express-** Cyclone Fengal makes landfall over Puducherry, How are cyclones named?, Cyclone Montha landfall: What exactly is a 'landfall', how much damage can it cause?, What makes the Bay of Bengal so prone to frequent cyclones, Cyclone Montha likely to hit east coast, How does climate change impact extreme weather events?)

Essays Simplified

10 FAQs aspirants ask before starting their essay prep — Answered

Beginners' guide to UPSC Essay Paper: How do you prepare for the UPSC Essay paper, especially with abstract topics and no clear syllabus? In this article, we answer the top 10 FAQs every aspirant asks, covering strategy, structure, resources, and common mistakes to avoid.

Written by **Manas Srivastava**

What should you focus on while writing UPSC essays?

"How should I write essays for the UPSC Civil Services Examination?" It is one of the most frequently asked questions among aspirants. But why are we talking about it now, especially when the Mains exam got over more than a month ago and most aspirants are waiting to begin their Prelims preparation after Diwali?

The answer is simple. There is no such thing as a "lean month" in the UPSC preparation cycle, which spans at least a year and a half. And more importantly, there are certain components of the exam that simply cannot be left for the last minute. Essay writing is one of them.

With no defined syllabus, the Essay paper demands consistent practice, just like daily newspaper reading. For beginners and future aspirants, the months following the Mains exam present a golden opportunity to build the skill of writing impactful, structured, and insightful essays.

Then there is the rising fear around the so-called "philosophical quotes" that have increasingly featured as essay topics in recent years. The Essay paper has shifted its focus towards abstract and philosophical themes, making it even more challenging for aspirants.

So if you are planning to kickstart your UPSC essay preparation, here's a 10-question starter's guide to help you begin the journey right.

Q1.What is the Essay Paper in UPSC all about?

The Essay paper is a compulsory component of the UPSC Civil Services (Main) Examination and plays a crucial role in the selection process. It is divided into two sections, each consisting of four topics. Candidates are required to write two essays in three hours. The essays carry a total of 250 marks (125 each), and the word limit for each is 1,000–1,200 words.

Unlike other GS papers, the Essay paper does not have a clearly defined syllabus, which adds to its complexity.

Shabbir A. Bashir, an expert on UPSC essays who has been mentoring aspirants for more than two decades, told UPSC Essentials of The Indian Express in a past interview:

"UPSC essays are not language proficiency comprehensions, just tools of creativity, or mere works of art. An essay is not about filling pages. The CSE essay is a representation of oneself that is going to be evaluated by one of the most esteemed institutions of the nation—UPSC."

Q2. When should you start preparing for the UPSC Essay paper?

Writing good essays takes time. Unlike other GS papers, the Essay paper is not strictly syllabus-bound. Essays need to be rich in references and must test your analytical skills with depth, not superficial understanding. It's about how well you apply your knowledge, connect the dots, and produce a coherent essay under exam pressure—within a time limit and word count.

As UPSC essay topics are becoming more abstract, many students struggle to grasp the themes. One major reason: shallow reading habits. The exam now demands insightful and thoughtful writing.

Do not leave essay preparation for the last moment. Ideally, start preparing alongside Prelims. Preparation doesn't just mean writing—it means strategizing: reading quality articles, analyzing previous year questions (PYQs), learning how to draft a blueprint, noting down good points in a diary specifically dedicated to essays, and adopting other effective practices.

Q3. What kind of topics are asked in the UPSC Essay paper?

In recent years, UPSC has increasingly included philosophical quotes as essay topics. These are essentially abstract themes.

Ravi Kapoor, former IRS officer, explains:

"Philosophical or abstract topics are more difficult to write about than others precisely because they apply to so many phenomena across the board. This means that even if you address the central theme of the essay topic in the UPSC exam, there could be important aspects of it that you failed to consider."

Essay topics can be broadly categorised into recurring themes:

(a) Philosophy and Ethics : e.g. 'Contentment is natural wealth; luxury is artificial poverty' (2025)

(b) History & Culture : e.g. 'Culture is what we are, civilization is what we have' (2020); 'History repeats itself, first as tragedy, second as farce' (2021)

(c) Environment : e.g. 'Forests are the best case studies for economic excellence' (2022)

(d) Economic Growth and Development : e.g. 'Poverty anywhere is a threat to prosperity everywhere' (2018)

(e) Social Issues : e.g. 'Patriarchy is the least noticed yet the most significant structure of social inequality' (2020)

(f) International Issues & Security : e.g. 'The supreme art of war is to subdue the enemy without fighting' (2025)

(g) Science & Technology : e.g. 'The process of self-discovery has now been technologically outsourced' (2021)

This classification helps draw parallels with GS papers. While much of the content can come from GS and current affairs notes, remember: the Essay paper is not a GS paper, and your answers should not read like GS responses.

Despite the classification, many topics remain abstract in essence. Essays are about ideas, where facts and analysis support your expression. They should not lack clarity, coherence, or narrative ability.

Q4. How should you choose between the four topics in each section of UPSC Essay paper?

Options are not always helpful. Each Essay paper has two sections with four topics each. Aspirants must pick one from each. Since most topics are abstract, a seemingly familiar one may not offer enough content to develop effectively.

Another dilemma: Should you attempt the unusual topic or the safe one?

The answer: Attempt the topic on which you can write the best essay.

Here are a few parameters to help with topic selection:

(a) Clarity of thought on the topic

(b) Availability of content based on prior knowledge and experience

(c) Comfort level with the theme

(d) Scope for a good structure and multidimensional analysis

A well-drafted blueprint during rough work and brainstorming will help determine which topic best suits your strengths.

Q5. How should you structure an essay?

Structure defines the flow of your essay. It keeps the evaluator engaged, especially in a 1,000-word write-up. Poor structuring breaks the flow and fails to hold the examiner's interest.

Structure and flow refer to how you organise your ideas and arguments. A good structure makes your writing easy to follow and ensures that your points build upon each other. Flow ensures smooth transitions between sections and ideas.

Everyone knows the basic format: Introduction – Body – Conclusion. But what you write in each part and how you write it, makes all the difference between average and excellent marks.

Ravi Kapoor outlines various structural styles:

(a) Two-Side Face-off: Compare both sides of a debate through arguments and counterarguments.

(b) Dimensional Analysis: Break down the topic into multiple dimensions—social, economic, historical, ethical, political, etc. Use only when appropriate.

(c) Timeline and Chronology: Some topics benefit from a historical or evolutionary narrative. For example: 'History is a series of victories won by the scientific man over the romantic man'.

(d) Anecdotes and Stories: Starting with a relevant anecdote, personal or fictional, can be powerful, but requires creativity and skill. However, anecdotes alone cannot carry the weight of an essay.

You can mix and match structures across sections of your essay. There is no single “best” structure. Choose what serves the topic best.

Q6. What resources should you use?

This is one of the most common queries. The GS syllabus is clearly defined. But Essay paper is not. With the rise in abstract topics, many aspirants feel lost.

Remember, the UPSC Essay paper is not a PhD thesis. You don’t have time to read a library of books. A smart resource strategy matters.

Here is what works:

(a) Analyze PYQs and practice those essays : Helps you identify trends and build content for recurring themes.

(b) Make the newspaper your best friend : Not just for facts, but also to improve your expression, understand various dimensions, and collect quotes, case studies, editorials, and reports. Pay attention to articles that may not be “GS-relevant” but provide philosophical or ethical content.

(c) Use social media wisely: Follow quality content creators, academic institutions, or thought leaders who offer knowledge-enriching perspectives.

(d) Make a list of authors, columnists, and public figures: Their insights can enrich both Essay and GS answers.

Prof. Pratibha Sharma of Miranda House addresses common fears regarding philosophical quotes. In an interview with UPSC Essentials, she said:

“Let’s begin by understanding that the great philosophers whose quotes appear in question papers come from diverse disciplines. Descartes, Leibniz, and Whitehead were mathematicians. Plato was a polymath. Political science students would know John Rawls. Figures like Tilak, Tagore, Malaviya, and Gandhi weren’t academic philosophers either—but their thoughts shaped philosophy…So, one doesn’t need to be a philosophy scholar to understand such quotes. Reading too many philosophy books in a short time won’t help. This is knowledge acquired gradually. I suggest aspirants make wise use of the Internet to explore ideologies, thinkers, and quotes. It will also help in Ethics papers, which are closely tied to philosophy. For those who want to go deeper, an ‘Introduction to Philosophy’ covering major themes is a good start.”

Q7. Should you prepare a few essays in advance?

Absolutely.

Practicing previous years’ questions is essential. Beyond that, take up topics or quotes with similar themes and practice writing regularly. This helps you test whether you’re able to convert your knowledge into essay form.

Many aspirants worry that their effort will be wasted if the practiced topics don’t appear. But that concern is misplaced.

Even if exact topics don’t repeat, regular practice develops core skills: reading from diverse sources, organizing thoughts, handling abstract themes, building arguments, and writing with clarity under pressure.

These are the abilities that make you exam-ready. And if a related theme appears in the final exam, you'll definitely have an edge.

Q8. Do you need to use facts, stats, or quotes?

It's not mandatory but when used relevantly, statistics, real-life examples, case studies, and quotes enhance credibility and impact.

(a) Use stats only when you're sure about the figures. Wrong data can harm your impression.

(b) Quotes help build arguments but shouldn't be forced into the essay.

(c) Know a few good quotes, but don't rely on quantity. One meaningful quote is better than five irrelevant ones.

(d) A quote isn't always a proverb. It should be relevant, meaningful, and enriching.

Sources for good quotes include books, novels, newspaper editorials, reports like the Economic Survey, and even speeches.

Remember: A quote or anecdote adds value only if it supports your point.

Q9. What gives you an extra edge in the Essay paper?

(a) Be observant. Keep a pocket diary to note impactful dialogues from movies, quotes and anecdotes from newspapers or books, campaign ideas from advertisement bill boards on the roadside etc.

(b) Analyze everything you read for essay relevance.

(c) Practice writing regularly (weekly if possible) and seek peer review or mentor guidance.

(d) Don't wait for the last hour. Start early.

Q10. What mistakes should you avoid?

(a) Writing against constitutional values, ethical norms, or sensitive issues like environmental sustainability and gender rights.

(b) Not having a clear structure, using jargons, heavy datas, and loosing track from the topic

(c) Making your essay sound like a GS answer or being overly poetic.

(d) Expressing frustration, anger, or bias.

(e) Trying to balance the essay artificially. Balance of mind matters more than balance of points.

(f) Giving generic, impractical solutions just for the sake of it.

UPSC Ethics Simplified

What can a doctor's story teach future public servants? Revisiting medical ethics after the cough syrup tragedy

When systems fail, like in the recent cough syrup tragedy, the consequences are catastrophic. It's time to ask: how and why should we uphold the ethics of care that define both medicine and public service? Nanditesh Nilay, our ethicist, answers through a case study.

Written by **Nanditesh Nilay**

The recent cough syrup tragedy, which led to multiple child deaths, underscores the urgent need to revisit medical ethics, particularly the ethics of care. With repeated lapses in healthcare, one must ask: are we truly upholding the basic principles of medical ethics? UPSC has often framed questions and case studies, directly or indirectly, around this issue. Nanditesh Nilay, our ethicist, helps explore this question through a caselet.

The story of the doctors shows how professionals have responsibilities not just to themselves or their careers, but to those they serve and to their relationships. (Image: AI generated)

When care defines ethics: 'The Hamdard Story'

Father and son — both were doctors. There was a great camaraderie between them. The father was a well-known figure in the medical fraternity, while the son was more of a seeker. However, whenever the chips were down, the father used to say, "You have made it this far."

They were Hamdards and were referred to as Senior Hamdard and Junior Hamdard. "I am getting old, and one day you will have to see all your patients. So work on your concentration and fitness," the father said. He was not in a good mood. The son replied, "Am I not seeing a large number of patients every day? I don't want you to work at this age. But you don't listen to me. And patients trust you more than my ability."

There was a patient who was nervous upon seeing the huge crowd at their clinic. He asked one of the fellow patients, "I am suffering from fever, cough, and cold. Whom should I consult…Senior Hamdard or Junior Hamdard?" The fellow patient replied, "If your cough and cold are chronic, see the father. If not, meet the son." The patient was perturbed and very confused. Finally, he tried to consult the father but was informed that he would have to visit

another day. Therefore, he consulted Junior Hamdard.

After a month, the patient was fully recovered. But he couldn't meet Junior Hamdard next time, as he was traveling. So, the patient consulted Senior Hamdard for his wife, who had been suffering from migraines and other health issues. He said, "Dr. Sahib, you are a walking God on this earth. Everybody speaks about you. But for me, your son is no lesser God. He has your blessings—a magician in my book. But due to his unavailability, I am consulting you for my wife." Senior Hamdard quietly listened but said nothing.

That day, Junior Hamdard was not in a good mood, as his father was not paying attention to his health. He said, "You have spent your whole life serving patients. Have you ever thought about who will take care of you?" This time, the quiet father smiled, and words rolled through his eyes. He said, "You, my son. You! I am sure you are doing it and you will continue to do so. But don't say I shouldn't see patients. I try to help others and simultaneously get the wonderful feeling of always being there for my son."

The next day, the son was ready and waiting in his car for his father to come. But his father didn't join him. Finally, the son went to the clinic alone. As usual, there were a lot of patients waiting, many of whom had come specifically for Senior Hamdard. Due to his absence, all decided to consult Junior Hamdard.

"Sir, we came to meet your father, but he is not here, so we came to meet you," one patient said. Junior Hamdard was hurt but, like a cultured human being, preferred to remain quiet. Later, he said, "My father is a better doctor than me. I will always be a student and a humbled son. But don't worry, you will be cured." Meanwhile, a few other patients came into Junior Hamdard's chamber.

"Your father is a God, and God's son cannot be a lesser God," one of them said. In the meantime, Junior Hamdard was inquiring about his father's health and was surprised to learn that his father was not home. He became worried.

He came out of the clinic and saw, at a distance, around fifty people surrounding someone. They were urging the old man to meet Junior Hamdard, promising he would be cured. The old man resisted, showing discomfort. Nevertheless, Junior Hamdard approached the gathering and said loudly, "Baba! He is my Baba. What are you all convincing him about? He is the Senior Hamdard." The father simply hugged his son and whispered, "Any advice for this old man, doctor?" Junior Hamdard smiled and demonstrated the ethics of care.

What this story tells us about ethics and care

When we examine this case, we see two doctors and their association with their profession as well as their relationship with each other. Medical ethics revolves around care, relationships, dependency, and the highest form of empathy. Our valuable relationships, particularly those involving dependency, are key to the ethics of care. Carol Gilligan believed that morality is primarily about care and responsibility. Though she discussed it in the context of female moral development, the central idea of the ethics of care is not about following only impartial or universal principles but about responding to the needs of those directly or indirectly dependent on us. It is about virtues like love, kindness, and concern for others, which guide and manifest various layers of moral decision-making.

Four Pillars of Medical Ethics

Foundational principles to prevent tragedies and uphold care

01	**Autonomy** Respecting patient rights and informed consent. Patients must understand treatment risks and make their own healthcare decisions.
02	**Beneficence** Acting in the patient's best interest. Healthcare providers must promote wellbeing and positive outcomes through competent care.
03	**Non-Maleficence** "First, do no harm." Avoiding actions that cause injury or suffering. Quality control and safety protocols are essential.
04	**Justice** Fair distribution of healthcare resources. Ensuring vulnerable groups—children, poor, patients—receive equitable protection and care.

Prevention Through Ethics

These principles aren't just rules—they're frameworks for care. When systems prioritize compliance over genuine ethical responsibility, tragedies become inevitable.

This case exemplifies the spirit of care between father and son, as well as their care for patients. Recent incidents, such as the cough syrup tragedy, have been inhuman and cruel, demonstrating a failure of the ethics of care. Who could have understood this better than Junior and Senior Hamdard?

The story of the doctors shows how professionals have responsibilities not just to themselves or their careers, but to those they serve and to their relationships. In today's scenario, where vulnerable groups (children, patients, the poor) are impacted, this sense of responsibility is very relevant. The father-son doctors build trust through consistent, caring behaviour. It is through this behaviour that people remain confident in institutions and individuals.

When systems fail — e.g., contaminated syrups reaching children — the consequences are catastrophic.

Ethics of care isn't an optional add-on; it is central to prevention of harm. In many recent incidents, protocols may have existed but oversight, quality control and a mindset of caring for the vulnerable were lacking. Focus on relational sensitivity and responsiveness (rather than just ticking boxes) shows what real ethics looks like. Remember, ethics in governance means going beyond compliance to proactive care.

The above story, in fact, goes beyond medical professional ethics. While entering the world of public service, readers (here, aspirants) must remember that ethics (not just in the medical profession but also elsewhere) is lived through actions and attention to human needs, not merely through rules.

Post Read Question for UPSC CSE Ethics paper:

What are the basic principles of medical ethics? How and why should recent incidents of health mishaps remind us of the ethics of care?

(The writer is the author of 'Being Good', 'Aaiye, Insaan Banaen', 'Kyon' and 'Ethikos: Stories Searching Happiness'. He teaches courses on and offers training in ethics, values and behaviour. He has been the expert/ consultant to UPSC, SAARC countries, Civil services Academy, National Centre for Good Governance, Central Bureau of Investigation (CBI), Competition Commission of India (CCI), etc. He has PhD in two disciplines and has been a Doctoral Fellow in Gandhian Studies from ICSSR. His second PhD is from IIT Delhi on Ethical Decision Making among Indian Bureaucrats. He writes for the UPSC Ethics Simplified (concepts and caselets) fortnightly.)

UPSC Current Affairs Pointers

Prelims Tidbits from the month of October

UPSC Current Affairs Pointers aim to help you consolidate your Prelims and Mains preparation. Take a quick look at key current affairs tidbits from September 29, 2025, to November 2, 2025 — curated especially for aspirants preparing for the UPSC, State PSC, and other competitive examinations.

Compiled by: **Khushboo Kumari**

Report

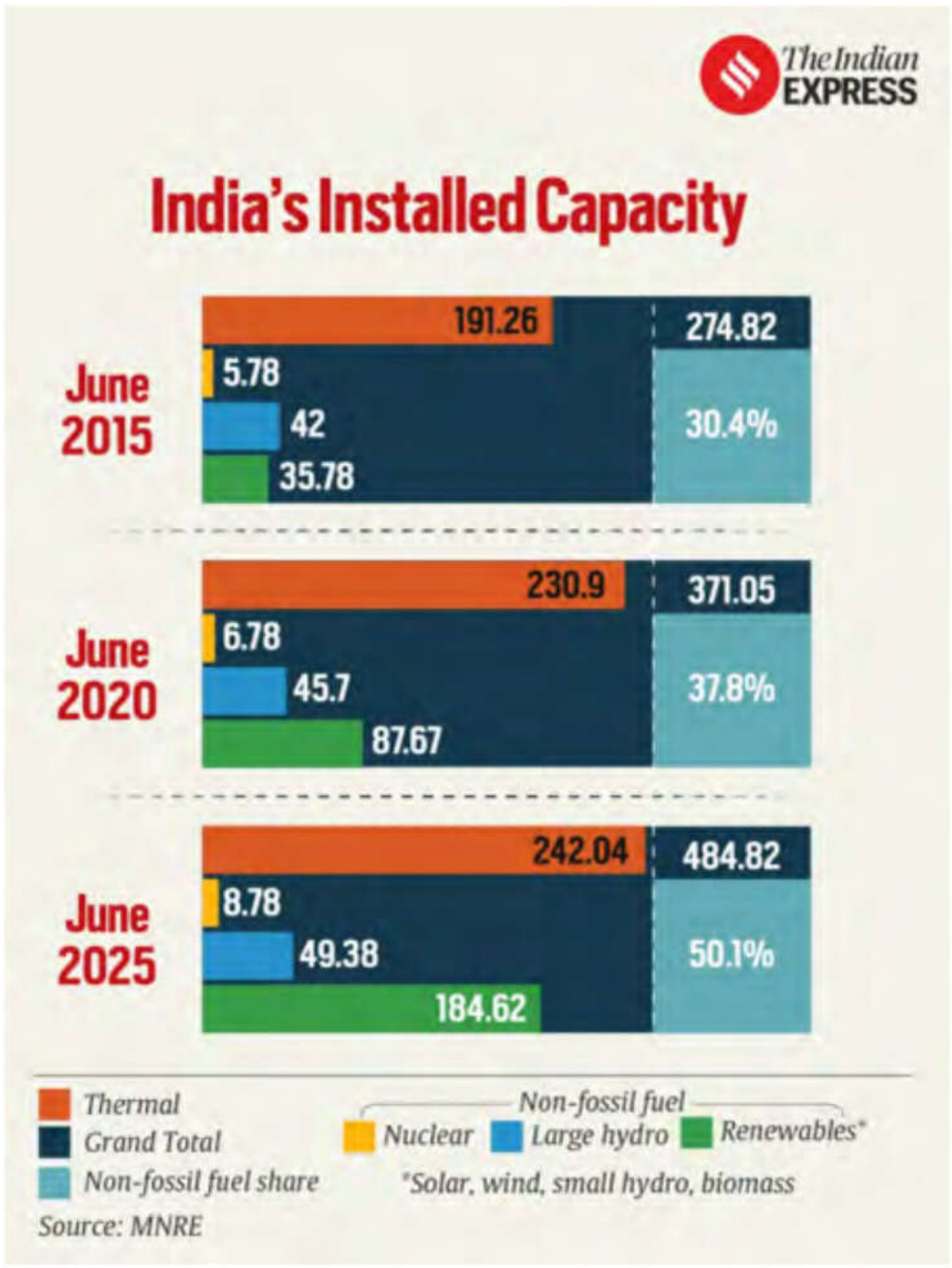
(**FYI**: The data provided in these reports can be used to substantiate your Mains answer and create a broad understanding of the topic.)

- **UK-based energy think tank Ember Report**

— For the first time ever, **renewable energy eclipsed coal as the world's leading source of electricity**, according to new data from the UK-based energy think tank Ember.

— The Ember report, which analysed changes in global electricity generation from January to June 2025 compared with the same period last year, said that while coal fell in both China and India, the dip in India was deemed as "temporary" while it was cited as "more structural" in China.

— The Indian government data up to June 30 has also shown that non-fossil fuel sources in the country accounted for 50.1 per cent of its installed electricity capacity, displacing thermal.



- **Global Burden of Disease (GBD) report**

— In the latest Global Burden of Disease (GBD) report launched at the World Health Summit, Berlin, and published in The Lancet, the Non-communicable diseases (NCD) account for nearly two-thirds of the world's total mortality and morbidity.

— The leading NCDs are ischaemic heart disease, stroke, and diabetes.

— In India, the causes of death are shifting from infectious diseases to NCDs. According to the report, in 2023, ischaemic heart disease caused maximum deaths — age-standardized mortality rate (ASMR) rate at 127.82 per lakh population.

— Chronic Obstructive Pulmonary Disorder was the second leading cause of deaths in India in 2023 with ASMR rate at 99.25 per lakh, while the third was stroke with an ASMR rate of 92.88 per lakh in 2023.

• WMO Greenhouse Gas Bulletin

— According to the World Meteorological Organisation (WMO) Greenhouse Gas Bulletin, an annual publication, globally averaged surface concentrations of carbon dioxide had increased by 3.5 parts per million from the 2023 levels to reach 423.9 ppm in 2024, a record high.

— The year 2024 was also the warmest year ever recorded, with the global average temperature being 1.55 degrees Celsius higher than pre-industrial times.

— This was the first time that global temperatures had breached the 1.5 degree Celsius threshold.

— The current CO2 concentration in the atmosphere, 423.9 ppm, is now 152% more than the pre-industrial levels of 278.3 ppm.

— CO2 is known to have contributed about 66% of the warming that has happened since pre-industrial times, and about 79% in the last decade.

— Anthropogenic activities, increased human-linked sources, rise in wildfire incidents were being underscored, yet again, as the major contributors for pushing the levels of CO2 during 2023 – 2024.

• State of Climate Action Report

— Ahead of COP30, the State of Climate Action Report 2025 was published by **Change Lab,** as a joint effort of the Bezos Earth Fund, Climate Analytics, the Climate High-Level Champions, ClimateWorks Foundation and World Resources Institute.

— According to the report, not a single one of the 45 indicators assessed is on track to meet the 2030 targets needed to achieve the Paris Agreement of limiting global warming to 1.5°C by the end of this decade.

— The report highlighted the key areas where acceleration is needed. The world needs to phase out coal more than ten times faster — equivalent to retiring nearly 360 average-sized coal-fired power plants each year and halting all projects in the pipeline.

— There is a need to reduce deforestation nine times faster. The current levels are far too high — roughly equivalent to permanently losing nearly 22 football (soccer) fields of forest every minute in 2024.

• Climate Inequality Report 2025

— The Climate Inequality Report titled ‘Climate Change: A Capital Challenge, Why Climate Policy Must Tackle Ownership’ was released on 29th October, 2025.

— The report is co-authored by an economist and co-director of the World Inequality Lab, Lucas Chancel, and Cornelia Mohren, Environmental Director, World Inequality Lab.

— According to the report, wealthy individuals fuel the climate crisis through their investments, even more than their consumption and lifestyles.

— At the world level, the top 1% represent 15% of global consumption-based emissions, while they account for 41% of global emissions associated with private capital ownership.

— Climate change can deepen wealth inequality as the share of wealth held by the global top 1 per cent could increase to 46 per cent in 2050 from 38.5 per cent at present if those individuals were to make and own all necessary climate investments in the next decades.

— In order to address the dual challenges of climate crisis and wealth inequality, the report suggested three policies avenues:

(i) A global ban on new fossil fuel investments

(ii) A financial investment tax on the carbon content of assets

(iii) Major public investment in low-carbon infrastructure

• UNEP Adaptation Gap Report

— Recently, UNEP has released the 'Adaptation Gap Report 2025: Running on empty'. The series provides regular updates on what is happening globally in planning, implementation, and finance for adaptation to climate change.

— According to the report, the developing countries will require at least USD 310 billion annually by 2035 to adapt to climate change — 12 times more than current international public finance flows.

— The report found that the new collective quantified goal for climate finance (NCQG) is insufficient to meet developing countries' adaptation finance needs in 2035.

(Source: UNEP)

• Global Forest Resources Assessment (GFRA) 2025

— India has climbed to the ninth spot globally in total forest area and retained its third rank in annual forest area gain, according to the Global Forest Resources Assessment (GFRA) 2025, released by **the Food and Agriculture Organization (FAO) of the United Nations in Bali**.

— India accounts for 2% of the world's forest areas, with a total of 72.74 million hectares, placing it just behind Indonesia.

— The world's total forest area stands at 4.14 billion hectares, covering 32 per cent of the planet's land. More than half (54 per cent) of this is concentrated in just five countries i.e. Russia, Brazil, Canada, the United States and China.

— According to the report, seven countries and areas – the Falkland Islands (Malvinas), Gibraltar, Holy See, Monaco, Nauru, Svalbard and Jan Mayen Islands, and Tokelau – reported having no forest at all.

Art and Culture

• Guru Charan Yatra

Images from Guru Charan Yatra. (Source: X/@HardeepSPuri)

— Prime Minister Narendra Modi urged people to have darshan of the sacred 'Jore Sahib' during the Guru Charan Yatra, from New Delhi to **Bihar's Patna Sahib Gurudwara**, which commenced on October 23.

— The Jore Sahib, meaning **holy or sacred shoes**, are a pair of footwear belonging to Guru Gobind Singh, the last of the ten Sikh Gurus, and his wife Mata Sahib Kaur.

— It is considered a sacred relic as it is revered as the personal belongings once worn by the Sikh spiritual leaders.

— The pair of footwear, measuring 11″ by 3½" for the right foot of the 'Dasam Pita', or Tenth Father, and 9″ by 3″ for the left foot of Mata Sahib Kaur, are sacred relics deeply revered in Sikhism.

— **Guru Gobind Singh**, the last human Guru of the Sikhs, founded the Khalsa Panth, or the community of the pure. He declared the **Guru Granth Sahib** as the eternal successor.

• Ningol Chakouba festival

— The Manipur government organised the 46th 'Fish Fair-cum-Fish Crop Competition' at Hatta Kangjeibung, Imphal, which is a part of the Ningol Chakouba festival.

— Ningol Chakouba festival falls on the second lunar day of the Manipuri calendar's Hiyangei month (November). Ningol means 'married woman' and Chakouba means 'invitation for a feast'.

— On this day, married women are invited to their parents' home for a feast. The invitation comes from the son(s) of the parental family of the Ningols, generally a week in advance.

— The essence is to strengthen the bond of affection among the brothers and sisters, daughters and parents of a family.

Events

• World Health Summit 2025

— The World Health Summit 2025 took place from October 12-14 in Berlin, Germany, and online under the theme **"Taking Responsibility for Health in a Fragmenting World."**

— The annual World Health Summit brings together global health stakeholders from all sectors and regions to find solutions for the most pressing health challenges. In 2025, it took place under the theme "Taking Responsibility for Health in a Fragmenting World."

— WHS was founded in 2009 on the occasion of the 300th anniversary of Berlin's Charité - Universitätsmedizin Berlin, and it is supported by the WHS Academic Alliance.

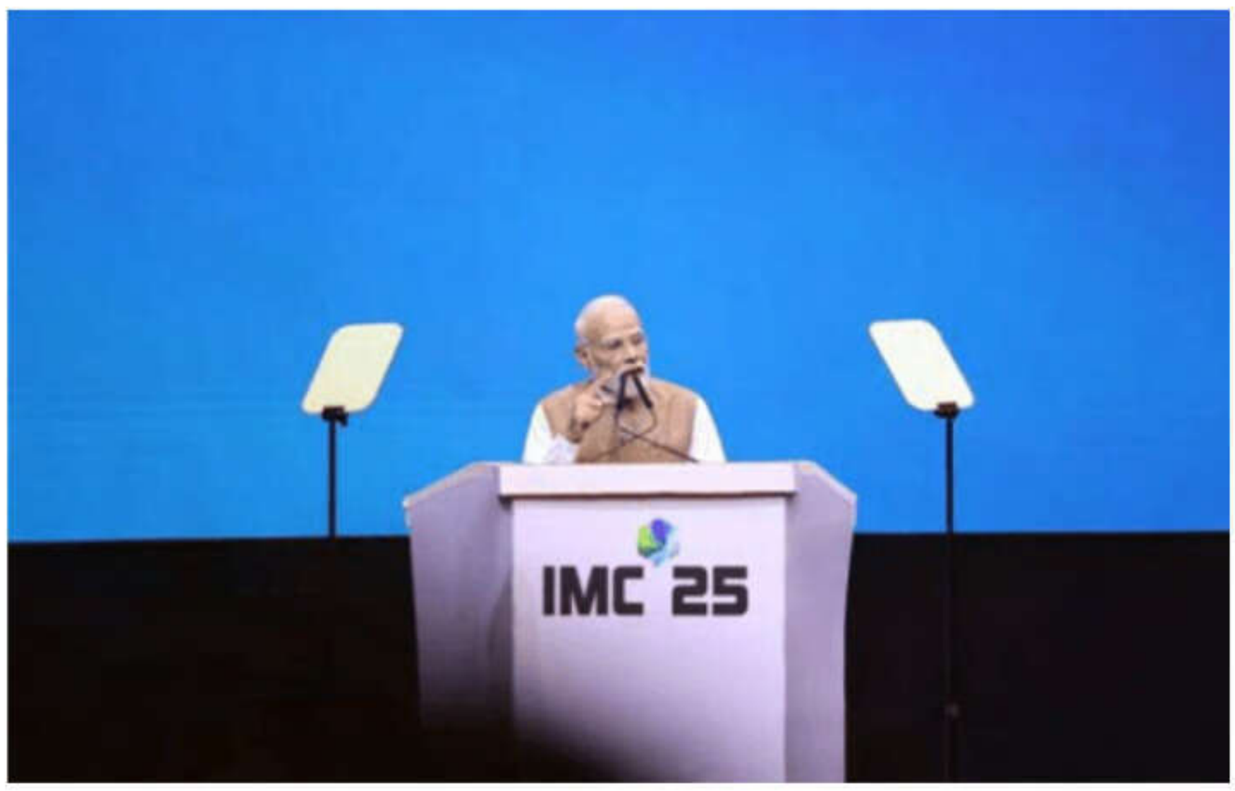
— Axel R. Pries is the President of WHS. Prof. (Dr.) **Balvir S. Tomar** is the International President of the World Health Summit 2025. He is the founder and Chancellor, NIMS University, Jaipur, India.

(Source: worldhealthsummit.org)

• India Mobile Congress (IMC) 2025

— The India Mobile Congress was organised by the Department of Telecommunications (DoT) and the Cellular Operators Association of India (COAI) over four days, that is, from October 8 to 11.

— It is said to be the **largest tech expo in Asia** with an estimated 1.5 lakh participants from more than 150 countries, including delegates from domains such as 5G and 6G networks, artificial intelligence, electronics manufacturing, cybersecurity, semiconductors, quantum computing, and more.



PM Modi onstage at the inauguration of IMC 2025 at Yashabhoomi Convention Centre in Delhi. (Image: IMC)

• G20 Disaster Risk Reduction Working Group(DRR WG)

— The Fourth Working Group and Ministerial Meeting of the G20 DRR WG was held at **Cape Town, South Africa** from 8–13 October 2025.

— It was held under the theme "Solidarity and Resilience" to advance international collaboration on early warning systems – a core component of the Early Warnings for All (EW4All) flagship initiative launched by the UN Secretary-General in 2022.

— **South Africa** has launched its national **EW4All Roadmap**, making it the first G20 country to unveil a national strategy at the G20 DRR WG event.

— DRR WG was established under India's G20 Presidency in 2023 which aims to integrate risk reduction measures into public and private sector investment decisions and policy making.

— **Held every 13 October**, the International Day for Disaster Risk Reduction day celebrates how people and communities around the world are reducing their exposure to disasters and raising awareness about the importance of reining in the risks that they face. The theme of this year is "**Fund Resilience, Not Disasters.**"

— The International Day for Disaster Risk Reduction was started in 1989, after a call by the United Nations General Assembly for a day to promote a global culture of risk-awareness and disaster reduction.

(Source: g20drrwg)

MAINS VALUE ADDITION

Recently, the Food Safety and Standards Authority of India (FSSAI) has prohibited the use of the term "ORS" (Oral Rehydration Solution) on all food and beverage labels, including within brand names or trademarks. This marked a major move to protect consumers. This order was the result of an individual fight put forth by **Dr Sivaranjini Santhosh**, a Hyderabad-based paediatrician. For years, she used social media platforms to ensure that children with diarrhoea do not end up consuming flavoured, sweetened beverages in place of the genuine Oral Rehydration Solution (ORS), a landmark discovery in medicine pioneered by Dr Dilip Mahalanabis.

In her eight-year long journey to ensure that people are not misled, she went to the Telangana High Court, wrote to the Union Health Minister and the Prime Minister. Dr Santhosh also wrote to medical associations to discontinue sponsorships from these products.

Her struggle came to the fore earlier this month when she posted a video about the deaths of children in Madhya Pradesh after consuming tainted syrup. She asked a simple question — how could doctors alone ensure the safety of children when regulators kept allowing harmful products to enter the market. She asked how many children would have to die for the regulator to take action on the ORS solutions. She showcased the power of individual will, compassion for society, and the power of social media.

• Police Commemoration Day

— The Police Commemoration Day is observed, every year on October 21, to remember the sacrifices of ten policemen who died in Chinese firing in 1959.

— So far since Independence, 34,418 Police personnel have sacrificed their lives for safeguarding the integrity of the nation and providing security to the people of this country.

Union Defence Minister Rajnath Singh lays a wreath during Police Commemoration Day at the National Police Memorial, in New Delhi on Tuesday. (@SpokespersonMoD X/ ANI Photo)

• Bharat International Rice Conference (BIRC) 2025

— The inaugural edition of the BIRC 2025 was held at the **Bharat Mandapam, Pragati Maidan**, New Delhi, on 30–31 October 2025.

— It was organised by the Indian Rice Exporters Federation (IREF) jointly with Agricultural & Processed Food Products Export Development Authority (APEDA), Ministry of Commerce & Industry.

— India has emerged as the largest producer of rice in the world surpassing China, with a total estimated production of over 149 million MT during 2024-25 season.

— With exports of over 20.19 million tons of rice in 2024-25, India continues to be the largest exporter of rice in the

world, contributing over 40% of global rice trade.

(Source: birc.in)

- **Chakhao Rice**

— A pact was signed by APEDA during the 1st BIRC conference which will allow Manipur to introduce another variety of Chakhao (white sticky rice) to the international market after successfully exporting its indigenous black sticky rice.

— Chakhao is a **Black Rice variety grown in Manipur**. It is glutinous rice with a pleasant aroma and nutty flavour. It is considered one of the healthiest superfoods due to several medicinal and nutritional values, rich in antioxidants, protein, iron, fibre and other essential nutrients.

— The Government of India awarded Chakchao (black variety) the **Geographical Indication Tagging in 2020**.

- **Asia Pacific Accident Investigation Group (APAC- AIG) meeting**

— Aircraft Accident Investigation Bureau (AAIB) on behalf of the Ministry of Civil Aviation, hosted a four-day Asia Pacific Accident Investigation Group (APAC- AIG) meeting along with a workshop from 28-31 October 2025.

— This is the first time that **India has hosted the APAC-AIG meeting**. This meeting is held annually which is generally hosted by one of the International Civil Aviation Organization (ICAO) member states in the APAC region.

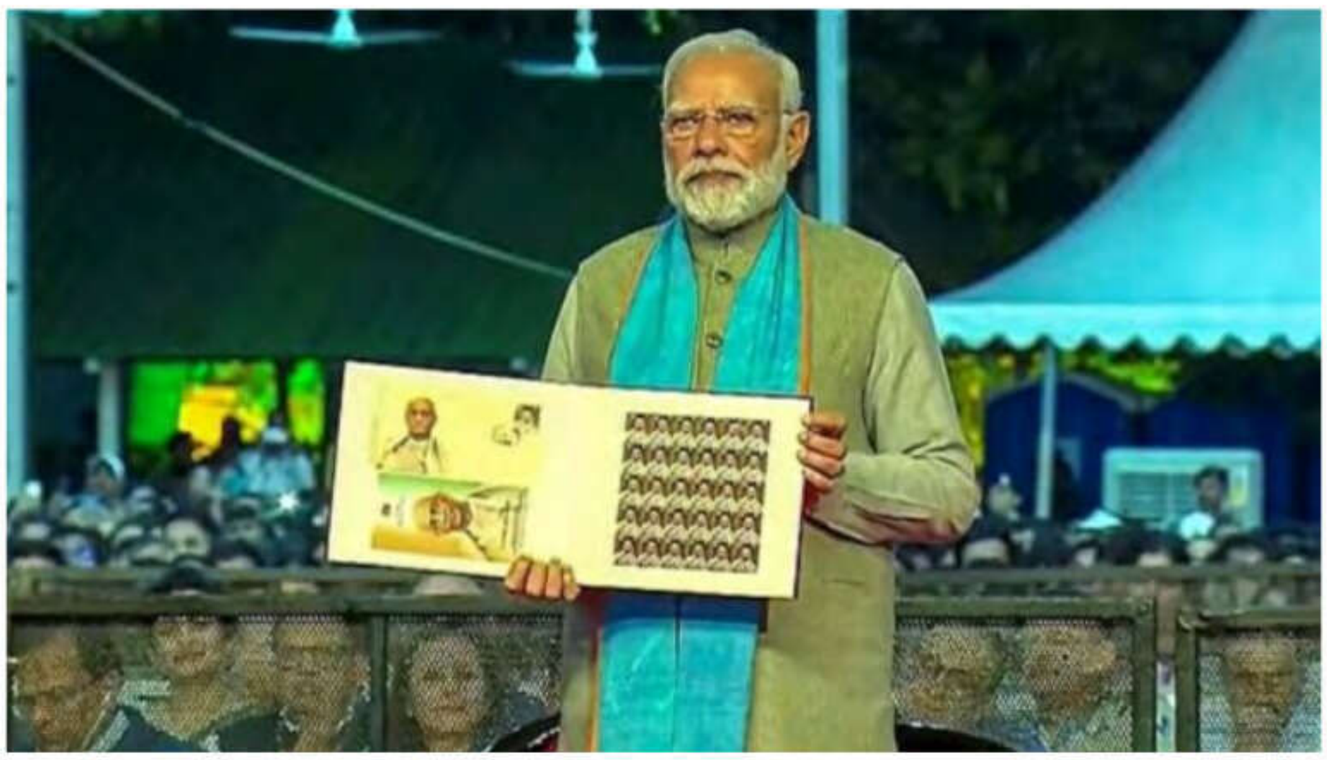
— ICAO is a specialised organisation of the United Nations created through the Chicago Convention (formally known as the Convention on International Civil Aviation) of 1944 to promote safe and orderly growth of international civil aviation throughout the world.

- **Rashtriya Ekta Diwas**

— October 31, Sardar Vallabhbhai Patel's birth anniversary is celebrated as 'Rashtriya Ekta Diwas' or National Unity Day.

— India's first Deputy Prime Minister and Home Minister, Sardar Vallabhbhai Patel, played a key role in bringing the country together after independence in 1947.

— National Unity Day was first observed in 2014 following the Government of India's decision to honor Sardar Patel's exceptional contributions to nation-building.



Prime Minister Narendra Modi launches stamp on the eve of 150th birth anniversary of Sardar Vallabhbhai Patel during the foundation stone laying ceremony of development works. (PTI Photo)

— Prime Minister Narendra Modi released a **special ₹150 commemorative coin** and stamp as a tribute on this occasion.

• Indo-Pacific Regional Dialogue (IPRD) 2025

— The 7th Edition of Indo-Pacific Regional Dialogue was held at the Manekshaw Centre in Delhi from October 28 to 30, 2025, under the theme of **'Promoting Holistic Maritime Security and Growth: Regional Capacity-Building and Capability-Enhancement'**.

— The IPRD is the Indian Navy's annual, international, apex-level conference, and is the principal manifestation of the Navy's outreach at the strategic level.

— Each successive edition of the IPRD seeks to sequentially focus upon the pillars of the "Indo-Pacific Oceans Initiative" (IPOI).

— In 2019, the IPOI was launched at the East Asia Summit and in 2020 the IPOI and SAGAR were linked at the ASEAN-India summit.

• India Maritime Week - 2025

— The India Maritime Week 2025 was hosted by the Ministry of Ports, Shipping and Waterways (MoPSW) from October 27 to 31 at NESCO Grounds in Mumbai.

— The theme of IMW 2025 is **'Uniting Oceans, One Maritime Vision'** – which reflects the timeless Indian ethos of 'Vasudhaiva Kutumbakam'.

— The government has decided to invest Rs 70,000 crore in the maritime sector to boost domestic capacity, build greenfield and brownfield shipyards.

Prime Minister Narendra Modi visits a stall at an exhibition during the Maritime Leaders Conclave at the India Maritime Week 2025 event, in Mumbai. Union Minister Sarbananda Sonowal is also seen. (PMO via PTI Photo)

— The logo of the proposed National Maritime Heritage Complex (NMHC) at Lothal in Gujarat was unveiled by Union Minister for Ports, Shipping and Waterways Sarbananda Sonowal on the second day of India Maritime Week 2025 in Mumbai.

Economy

• Payments Regulatory Board (PRB)

— The Reserve Bank of India (RBI) has constituted a **six-member Payments Regulatory Board (PRB)**, comprising three nominees from the Central government, to oversee the functioning of payment systems in the country.

— The Board is chaired by RBI Governor **Sanjay Malhotra**. Alongside the Governor, the two

The Board is chaired by RBI Governor Sanjay Malhotra. (Express File Photo)

other RBI representatives are the Deputy Governor and the Executive Director in charge of Payment and Settlement Systems.

— The PRB replaces the Board for Regulation and Supervision of Payment and Settlement Systems (BPSS), a committee of the RBI's Central Board. The new board derives its authority from the Payment and Settlement Systems Act, 2007.

Polity

- **National Crime Records Bureau (NCRB) data**

(**FYI**: The NCRB data are important fodder for your Mains answer writing. Do keep in mind important data to substantiate your answers.)

— The National Crime Records Bureau (NCRB) on September 29 released the Crime in India report for 2023, which is the most authoritative compilation of offences across the country.

— The annual report provides crucial data on violent crime, caste-based offences, economic frauds, and more that informs policymaking and law enforcement priorities.

Key data points from the report

— India **recorded 27,721 cases** of murder in 2023, a dip of 2.8% from 2022, while cybercrimes saw a 31.2% increase, with 86,420 cases reported.

— **Crime against children:** A total of 1,77,335 cases of crime against children were registered across the country in 2023, showing an increase of 9.2% as compared to the previous year.

— Crimes against Scheduled Tribes (STs): Crimes against STs increased 28.8% in 2023, with 12,960 cases registered.

— **Crime against Scheduled Castes (SCs):** There were 57,789 cases registered in 2023 for crimes against SCs, with Uttar Pradesh accounting for the highest share at 15,130 cases.

— **Cybercrime:** Cybercrime in India saw a sharp surge in 2023, with fraud, extortion and sexual exploitation accounting for the majority of cases. The crime rate, which is the number of crimes per lakh population, increased from 4.8 in 2022 to 6.2 in 2023.

— **Crime against women:** A total of 4,48,211 cases of crime against women were registered, marking an increase of 0.7%. The national crime rate stood at 66.2 incidents per lakh female population.

— **NCRB data on student suicide:** The number of student suicides in the country went up by 34 per cent in 2023 as compared to 2019, data from the National Crime Records Bureau (NCRB) shows.

— Over the past decade, the number of student suicides rose by around 65% — from 8,423 in 2013 to 13,892 in 2023. The total number of deaths by suicide in 2023 is 1.71 lakh, which saw an increase of 23 per cent from 2019 (1.39 lakh deaths). **Student suicides** made up around 8.1% of the total deaths by suicide in the country in 2023.

— **NCRB data on the safest city in India:** Kolkata has once again emerged as the safest city in India for the fourth year running. It has recorded 83.9 cognisable offences per lakh population in 2023, the lowest among the 19 Indian cities with populations above 20 lakh. Among the cities surveyed, Kochi (Kerala) is at the top amongst the most unsafe cities, followed by Delhi.

About NCRB

The NCRB was established in 1986 to compile crime data, functioning under the Union Home Ministry. Apart from publishing annual reports, it engages in the "Collection, coordination and exchange of information on inter-state and international criminals to the respective states".

NCRB also acts as a "national warehouse" for the fingerprint records of Indian and foreign criminals, and assists in locating interstate criminals through fingerprint search.

- **BSNL's 'Swadeshi' 4G network**

— Prime Minister Narendra Modi inaugurated BSNL's 'Swadeshi' 4G stack

— The development marked India's entry into an exclusive group of countries, including Denmark, Sweden, South Korea and China, which manufacture their own telecom equipment.

- **RSS @ 100**

— The Government of India has released a special postage stamp and commemorative coin to commemorate the Rashtriya Swayamsevak Sangh's glorious 100-year journey.

— The **₹100 coin** features the national emblem on one side and a majestic image of Bharat Mata in Varad Mudra with a lion, being saluted by swayamsevaks, on the other.

PM Modi releases the special coin and stamp at the RSS centenary event in Delhi.

- **Aspirational Agriculture Districts**

— The Centre has announced 100 Aspirational Agriculture Districts to be developed under the **Prime Minister Dhan-Dhaanya Krishi Yojana (PMDDKY)** across 29 states and UTs, with Uttar Pradesh accounting for the most 12 districts.

— The identification of 100 aspirational agricultural districts has been based on three factors: (i) low productivity (ii) moderate crop intensity (iii) below-average access to credit.

— It is designed on the lines of the Aspirational Districts Programme.

- **National Camel Mission**

— The Ministry of Fisheries, Animal Husbandry and Dairying is planning to launch the **National Camel Sustainability Initiative (NCSI)** — a national mission aimed at reversing the steady decline in India's camel population.

— The NCSI would bring together the Department of Animal Husbandry and Dairying, the Ministries of Environment, Rural Development and Tourism, and State governments, to ensure coordinated action.

— According to the 20th Livestock Census, India's camel population stood at 2.52 lakh in 2019, down from about 11 lakh in 1977 and 4 lakh in 2013. Nearly 90% of these camels are concentrated in Rajasthan and Gujarat.

— Notably, World Camel Day is celebrated on **June 22** to promote camel culture, conservation, and innovation.

About Kharai camels

In 2016, a prelims question in the UPSC was asked on Kharai camels. According to ICAR, the Kharai camel, indigenous to Gujarat, derives its name from the local term "Khara," meaning saline, reflecting its adaptability to both desert and coastal ecosystems.

It is known as the "Swimming Camel," as it can traverse long distances across water. It has been preserved by the Rabari and Fakirani Jat tribes for over 400 years.

• Greenhouse Gas Emission Intensity (GEI) Target Rules, 2025

— The Centre has notified the first legally binding Greenhouse Gas Emission Intensity (GEI) Target Rules, 2025, for four high-emission sectors—aluminium, cement, chlor-alkali, and pulp and paper.

— Industries will earn carbon credits in lieu of meeting emissions targets, while those that fail to do so will have to buy credits or pay environmental compensation.

— The Rules will help operationalise the country's domestic carbon market under the Carbon Credit Trading Scheme (CCTS), 2023.

— India's commitment: India has committed to reducing the emissions intensity of its gross domestic product (the amount of energy used per unit of GDP) by 45 per cent by 2030 compared to 2005 levels, as part of its domestic commitments under the global agreement.

• New Agriculture Schemes

— Two new agriculture schemes, the **PM Dhan Dhaanya Krishi Yojana (PMDDKY)** and the **Mission for Aatmanirbharta in Pulses**, with a total outlay of `35,440 crore, was launched by Prime Minister Narendra Modi on 11th October, 2025.

— PMDDKY is designed on the lines of the Aspirational Districts Programme (ADP) that was launched by Prime Minister Narendra Modi in January 2018 in the country's 112 most underdeveloped districts, with the aim of transforming them quickly and effectively.

— The PMDDKY is aimed at developing 100 agricultural districts selected based on 3 factors — low productivity, moderate crop intensity, below-average access to credit. While the PMDDKY does not have a separate budget, its outlay of `**24,000 crore** will come from convergence of various schemes.

— The pulses mission has an outlay of `**11,440 crore**. It will be implemented from 2025-26 to 2030-31 and aims at expanding the area under pulses to 310 lakh hectares, increase production to 350 lakh tonnes, and raise yield to 1130 kg/ha by 2030-31.

- **DRAVYA portal**

— Last month, the Ministry of Ayush unveiled the portal during the 10th Ayurveda Day event.

— The DRAVYA portal serves as a comprehensive, open-access database that dynamically consolidates data from classical Ayurvedic texts and standard online research platforms.

— It enables users to search for medicinal substances used across Ayush systems and access detailed profiles spanning Ayurvedic pharmacotherapeutics, botany, chemistry, pharmacy, pharmacology, and safety information

- **Extension of 16th Finance Commission**

— The government has extended the tenure of the 16th Finance Commission by one month till November 30.

— The 16th Finance Commission was constituted by the government on December 31, 2023, with former Niti Aayog vice-chairman **Arvind Panagariya as its Chairman**. The report by the panel was due by October 31

- **State Mining Readiness Index**

— The Ministry of Mines has released the State Mining Readiness Index (SMRI) and corresponding State rankings, marking what it described as a major step towards promoting mining sector reforms at the State level.

— Under the SMRI, States were grouped into three categories on the basis of their mineral wealth.

Category A for mineral-rich states. The top three ranked States are Madhya Pradesh, Rajasthan, and Gujarat.

Category B for those with moderate resources, and the top three states are Goa, Uttar Pradesh, and Assam.

Category C for states with limited mineral resources. Punjab, Uttarakhand, and Tripura have obtained the top three ranks.

— The purpose of the index is to serve as a tool for benchmarking State performance and encouraging healthy competition, thereby accelerating the pace of mining reforms and sustainable resource management across India.

(Source: Ministry of Mines)

- **'We Rise' initiative**

— '***We Rise* - Women Entrepreneurs Reimagining Inclusive and Sustainable Enterprises'** has been launched as a joint initiative of NITI Aayog's Women Entrepreneurship Platform and DP World.

— This programme under the aegis of WEP's Award to Reward (ATR) initiative, aims to help women entrepreneurs in India to scale their businesses globally through trade facilitation, mentorship, and strategic partnerships.

— WEP serves as national aggregator to strengthen India's women entrepreneurship ecosystem and make women-led development a reality.

— The **Award to Reward (ATR) initiative**, launched in 2023, institutionalises WEP's partnership framework by bringing together ecosystem stakeholders to address the specific needs of women entrepreneurs. It serves as a plug-and-play model fostering scalable collaborations and measurable impact.

- **Scheme for Innovation and Technology Association with Aadhaar (SITAA)**

— To foster innovation and collaboration in the digital identity domain, the **Unique Identification Authority of India (UIDAI) has launched the SITAA**.

— The initiative aims to strengthen India's ID Tech ecosystem by enabling startups, academia, and industry to work closely with UIDAI.

— Through this initiative, UIDAI seeks to drive innovation, promote indigenization, and co-develop advanced and future-ready identity technologies.

(Source: PIB)

- **Rule 3(1)(d) of the IT Rules 2021**

— The Ministry of Electronics and Information Technology (MeitY) has notified amendments to the IT Rule, 2021. It amends **Rule 3(1)(d) of the IT Rules, 2021**, which governs intermediary takedown obligations.

— The amendment, which will come into force from 15th November, 2025 provides additional safeguards to ensure senior-level accountability, precise specification of unlawful content, and periodic review of government directions at higher level.

— According to the amendment, content blocking intimations to social media platforms like YouTube, Instagram and X can be sent by a senior officer **not below the rank of Joint Secretary (JS)**, or equivalent, and a Director or an officer equivalent in rank where a JS has not been appointed.

— In case of police authorities, only an officer not below the rank of Deputy Inspector General of Police (DIG), specially authorised, can issue such intimation.

— A periodic review mechanism has been introduced, requiring all intimations under Rule 3(1)(d) to be reviewed monthly by an officer of the rank of Secretary or equivalent in the Appropriate Government, ensuring that actions remain necessary, proportionate, and lawful.

- **PM-SHRI**

— The CPI(M)-led Left Democratic Front (LDF) government in Kerala has agreed to implement the PM-SHRI scheme. This has drawn fire not only from the opposition Congress, but also from within the LDF.

— The Centre's PM Schools for **Rising India (PM-SHRI) scheme** was approved in 2022. It seeks to develop 14,500 schools to "showcase" aspects of the NEP 2020. These schools are to be "exemplars" for other schools in their region.

— The scheme is for existing elementary, secondary, and senior secondary schools run by the central government and state and local governments across the country.

- **Electronics Components Manufacturing Scheme (ECMS)**

— The government has approved the seven projects worth **Rs 5,532 crore** under the ECMS.

— The scheme was approved by the Union Cabinet in March 2025 with an outlay of Rs 22,919 crore over six years. It seeks to integrate India's electronic industry with global value chains by encouraging production of essential

components, sub-assemblies, and raw materials within the country.

— It was expected to generate production of Rs 4.56 lakh crore and bring in incremental investment of Rs 59,350 crore.

— Under this scheme, incentives have been linked to three key parameters: **annual employment generation, capital expenditure needs and annual production**.

— The components that the government is looking to target through the scheme include display modules, sub assembly camera modules, printed circuit board assemblies, lithium cell enclosures, resistors, capacitors, and ferrites, among others.

About the Electronics Sector

- Electronics have emerged as India's third largest and fastest growing export category in 2024–25, rising from the seventh position in 2021–22. Total export in 2024-25 was ₹3.27 lakh crore.
- The country's electronics production has grown from ₹1.9 lakh crore in 2014–15 to ₹11.3 lakh crore in 2024–25, marking a six-fold increase.
- Over the past decade, electronics manufacturing has created around 25 lakh jobs across the country.

• Model Youth Gram Sabha

— The Model Youth Gram Sabha was launched nationwide on 30th October 2025 at Dr. Ambedkar International Centre, New Delhi.

— It was launched by the Ministry of Panchayati Raj in collaboration with the Ministry of Education (Department of School Education and Literacy) and the Ministry of Tribal Affairs.

— It is an initiative based on the **Model UN** – an educational simulation of the United Nations – in schools across the country.

— The initiative will be rolled out across more than 1,000 schools nationwide, including Jawahar Navodaya Vidyalayas (JNVs), Eklavya Model Residential Schools (EMRSs), and State Government Schools.

— As part of the initiative, a mock Gram Sabha will be conducted in identified schools, where students from classes 9-12 will play the roles of sarpanch, ward members, and village-level officials, including village secretary, Anganwadi worker, auxiliary nurse midwife (ANM), and junior engineers.

— They will hold mock meetings of the Gram Sabha, discuss various issues, and prepare the village budget and development plans.

• Koyla Shakti Dashboard and CLAMP portal

— The Union Minister of Coal and Mines, Shri G. Kishan Reddy, has launched two digital platforms, the Koyla Shakti Dashboard and the Coal Land Acquisition, Management, and Payment (CLAMP) Portal.

— Koyla Shakti enables real-time monitoring of coal movement through rail, road, and multimodal systems,

facilitating data-driven decision-making and predictive analytics for better demand forecasting and logistics planning.

— The CLAMP Portal is a unified digital solution aimed at streamlining land acquisition, compensation, and rehabilitation & resettlement (R&R) processes in the coal sector.

- **Transit-oriented development**

— Delhi Development Authority (DDA) is set to launch **Delhi's first transit-oriented development** in the East Delhi Hub in Karkardooma.

— TOD is an urban development strategy that aims to create the maximum possible numbers of houses, shops, offices and recreational spaces near public transport facilities. It puts public transportation at the centre of the urban development plan.

— For land-owning agencies and governments, TOD appears as a mode of value-capture financing, which allows them to fund public projects through potential increases in land values resulting from these projects.

Defence

- **BrahMos missiles**

— Recently, the **first batch of supersonic BrahMos missiles** manufactured at the Lucknow unit of BrahMos Aerospace Limited was flagged off.

— Lucknow facility was inaugurated in May at a cost of Rs 380 crore over 200 acres, which has manufactured and delivered its first batch of missiles in just five months.

— BrahMos is considered an extremely versatile 'fire and forget' type missile, which has proved its capabilities across its land-based, ship-based, air-launched and submarine-based versions.

— It is a two-stage cruise missile with a solid propellant booster engine.

- **LCA Tejas Mk 1 A**

— The indigenous Light Combat Aircraft (LCA) Tejas Mk 1A undertook its first public sortie at the Hindustan Aeronautics Limited (HAL) facility in Nashik on 17th October, 2025.

— LCA Tejas is a **4.5 generation**, all-weather and multi-role fighter aircraft. India is currently developing its own fifth-generation aircraft with Advanced Medium Combat Aircraft (AMCA).

— Currently, only the US (F-22 and F-35), Russia (Sukhoi Su-57), and China (Chengdu J-20) have developed operational **fifth-generation aircraft**.

- **Trishul Joint Exercise**

— The Pune headquartered Southern Command of the Indian Army undertakes a **Joint Exercise 'Trishul'** with the Navy and Air Force, with offensive manoeuvres in the creek and desert sectors, and amphibious operations off the Saurashtra coast.

— The exercise comprises joint multi-domain operational exercises encompassing Intelligence, Surveillance and Reconnaissance (ISR), Electronic Warfare (EW), and Cyber capabilities.

— In the initial days, they conducted two critical drills — **Agni Drishti** and the **spectrum dominance exercise Trinetra**.

— The network-centric warfare drill **Agni Drishti** aimed at integrating land, air, space, and unmanned Intelligence, Surveillance, and Reconnaissance (ISR) assets.

— **Exercise Trinetra** focused on electromagnetic spectrum operations and counter-unmanned aerial system kill-chains.

— The **concept of spectrum** dominance refers to the ability to control the electromagnetic spectrum for communications, surveillance, and combat advantage, while denying the same to the enemy.

• Super Sukhoi programme

— With the final exit of the MiG-21s last month bringing down the IAF fighter squadron strength to 29 as against the sanctioned 42, there's a push within the government to go ahead with the programme to upgrade the Sukhoi Su-30MKI fleet.

— The **Su-30MKI upgrade programme**, also referred to as the Super Sukhoi programme, is a major midlife upgrade programme that can increase the service life of the multirole fighter by another 20 years.

• Rafale Fighter Jet

— **President Droupadi Murmu**, the supreme commander of the Indian armed forces, made history by undertaking a sortie in a Rafale fighter jet at the Air Force Station in Ambala, Haryana.

— This marked the first time an Indian President has flown in the advanced French-origin multirole combat aircraft.

— **Group Captain Amit Gehani**, the commanding officer of the IAF's No. 17 Squadron, the 'Golden Arrows', was the pilot of the aircraft carrying the President.

President Droupadi Murmu poses for a picture with Flight Lieutenant Shivangi Singh, whom Pakistan falsely claimed had been captured during Operation Sindoor. Murmu took a sortie in Rafale fighter jet, at Air Force Station in Haryana's Ambala.
(Rashtrapati Bhavan via PTI Photo)

— The President was assisted into the Rafale cockpit by **Flight Lieutenant Shivangi Singh**, the first woman pilot to fly the aircraft.

International Cooperation

• Mutual Legal Assistance Treaty (MLAT)

— The Assam government has requested the Ministry of Home Affairs to invoke the Mutual Legal Assistance Treaty (MLAT) with Singapore to assist in the ongoing probe into superstar **Zubeen Garg's death in Singapore**.

— An MLAT is an agreement between two or more countries for the purpose of gathering and exchanging information

in an effort to enforce public laws or criminal laws.

— When evidence or other forms of legal assistance, such as witness statements or the service of documents, are needed from a foreign sovereign, states may attempt to cooperate informally through their respective police agencies or, alternatively, resort to what is typically referred to as requests for 'mutual legal assistance'.

• Trump's 20-point peace plan for Gaza

— US President Donald Trump has put forward a 20-point proposal titled the "Comprehensive Plan to End the Gaza conflict" to bring about peace in Gaza as the devastating war by Israel after the October 7, 2023, attacks by Hamas.

— The plan has different elements, which will hold ramifications for the wider Middle East region, for Trump, and for India. Crucially, Hamas is yet to accept the plan.

• US Government Shutdown 2025

— The US government shut down on October 1 at 12:01 AM for the first time in seven years, after Republican and Democrat members of the Senate failed to approve federal funding for the government.

— This would result in the furlough of thousands of federal employees or temporarily dismissed from work, and public services will also be impacted.

— The **government has been shut down** 14 times since 1980, with three of these occurring during Trump's first term (2017-2021) alone.

— The US Congress needs to approve about a dozen appropriations bills, which determine the funding of several government agencies, and get the president's assent before October 1 every year. These bills are often lumped into a collection **called an "omnibus" bill** to speed up the process at the last minute.

— Thus, a shutdown is the result if Congress is unable to authorise more spending before the funding deadline lapses. Depending on the extent of approvals made and which agencies get funded, the government must fully or partially shut down.

• "Welcome to Country" smoke ceremony

— Defence Minister was welcomed to the Australian Parliament with a traditional Aboriginal "Welcome to Country" smoke ceremony.

— It is a symbolic **Aboriginal Australian ritual** that acknowledges the traditional custodians of the land and signifies friendship and reconciliation.

— A **Welcome to Country** is a formal ceremony delivered by an Elder, Traditional Owner or Aboriginal and Torres Strait Islander person who has been given permission from Traditional Owners to welcome visitors to their Country. Traditionally it is a ceremony to not only welcome an outsider to Country but to also grant permission for the visitor to enter their land.

— A **Welcome to Country** occurs at the beginning of any gathering or event. It can take many forms, including singing, dancing, smoking ceremonies or a speech delivered in traditional language, English or a mixture of both.

• Konkan-25

— The first-ever India-UK Carrier Strike Group maritime exercise named Konkan-25 began on October 5. Carriers are warships that can serve as airbases, too.

— The Indian Navy's carrier strike group, led by the indigenous aircraft carrier INS Vikrant, and the United Kingdom Royal Navy's Carrier Strike Group (CSG), led by HMS Prince of Wales is participating in the exercise.

— The exercise is named after India's strategically crucial Konkan coastal region. It is undertaken every two years to enhance joint maritime and air capabilities between the Indian and UK navies on the high seas.

— While the exercise has been biennial since 2004, this edition marks the first time that a British and Indian Carrier Strike Group are participating together. The exercise is being conducted in two phases: Sea phase and Harbour phase.

— Notably, UK CSG is currently on an eight-month multinational deployment known as Operation Highmast.

• Diwali as holiday in the US

— **California** has become the third US state to designate Diwali as an official state holiday.

— The bill titled, 'AB268' to designate Diwali as an official state holiday, had successfully passed both houses of the legislature in California and it was signed by Governor Gavin Newsom.

— The first US state to declare Diwali as a state holiday was Pennsylvania in 2024 and it was followed by Connecticut earlier this year.

— California has now joined the list of states to declare Diwali as a state holiday. In New York City, Diwali has been declared a holiday for public schools.

• India's engagement with the Taliban ruled Kabul

— As a first step towards normalising diplomatic ties with the Taliban since the group seized power in Afghanistan after the withdrawal of the US-led forces in 2021, India has decided to upgrade its "technical mission" in Kabul to the status of an embassy.

— India closed its embassy in Kabul after the Taliban seized power in August 2021. In June 2022, India re-established its diplomatic presence in the Afghan capital by deploying a "technical team."

In this image posted on Oct. 10, 2025, Union External Affairs Minister S Jaishankar during a meeting with his Afghani counterpart Amir Khan Muttaqi, in New Delhi. (@HafizZiaAhmad/X)

• JAIMEX-25

— **Indian Naval Ship (INS) Sahyadri** participated in the Sea phase of JAIMEX-25 (Japan India Maritime Exercise) from 16 to 18 Oct 2025 and made a port call at Yokosuka, Japan, on 21 Oct 2025 for the Harbour phase.

— JAIMEX, earlier known as JIMEX, has been conducted since 2012. It comprised of complex tactical drills in all

dimensions of Naval warfare to enhance interoperability between two key maritime forces in the Indo-Pacific.

(Source: indiannavy.gov.in)

• Kafala System

— Recently, **Saudi Arabia** has decided to replace the Kafala System with a contractual model, giving migrant workers more rights and freedom to work in the kingdom.

— The Kafala System refers to a **binding contract between migrant workers and their local sponsor**, under which they can only work for the specific employer throughout the period of their residence in the country.

— Under the Kafala System, the employer, who is also the sponsor of the migrant workers, had an undue legal advantage over them as they were not allowed to switch jobs without the Kafala's consent

— Due to its exploitative nature, especially on migrant workers who come to the Middle East for jobs, including domestic work, construction, etc, critics have often called it modern-day slavery.

— In 2009, **Bahrain became the first country in the Middle East** to abolish the Kafala system, while the UAE diluted its Kafala system in 2015, allowing migrant workers whose contracts have expired to obtain a new permit and remain in the country on a 6-month job seeker visa.

— Gulf Cooperation Council countries that still have the strict Kafala system in place are Kuwait, Qatar, and Oman.

• New member to ASEAN

— **East Timor** was added as the newest member to the 10-member Association of Southeast Asian Nations (ASEAN) on October 26.

— East Timor, also known as Timor-Leste, had long attempted to join ASEAN, given the organisation's significance in maintaining economic, political and security coordination in the region.

— With a population of 1.4 million, East Timor is located in the Pacific Ocean to the north of Australia. It constitutes the eastern side of a larger island, while most of the western side is under Indonesian control.

— Current President **Jose Ramos-Horta**, 75, won the Nobel Peace Prize in 1996. He was jointly awarded with Catholic priest and fellow East Timorese Carlos Filipe Ximenes Belo, "for their work towards a just and peaceful solution to the conflict in East Timor".

— It also marked ASEAN's first expansion in years, after Cambodia last joined it in 1999.

— Members of ASEAN: Indonesia, Thailand, Singapore, Philippines, Vietnam, Malaysia, Myanmar, Cambodia, East Timor, Brunei and Laos.

— The **47th ASEAN Summit** is happening in Kuala Lumpur in Malaysia under the theme, "Inclusivity and Sustainability".

• Sevilla Forum on Debt

— A new global platform to confront mounting debt challenges - the **Sevilla Forum on Debt** was launched on October 22, 2025, at the 16th United Nations Conference or Trade and Development (UNCTAD16) in Geneva.

— The Forum, a Spanish-led initiative supported by UNCTAD and the UN Department of Economic and Social Affairs (DESA), aims to serve as an open and inclusive space for dialogue and action on sovereign debt reform.

— The Forum marks one of the first tangible outcomes of the **Fourth International Conference on Financing for Development (FfD4)** held from 30 June – 3 July in Seville, Spain.

— Financing for development (FfD) is an ongoing process to align financial flows and policies with economic, social, and environmental priorities.

— Many countries face escalating debt burdens, declining investments, decreasing international aid, and increasing trade barriers. The Conference is seen as an opportunity to close the staggering $4 trillion annual financing gap, promoting development, bringing millions of people out of poverty, and helping achieve the UN's Sustainable Development Goals, which are currently lagging.

• United Nations Conference on Trade and Development (UNCTAD16)

— The **16th session of the United Nations Conference on Trade and Development (UNCTAD16)** took place from 20 to 23 October 2025 at the Palais des Nations in Geneva.

— The theme of the UNCTAD16 was "Shaping the future: Driving economic transformation for equitable, inclusive and sustainable development".

— UNCTAD, a permanent organ of the United Nations (UN) General Assembly, was established in **1964** to promote trade, investment, and development in developing countries.

— It is headquartered in **Geneva, Switzerland**, with approximately 190 members.

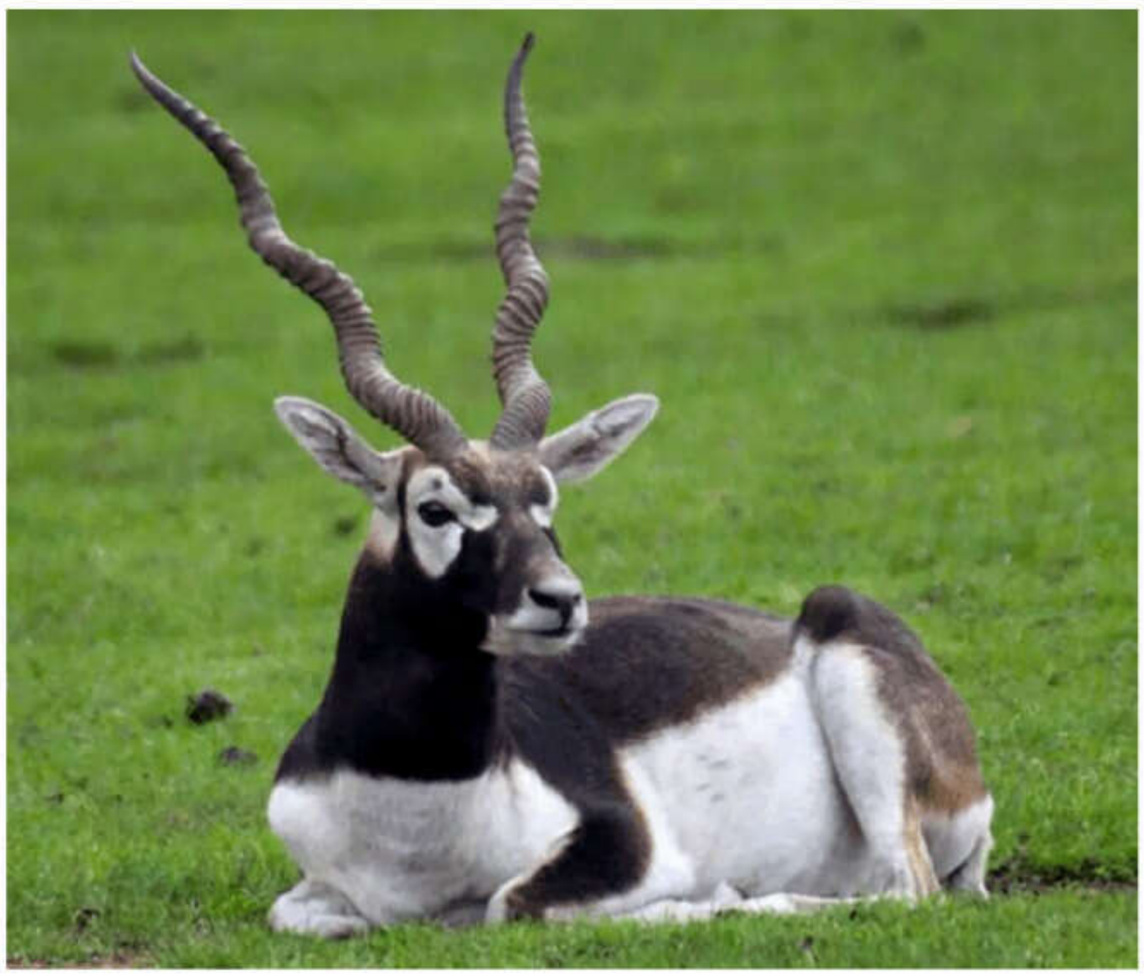
• Blackbuck

— The **blackbuck (Antilope cervicapra)**, which had become "locally extinct" in Chhattisgarh for almost 50 years, today hosts 190 blackbucks in the Barnawapara Wildlife Sanctuary of Chhattisgarh.

— In 2018, the Chhattisgarh government embarked on an ambitious venture to revive the blackbuck population. As part of the 2021–2026 revival plan, the Chhattisgarh State Wildlife Board translocated 77 blackbucks – 50 from the National Zoological Park in New Delhi and 27 from the Kanan Pendari Zoological Garden, Bilaspur, Chhattisgarh — to **Barnawapara Wildlife Sanctuary**.

— Blackbuck is a graceful, medium-sized antelope that inhabits open grasslands of India and Nepal. They are found only in the Indian subcontinent. Males have corkscrew-shaped horns and black-to-dark brown coats, while females are fawn-coloured.

— The animals are mainly seen in three broad clusters across India-northern, southern, and eastern regions. Due to conservation efforts, **IUCN** was able to relax the blackbuck's status to '**Least Concern**' in 2017.



Blackbucks are listed under Schedule 1 of the Wildlife Protection Act, 1972. (Wikimedia Commons)

— It is listed **under Schedule 1 of the Wildlife Protection Act, 1972**. Hunting and poaching blackbucks is a non-bailable offence and can invite a jail term of up to six years. The Bishnoi community worships it.

• Boma technique

— Recently, the Madhya Pradesh forest department has used the helicopter-driven boma technique to capture the key antelope species from Shajapur district and shifted them to the safe zone of the Gandhi Sagar Wildlife Sanctuary to save the standing crops.

— The **Boma capturing technique**, which is popular in **Africa**, involves luring animals into an enclosure by chasing them through a funnel-like fencing. The funnel tapers into an animal selection-cum-loading chute, supported with grass mats and green net to make it opaque for animals, which are herded into a large vehicle for their transport to another location.

• Cyclone Montha

— The IMD warned that a "Deep depression over the southeast Bay of Bengal is likely to intensify into a Cyclonic Storm" by October 27 and a Severe Cyclonic Storm by October 28. When it does hit the coast, it will be known as Cyclone Montha.

— The name "Montha", suggested by Thailand, means "fragrant flower" or "beautiful flower."

— As per the National Disaster Management Authority (NDMA), a **cyclone** is characterised by **inward spiralling winds** that rotate anticlockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.

— It is also called a hurricane or typhoon in other parts of the world. India often witnesses tropical cyclones, known as such because they develop in the regions between the Tropics of Capricorn and Cancer.

MAINS VALUE ADDITION

Recently, UNDP India has published an in-depth story on how women in Odisha are using poetry, storytelling, and community leadership as tools for climate resilience and awareness. It entails the story of local "climate champions" like Kanchan Jena from Balasore district who used poetry in local form for climate storytelling. She is part of an initiative called Enhancing Climate Resilience of India's Coastal Communities (ECRICC) which is helping communities turn hardship into strength. These stories can be used as value addition in your Mains answer on the role of women, local communities, and new voices in the fight against climate change.

"We went to the seashore,
Sorrow filled our hearts
Seeing the waste scattered around,
Which never perishes.
The sea is our ornament,
So, why are you degrading it?
From it we are securing our livelihoods,
By selling the fish it bestows." - Kanchan Jena

(Source: UNDP India)

• 47th ASEAN Summit

— Prime Minister Narendra Modi attended the Summit virtually and declared **2026** as the '**ASEAN-India Year of Maritime Cooperation**'.

— Malaysia is the Chair of ASEAN for 2025, and it will be the Philippines in 2026.

— ASEAN, or the Association of Southeast Asian Nations, is a grouping of 11 countries — Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam, and the recently added East Timor or Timor Leste.

Prime Minister Narendra Modi is seen on a screen at the top right delivering a virtual speech to ASEAN leaders during the 47th Association of Southeast Asian Nations (ASEAN) Summit in Kuala Lumpur, Malaysia, Sunday (AP)

• Asia-Pacific Economic Cooperation (APEC) Summit

— The APEC summit was held from October 31 to November 1, 2025, in Gyeongju, South Korea. The permanent secretariat of APEC is located in **Singapore**.

— At the APEC summit, Chinese President Xi Jinping proposed the **establishment of a World Artificial Intelligence Cooperation Organization** to govern the technology's development, set international rules, and foster collaboration among nations.

— APEC is a regional economic forum that was established in 1989. Its stated aim was to "leverage the growing interdependence of the Asia-Pacific and create greater prosperity for the people of the region through regional economic integration".

— The APEC economies are Australia, Brunei, New Zealand, Papua New Guinea, Hong Kong (as part of China), the Philippines, Indonesia, Malaysia, Vietnam, Singapore, Thailand, Chinese Taipei (Taiwan), China, Japan, South Korea, Russia, Canada, the United States, Mexico, Peru, and Chile – as located geographically around the Pacific Ocean.

• Eighth Session of the International Solar Alliance Assembly (ISA)

— The **President of India, Droupadi Murmu**, inaugurated the opening plenary of the Eighth Session of the International Solar Alliance Assembly (ISA) in New Delhi, on October 28, 2025.

— The Assembly witnessed the launch of **five ISA knowledge products** — Ease of Doing Solar 2025, Solar PV Skills and Jobs in Africa, Solar Compass: Special Issue on Integrated Photovoltaics, Global Floating Solar Framework, and Global Solar Trends & Outlook 2025.

— The International Solar Alliance (ISA) is a **joint initiative of France and India**, launched during COP21 in Paris in 2015 with the aim of making an unprecedented effort to promote solar energy.

— Headquartered in **New Delhi**, the ISA brings together over 120 member countries to improve energy access and security worldwide and promote solar power as a sustainable transition to a clean energy future.

(Source: presidentofindia.gov.in)

- **SJ-100 civil jets**

— The Hindustan Aeronautics Limited (HAL) inked an MoU with Russia's Public Joint Stock Company United Aircraft Corporation, for the production of **SJ-100 civil jets**.

— The SJ-100 is a twin-engine, narrow-body aircraft, and is currently in the fleet of around 16 commercial airlines.

HAL and Public Joint Stock Company United Aircraft Corporation (PJSC-UAC) Russia signs MoU

— HAL said that SJ-100 will be the game changer for short-haul connectivity. Under this arrangement, HAL will have the rights to manufacture SJ-100 aircraft for domestic customers.

- **2026 Republic Day guests**

— In a first, India is inviting the **European Union's leadership** — President of the European Commission Ursula von der Leyen and President of the European Council Antonio Costa — as chief guests for the Republic Day celebrations next year, The Indian Express has learnt.

— An invitation to be the Republic Day chief guest is highly symbolic from the Indian government's perspective. New Delhi has been weaving strategy with hospitality to decide its chief guest.

— This year, Indonesian **President Prabowo Subianto** was the chief guest at the Republic Day.

Environment

- **World Network of Biosphere Reserves (WNBR)**

— The **Cold Desert Biosphere Reserve (CDBR)** in Himachal Pradesh, along with 25 other biosphere reserves across several countries, has been included in the World Network of Biosphere Reserves (WNBR) by UNESCO.

— With this addition, India now has **13 biospheres listed in WNBR**.

— CDBR is in the Trans-Himalayan region that encompasses the entire Spiti Wildlife Division and adjoining areas of the Lahaul Forest Division, including Baralacha Pass, Bharatpur, and Sarchu with altitudes ranging from 3,300 to 6,600 m.

— It integrates Pin Valley National Park, Kibber Wildlife Sanctuary, Chandratal Wetland, and the Sarchu plains, encompassing windswept plateaus, glacial valleys, alpine lakes, and high-altitude desert making it one of the coldest and driest ecosystems in WNBR.

- **Dragonfly**

— During the three-day survey on dragonflies at seven biodiversity parks in New Delhi registered a 54 per cent increase in the number of dragonflies.

— At the Yamuna Biodiversity Park, **Yellow-tailed Ashy Skimmer** (Potamarcha congener) has been recorded for the

first time.

— Dragonflies and damselflies are **bioindicators** or species whose presence tracks wetland health. Their larval stages require clean, well-oxygenated water, and both larvae and adults are voracious mosquito predators.

— A single dragonfly is reported to eat 30-100 mosquitoes per day, underscoring its importance, especially after floods.

— The International Union for the Conservation of Nature, in its global assessment in 2021, found that 16% of 6,016 species of dragonflies and damselflies are at risk of extinction, with their freshwater breeding grounds having plummeted.

• Wildlife week 2025

— Wildlife Week is annually celebrated from **October 2 to 8** to raise mass awareness about the importance of wildlife conservation and ecological balance. This year's celebrations are being organized under the theme of **Sewa Parv**, aligning with the broader spirit of service and responsibility towards nature.

— Union Minister for Environment, Forest and Climate Change, Shri Bhupender Yadav, along with Haryana Cabinet Minister Shri Rao Narbir Singh, laid the foundation stone of 'Namo Van' at Manesar on the occasion. The occasion was also marked by a plantation drive under the campaign 'Ek Ped Maa Ke Naam'.

• Cyclone Shakhti

— Cyclone Shakhti, which developed in the Arabian Sea on Friday, has further intensified into a 'severe' storm on 4th October, according to the India Meteorological Department (IMD).

— As the storm, the first to develop in the **North Indian Ocean basin** in 2025, has moved significantly away from the Indian coast, there is no direct threat to the west coast.

IMD confirmed that Cyclone Shakhti has strengthened into a severe storm over the Arabian Sea with winds up to 100 kmph. (PTI)

— Cyclone Shakhti, was located 420 km west of Dwarka, 420 km west-southwest of Naliya, and 290 km south-southwest of Karachi in Pakistan.

— The cyclone has been named Shakhti, a name **suggested by Sri Lanka** as per the convention followed by the WMO/ESCAP Panel on Tropical Cyclones.

— The North Indian Ocean basin, comprising the Arabian Sea and the Bay of Bengal, is prone to cyclones during the pre-monsoon (March to May) and the post-monsoon (October to December) periods.

• IUCN World Conservation Congress

— The IUCN World Conservation Congress is taking place in **Abu Dhabi, United Arab Emirates**, from 9 to 15 October 2025.

— It is organised every **four years**, which enables IUCN's more than 1,400 Member organisations to democratically determine the most pressing issues in nature conservation and actions to address them to help guide humanity's relationship with our planet.

— The IUCN is a global organization comprising 160 member countries and hundreds of civil society groups that work together towards environmental and biodiversity protection.

• National Red List

— Union Minister of State for Environment, Forest and Climate Change Kirti Vardhan Singh unveiled the roadmap for the national-level five-year (2025-2030) assessment on the first day of the World Congress of the IUCN at Abu Dhabi.

— According to the assessment plan, the aim is to establish a nationally coordinated, participatory, and **upgradable 'Red Listing' system** that accurately reflects the conservation status of India's biodiversity.

— It will assess the extinction risk of approximately 11,000 species, including 7,000 kinds of flora and 4,000 types of fauna — across the country to prepare a 'national red list'.

• India's first dugong conservation reserve

— The IUCN World Conservation Congress 2025 has adopted a motion to recognise India's first dugong conservation reserve in **Tamil Nadu's Palk Bay** as a global model for marine biodiversity conservation.

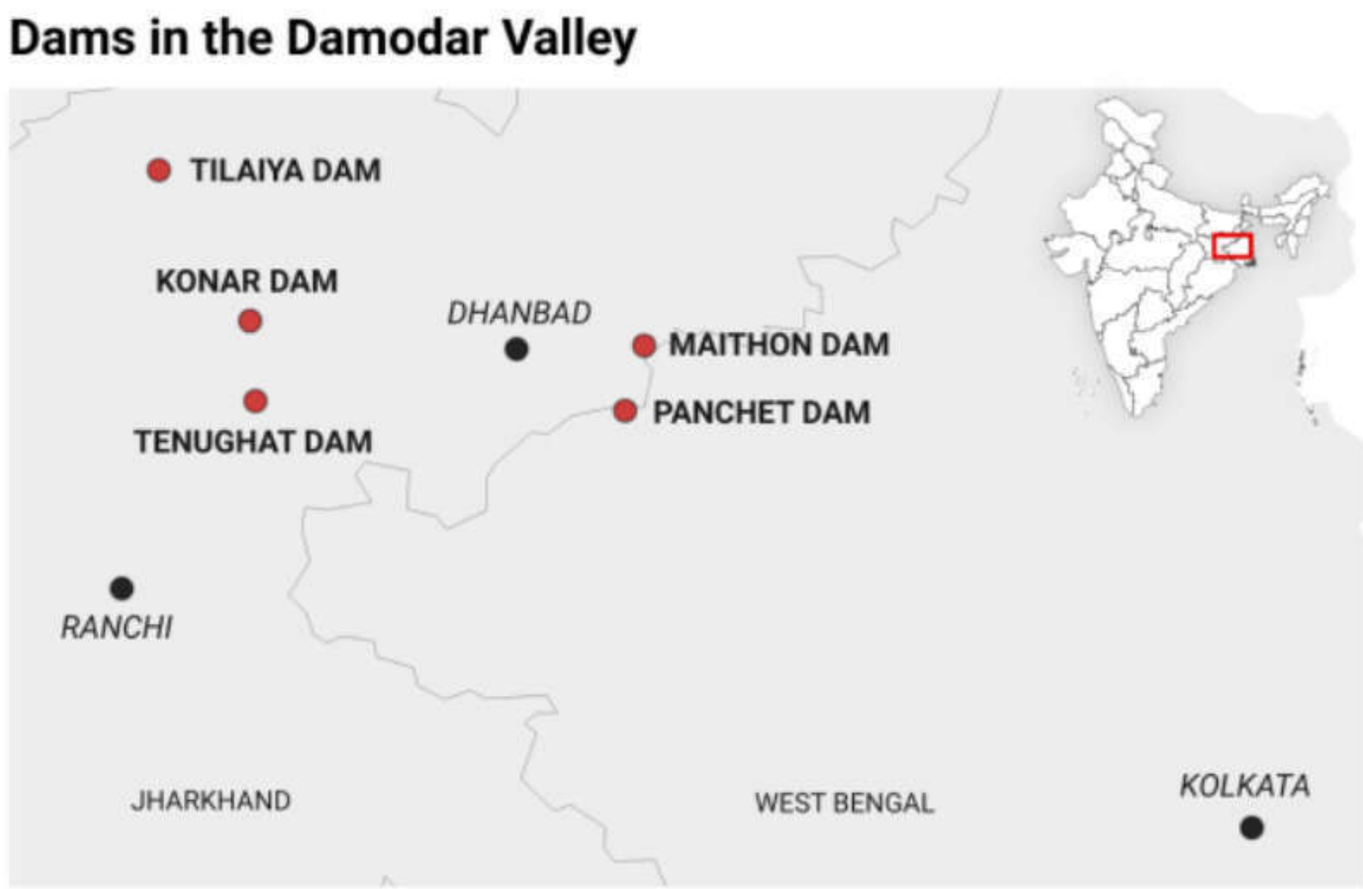
— The reserve, the first of its kind in the country, lies in the northern Palk Bay, which harbours more than 12,250 hectares of seagrass meadows. These meadows are critical feeding grounds for dugongs.

— The dugong (*Dugong dugon*), also called the **sea cow**, is a herbivorous mammal. They can grow upto three meters long, weigh about 300 kilograms, and live for about 65 to 70 years, grazing on seagrass and coming to the surface to breathe.

— They are found in over 30 countries, and in India, are seen in the Gulf of Mannar, Gulf of Kutch, Palk Bay, and the Andaman and Nicobar Islands.

— Dugongs are listed as **Vulnerable** on the IUCN Red List of Threatened Species.

— It is listed in **Appendix I** of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which prohibits the trade of the species and its parts.



• Dams in Damodar Valley

— The ruling Trinamool Congress (TMC) in West Bengal is targeting the Damodar Valley Corporation (DVC), the Central agency that oversees dams along the

Damodar river, for releasing water into the state and creating a "man-made flood".

— DVC is a **statutory body** set up in 1948 which manages the larger Damodar Valley Project that was the first multipurpose river valley development project in India.

—,The corporation oversees several dams and hydroelectric and thermal power plants in the Damodar river region that is spread across West Bengal and Jharkhand.

— The DVC is led by a **seven-member board** that includes the chairman, four DVC members, and one representative each from the governments of the Centre, West Bengal and Jharkhand.

• Synchronous All India Elephant Estimation (SAIEE) 2021-25

— The Synchronous All India Elephant Estimation (SAIEE) 2021-25 was released on October 14 in Dehradun by officials of the Union Environment Ministry and Wildlife Institute of India (WII).

— The estimation reported **22,446 elephants in the country**, primarily concentrated across the Western Ghats in the southern states, and the hills and plains of the Northeast.

— Among states, **Karnataka** continues to be home to the largest elephant population, 6013, followed by Assam (4,159), Tamil Nadu (3,136), Kerala (2,785), Uttarakhand (1,792), and Odisha (912).

— The Brahmagiri – Nilgiri – Eastern Ghats block is home to the largest sub-population in Western Ghats.

— Compared to the 2017 numbers, the estimated population of elephants has dipped by nearly 18%, with the highest dip seen across the Northeast Region and Central India and Eastern Ghats region. Jharkhand and Odisha have seen a 68% and 54% drop, respectively, compared to the 2017 estimate.

— The endangered Asian elephant (*Elephas maximus*) is an **endangered species**. It has been on the IUCN Red List, which details the global conservation status of animal, fungi and plant species, since 1986.

State/Landscape	Population
Karnataka	6,013
Tamil Nadu	3,136
Kerala	2,785
Western Ghats	**11934**
Jharkhand	217
Odisha	912
Madhya Pradesh	97
Chhattisgarh	451
Maharashtra (Western Ghats & Gadchiroli)	63
West Bengal (South)	31
Andhra Pradesh	120
Central India & Eastern Ghats	**1,891**
Uttarakhand	1,792
Uttar Pradesh	257
Bihar	13
Shivalik Hills & Gangetic Plains	**2,062**
Arunachal Pradesh	617
Assam	4,159
Manipur	9
Meghalaya	677
Mizoram	16
Nagaland	252
Tripura	153
West Bengal (North)	676
North Eastern Hills & Brahmaputra Flood Plains	**6,559**
Total	**22,446**

Among states, Karnataka continues to harbour the largest population (6,013), followed by Assam (4,159) and Tamil Nadu (3,136)

• Green Crackers

— Recently, the Supreme Court has relaxed the absolute ban on the sale and use of firecrackers in the

Delhi-National Capital Region (NCR), allowing government-approved "green crackers" on a "test case basis".

— The term 'green cracker' does not mean it is pollution-free. It refers to a formulation developed by the Council of Scientific and Industrial Research (CSIR) and NEERI to have a reduced environmental impact compared to traditional firecrackers.

— Green crackers **do not contain harmful chemicals** like barium nitrate, arsenic, lithium, and mercury. They exclude barium compounds and have drastically reduced aluminium and sulphur content. They are designed to release water vapour or dust suppressants that trap a portion of the particulate matter generated.

— They have a lower noise intensity, capped at 120 decibels.

— Manufacturers must obtain a licence from the Petroleum and Explosives Safety Organisation and a certificate from CSIR-NEERI to produce and sell them.

— Three types of green crackers have been developed – **SWAS** (Safe Water Releasable), STAR (Safe Thermite Cracker), and **SAFAL** (Safe Minimal Aluminium).

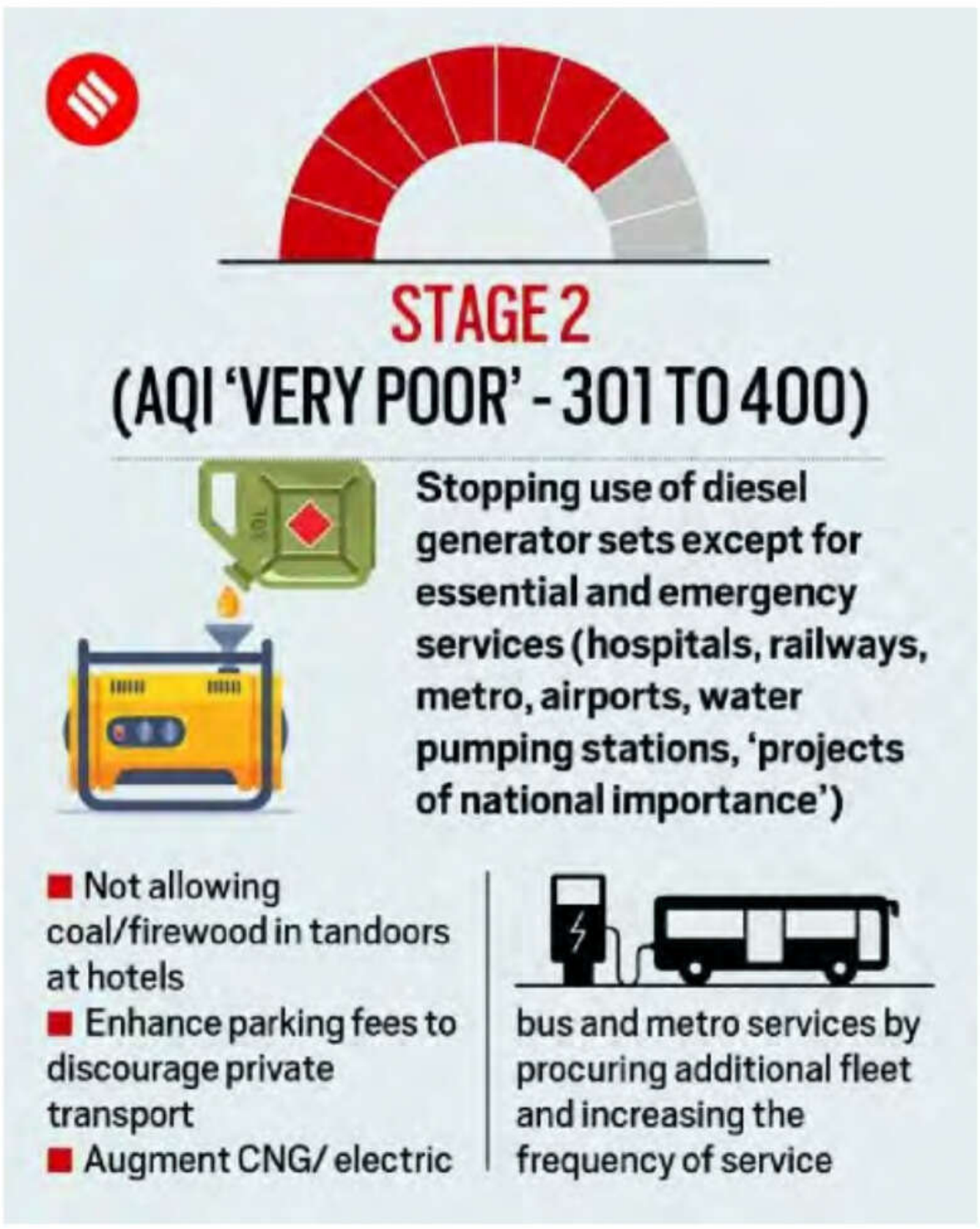
• Graded Response Action Plan (GRAP)

— Pollution levels in Delhi spiked sharply through Diwali night on Monday, with the Delhi Pollution Control Committee (DPCC) real-time data showing PM2.5 and PM10 concentrations breaching safe limits by 15 to 18 times across several stations.

— The Commission for Air Quality Management in Delhi-NCR has already ordered the implementation of actions under Stage II of the GRAP following the deterioration in the air quality to 'very poor' on Diwali eve.

— The GRAP is a set of emergency measures that kick in to prevent further deterioration of air quality once it reaches a certain threshold.

— Stage 1 of GRAP is activated when the AQI is in the 'poor' category (201 to 300). The second, third and fourth stages will be activated three days ahead of the AQI reaching the 'very poor' category (301 to 400), 'severe' category (401 to 450) and 'severe +' category (above 450), respectively.



• Golden snub-nosed monkey

— Three golden snub-nosed monkeys (*Rhinopithecus roxellana*) were sent to France's Beauval Zoo in the city

of Saint-Aignan this April, to mark the 60th anniversary of the establishment of diplomatic relations between the People's Republic of China and France.

— Another trio of golden monkeys arrived at the Pairi Daiza zoo in Brugelette, Belgium, in May. It is seen as a possible successor to the 'Panda diplomacy' of China.

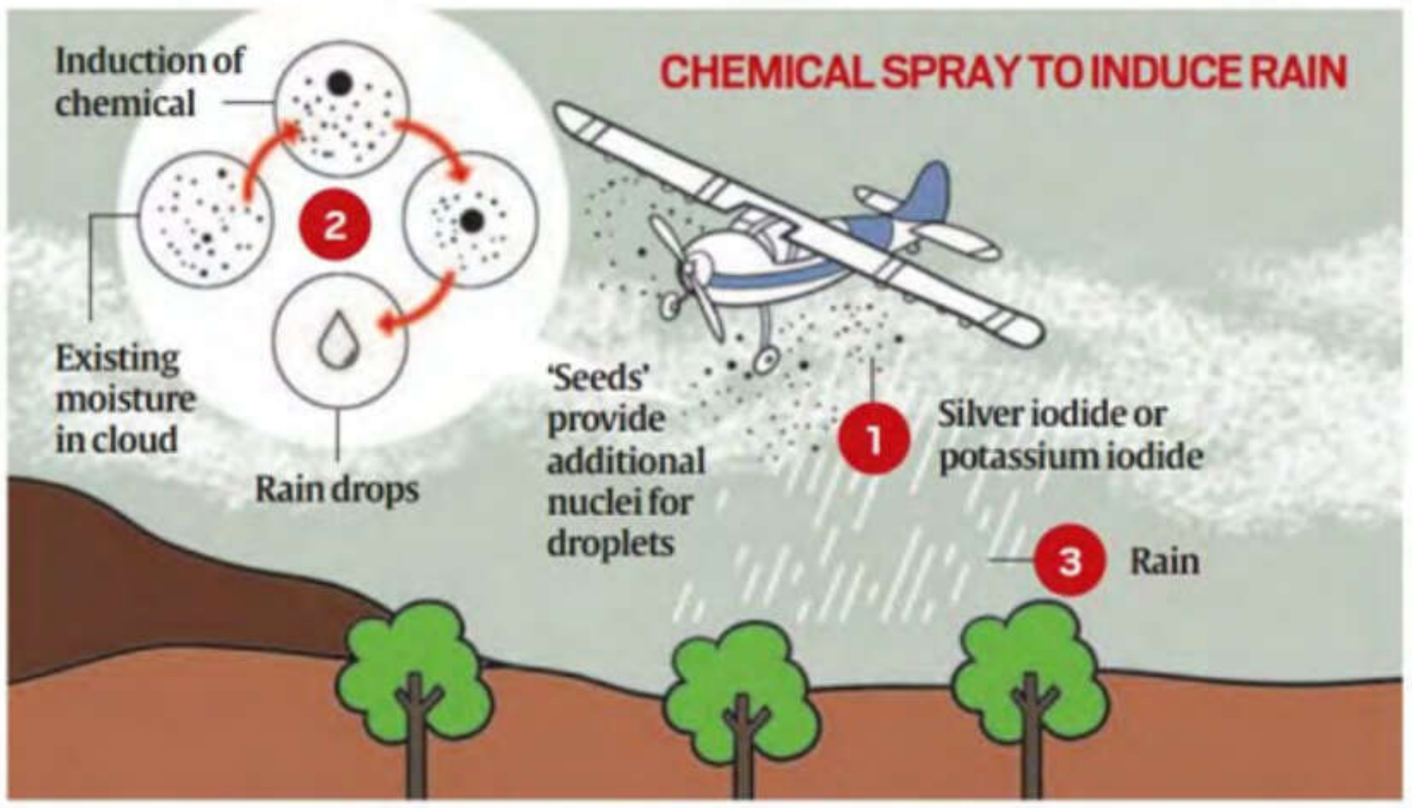
— Within China, the golden snub-nosed monkeys today live across a swath of central and southwestern China that includes parts of Sichuan, Shaanxi, Gansu and Hubei provinces.

— The IUCN Red List status of the Golden snub-nosed monkey is **Endangered**.

• Cloud seeding

— Recently, Delhi made two attempts at creating artificial rain to help curb pollution levels.

— **Cloud seeding** is a technique "used to modify suitable clouds with 'seed' particles to increase rainfall." Globally, it was first tested in the 1940s.



— It involves releasing salts into clouds to provide nuclei for water vapour to condense around and form droplets to increase the chances of rainfall.

— **In case of cloud seeding**, the seed particles are "cloud condensation nuclei (CCN), a particle on which water vapour condensates" or "ice nuclei particles, a particle on which water freezes"

— To induce rain artificially, clouds are usually injected with salts like silver iodide, potassium iodide, or sodium chloride, which is the 'seed'. These salts are expected to provide additional nuclei around which more cloud droplets can form. They are dispersed into the cloud either using aircraft or through generators on the ground.

• Taal Volcano

— Recently, the Taal Volcano, located south of **Manila**, experienced a spate of eruptions.

— Taal is classified as a "complex" volcano by the Philippine Institute of Volcanology and Seismology (PHIVOLCS).

— A complex volcano, also called a **compound volcano**, is defined as one that consists of a complex of two or more vents, or a volcano that has an associated volcanic dome, either in its crater or on its flanks.

— The Taal volcano does not rise from the ground as a distinct, singular dome but consists of multiple stratovolcanoes (volcanoes susceptible to explosive eruptions), conical hills and craters of all shapes and sizes.

• New Ramsar site- Gogabil Lake

— Gogabil Lake in Bihar becomes the latest addition to the list of Ramsar sites in India, taking the total tally to 94.

— Gogabil Lake is an oxbow wetland situated between the Rivers Ganga (Ganges) and Mahananda.

Science and Technology

- **India wins Exclusive rights to explore Polymetallic Sulphides (PMS)**

— India has signed a contract with the International Seabed Authority (ISA) for exclusive rights to explore Polymetallic Sulphides (PMS) in the **Carlsberg Ridge in the Indian Ocean**.

— With this, India has become the first country in the world to have two contracts with the ISA for PMS exploration. The earlier contract is in the Central Indian Ridge and Southwest Indian Ridge, signed in 2016.

— Goa-based National Centre for Polar and Ocean Research (NCPOR) will carry out the PMS exploration in 2026.

What is PMS?

— Polymetallic Sulphides are deposits on the ocean floor, rich in strategic and critical metals such as copper, zinc, lead, gold, and silver, along with trace amounts of rare and precious elements.

— PMS deposits are generally found near hydrothermal vents, which are like hot springs on the ocean floor.

— The cold seawater interacts with the magma through these vents, and is expelled back in a hot gush. This expelled water is rich in minerals, which are then deposited on the ocean floor as solids.

- **Diethylene Glycol**

— In Madhya Pradesh, authorities have ordered the immediate stoppage of sales and distribution of a cough syrup after it was allegedly found to contain a poisonous substance linked to child deaths in the state's Chhindwara district.

— The analysis found that the syrup contained 48.6 percent by volume of **Diethylene Glycol**, a toxic industrial chemical, that may render the contents injurious to health.

— **Diethylene Glycol** is an industrial solvent used in antifreeze, paints, brake fluids, and plastics. It is not meant for medicines.

— It is a colorless and odorless impurity of propylene glycol that is highly toxic and has caused poisoning epidemics since the early 20th century, making it prohibited in food and drugs due to its adverse effects on humans.

- **Nobel Prize in Medicine**

— The Nobel Prize in Physiology or Medicine was awarded to Japanese scientist **Shimon Sakaguchi**, and American scientists **Mary E Brunkow** and **Frederick Ramsdell**.

— They were awarded for their discoveries on peripheral immune tolerance which have been essential for understanding how the immune system functions, and key to developing therapies for cancers and autoimmune diseases.

— The immune system protects the body against diseases by neutralising disease-causing pathogens like bacteria and

viruses. A special type of white blood cell, called T-cells are key to this process, which distinguish between the cells of the pathogen and the host body.

— When this does not happen properly, it leads to auto-immune diseases, in which the T-cells start damaging the body's own cells. When it is overactive, it prevents other T cells from killing the cancerous cells.

— Sakaguchi identified a special group of T-cells, called regulatory T-cells, or Tregs, that suppresses the activity of other T-cells if they had a propensity to attack the body's own tissues. — Brunkow and Ramsdell later discovered the gene that enables some T-cells to function as Tregs. Together, they complete the picture of the immune system.

• Nobel Prize in Physics

— John Clarke, Michel Devoret and John Martinis have been awarded the 2025 Nobel Prize in Physics "for the discovery of macroscopic **quantum mechanical tunnelling** and energy quantisation in an electric circuit".

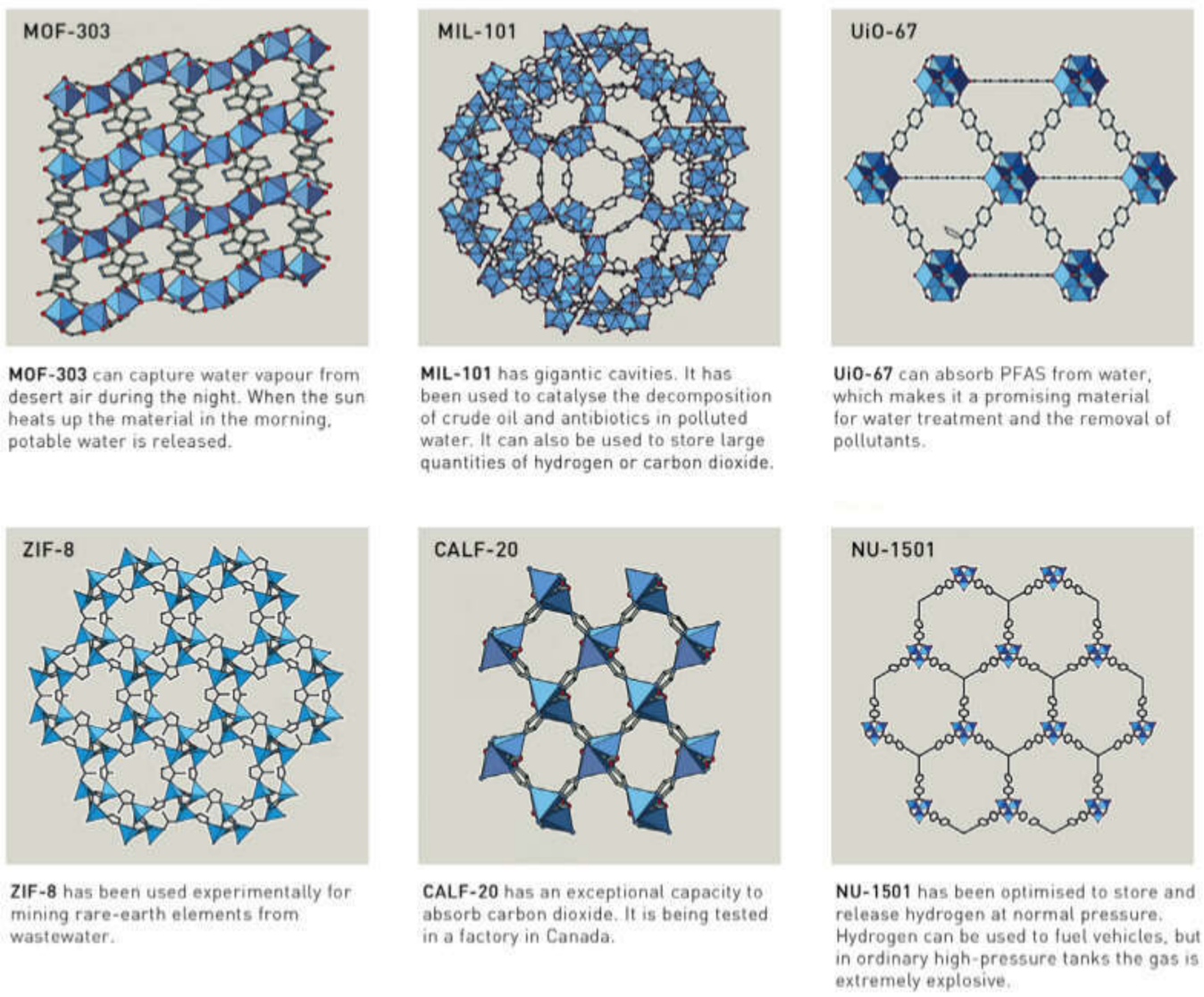
— Their studies revolutionised the understanding of quantum tunnelling — the ability of particles, such as electrons, to move or tunnel through barriers. This is somewhat akin to throwing a ball onto a wall and finding it across the other side of the structure, which remains unscathed.

• Nobel Prize in Chemistry

— Susumu Kitagawa, Richard Robson and Omar Yaghi are awarded the Nobel Prize in Chemistry 2025. They have developed a new form of molecular architecture.

— They are credited for creating novel materials in which atoms and molecules are linked in a way that leaves large, neatly arranged open spaces inside the molecular structure.

— In their constructions, metal ions function as cornerstones that are linked by long organic (carbon-based) molecules. Together, the metal ions and molecules are organised to form crystals that contain large cavities. These porous materials are called metal–organic frameworks (MOF).



The electronics industry can now use MOF materials to contain some of the toxic gases required to produce semiconductors. (Source: X/@NobelPrize)

— This design allows gases and liquids to flow through, making MOFs highly adaptable for various applications (water harvesting, pollutant removal, carbon capture, and hydrogen storage).

• RAT system on Air India Boeing 787

— In Air India flight AI-117, flying from Amritsar to Birmingham in the UK, the ram air turbine (RAT)—a last-resort

emergency power system—of the Boeing 787-8 aircraft deployed on its own, even as all electrical and hydraulic parameters were found to be normal and the pilots did not spot any abnormality with the plane.

— In modern aircraft, the RAT deploys automatically during grave emergencies involving total electrical failure, a debilitating hydraulic failure, or a dual engine failure, considered to be the rarest of rare scenarios. Pilots may also deploy it manually.

— The RAT, a critical system, is essentially a wind turbine stowed in a compartment on the underside of the Boeing 787's fuselage, just behind the aircraft's wing. It deploys into the airstream to generate power only when primary and secondary power sources fail.

— The RAT generates power from the airstream by injecting ram pressure, which is created by the forward motion of the aircraft, and depends on the plane's speed at the time.

— In the event of total power failure, the RAT helps power vital systems, including flight controls, flight-critical instrumentation, navigation, and communication equipment. The RAT, however, is not a substitute for engine power.

• Phosphine on brown dwarf

— On a brown dwarf, called Wolf 1130C, dozens of light years from Earth, astronomers have detected trace amounts of phosphine, a molecule that is produced by living things on Earth.

— Phosphine, a molecule made of three hydrogen atoms and one phosphorus atom, is tricky to create and easy to destroy. On Earth, it is largely made by microbial life in swamp plants and animal intestines.

— Brown dwarfs are often called "failed stars" because they share some similarities with stars and others with planets. These objects form like stars from collapsing clouds of gas and dust. However, they do not have enough mass to consistently fuse hydrogen, a process that heats a star and makes it shine.

• South Atlantic Anomaly

— Using the data of 11 years from Swarm, an Earth Explorer mission developed under ESA's Earth Observation FutureEO programme, the scientists have discovered that the weak region in Earth's magnetic field over the **South Atlantic – known as the South Atlantic Anomaly (SAA)** – has expanded by an area nearly half the size of continental Europe since 2014.

— The SAA is caused by the "tilt of Earth's magnetic axis and the flow of molten metals within its outer core".

— Earth's magnetic field has a protective layer around the planet that keeps charged particles (solar particles) from the Sun at bay. Its protection is also extended to the satellites that orbit close to the Earth.

— However, the SAA causes these particles to dip closer to the surface than they are supposed to. This will result in interference in the data collection by knocking out satellites' computers.

(Source: ESA)

• OpenAI launched Atlas

— OpenAI has announced its own web browser called Atlas. This followed after artificial intelligence firm Perplexity announced its AI browser Comet.

— The web browser is the gateway to everything – search, docs, shopping, banking, research, entertainment. Owning that interface means companies can control how users reach the web, and observe and optimise user intent directly.

— Whoever owns the interface, owns user data, which can be used as a monetisation channel, the way Google does with its advertisement business.

- **ISRO launches India's heaviest satellite CMS-03**

— ISRO has successfully launched the **CMS-03 communication satellite** using its biggest launch rocket LMV-3.

—This is the first time that ISRO has put a satellite weighing over 4,000 kg in the distant geosynchronous transfer orbit (GTO) from the Indian soil. It was launched from the second Launch Pad (SLP) from Sriharikota.

— LVM-3, earlier referred to as **Geosynchronous Launch Vehicle Mark 3 or GSLV Mk 3**, uses solid, liquid, as well as cryogenic-fuel based engines to put up to 8,000 kg in low earth orbit (up to an altitude of 2,000 km from Earth's surface) and up to 4,000 kg in geosynchronous orbit (about 36,000 km).

Narayanan said the CMS-03 was designed to provide communication services for at least 15 years. (Credit: isro.gov.in)

— The previous LVM3 mission was the successful launch of Chandrayaan-3, during which India became the first country to successfully land near the lunar South Pole in 2023, according to ISRO.

Diseases

(***Just FYI***: UPSC has consistently included questions on health and diseases in its examinations over the years. For instance, in 2014, a question about the Ebola virus appeared in the Prelims, and in 2017, a question about the Zika virus was featured. Therefore, it is crucial to stay updated on diseases that are currently in the news.)

- **Thalassemia**

— At least five thalassemia-affected minors have allegedly tested HIV positive in Jharkhand's West Singhbhum district after receiving blood transfusions at Sadar Hospital in Chaibasa, prompting a high-level probe by the state Health Department.

— Thalassemia is an **inherited genetic hemoglobinopathy**, a group of disorders that lead to defective production of haemoglobin synthesis in the body. This results in low production of red blood cells and a lack of oxygenated blood supply to the body parts.

— Thalassemia is mainly classified into two types: Alpha-thalassemia and Beta-thalassemia. The main difference between these two is the involvement of alpha chain and beta chain production (of hemoglobin) respectively and clinical presentation.

Persons in News

(***Just FYI***: Noting historical personalities' anniversaries aids UPSC prep. UPSC often includes such personalities in questions, so revisiting their lives refreshes your static syllabus.)

• Sanae Takaichi

— Japan's ruling **Liberal Democratic Party** (LDP) elected Sanae Takaichi as its new leader on October 4.

— Takaichi is set to replace incumbent Shigeru Ishiba less than a year after the latter entered office last year.

— The lower house of Japan's parliament, **known as the Diet**, is expected to choose her as prime minister in a leadership vote in mid-October.

Former Economic Security Minister Sanae Takaichi, center, stands as Takaichi was chosen to a new leader of Japan's ruling Liberal Democratic Party during the party's leadership election in Tokyo, Japan. (Photo: Kyodo News via AP)

• T J S George

— Veteran journalist T J S George, who was the founding editor of Asiaweek magazine in Hong Kong and a former editorial adviser at The New Indian Express, died at the age of 97.

— George, who was awarded the **Padma Bhushan in 2011**, authored a widely read weekly column 'Point of View' for The New Indian Express for over two decades until 2022.

• Pandit Chhannulal Mishra

— Hindustani music titan, the Padma Vibhushan singer, Pandit Chhannulal Mishra of Varanasi, died on October 2.

— Born in Azamgarh in 1936, Mishra grew up to be a doyen of Hindustani classical music, contributing immensely to such styles of the form as Khayal, Thumri, Dadra, Chaiti, Kajri, and Bhajan.

— He was conferred with Padma Vibhushan in 2020 and Padma Bhushan in 2010.

• Sarah Mullally

— Dame Sarah Mullally has been named Archbishop of Canterbury designate, becoming the first woman chosen for the Church of England's most senior role.

— A former chief nurse in the NHS, Mullally was ordained in 2006 and became the first female Bishop of London in 2018, the third-highest office in the Church.

Sarah Mullally, the new Archbishop of Canterbury, spiritual leader of the world's 85 million Anglicans, poses for the media inside Canterbury Cathedral in Canterbury, England, Friday, Oct. 3, 2025. (AP Photo)

• Sandhya Shantaram

— Veteran actress Sandhya Shantaram, wife of late filmmaker V Shantaram, has died due to age-related ailments, her family said on October 4.

— She has starred as the leading lady in films such as Do Aankhen Barah Haath (1957), Navrang (1959), Jhanak Jhanak Payal Baje (1955), and Pinjra (1972).

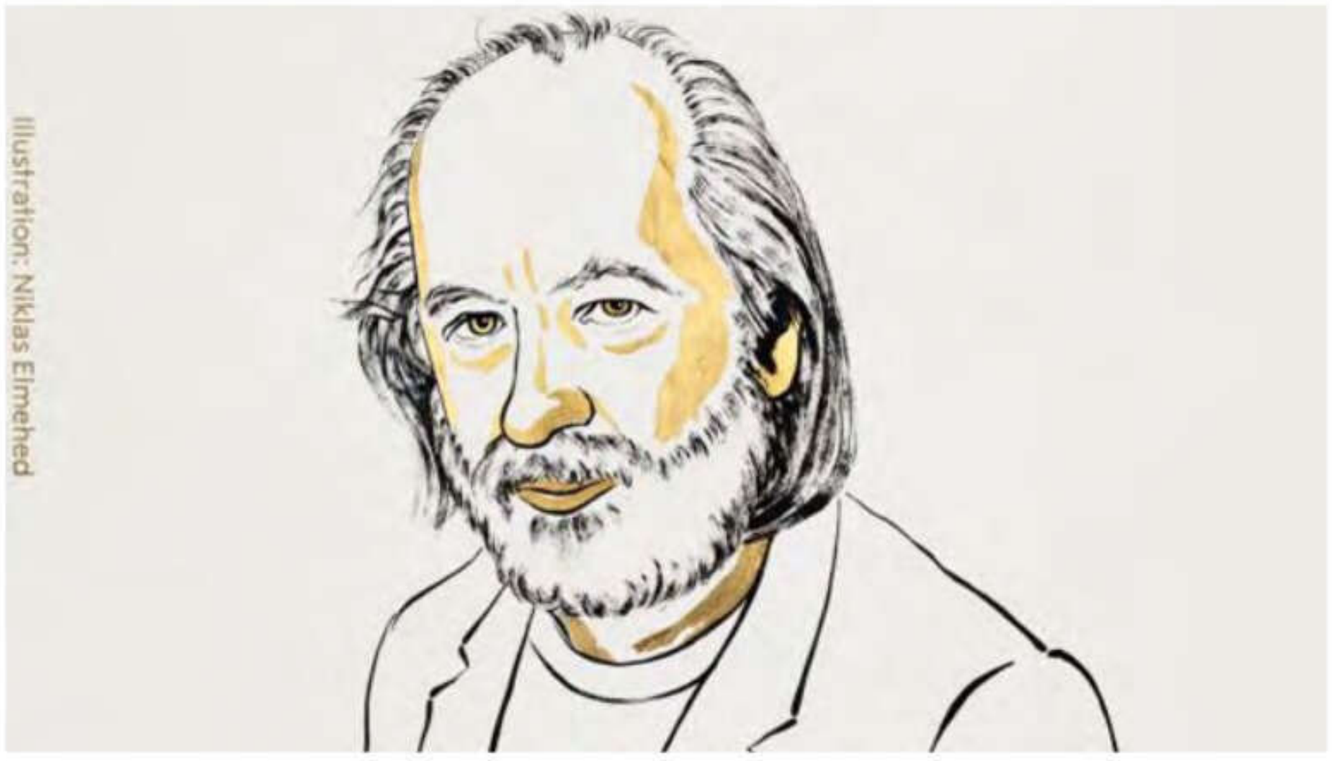
— She had debuted in the Marathi movie, Amar Bhoopali in 1951 in which she played the role of vocalist who was wooed by poet Honaji Bala.

Sandhya Shantaram passed away on October 4, 2025. (Photos: Express Archive and Wikimedia Commons)

• Nobel Prize in Literature

— The 2025 Nobel Prize in Literature was given to Hungarian writer László Krasznahorkai, 71, for his "singular prose that, in the midst of apocalyptic terror, reaffirms the power of art".

— Krasznahorkai will receive the medal and diploma in a ceremony in December in Stockholm. He is the second Hungarian, after Imre Kertesz in 2002, to bag the award.



The 2025 Nobel Prize in Literature is awarded to the Hungarian author László Krasznahorkai "for his compelling and visionary oeuvre that, in the midst of apocalyptic terror, reaffirms the power of art." (Image credit: @NobelPrize/X)

• Nobel Peace Prize 2025

— **Maria Corina Machado**, a Venezuelan politician, has been announced as this year's Nobel Peace Prize winner for her work in promoting democratic rights.

— Machado received the honour for her tireless work promoting democratic rights for the people of Venezuela and for her struggle to achieve a just and peaceful transition from dictatorship to democracy.

— Founder of **Súmate**, an organisation devoted to democratic development, Machado stood up for free and fair elections more than 20 years ago. In political office and in her service to organisations since then, Machado has spoken out for judicial independence, human rights and popular representation.

Maria Corina Machado waves from atop a truck during the closing election campaign rally for presidential candidate Edmundo Gonzalez in Caracas, Venezuela, Thursday, July 25, 2024. (AP Photo/Matias Delacroix, File)

— She will receive a cash prize worth around 11 million Swedish kronor (around USD 1.17 million), a diploma and a medal.

• MacArthur Grant winners

— Optometrist **Teresa Puthussery** and Epidemiologist **Nabarun Dasgupta** are among the 22 'genius' winners of the MacArthur Grant. The winners of the fellowship will receive a cash award worth $800,000 as stipend.

— The grant is constituted in the name of Catharine and John Donald MacArthur and recognises seminal and original contributions made by scientists, intellectuals and artists.

• Deepika Padukone

— Actor Deepika Padukone was appointed as the **first-ever Mental Health Ambassador of India** by the Health Ministry.

— The announcement was made on World Mental Health Day, which is marked on October 10 every year to raise awareness about mental health concerns while mobilising support for its well-being.

— The World Federation for Mental Health, a global mental health group with members and links in over 150 countries, initiated the first World Mental Health Day on **October 10, 1992**.

Renowned actor Deepika Padukone has been appointed as the first-ever Mental Health Ambassador of the Union Ministry of Health and Family Welfare.
(Source: X/@MoHFW_INDIA)

— The theme of this year is '**Mental Health in Humanitarian Emergencies**', which encourages governments, organisations, and the general public to provide psychological support, trauma care, and community resilience programmes, particularly during times of crisis.

• Vivek Menon

— Vivek Menon has been elected as the **new Chair of the International Union for Conservation of Nature (IUCN) Species Survival Commission (SSC**) for the 2025–2029 quadrennium.

— Menon's appointment marks the first time in the Commission's 75-year history that an Asian leader will head the global body — a significant recognition of the growing leadership of Asia and the Global South in shaping conservation action worldwide.

— The SSC is one of the seven expert commissions under the global body that advises the IUCN secretariat on matters concerning biodiversity and species conservation. The commission and its specialist groups play a key role in preparing the IUCN's red list of threatened species.

- **Sonali Ghosh**

— Sonali Ghosh, the Director of Kaziranga National Park and Tiger Reserve, has become the **first Indian to receive the prestigious WCPA-Kenton Miller Award** for innovation in national parks and protected area sustainability.

— The award was presented at the IUCN World Conservation Congress by the World Commission on Protected Areas (WCPA), a global body that recognises individuals who have made innovative contributions to wildlife area conservation.

- **Joel Mokyr, Philippe Aghion and Peter Howitt**

— The Royal Swedish Academy of Sciences awarded the "Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2025" — popularly called the Nobel prize for economics — to **Joel Mokyr** (Northwestern University, US), **Philippe Aghion** (Collège de France, INSEAD, and LSE) and **Peter Howitt** (Brown University, US) "for having explained innovation-driven economic growth".

— Mokyr, an economic historian, has received the Nobel for his work that was grounded in using historical sources to uncover the causes of sustained economic growth in the world.

— Aghion & Howitt have been recognised for their mathematical model, which instead of looking into the past, analysed how individual decisions and conflicting interests at the level of firms can lead to steady economic growth at the national level.

- **Sunil Amrith**

— **Historian Sunil Amrith** has been named the winner of the 2025 British Academy Book Prize for *The Burning Earth: An Environmental History of the Last 500 Years*, a panoramic account of how human ambition has transformed the planet, and how the planet, in turn, has shaped human history.

— Amrith has become the 13th winner of the British Academy's non-fiction book prize which has been awarded annually since 2013. It recognises work that "searches for truth and reason in difficult places, and shines a light on the connections and divisions that shape cultural identity worldwide."

"The Burning Earth" explores how centuries of environmental change have propelled human migration.

- **Sanae Takaichi**

— Sanae Takaichi has been **elected Japan's prime minister** by its parliament, making her the **first woman to hold the office**.

— Takaichi will replace Prime Minister Shigeru Ishiba, ending a three-month political vacuum and wrangling since the Liberal Democratic Party's disastrous election loss in July.

— Takaichi is among the Japanese politicians who have stonewalled measures for women's advancement. Takaichi

supports the imperial family's male-only succession and opposes same-sex marriage and allowing separate surnames for married couples.

- **Professor Eknath Vasant Chitnis**

— Veteran **space scientist Professor** Eknath Vasant Chitnis passed away in Pune on Wednesday (22nd October). He was 100.

— Among the pioneers of the country's space programme, Chitnis had played a key role in establishing the Indian Space Research Organisation (Isro).

— His most significant contribution came through the Satellite Instructional Television Experiment (SITE) in 1975-76, which he directed. This project conducted educational programmes in 2,400 villages across six states using Nasa's ATS-6 satellite, and laid the groundwork for the digital revolution.

- **Paul Biya**

— Cameroon's top court has confirmed President Paul Biya, the **world's oldest head of state**, as the winner of the 12 October election.

— The 92-year-old leader has ruled the central African country since 1982. The Constitutional Council said Biya received 53.66 per cent of the vote.

- **Dr Patrick Herminie**

— Vice-President C P Radhakrishnan attended the swearing-in ceremony of the President of Seychelles, Dr Patrick Herminie, in Victoria, Seychelles, on 26th October on behalf of India.

— Herminie represents the United Seychelles party, which led the country for four decades before it lost power in 2020. It was the governing party from 1977 to 2020.

- **Queen Mother Sirikit**

— **Thailand's Queen Mother Sirikit**, who supervised royal projects to help the rural poor, preserve traditional craft-making and protect the environment, died on 24th October. She was 93.

— Sirikit Kitiyakara was born into a rich, aristocratic family in Bangkok on Aug. 12, 1932, the year absolute monarchy was replaced by a constitutional system. Both of her parents were related to earlier kings of the current Chakri dynasty.

— Sometimes dubbed the "Green Queen," she also set up wildlife breeding centres, "open zoos," and hatcheries to save endangered sea turtles.

Places in News

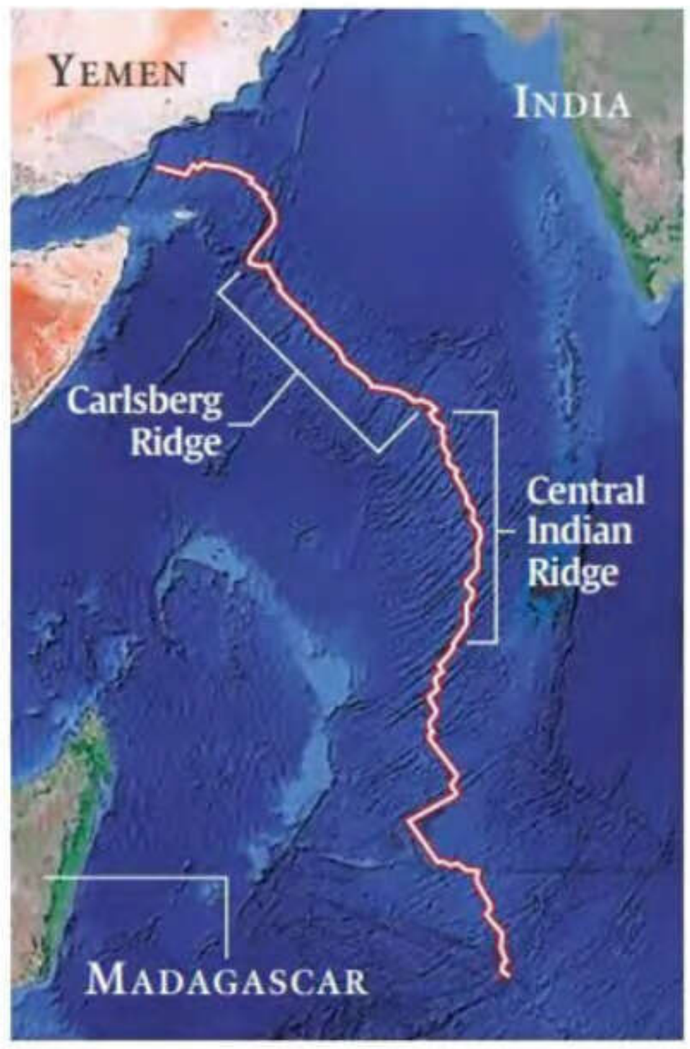
(***Just FYI***: The location of the place is important, considering that UPSC has asked several questions about places that were in the news, such as Aleppo and Kirkuk, in the 2018 UPSC Prelims. The best way to remember them is to plot them on a world map.)

• Carlsberg Ridge

— India has signed a contract for mineral exploration in the Carlsberg Ridge of the Indian Ocean.

— The Carlsberg Ridge is a major segment of the mid-ocean ridge system in the Indian Ocean, formed by seafloor spreading between the **Indian Plate and the Somali Plate**.

— The ridge is known to host hydrothermal vent systems, potential sites of PMS deposits.



Indian Ocean

• Gelephu and Samtse

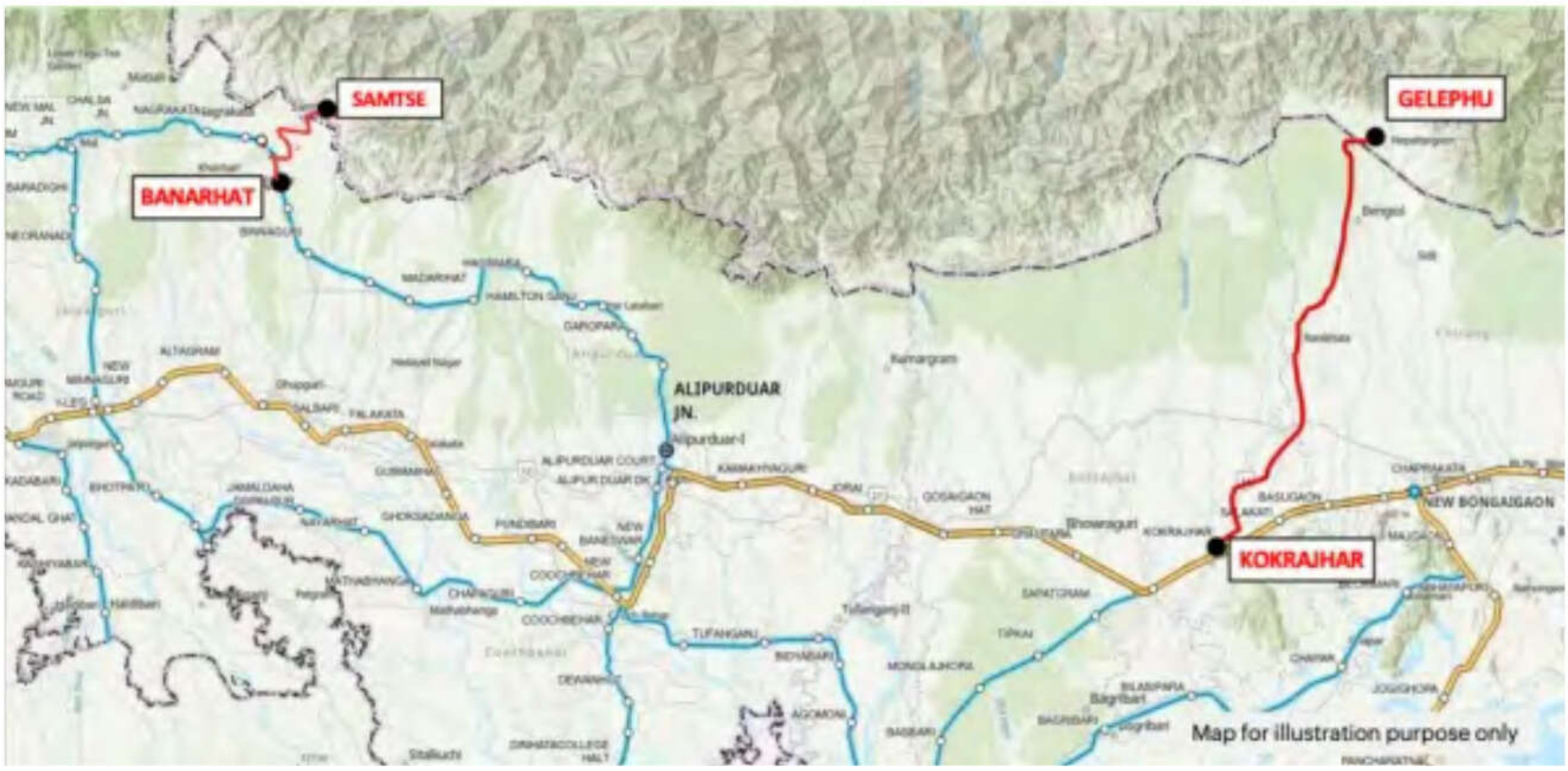
— The Indian government has announced two cross-border railway projects of 69-km and 20-km length that will connect Bhutan with the bordering areas of Assam and West Bengal.

— The 69-km Kokrajhar (Assam)-**Gelephu (Bhutan)** and 20-km Banarhat (West Bengal)-**Samtse (Bhutan)** will cost Rs 3,456 crore and Rs 577 crore, respectively.

— The Kokrajhar-Gelephu new line will directly connect Bhutan's Sarpag district and India's Kokrajhar and Chirang districts in Assam. The Banarhat-Samtse line will connect Bhutan's Samtse district with India's Jalpaiguri district in West Bengal. It will have two stations Ambari and Samtse.

— Gelephu and Samtse are the major export-import hubs in Bhutan and serve the 700-km long India-Bhutan border. Gelephu is being developed as "Mindfulness City" and Samtse is being developed as an industrial town by the Government of Bhutan.

— Currently, the Himalayan nation of Bhutan does not have any railway network. The Gelephu and Samtse line will be the first such project in the neighbouring country.



Bhutan project map

• Huajiang Grand Canyon Bridge

The Huajiang Grand Canyon Bridge in Guizhou will cut travel time across the canyon from two hours to two minute, as per officials. (Wikimedia Commons Photo)

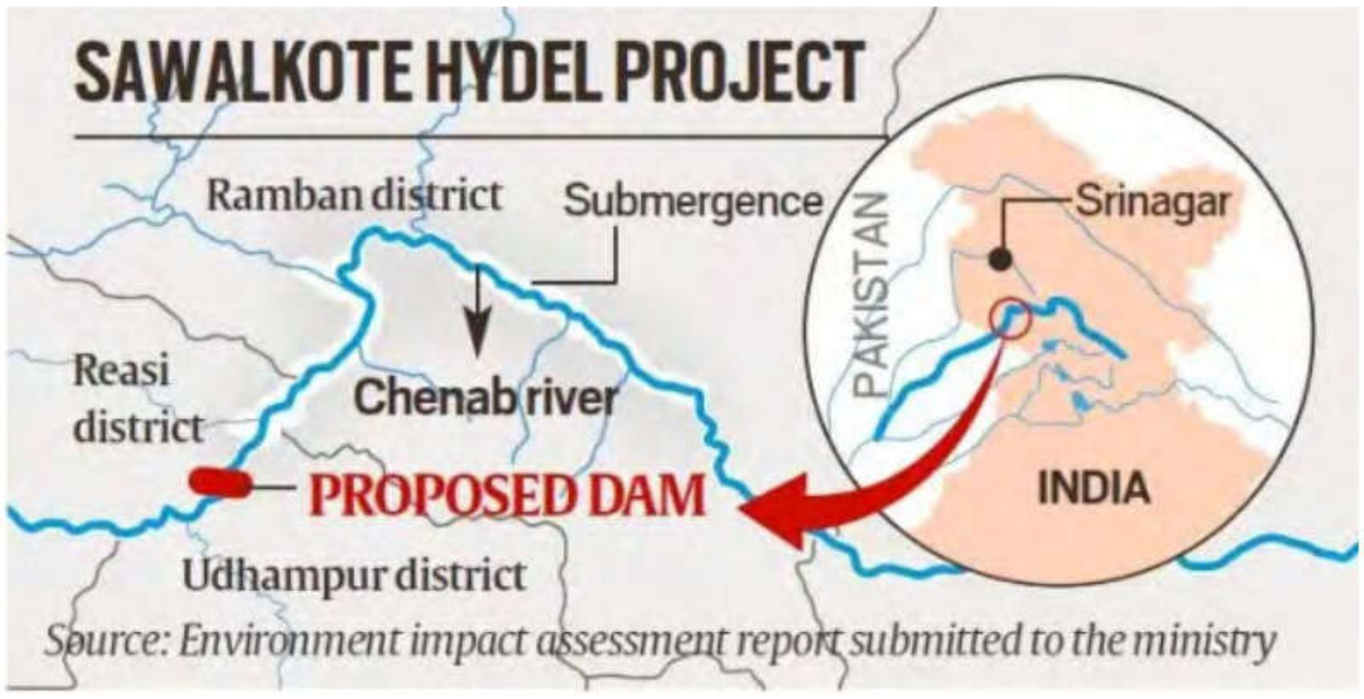
— China has opened the Huajiang Grand Canyon Bridge in Guizhou, claiming the title of the **world's tallest bridge**. Soaring about 2,050 feet above a river and gorge, the bridge surpasses the Royal Gorge Bridge in Colorado, which stands 956 feet above the Arkansas River.

• Port on the Arabian Sea in Balochistan

— Recently, Pakistan has offered a port on the Arabian Sea in Balochistan, close to the Chinese-developed Gwadar port, to the US.

— The port in the small, coastal fishing town of Pasni — about 70 miles from Gwadar and 100 miles from the Pakistan-Iran border — is being pitched as a terminal to ship Pakistan's critical minerals.

• Sawalkote Dam



— The Sawalkote hydroelectric project has received a push, with the Union Environment Ministry's expert panel on hydropower projects recommending it for environmental clearance.

— The 1,865 MW project, to be built by NHPC Ltd in Jammu and Kashmir's Ramban district, will be one of the largest on the west-flowing Chenab.

— The **Chenab River**, the largest tributary of the Indus, has a length of 1,180 km in India. The confluence of the Chandra and Bhaga rivers at Tandi in Keylong, Himachal Pradesh, forms it.

— The Chenab basin already hosts three operational projects — the 390 MW Dulhasti in Kishtwar, the 890 MW Baglihar in Ramban, and the 690 MW Salal in Reasi.

• Chaman Border

— The Chaman border crossing between **Pakistan and Afghanistan** has partially reopened following a ceasefire between the two countries.

— The Chaman border was sealed when the Pakistan and Afghanistan conflict started, leaving nearly 400 containers carrying goods from the Karachi port stranded at the border.

- **Iceland**

— Iceland, one of the few places in the world to be free of mosquitoes, recorded its first sighting of the insect this month. Iceland is currently warming at four times the rate of the rest of the northern hemisphere. This has led to unprecedented glacier melt and frequent heatwaves.

— **Mosquitoes**, like all arthropods, are cold-blooded creatures and cannot regulate their body temperature in response to the surrounding environment. As a result, temperature is one of the biggest drivers of mosquito activity, and most of their species thrive in warmer weather.

— That is why global warming has enabled the insect to proliferate. Several studies have shown that with rising temperatures, mosquitoes can invade and thrive in habitats which once represented hostile environments.

— **Only female mosquitoes** are known to bite humans to get a "blood meal" — they extract proteins from our blood to produce their eggs. Higher temperatures result in a faster rate of blood meal digestion, making mosquitoes hungrier and leading to more bites.

— Note that male mosquitoes usually consume plant nectar, sweet plant secretions, and fruit juices.

- **Bagh-e-Gul Dawood**

— Chief Minister Omar Abdullah has officially opened Kashmir's latest tourist spot – the **Bagh-e-Gul Dawood– Kashmir's first exclusive chrysanthemum garden** – at Cheshma Shahi.

— Cradled between the bluish Zabarwan mountains and the shimmering Dal Lake, the terraced Bagh-e-Gul Dawood – or Chrysanthemum Garden – stands next to Srinagar's other main attraction, the Tulip Garden.

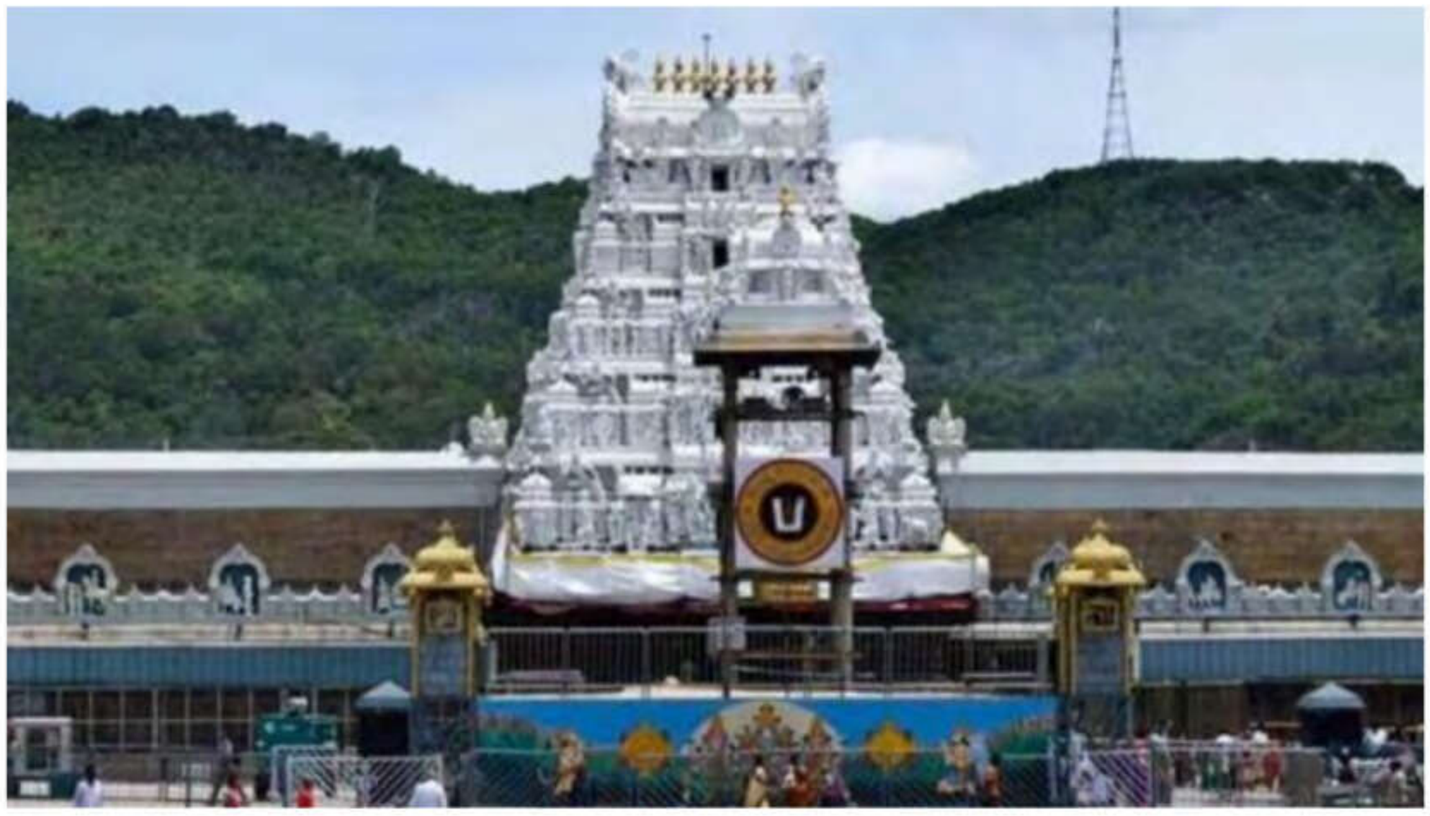
The J&K government has begun work on an exclusive chrysanthemum (or Gul-e-Dawood) garden at the Srinagar Botanical Garden. (Express)

— A native of East Asia and Europe — and Japan's national flower — the chrysanthemum is a perennial herbaceous plant that blooms in autumn.

- **Venkateswara Swamy temple in Kasibugga, Andhra Pradesh**

— A stampede took place at the Venkateswara Swamy temple in Kasibugga, Srikakulam district, leaving at least 9 people, including two children.

— The Kasibugga temple sees around 10-15,000 devotees every Saturday, owing to its reputation as "**Chinna Tirupati**" (small Tirupati), a temple official said. The temple is modelled after the Tirumala



Officials said that in spite of the scare, devotees did not hesitate, and that adequate arrangements have been made by posting guards to ensure their safety

Sri Venkateswara Temple.

— Sources said that a landlord named **Hari Mukunda Panda**, who resides in Kasibugga, had a bitter experience several years ago at the Tirumala temple, when he was unable to perform darshan because he fell ill and security officials removed him from the queue, instructing him to visit the hospital.

— He was able to go inside the next day, but felt that after waiting for eight-nine hours, the darshan of only a few seconds was disappointing. "He vowed to build a temple dedicated to Tirumala Sri Venkateswara Temple."

MAINS VALUE ADDITION

NCRB data on stampede: According to the NCRB's report titled '*Accidental Deaths and Suicides in India*,' the number of deaths caused by stampedes spanning from 2000 to 2022 revealed that a total of 3,074 lives had been lost due to stampedes in India. Nearly 4,000 stampede events have been recorded over the last three decades.

- **Lucknow- Creative city of gastronomy**

— UNESCO has declared **Lucknow a "Creative City of Gastronomy"** at the 43rd session of its General Conference in Samarkand, Uzbekistan.

— The designation places Lucknow among 70 gastronomy cities worldwide and makes it the second Indian city to win the title after Hyderabad.

— The state's Directorate of Tourism submitted Lucknow's nomination to the Ministry of Culture on January 31, 2025, and the Government of India selected the city as the country's official entry on March 3, 2025.

(Source: rsis.ramsar.org)

Sports

(***Just FYI***: With the unpredictability of the UPSC examinations and questions like the ICC World Test Championship question 2021, you can't be sure of anything. It is wise to know what it is and not go into too much detail.)

- **World Para Athletics Championships 2025**

— The 12th edition of the **World Para Athletics Championships** was held in New Delhi from 27 September to 5 October.

— Asia has hosted the World Championships in four occasions, at Doha 2015 in Qatar, Dubai 2019 in the United Arab Emirates and Kobe 2024 in Japan.

— **Brazil finished top** of the medal tally in the World Para Athletics Championships 2025 with 44 medals, including 15 gold medals, 20 silver medals, and nine bronze medals.

— India finished **tenth in the medal tally**. It won a total of 22 medals, with

WPAC 2025 MEDAL TALLY

Rank	Country	G	S	B	Total
1	Brazil	15	20	9	44
2	China	13	22	17	52
3	Iran	9	2	5	16
4	Netherlands	8	3	1	12
5	Poland	8	2	6	16
6	Colombia	7	10	4	21
7	GBR	7	5	13	25
8	Italy	7	1	3	11
9	USA	6	9	12	27
10	India	6	9	7	22

six gold medals, **nine silver medals, and seven bronze medals**. This is the best-ever medal haul for India at a single edition of the World Para Athletics Championships.

Winner of the Gold medal	Category
Simran Sharma	Women's 100m T12
Nishad Kumar	Men's High Jump T47
Sumit Antil	Men's Javelin Throw F64
Sandip Sanjay Sargar	Men's Javelin Throw F44
Rinku Hooda	Men's Javelin Throw F46
Shailesh Kumar	Men's High Jump T63

- **Badminton World Junior Mixed Team Championships**

— India won the first-ever medal in the BWF World Junior Mixed Team Championships organised in Guwahati, Assam, India from 6 to 19 October 2025.

— The Indian Badminton team settled for a bronze medal after losing to defending champions Indonesia in the semi-finals.

- **India's first-ever medal at Junior Judo World Championships**

— Linthoi Chanambam became the first Indian to secure a medal at the Junior Judo World Championships, clinching bronze in the women's -63 kg category at the 2025 edition in Lima, Peru.

— She beat the Netherlands' Joni Geilen in the women's 63 kg category.

- **2030 Commonwealth Games**

— India is set to hold the Commonwealth Games (CWG) in 2030 with Ahmedabad as the venue for the centenary edition of the event. India last hosted the CWG in 2010 in Delhi.

— The final decision on the host nation for the **Centenary Commonwealth Games** will be made by the General Assembly of Commonwealth Sport and will be announced on November 26 in Glasgow.

— First hosted in 1930 in Hamilton, Canada, the Commonwealth Games will see its 24th edition play out in 2030.

— The 2026 edition of CWG will be held in Glasgow and it will feature only 10 games.

• Khelo India University Games 2025

— Khelo India University Games 2025 will be held in Rajasthan from November 24 to December 5. It will be held across seven Rajasthan cities - Jaipur, Ajmer, Udaipur, Jodhpur, Bikaner, Kota, and Bharatpur.

— Rajasthan will be hosting the KIUG for the first time. The inaugural Khelo India University Games was held in 2020 with Bhubaneswar, Odisha, playing host.

(Source: olympics.com)

• BWF World Junior Championships 2025

— **Tanvi Sharma** won the silver medal in the girls' singles event at the BWF World Junior Championships 2025 badminton tournament in Guwahati, Assam, on 19th October, 2025. She lost to Thailand's second seed Anyapat Phichitpreechasak

— She became the **fifth Indian** to win silver at the World Junior Championships, after Aparna Popat (1996), Saina Nehwal (2006), Siril Verma (2015), and Sankar Muthusamy (2022).

— The Indian Badminton team also clinched bronze in the Mixed Team event at the BWF World Junior Mixed Team Championships 2025. Though India lost to Indonesia in the semifinals, but secured a historic first-ever medal in the event category.

— The BWF World Junior Championships were held in **Guwahati** from October 6 to 19. India hosted the Junior Championships after 17 years.

• ICC Women's World Cup final

— India created history as they defeated South Africa by 52 runs in the Women's World Cup final at Navi Mumbai and clinched their maiden ICC Trophy.

— This is the 13th edition of the Women's World Cup, and so far Australia have won seven times, England four times, and New Zealand and India have lifted the trophy once.

— According to the official site of the Olympics, **the Women's ODI Cricket World Cup** was first played in 1973, two years before the inaugural men's World Cup, the oldest global event in the sport.

India's Amanjot Kaur (C bottom) is being congratulated by her teammates after she took the catch to dismiss South Africa's captain Laura Wolvaardt during the ICC Women's Cricket World Cup 2025 one-day international (ODI) final match between India and South Africa at the DY Patil Stadium in Navi Mumbai on November 2, 2025. (Express photo by Narendra Vaskar)

— The **Women's Cricket World Cup** 1973 was contested by seven teams with teams battling for 60 overs – not 50 –

and a league table deciding the winners instead of a knock-out competition.

— India hosted and made their debut in the 1978 tournament, and they were joined by Australia, England and New Zealand.

• World Kungfu Championships

— The World Kungfu Championships, previously known as the World Traditional Wushu Championships, were held from October 14 to 20 in Emeishan, China.

— It is hosted by the **International Wushu Federation (IWUF)** for the Chinese martial art of wushu, or kung fu. This year's competition saw participants from 54 countries.

— **Purnima Linda**, from Jharkhand's Adivasi Oraon tribe in Ranchi's Kanke village, clinched two bronze medals at the competition held in China's Emeishan this year.

• U23 World wrestling championships

— Indian wrestler **Sujeet Kalkal** was crowned the U-23 World Champion in the 65 kg category, after he defeated Uzbekistan's Umidjon Jalolov.

— It's only the third time an Indian male wrestler has won a gold medal at this level - only Aman Sehrawat (2022) and Chirag Chikkara (2024) have done this before, both in the 57kg category.

— In the Championship, India finished with nine medals - one gold, two silvers and six bronze – that concluded in Novi Sad, Serbia on 27th October, 2025.

— In the women's 59kg category, Sarika won the Silver medal and Hansika Lamba also won the Silver in women's 53kg.

(Source: olympics.com)

Awards

• Rashtriya Vigyan Puraskar 2025

— The winners of the Rashtriya Vigyan Puraskar 2025, the country's highest recognition for exemplary and inspirational contributions in the fields of science, technology, and innovation, was announced on 25th October.

— It comprises four awards — Vigyan Ratna for lifetime achievement, Vigyan Shri for scientists of all ages, Vigyan Yuva–Shanti Swarup Bhatnagar (VY-SSB) for scientists under 45 years, and Vigyan Team for collaborative research work.

— These awards were instituted in 2023 after disbanding all existing science awards, including the coveted Shanti Swarup Bhatnagar Prize. VY-SSB is a replacement for the Bhatnagar Prize, which too used to be given to outstanding scientists below 45 years old.

Category	Winners
Vigyan Ratna	Prof. Jayant Vishnu Narlikar (Physics) Posthumously
Vigyan Shri	Dr. Gyanendra Pratap Singh (Agricultural Science); Dr. Yusuf Mohammad Seikh (Atomic Energy); Dr. K Thangaraj (Biological Sciences); Prof. Pradeep Thalappil (Chemistry), and more.
Vigyan Yuva	Dr. Jagdis Gupta Kapuganti (Agricultural Science); Dr. Satendra Kumar Mangrauthia (Agricultural Science); Shri Debarka Sengupta (Biological Sciences); Dr. Deepa Agashe (Biological Sciences), and more.
Vigyan Team	Team- Aroma Mission CSIR (Agricultural Science)

Practice Quiz

Current Affairs Revision MCQs

Brush Up Your Current Affairs Knowledge And Consolidate Your UPSC CSE Preparation.

Compiled by **Nitendra Pal Singh**

QUESTION 1

With reference to the Maratha Empire, consider the following statements:

1. The Maratha Empire began with the coronation of Chhatrapati Shivaji Maharaj in 1674.

2. Chhatrapati Shahu was appointed as the first Peshwa in 1714.

3. The borders of the Maratha empire were never expanded to Malwa, Gujarat and Bundelkhand.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

QUESTION 2

With reference to the Mandal Commission, consider the following statements:

1. It was formed during the Morarji Desai-led Janata Party government in 1979.

2. Its report recommended 27% reservation for OBCs in government jobs and educational institutions.

3. The recommendations of the Commission were implemented in 1981.

Which of the statements given above is/are correct?

(a) 1 only

(b) 1 and 2 only

(c) 2 and 3 only

(d) 1, 2 and 3

QUESTION 3

Venkateswara Temple was recently in the news due to a stampede. The temple is located in:

(a) Telangana

(b) Andhra Pradesh

(c) Kerala

(d) Karnataka

QUESTION 4

With reference to the Single-cell RNA sequencing (scRNA-seq), consider the following statements:

1. It is a technique that analyses the gene expression of individual cells.

2. It involves isolating single cells, converting their RNA to cDNA.

3. It allows researchers to study cell-to-cell variability.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

QUESTION 5

Which of the following commands of the Indian Army successfully conducted a largescale drone and counter-drone exercise, Vayu Samanvay-II?

(a) Northern Command

(b) Eastern Command

(c) Southern Command

(d) South Western Command

QUESTION 6

With reference to the Mahatma Gandhi National Rural Employment Guarantee Act, consider the following statements:

1. It provides for a hundred days of wage employment in rural areas who are willing to do unskilled manual work.

2. Recently, the Supreme Court cleared the path for restarting the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in West Bengal after a gap of three and a half years.

3. Central and State Governments provide financial assistance in the ratio of 50:50.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

QUESTION 7

A five-judge Constitution Bench of the Supreme Court, which is to determine "the criteria for determining seniority in the cadre of Higher Judicial Services", has been led by:

(a) Justice B.R. Gavai

(b) Justice Sanjay Kishan Kaul

(c) Justice D.Y. Chandrachud

(d) Justice Surya Kant

QUESTION 8

Consider the following agreements:

1. Logistics Exchange Memorandum of Agreement (LEMOA)

2. Communications Compatibility and Security Agreement (COMCASA)

3. Basic Exchange and Cooperation Agreement (BECA)

The above mentioned agreements were signed between:

(a) India-Russia

(b) India-China

(c) India-France

(d) India-United States

QUESTION 9

Which of the following states has the prevalence of chronic kidney disease among agricultural workers?

(a) Rajasthan

(b) Tamil Nadu

(c) Maharashtra

(d) Bihar

QUESTION 10

Whose birth anniversary is celebrated as 'Rashtriya Ekta Diwas' or National Unity Day?

(a) Vallabhbhai Patel

(b) Jawaharlal Nehru

(c) Mahatma Gandhi

(d) B. R. Ambedkar

QUESTION 11

In the second Test match between India and South Africa to be played in Guwahati from November 22, the players will, for the first time, have a tea break before lunch. Why has this change been introduced?

(a) Because of the local weather conditions, where heavy dew affects play later in the day

(b) Because play is scheduled to start earlier than usual due to expected poor light in the evening

(c) Because of an experimental change in the format introduced by the ICC for day-night Tests

(d) Because the match is being played in an area with early sunrise and sunset

QUESTION 12

With reference to Kerala Piravi Day, consider the following statements:

1. In 1956, Travancore-Cochin was merged with Malabar and Kasaragod taluk of South Canara,

leading to the formation of modern-day Kerala.

2. A newly formed unified territory of Malayalam speakers was a result of States Reorganisation Commission's recommendation of the rebordering of 16 several states and 3 union territories along linguistic lines.

Which of the above given statements is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 13

Consider the following statements:

1. Recently, three Indian companies had received licences for importing rare earth minerals from China.

2. The US controls 61 per cent of the production and 92 per cent of the processing capacity of rare earth magnets.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 14

With reference to Know Your Vehicle (KYV) process for FASTag users, consider the following statements:

1. Recently NHAI simplified KYV rules to strengthen the FASTag ecosystem as it is preparing to implement a multi-lane free flow (MLFF) system, a barrier-less tolling system, at key sections of National Highways.

2. As per the new rule, if multiple vehicles are registered against a single person's name, the person will have to get an additional 'Registration Certificate' (RC) issued from the Vahan portal.

Which of the above given statements is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 15

What is the overarching theme of India Maritime Week (IMW) 2025?

(a) From Heritage to Horizon: India as a Global Maritime Hub

(b) Charting a Green, Digital & Inclusive Blue Economy

(c) Uniting Oceans, One Maritime Vision

(d) Deals, Delegates & Direction: India's Maritime Future

QUESTION 16

What is the correct order (high to low) of global carbon sequestration on forest land?

1. United States

2. China

3. Russia

Select the correct answer using the codes given below:

(a) 1—2—3

(b) 2—3—1

(c) 3—2—1

(d) 1—3—2

QUESTION 17

The Nellie massacre was the most violent flashpoint of the:

(a) Assam Agitation against illegal migration from Bangladesh

(b) Telangana movement for statehood

(c) Naxalite uprising in West Bengal

(d) Anti-Hindi agitation in Tamil Nadu

QUESTION 18

The 2012 Rules of the Forest Rights Act (FRA) provide a range of key provisions and rights on issues such as:

1. Community rights
2. Management of forest resources by communities
3. Disposal of minor forest produce
4. Powers of Gram Sabha to protect customary rights

Select the correct answer using the codes given below:

(a) 1 and 2 only

(b) 2, 3 and 4

(c) 3 and 4 only

(d) 1, 2, 3 and 4

QUESTION 19

With reference to India's makhana (foxnut), consider the following statements:

1. It is the dried edible seed of the prickly water lily.
2. It is a species which grows in saltwater ponds across South and East Asia.
3. The Indian state of Bihar contributes to roughly 90% of India's makhana (foxnut) production.
4. It is classified as a cereal crop under the Indian agricultural system.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) Only three

(d) All four

QUESTION 20

A person is considered an Overseas Citizen of India (OCI) Cardholder:

(a) if he or she is holding dual citizenship of India and another country.

(b) if he or she is residing in India for more than 182 days in a year.

(c) if he or she is born in India after 1950 and holds a valid Indian passport.

(d) if he or she is registered by the Government of India under Section 7A of the Citizenship (Amendment) Act, 2015.

QUESTION 21

With reference to the Indian Ornamental Tarantula, consider the following statements:

1. It is native to western India.
2. It is not deadly to humans.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 22

Which of the following can disrupt market access and payment channels?

1. Sanctions
2. Financial restrictions
3. Operational barriers
4. Weather preferences of consumers

Select the correct answer using the codes given below:

(a) 1 and 2 only

(b) 1, 2 and 3

(c) 3 and 4 only

(d) 2, 3 and 4

QUESTION 23

The semaglutide is:

(a) a medication used to support weight loss and diabetes management

(b) a vaccine for influenza

(c) an antibiotic for bacterial infections

(d) a painkiller for chronic arthritis

QUESTION 24

With reference to the Foreign Portfolio Investment (FPI), consider the following statements:

1. It consists of securities and other financial assets held by investors outside of their domestic market.

2. It provides the investor with direct ownership of a company's assets.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 25

Rampur and Mudhol are the breeds of:

(a) Buffalo

(b) Hound

(c) Goat

(d) Camel

QUESTION 26

The award-winning book 'The Burning Earth: An Environmental History of the Last 500 Years' is authored by:

(a) Jasleen Kaur

(b) Samantha Harvey

(c) Kiran Desai

(d) Sunil Amrith

QUESTION 27

With reference to Global Forest Resources Assessment (GFRA) 2025, consider the following statements:

1. India has climbed to ninth spot globally in total forest area and retained its third rank in annual forest area gain.

2. Russia, Brazil, Canada, the United States of America, and China remain the top five countries with the largest forest areas globally.

Which of the above given statements is/are true?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 28

In which country, previously known to be free of mosquitoes, was the first sighting of the insect recorded this month?

(a) Denmark

(b) Norway

(c) Finland

(d) Iceland

QUESTION 29

The Ningol Chakouba festival was recently in the news due to a fish fair. Which of the following states celebrates this festival?

(a) Himachal Pradesh

(b) Manipur

(c) Goa

(d) None of the above

QUESTION 30

"Primary and secondary sanctions" are often seen in news headlines due to the U.S. and the EU's sanctions on Russia. Consider the following statements in this context:

1. Under international law, primary sanctions are viewed as coercive measures that penalise third states or their entities for maintaining relations with a sanctioned actor.

2. Unlike primary sanctions, which regulate a state's own nationals and territory, secondary sanctions target external actors to influence their dealings with the primary target.

3. Secondary sanctions operate by altering access to the sanctioning state's market or financial system, creating indirect pressure on third parties to conform to the sanctioning state's policy objectives.

Which of the above given statements is/are true?

(a) 1 and 2 only

(b) 1 and 3 only

(c) 2 and 3 only

(d) 1, 2 and 3

QUESTION 31

With reference to the green crackers, consider the following statements:

1. These are developed by the Council of Scientific and Industrial Research (CSIR) and NEERI to have a reduced environmental impact.

2. They contain chemicals like barium nitrate and arsenic.

3. They are completely pollution-free.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

QUESTION 32

With reference to carbon dioxide, consider the following statements:

1. The atmospheric concentration of carbon dioxide (CO_2) is the primary driver of climate change.

2. CO_2 accounts for more than 90% of all accumulated GHGs in the atmosphere.

3. Its ability to trap heat is significantly more than other GHGs such as methane and nitrous oxide.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

QUESTION 33

With reference to the elephants, consider the following statements:

1. It is the largest mammal found in India's forests.

2. Project Elephant was launched in 1982.

3. Compared to the 2017 numbers, Karnataka has seen the highest drop in elephant population in 2025.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

QUESTION 34

Rakchham-Chitkul Wildlife Sanctuary was recently in the news. It is located in:

(a) Uttarakhand

(b) Himachal Pradesh

(c) Punjab

(d) Sikkim

QUESTION 35

With reference to the Northeast Monsoon, consider the following statements:

1. It is known as the retreating monsoon.

2. It is important for southern India.

3. It creates a high-pressure area over the Indian subcontinent and a low-pressure area over the surrounding seas.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

QUESTION 36

Who has conducted the first-ever joint scuba diving expedition?

1. Coast Guard
2. Indian Air Force
3. Indian Navy
4. Indian Army

Select the correct answer using the codes given below:

(a) 1 and 2 only

(b) 1 and 3 only

(c) 2, 3 and 4

(d) 1, 2, 3 and 4

QUESTION 37

With reference to the blackbuck, consider the following statements:

1. It is listed as a vulnerable species.

2. It is classified under Schedule II of the Wildlife Protection Act, 1972.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 38

With reference to antimicrobial resistance (AMR), consider the following statements:

1. It refers to the bacteria's ability to evolve and stop responding to the drugs designed to kill them.

2. According to a recent report by the WHO, one in every six bacterial infections globally was resistant to antibiotics.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 39

Loop Line Speed Control Test and SPAD Prevention Test are associated with:

(a) Kavach – Automatic Train Protection

(b) Shakti – Indigenous locomotive traction system

(c) Suraksha – Passenger safety monitoring initiative

(d) Rakshak – Train fire detection and alerting system

QUESTION 40

With reference to the India-China trade, consider the following statements:

1. China is India's second-largest trading partner.

2. India's exports to China increased in 2024-25, while imports saw a decline.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 41

Consider the following statements with reference to Tomahawk missiles:

1. They are long-range, precision-guided cruise missiles originally developed for sea-to-land strikes.

2. Ukraine has developed this missile domestically, with a range of more than 1,000 miles, first unveiled in 2015.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 42

Consider the following statements:

1. Darul Uloom Deoband was established in the wake of the revolt of 1857.

2. Dar ul-Uloom Haqqania was established in Lucknow as Islamic alternative to universities being run by the British empire.

Which of the above given statements is/are true?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

QUESTION 43

The term Fitna al-Khawarij was mentioned in the news. What does it refer to?

(a) It is a term the Pakistani State uses for the militant group Tehreek-e-Taliban Pakistan (TTP)

(b) It is a reform movement from the 18th Century also known as Wahabism

(c) It refers to the rise of the modern state of Israel and the occupation of Palestine

(d) None of the above

QUESTION 44

Sikandar Badusha Dargah was recently seen in news. It is located atop the:

(a) Nandi Hills near Bengaluru

(b) Melmalai Hill in Thiruthani

(c) Palani Hills in Palani

(d) Thiruparankundram Hill in Madurai

QUESTION 45

The '2025 Gaza peace summit', a discussion on plans to end the two-year-long conflict in Gaza, was recently held in which country?

(a) Izmir

(b) Tel Aviv

(c) Sharm el-Sheikh

(d) None of the above

QUESTION 46

The government has notified the first legally binding Greenhouse Gas Emission Intensity (GEI) Target Rules, 2025, for high-emission sectors including:

1. Aluminium

2. Paper and Pulp

3. Cement

4. Rubber

5. Plastic

Select the correct answer using the codes given below:

(a) 1 and 3 only

(b) 2, 3 and 5

(c) 3 and 5 only

(d) 1, 2 and 3

QUESTION 47

Consider the following statements:

Statement 1: Global freight rates had been surging since late 2023, going up nearly three times compared to the pre-crisis levels.

Statement 2: It is due to Yemen's Houthi rebels attacking shipping vessels in the region in opposition to the war on Gaza, forcing major shipping lines to reroute operations through the costlier Cape of Good Hope route.

Which one of the following is correct in respect of the above statements?

(a) Both Statement 1 and Statement 2 are correct and Statement 2 is the correct explanation for Statement 1.

(b) Both Statement 1 and Statement 2 are correct and Statement 2 is not the correct explanation for Statement 1.

(c) Statement 1 is correct but Statement 2 is incorrect.

(d) Statement 1 is incorrect but Statement 2 is correct.

QUESTION 48

With reference to the Rare earth metals, or rare earth elements (REEs), consider the following statements:

1. These elements are on the periodic table that share similar chemical properties and are silver-coloured in appearance.

2. These are extensively used in mobile phones and electric vehicles.

3. Russia holds unparalleled expertise in refining REEs compared to other nations.

How many of the statements given above are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

QUESTION 49

Which of the following are the most common invasive plant species found across India?

1. Water Hyacinth
2. Prosopis Juliflora
3. Hyptis Suaveolens
4. Purple Loosestrife
5. Kudzu Vine

Select the correct answer using the codes given below:

(a) 1, 2 and 3

(b) 2, 3, 4 and 5

(c) 3, 4 and 5

(d) 1, 2, 3, 4 and 5

QUESTION 50

Consider the following statements:

1. The government has proposed opening up the conservation of protected monuments to the public and private sector.

2. The money invested would be treated as corporate social responsibility (CSR), but will not be considered for tax exemptions.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Answer Key									
1. (a)	2. (b)	3. (b)	4. (c)	5. (c)	6. (b)	7. (a)	8. (d)	9. (b)	10. (a)
11. (d)	12. (c)	13. (a)	14. (a)	15. (c)	16. (c)	17. (a)	18. (d)	19. (b)	20. (d)
21. (b)	22. (b)	23. (a)	24. (a)	25. (b)	26. (d)	27. (c)	28. (d)	29. (b)	30. (c)
31. (a)	32. (b)	33. (a)	34. (b)	35. (d)	36. (a)	37. (d)	38. (c)	39. (a)	40. (a)
41. (a)	42. (a)	43. (a)	44. (d)	45. (c)	46. (d)	47. (a)	48. (b)	49. (a)	50. (a)

Detailed Explanations:

For a detailed explanation, visit indianexpress.com/section/upsc-current-affairs/ . Click on the UPSC Quiz tab and explore weekly current affairs quizzes from October 2025.