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Time: 45 Min

Date: 08-10-2025

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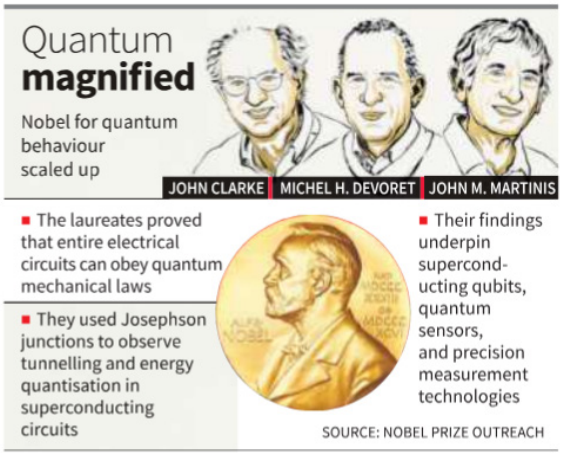
2025 NOBEL PRIZE IN PHYSICS

Context

- **John Clarke, Michel Devoret and John Martinis** will share the 2025 Nobel Prize in physics for their discovery of a phenomenon **called quantum mechanical tunneling in an electrical circuit.**

About

- They showed that the **process of tunneling** can occur not only in subatomic particles **but also in an electrical circuit made of superconductors.**



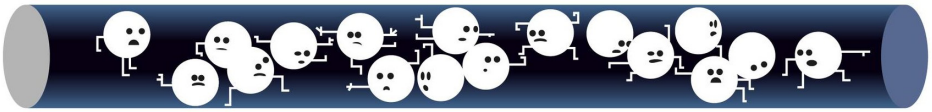
- **Tunneling** literally is the **ability of particles to pass through physical walls.**
  - Such strange behaviour **cannot be observed at the macroscopic level** but these scientists showed that it was possible to **organise a multitude of single particles** and coerce them to **exhibit "tunnelling" properties.**

Do you Know?

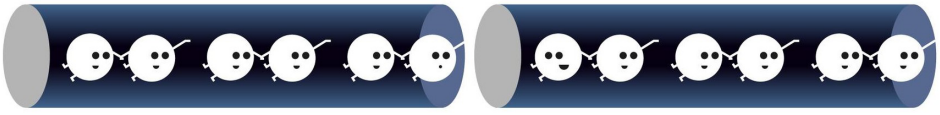
- **Quantum mechanics** was first formally described by **German physicist Werner Heisenberg in 1925.**
- **One-hundred years** later the **United Nations declared 2025** the **international year of quantum science and technology** to celebrate the centenary of the breakthrough.
- **Quantum technology** is a rapidly advancing field that leverages the **principles of quantum mechanics** to develop new technologies with unprecedented capabilities.
  - **Quantum mechanics** is the branch of physics that studies the **behavior of particles at the quantum level**, where classical physics no longer applies.

How was it done?

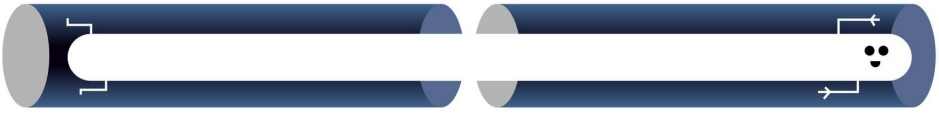
- **A Josephson junction** is a device made of two superconductors separated by a very thin insulating barrier.
  - **It allows Cooper pairs** (pairs of electrons in a superconductor) to **tunnel through the insulator without resistance,** even though it is classically forbidden — this is **known as the Josephson effect.**
- **Quantum Tunnelling:** When the current was below a critical value, electrons were trapped (no voltage).
  - Classically, this state should persist indefinitely, but quantum mechanics allows tunnelling — **electron pairs "escape" through the barrier, producing a small voltage.**



1 In a normal conductor, the electrons jostle with each other and with the material.



2 When a material becomes a superconductor, the electrons join up as pairs, *Cooper pairs*, and form a current where there is no resistance. The gap in the illustration marks the Josephson junction.



3 Cooper pairs can behave as if they were all a single particle that fills the entire electrical circuit. Quantum mechanics describes this collective state using a shared *wave function*. The properties of this wave function play the leading role in the laureates' experiment.

Applications of Josephson Junctions and Related Work

- **Quantum Computing:** Josephson junctions form the basis of superconducting qubits, which use quantised energy levels for computation.
  - The field of **circuit quantum electrodynamics (cQED)** — coupling superconducting circuits with microwave resonators arises from this work.
- **Precision Measurements:** Used in Josephson voltage standards for precise definition of the volt.
  - SQUIDs (Superconducting Quantum Interference Devices) use Josephson junctions to detect extremely weak magnetic fields.
- **Quantum Technologies:**
  - **Quantum amplifiers:** Boost weak signals with minimal noise.
  - **Microwave-to-optical converters:** Interface between quantum processors and optical networks.
  - **Quantum simulators:** Model complex materials and reactions.

Source: TH

ABHIDHAMMA DIVAS

In News

- The International Buddhist Confederation (IBC), in collaboration with Gautam Buddha University (GBU), Antarrashtriya Baudh Shodh Sansthan and the Ministry of Culture celebrated **International Abhidhamma Day.**

Background

- Abhidhamma Divas commemorates the day when Lord Buddha descended from the celestial realm, Tāvatiṃsa-devaloka, to Sankassiya (now Sankisa Basantapur) in Uttar Pradesh.
- The Asokan Elephant Pillar, a historical marker at the site, marks this significant event.
- According to Theravada Buddhist texts, Lord Buddha spent three months teaching the Abhidhamma to the deities in Tvatisa, including his mother.

Do you know?

- India, the birthplace of Buddhism, holds a deep spiritual and cultural connection to the life and teachings of Gautam Buddha, especially through sacred sites like Bodh Gaya.
- These places symbolize his journey to enlightenment and inspire seekers toward peace and self-discovery.
- At the heart of his teachings is the Abhidhamma, a profound philosophical text that emphasizes mental discipline, self-awareness, and inner transformation beyond ethical conduct.

International Abhidhamma Divas

- It is celebrated worldwide to honor the Abhidhamma's timeless relevance in guiding ethical conduct and mental discipline.
- It highlights India's enduring connection to Buddhism and its role in preserving and promoting the Buddha's legacy, serving as a bridge between ancient wisdom and modern spiritual practice.

Teachings of Abhidhamma

- The Abhidhamma, known as the "Higher Teaching" of the Buddha, offers a rigorous and analytical exploration of mind and matter, distinct from the everyday language of the Sutta Piaka.
- It presents a detailed framework for understanding existence, including birth, death, and mental processes, using a specialized Pali vocabulary—such as citta (consciousness), cetasika (mental factors), rpa (materiality), and nibbna (liberation).
- Traditionally taught by the Buddha in the Tavatimsa heaven and later elaborated by his disciple Sariputta, the Abhidhamma Piaka comprises seven treatises, including the Paññhna, which deeply analyzes causal relationships.
- These texts form the foundation of Buddhist philosophy and psychology, serving as vital tools for practitioners seeking insight and spiritual growth.

Government support and efforts

- Abhidhamma's profound teachings are preserved through the ancient Pali language, recognized as a Classical Language by the Government of India for its literary and historical significance in Buddhism and Jainism.
  - Pali, shaped from various dialects around 500 B.C., is the medium for the entire Buddhist canon, including the **Vinaya Pitaka (outlines ethical monastic rules)**, Sutta Pitaka (a rich compilation of the Buddha's discourses), and Abhidhamma Pitaka (delves into ethics, psychology, and the intricate analysis of mind and reality).
  - Pali literature also includes the **Jataka tales** (recount the stories of the Buddha's previous lives, reflecting shared moral values prevalent among the Indian populace).

Source :PIB

EUROPE'S GROWING ROLE IN INDIA'S DIPLOMACY

Context

- British PM Keir Starmer's visit to India, new EFTA trade pact, and EU trade negotiations **indicate Europe's growing role in India's diplomacy.**

Triggers for Western Pluralism:

- **US Policy Shifts under Trump:** "America First" nationalism questioned alliances and security commitments.
  - It undermined the global institutions and trade norms.
- **Internal Divisions within the West:** The western countries have disagreements on various global issues such as Russia, China, trade, and technology.
  - Europe itself begins to develop its own geopolitical act rather than remain a mere extension of the US within the so-called "collective West."
- **Europe's Response:** It has called for strategic autonomy and continental sovereignty.
  - European Commission President Ursula von der Leyen declared that "Europe must be prepared to stand on its own feet — economically, technologically, and militarily.

India-EU Relations

- **Political cooperation:** India-EU relations date to the early **1960s,** and a cooperation agreement signed in **1994** took the bilateral relationship beyond trade and economic cooperation.
  - **The first India-EU Summit, in 2000**, marked a landmark in the evolution of the relationship.
  - At the **5th India-EU Summit at The Hague in 2004**, the relationship was upgraded to a **'Strategic Partnership'.**
- **Economic cooperation:** India's bilateral trade in goods with the **EU was USD 137.41 billion in 2023-24**, making it the largest trading partner of India for goods.
  - **EU is India's largest trading partner** for goods, 17% of India's exports go to the EU and 9% of EU exports come to India.
- **India-EU Free Trade Agreement (FTA) Negotiations:**
  - **Negotiation Resumption:** Talks resumed in 2022 after an 8-year hiatus .
  - **Objective:** To finalize a comprehensive trade agreement covering goods, services, investments, and geographical indications.
  - Prime Minister Narendra Modi and the European Commission President agreed to seal the deal **by the end of this year.**
- **Other areas of cooperation:**
  - **The India-EU Water Partnership (IEWP),** established in 2016, aims to enhance technological, scientific, and policy frameworks in water management.
  - **In 2020**, there was an **agreement for research and development cooperation** in the peaceful uses of nuclear energy between the **European Atomic Energy Community and the Government of India.**
  - India and the EU established the **Trade and Technology Council (TTC)** in 2023. The TTC is a forum for the two parties to collaborate on trade, technology, and security. The TTC's goals.
- **India's Two Levels of Engagement**
  - **EU as a bloc:** Regular summits, strategic dialogues on trade, tech, security, foreign policy.
  - **Bilateral with major EU members:** Deepening ties with France, Germany, Nordic and Eastern European countries.

Factors Shaping India-Europe Relations:

- **Geopolitical Shifts and Strategic Autonomy:** Return of war in Europe (Russia–Ukraine) and the global erosion of multilateralism.
  - Europe seeking greater strategic autonomy from the US especially post-Trump era.
  - India aims to maintain a multipolar world order while diversifying its partnerships beyond the US, Russia, and China.
- **Trade and Economic Cooperation:** EU is one of India's largest trade and investment partners.
  - India and EU are keen on concluding India–EU Free Trade Agreement (FTA) and Investment Agreement.
  - IMEC (India–Middle East–Europe Corridor) provides opportunities for strategic connectivity and trade.
- **Technology and Digital Sovereignty:** Both have the shared interest in promoting digital technologies as public goods.
  - India can benefit from Europe's strengths in deep tech, semiconductors, and digital manufacturing.
- **Defence and Strategic Cooperation:** Europe is a key arms supplier to India.
  - India seeks joint development, co-production, and technology transfer.
  - Europe is rearming due to the Ukraine war; India is pursuing Atmanirbharta (self-reliance).
- **Indo-Pacific and Maritime Strategy:** Europe increasingly views the Indo-Pacific as a strategic priority.
  - India is working with France, Germany, and others to promote free and open Indo-Pacific.

Challenges in the India - EU Relations

- **India's Stand on Ukraine War:** Europe expects India to be more critical of Russia; India maintains strategic neutrality.
- **EU's Stand on Pakistan and Terrorism:** India expects the EU to hold Pakistan accountable for state-sponsored terrorism.
- **Slow Progress on Trade Agreements:** The India–EU Free Trade Agreement (FTA) negotiations have faced multiple deadlocks.
- **Carbon Border Adjustment Mechanism (CBAM)** imposed by the EU creates additional trade barriers for India.
- **Human Rights and Normative Pressure:** EU often adopts a prescriptive stance on India's internal matters (e.g., Kashmir, CAA, farm laws).
  - India views this as interference in domestic affairs, causing diplomatic friction.
- **Regulatory and Standards Barriers:** EU's strict regulations on data privacy, digital taxation, environmental standards, and labour laws are hurdles for Indian exporters and tech firms.
- **Media stereotypes and limited public awareness in Europe with respect to India** hinder people-to-people ties.

Way Ahead

- **Fast-Track Trade and Investment Agreements:** Conclude the long-pending India–EU Free Trade Agreement and Investment Protection Agreement.
- **Deepen Strategic and Defence Cooperation:** Move beyond buyer-seller relationship to joint development and co-production of defence technologies.
- **Expand Mobility and Education Partnerships:** Finalise a comprehensive mobility agreement for skilled professionals, students, and researchers.
- **Build Resilient Supply Chains:** Diversify away from China by promoting trusted, transparent supply chains.
  - Leverage initiatives like IMEC (India-Middle East-Europe Corridor) for logistics, energy, and trade.
- **Enhance People-to-People and Cultural Ties:** Promote tourism, media engagement, and cultural exchanges to break stereotypes and deepen mutual understanding.

Conclusion

- The evolving Western pluralism, marked by Europe's rearmament and diversified trade creates both opportunities and challenges for India.
- It expands India's diplomatic space while demanding faster domestic adaptation to leverage economic and strategic advantages in a more multipolar world.

Source: IE

E-GOVERNANCE: DIGITAL TRANSFORMATION OF GOVERNANCE IN INDIA

Context

- The evolution of e-governance in India has reshaped governance from a top-down administrative model into a participatory, transparent, and citizen-centric ecosystem.

About e-Governance in India

- It represents a **paradigm shift** in how the government interacts with citizens, businesses, and other arms of the state.
- India has reimagined governance to be more transparent, efficient, and citizen-centric **by leveraging Information and Communication Technology (ICT).**
- **Core Objectives of E-Governance:**
  - **Transparency:** Reducing corruption through digital trails;
  - **Efficiency:** Streamlining administrative processes and reducing delays;
  - **Inclusivity:** Bridging urban-rural gaps and empowering marginalized communities;
  - **Accountability**: Real-time monitoring and feedback mechanisms;
  - **Affordability**: Minimizing costs for both government and citizens.

Evolution of e-Governance in India

Phase I (Till 2000):

- **National Informatics Centre (NIC), 1976**: To familiarise government departments with computers and develop basic digital communication systems.
- **NIC Network (NICNET), 1987:** India's first government-wide satellite-based network; enhanced connectivity between national, state, and district levels.
- Other breakthroughs such as the **computerised railway reservation system**, digital **Income Tax records**, and **computerised electoral rolls** showcased how back-end digitisation could enhance administrative efficiency.
- **e-Seva (Andhra Pradesh, 1999):** Enabled citizens to access multiple services through a single window.

Phase II (2000–2014):

- **Gyandoot (Madhya Pradesh, 2000):** Created rural cyber kiosks for tribal regions.
- **Bhoomi (Karnataka, 2001):** Digitised land records, transforming property management.
- **FRIENDS (Kerala)** and **Lokvani (Uttar Pradesh):** Showed that digital governance could adapt to India's socio-economic diversity.
- **Institutionalisation of e-Governance:**
  - **National e-Governance Plan (NeGP), 2006:** It marked the beginning of systemic, nationwide digitisation. It introduced:
    - **State Wide Area Networks (SWANs)** for connectivity;
    - **Common Service Centres (CSCs)** to bridge the rural-urban divide;
    - **State Data Centres (SDCs)** to host applications and services.
  - Key infrastructure projects such as **State Wide Area Networks (SWANs)**, **Common Service Centres (CSCs)**, and **State Data Centres (SDCs)** created the digital backbone for integrated services.
  - **Aadhaar (2010):** It is the world's largest biometric identity program that enables verifiable digital identities for over a billion people, powering welfare transfers and financial inclusion through the **UIDAI**.
- However, many projects suffered from **connectivity issues and financial unsustainability** — a classic case of the **'pilot project syndrome'**, where small-scale success failed to translate into nationwide adoption.

Phase III (2015–2019):

- **Digital India (2015):** To empower citizens and bridge the digital divide, moving from service delivery to **ecosystem creation**.
- **Building a Digital Ecosystem:**
  - **JAM Trinity (Jan Dhan, Aadhaar, Mobile):** Enabled direct welfare transfers and financial inclusion.
  - **DigiLocker** and **BHIM:** Empowered citizens with secure digital storage and payments.
  - **India Stack:** Offered open APIs like **Aadhaar authentication**, **e-KYC**, **e-Sign**, and **UPI**, creating programmable public infrastructure for innovation.
  - **Unified Payments Interface (UPI):** It grew from **0.01 million transactions in 2016** to **18 billion monthly by 2025**.
- **Platformisation of Governance:**
  - **UMANG:** Unified platform for accessing 100+ government services via mobile/web;
  - **e-Kranti:** A sub-mission under Digital India focused on transforming e-Governance into good governance;
  - **DigiLocker:** Secure cloud-based platform for storing and sharing digital documents;
  - **Mobile Seva:** Delivery of services via SMS, IVRS, USSD, and mobile apps;
  - **Common Service Centres (CSCs):** Rural access points for e-services and digital literacy;
  - **DigiYatra:** It allows passengers to bypass queues with a quick face scan, signifying a **fundamental transformation in the state-citizen relationship**.

Related Concerns & Challenges

- **Gaps & Divide:**
  - **Urban-Rural Gap:** While urban areas benefit from high-speed internet and digital literacy, rural regions often lack basic connectivity and awareness.
  - **Low Digital Literacy:** Many citizens, especially in rural and elderly populations, struggle to navigate digital platforms.
  - **Language Barriers:** India's linguistic diversity poses a major challenge. Most e-Governance platforms are English-centric, alienating non-English speakers.
  - **Infrastructure Deficiencies:** Unreliable electricity, poor internet connectivity, and lack of hardware in remote areas hinder platform functionality.
- **Cybersecurity & Data Privacy:** With increasing digitization, safeguarding citizen data is critical.
  - Rising cyber frauds, phishing attacks, and identity theft, especially targeting vulnerable groups.
  - Weak KYC norms and under-equipped cyber police forces exacerbate the problem.
- **Interoperability Issues:** Many government departments operate in silos, leading to fragmented databases and inefficient service delivery.
- **Resistance to Change:** Bureaucratic inertia and lack of training among officials often slow down adoption.

Policy Framework and Support

- MeitY has laid out comprehensive policies to support e-Governance, and ensure scalability, security, and sustainability of digital governance systems, including:
  - Open Source Software Adoption;
  - Cloud-Ready Application Development;
  - Open APIs for interoperability;
  - Email and data security policies.

Source: IE

EVOLUTION OF BAT WINGS

Context

- A study published in Nature Ecology & Evolution explores **how bats evolved wings from the same five-digit mammalian limb structure.**

Key Points

- **Bats are the only mammals that can fly.** Their wings formed from the same five-fingered limbs found in other mammals.
- Earlier, scientists thought bats kept the skin between their fingers by **stopping cell death**, but the study shows **cell death still happens**.
- Researchers found special **fibroblast cells** in bats' wings that help form the thin skin (called **chiropatagium**) used for flying.
  - **Fibroblast cells** are connective tissue cells that help make and repair skin.
- Two genes, **MEIS2** and **TBX3**, stay active in bats and help these cells build wings.
- When these genes were added to **mouse embryos**, the mice grew **webbed fingers**, like early bat wings.

Significance of the Study

- **Evolutionary Insights:** Supports the idea that major evolutionary innovations (like wings) often arise from modifying existing genetic networks, not creating new genes.
- **Human health:** Provides insight into **syndactyly (fused fingers)**, a developmental disorder possibly linked to similar gene regulation errors.
- **Comparative evolution:** Suggests similar genetic repurposing might underlie the evolution of bird wings, fish fins, and whale flippers.

Key Facts about Bats

- Bats are mammals belonging to the **order Chiroptera and are the only mammals capable of sustained powered flight**, with wings made of stretched skin over elongated finger bones.
- There are over 1,400 species of bats worldwide, constituting about **20% of all mammal species.** They inhabit almost every continent except Antarctica, thriving mainly in tropical regions.
- Bats are **crucial for ecosystems as pollinators f**or many plants, agents of seed dispersal, and natural controllers of insect populations, including agricultural pests.
- **Most bats use echolocation**—high-frequency sound waves—for navigation and hunting in the dark, a unique adaptation that allows them to exploit nocturnal ecological niches effectively.
- **Unlike birds, bats cannot take off from the ground easily**; they hang upside down to launch into flight. They rest during daytime, often in caves or hollow trees, forming colonies that can range widely in size.
- The **Indian flying fox (Pteropus giganteus) is among the largest bats in India** and a critical species for pollination and ecosystem health.
- Bats are known **reservoirs of numerous viruses**, including coronaviruses, Nipah virus, and Ebola, yet they exhibit remarkable immunity and longevity which is a subject of scientific research.

Source: TH

NEWS IN SHORT

SRI LANKA ACTS AS A NATURAL SHIELD FOR INDIA'S SOUTHEAST COAST: INCOIS

Context

- According to the Indian National Centre for Ocean Information Services (INCOIS), **Sri Lanka acts as a natural land barrier** shielding the southeastern coast of the country from the **long-period swell waves** generated in the Southern Ocean.

What the Study Found

- The team studied **swell waves.**
  - These are the long ocean waves formed by storms in the Southern Ocean.
  - These waves can travel thousands of kilometres without losing much energy.
- Such waves often cause flooding and coastal erosion along Kerala's coast, but the eastern coast of India, including Tamil Nadu and southern Andhra Pradesh, remains mostly safe.

- Using data from wave rider buoys placed near Kollam (west coast) and Pondicherry (east coast), and computer models known as **WAVEWATCH III**, scientists found that over 96% of these waves stop before reaching Pondicherry.
- When they removed Sri Lanka's landmass in a computer simulation, the waves travelled freely and hit India's east coast. This confirmed that Sri Lanka blocks most of the swells, **acting as a "swell shield."**

Significance

- Findings are valuable for India's coastal zone management, disaster risk reduction, and climate adaptation planning under frameworks like the National Coastal Mission and Blue Economy initiatives.

Source: TH

SUPERMOON

Context

- The Supermoon, also known as the Harvest Moon, was observed recently.

About the Supermoon

- A supermoon occurs when a **full moon or new moon** coincides with the moon's closest approach to the earth in its elliptical orbit — a point known as the **perigee**.
- Because the moon's orbit is not a perfect circle, its distance from the earth varies throughout the month by around 50,000 km.
- When the moon is near its perigee and also directly opposite the sun, the full moon appears about **14% larger and 30% brighter** than when it is at its farthest point. This is the supermoon.
- Culturally, supermoons have long captured human imagination, inspiring folklore and spiritual observances across civilisations.
- The term "supermoon" was first used by astrologer **Richard Nolle** in the 1970s and is now common in astronomy and the media.

Do you know?

- Supermoons also influence the **tides**, creating perigean spring tides. These tides are slightly higher and lower than usual because the moon's stronger gravitational pull acts in concert with that of the sun.
- While the changes are typically modest, they can exacerbate coastal flooding when combined with storm surges.

Source: TH

MOSCOW FORMAT TALKS

In News

- India, China, Pakistan attend 10-nation Moscow Format talks that inducts Mr. Muttaqi, as an "official" member for the first time.

About

- The Moscow Format is a regional diplomatic initiative established in 2017 to address the Afghanistan conflict, promote stability, and foster national reconciliation.
- It serves as a platform for regional countries to coordinate on Afghan peace and stability.
- Its members are India, Afghanistan, China, Iran, Kazakhstan, Kyrgyzstan, Pakistan, Russia, Tajikistan, and Uzbekistan.

Source: TH

POLAR SILK ROAD

In News

- The Chinese ship **"Istanbul Bridge"** became the first commercial vessel to sail from **Ningbo-Zhoushan (China) to Felixstowe (UK)** via the Arctic in 18 days, marking the operational launch of the **Polar Silk Route.**

About Polar Silk Road

- The Polar Silk Road is a part of **China's broader Belt and Road Initiative (BRI)**, envisioned as a "blue economic corridor" through the Arctic Ocean.
- It focuses on developing navigable Arctic sea routes connecting East Asia, North America, and Western Europe via the Northern Sea Route (NSR) along Russia's coast.
- It establishes a new shipping corridor between Asia and Europe — shorter and more cost-effective than the Suez Canal route.

Source: TH

US'S INSURRECTION ACT

In News

- Donald Trump has threatened to **invoke the Insurrection Act** to deploy military forces domestically, aiming to bypass opposition from courts and Democratic-led cities that are blocking his efforts to control the **National Guard.**

What is the Insurrection Act?

- The Insurrection Act is a **U.S. federal law** that allows the President to deploy the military or federalize the National Guard for domestic law enforcement during emergencies like uprisings or rebellions.
- Though typically barred from civilian law enforcement, troops can make arrests and conduct searches if the Act is invoked.

Past Usage

- The Insurrection Act has been used **during the 1960s civil rights movement**, notably by **Eisenhower in Little Rock**, and in 1992 by George H.W. Bush during the Los Angeles riots. Its use has since become very rare.

Controversies

- The Insurrection Act is controversial because it allows the president to bypass state authority and use the military in civilian affairs, which challenges long-standing American principles and the Posse Comitatus Act.
- Civil rights groups warn it risks eroding civil liberties and democratic norms.

Source:IE

PM SURYA GHAR MUFT BIJLI YOJANA

In News

- More than 5 lakh loan applications worth over 10,907 crore have been sanctioned by public sector banks to support the widespread adoption of this scheme in 2025.

About the Scheme

- **Objective:** To supply up to 300 units of free electricity per month to 1 crore households by enabling them to install rooftop solar panels. It is the world's largest **domestic rooftop solar initiative.**
- **Nodal Ministry:** Ministry of New and Renewable Energy
- **Subsidy & Financial Support:** Households receive a central government subsidy covering up to 40% of the solar panel installation cost (30,000 per kW up to 2 kW, 18,000 per extra kW up to maximum 78,000 for systems larger than 3 kW).
- **Eligibility:** Any Indian citizen who owns a house with a suitable roof and has not previously installed rooftop solar benefitting from similar subsidy schemes.

Source: PIB

OPERATION HAECHI-VI

Context

- The **Central Bureau of Investigation (CBI)** has arrested eight accused and identified 45 suspects as part of Interpol's **Operation HAECHI-VI**.

About Operation HAECHI-VI

- The operation focused on **seven categories of offences:** cyber-enabled financial crime, voice phishing, love and romance scams, online sextortion, investment fraud, money laundering linked to illegal online gambling, business email compromise, and e-commerce fraud.
- Investigators worked together to detect and disrupt **online fraud as well as money laundering activities**, blocking over **68,000 associated bank accounts** and freezing close to 400 cryptocurrency wallets.

Source: TH

PM GATI SHAKTI NATIONAL MASTER PLAN

Context

- The Union Cabinet on Economic Affairs approved four **multi-tracking projects under the PM Gati Shakti National Master Plan.**
  - These projects span across Maharashtra, Madhya Pradesh, Gujarat, and Chhattisgarh, adding about 894 km to the Indian Railways network.

PM GatiShakti National Master Plan (PMGS-NMP)

- It was launched in **2021** for providing multimodal connectivity infrastructure to various economic zones and improving logistics efficiency across India.
- It is **not under a single ministry** but is coordinated by the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry.
- **PM GatiShakti is driven by seven engines:** Railways, Roads, Ports, Waterways, Airports, Mass Transport and Logistics Infrastructure.
- 57 Central Ministries/Departments including 8 Infrastructure, 22 Social and 27 Economic & other Ministries/Departments have been onboarded on PMGS NMP.

Source: TH

CARBON CAPTURE AND STORAGE (CCS)

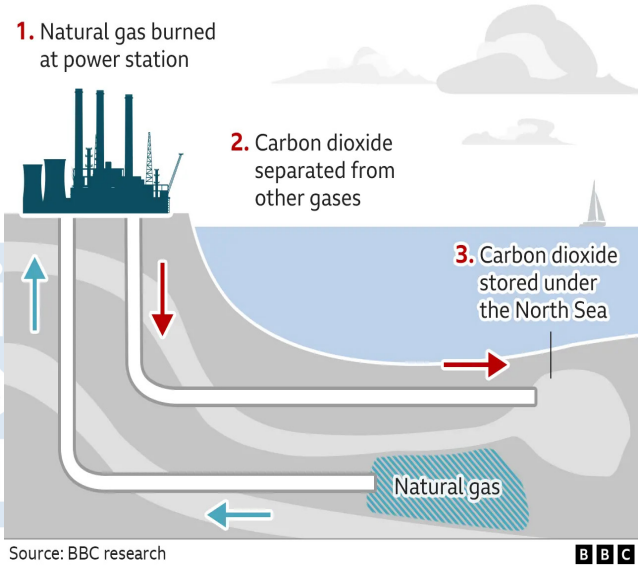
In News

- A new report by Climate Analytics warns that Asia's growing reliance on **carbon capture and storage (CCS)** could backfire, locking the region into prolonged fossil fuel use and adding up to 25 billion tonnes of CO_2 emissions by 2050.

Carbon Capture and Storage (or "Sequestration")

- It refers to technologies that capture the greenhouse gas carbon dioxide (CO_2) with the aim of storing it safely underground (sequestration) for permanent isolation.
- It could be one of the key tools to help tackle global warming.
- It is promoted as a climate solution, and most projects in countries like China, India, Japan, and South Korea aim to extend fossil fuel use rather than cut emissions.

Carbon capture and storage



Benefits

- CCS helps reduce CO_2 emissions in industries like cement and steel by capturing and storing CO_2.
- Combined with bioenergy (BECCS), it can remove CO_2 from the atmosphere, aiding efforts to limit global warming.

Criticism

- CCS is criticized as costly and ineffective, often used to extend fossil fuel use.
- Renewables are cheaper and more efficient in Asia, offering a faster and more reliable path to net zero without undermining climate goals.

Source :DTE

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