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Table of Content

STEM CELL THERAPY FOR AUTISM RESTRICTED TO APPROVED CLINICAL TRIALS

Context

- The Union Health Ministry has directed States and Union Territories to ensure that stem cell therapy for Autism Spectrum Disorder is offered only through duly approved clinical trials and is not marketed as routine or standard clinical care.

What is Stem Cell Therapy?

- Stem cell therapy utilizes the unique properties of stem cells, including **self-renewal and differentiation,** to **regenerate damaged cells and tissues** in the human body **or replace** these cells with new, healthy and fully functional cells.
- It is also known as **regenerative medicine,** promotes the **repair response of diseased, dysfunctional or injured tissue** using stem cells or their derivatives.
  - It is the **next step in organ transplantation** and uses cells instead of donor organs, which are limited in supply.
- Stem cells are grown in the labs, these **stem cells are manipulated to specialize into specific types of cells,** such as heart muscle cells, blood cells or nerve cells.
  - The specialized cells can then be **implanted into a person.**

India's Regulatory Framework

- **The National Guidelines for Stem Cell Research, 2017,** provide the core framework for ethical and scientific oversight of stem-cell research and clinical translation.
  - The guidelines were jointly issued by the **Indian Council of Medical Research (ICMR) and the Department of Biotechnology.**
  - The therapeutic use of any type of stem cell in autism is to remain restricted to duly approved clinical trials, in accordance with these Guidelines.
- **Clinical Establishments (Registration and Regulation) Act, 2010: It** enables State and district authorities to take action against establishments offering unauthorised stem cell therapies.

Benefits of Stem Cell Therapy

- **Treatment of difficult diseases:** Cell-based approaches offer potential applications in cancer, genetic disorders, cardiovascular diseases, neurological disorders and tissue injuries, although the evidence varies considerably across conditions.
  - **Haematopoietic stem-cell transplantation** is an established treatment for several blood and immune disorders.
- **Research and personalised medicine:** Stem cells can be used to model diseases, study drug responses and develop more targeted therapies.

What are the challenges?

- **Limited clinical evidence:** Promising laboratory or early-stage results do not necessarily establish safety and efficacy in patients; many proposed applications remain experimental.
- **Safety concerns:** Poorly controlled cell therapies can create risks such as immune reactions, infections, abnormal tissue growth and tumour formation.
- **Ethical concerns:** Stem-cell research raises questions relating to informed consent, sourcing of cells, embryo-derived cells, patient safety and equitable access.

Conclusion

Stem cell therapy is a very promising field for regenerative medicine and personalised health care and already has various applications in use. But wider use will require rigorous clinical evidence, reliable manufacturing, long-term safety surveillance and strict regulation to avoid the abuse of experimental medications.

What is Autism?

- **Autism, or autism spectrum disorder (ASD),** is a lifelong **neurodevelopmental** condition affecting how a person communicates, interacts socially, and behaves.
- **The term "spectrum"** reflects the wide variation in symptoms and their severity, with individuals experiencing autism differently and requiring varying levels of support.
- **Key Characteristics:** Persistent difficulties in social-communication and interaction, and restricted, repetitive patterns of behavior or interests.
  - Many autistic people experience **differences in how they process sensory information,** finding certain sounds, lights, or textures overwhelming or uncomfortable.

Source: TH

BALANCING PRIVATE PARTICIPATION WITH ISRO'S CORE CAPABILITIES

Context

- Recently, ISRO employee associations raised concerns over the proposed transfer of launch-vehicle manufacturing and spaceport operations.

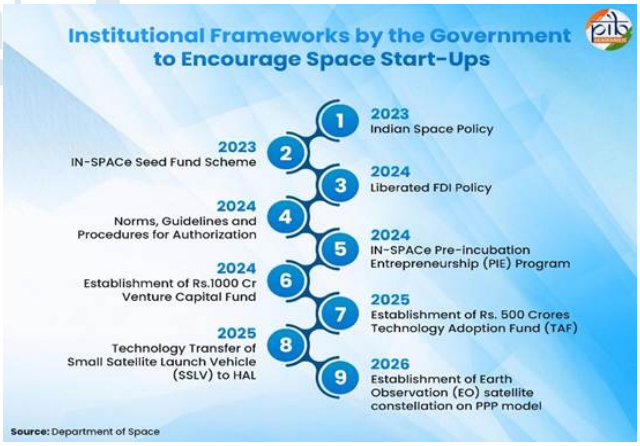
India's Emerging Private Space Ecosystem

- India's space economy currently stands at $8.4 billion, accounting for 2–3% of the global space economy. It is expected to be **$40–45 billion by 2030.**
- **The Indian Space Policy 2023** led to the entry of private players to space-related activities in India.
- Companies such as **Pixxel, Dhruva Space, Skyroot Aerospace, Agnikul Cosmos, and Bellatrix Aerospace** have emerged as **pioneers of a new space era.**

- Skyroot Aerospace became **India's first space-tech unicorn.** Its **Vikram-1** became the **first privately developed Indian orbital-class rocket** to successfully place a payload into **Low Earth Orbit (LEO).**
- **Pixxel Space** is building **hyperspectral imaging satellites** that provide Earth observation data to commercial customers and government agencies in India, Europe and the United States.

Major Reforms in the Space Sector of India

- **Establishment of IN-SPACe (Indian National Space Promotion and Authorisation Centre, 2020):** Acts as a **single-window regulator** and facilitator for private companies, authorising and promoting their participation in space activities.
- **Corporatisation via NewSpace India Limited (2019):** It was set up as ISRO's commercial arm to transfer technology, manufacture satellites/ launch vehicles through industry, and provide commercial satellite services.
- **Schemes to encourage the private sector have been implemented by IN-SPACe:** Seed Fund Scheme, Pricing Support Policy, Mentorship Support, Design Lab for NGEs, Skill Development in Space Sector, ISRO facility utilisation support and technology transfer to non-governmental entities (NGEs).
  - **The ₹1,000 crore Venture Capital (VC) Fund under IN-SPACe** aims to accelerate private participation in the space sector.
  - IN-SPACe also introduced the **₹500 crore Technology Adoption Fund (TAF).**
- **Liberalised FDI Policy for Space:** The revised policy permits up to **74% automatic FDI** in satellite manufacturing and operations, **49% automatic FDI** in launch vehicles and spaceports, and **100% automatic FDI** in the manufacturing of satellite components and subsystems.
- **SpaceTech Innovation Network (SpIN)**: SpIN is a one-of-its-kind public-private collaboration for start-ups and SMEs in the space industry.



- **Technology Transfers** : India is gradually commercialising and transferring its major space launch systems to the private sector to increase its participation in the global space economy.
  - The Small Satellite Launch Vehicle (SSLV) was operationalised in 2024 after three developmental flights. It takes around 3 days for 6 people to assemble it at a cost of roughly ₹30 crore as against the Polar Satellite Launch Vehicle (PSLV), which takes about 70 days, 60 workers and ₹100 crore.

- Hindustan Aeronautics Limited (HAL) has secured the ₹511-crore SSLV technology-transfer contract in 2025 and would produce a minimum of two vehicles using Indian Space Research Organization (ISRO) protocols prior to independently commercialising them after August 2027.
- The Polar Satellite Launch Vehicle (PSLV) has been commercialised in 2022 with a consortium of HAL and Larsen & Toubro (L&T) and ISRO has floated another Expression of Interest (EoI) for transfer of technology.
- The biggest launch vehicle of ISRO, Launch Vehicle Mark-3 (LVM3) is also being thrown available for private manufacturing with a fresh EoI being released in 2026 after the first attempt in 2024 to attract a successful bid failed.
- The Indian National Space Promotion and Authorisation Center (IN-SPACe) has also encouraged commercial engagement in operating the future Small Satellite Launch Complex (SLC) at Kulasekarapattinam, Tamil Nadu, with ISRO providing technical assistance, training and operational support.

Significance of the Privatisation of the Space Sector

- Private participation aims to i**ncrease launch frequency, reduce costs, attract investment**, and expand India's presence in the global space economy.
- Privatisation introduces **competition into the space industry**, which can drive both efficiency and innovation.
- Private players facilitate the **commercialisation of space applications** and services in agriculture, disaster management, urban planning, navigation, and communication, as well as in other sectors.
- Private companies have a **greater degree of autonomy** in making decisions, which enables them to take up new projects.
- It helps to **generate employment,** enable modern technology absorption and make the sector self-reliant.

What are the concerns?

- **Preserving Core Expertise:** The commercialisation can result in the erosion of ISRO's in-house expertise and end-to-end technological capabilities.
- **Public Investment:** Technologies and infrastructure developed using public funds raise **concerns regarding transparent valuation**, accountability and adequate returns to the nation during technology transfer.
- **Strategic Missions:** Retaining strong in-house capabilities remains important for complex programmes such as Gaganyaan, Chandrayaan-4 and 5, the Bharatiya Antariksh Station, and future Mars and Venus missions.

Way Ahead

- India needs a c**omplementary public–private model** in which private industry expands manufacturing and commercial services while **ISRO retains expertise** in advanced R&D, strategic technologies, system integration and critical national missions.
- Technology transfer should be accompanied by transparent valuation, performance standards, institutional safeguards and mechanisms to preserve critical knowledge within the public sector.

Source: IE

U.S. CLEARS RUSSIA SANCTIONS BILL

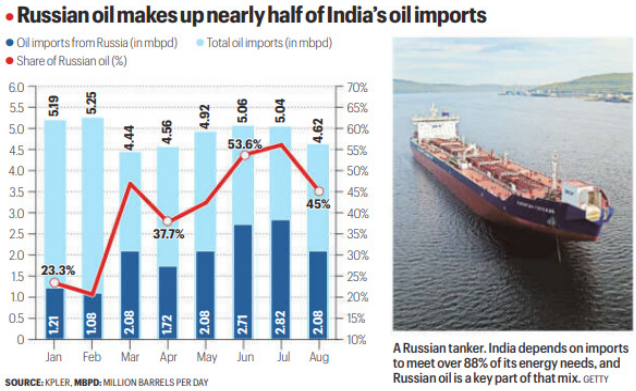
Context

- The US House of Representatives passed the **Lindsey O. Graham Sanctioning Russia and Iran Act of 2026**, allowing the U.S. to **impose tariffs of up to 100%** on th**e top five purchasers of Russian oil.**

About the Bill

- The bill calls for the **US Trade Representative to reassess the top five purchasers every 180 days** to adjust tariff rates based on changes in purchasing behaviour.
  - Apart from **China and India,** the other top purchasers of Russian oil are **Turkiye, Slovakia, and Hungary.**
- **It provides exceptions for countries** that import **less than 15%** of their natural gas from Russia and are taking steps to reduce those imports.
- **Supporters of the bill claim** it's necessary to choke off **Russia's energy income,** weakening the Russian President's **ability to finance the war in Ukraine.**

India's Import of Russian Oil



A Russian tanker. India depends on imports to meet over 88% of its energy needs, and Russian oil is a key part of that mix. GETTY

- **Invasion of Ukraine:** Most of the Western countries avoided Russian crude following the country's 2022 invasion of Ukraine.
  - Russia began offering **discounts on its oil** to willing buyers, including Indian refiners.
  - This is how a peripheral supplier of oil to India became India's biggest source of crude, displacing the traditional West Asian suppliers.
- **Security Amid West Asia Crisis:** This proved to be a strong energy security hedge for India amid the West Asia crisis, as oil flows from the Gulf dried up.
- **Unsubstitutable Supply Source:** Despite the threat of sanctions, Russian crude remains the most practical and competitive source of supply for Indian refiners and is extremely difficult to replace in the current market.
- **India imported** 2.08 million barrels per day (bpd) of Russian oil in August, accounting for 45% of the country's total oil imports. The share was even higher, at over 50%, in the preceding two months.

Concerns for India

- **Tight Global Supply Chains:** For India, reducing Russian oil imports is just not an option in the prevailing circumstances of global energy supply tightness amid the West Asia crisis.
  - Even for the U.S., taking away millions of barrels of Russian oil from the global market when energy flows from West Asia remain highly constrained wouldn't be prudent.
- **Higher import costs and inflation:** If Russian supplies become inaccessible and India has to procure costlier alternatives, the impact could pass through to transport, manufacturing, agriculture, and consumer prices.
- **India–US trade relations:** The proposed tariff mechanism could add pressure to ongoing India–US trade negotiations. India has itself warned that such measures could affect bilateral relations.
- **Strategic Autonomy:** External pressure to alter India's energy purchases can constrain India's ability to pursue an independent foreign policy based on national energy-security interests.

Way Ahead

- **Maintain diversified sourcing:** While procuring crude from Russia, India could simultaneously expand supplies from the Middle East, Africa, the Americas, and other reliable sources to avoid excessive dependence on any single country.
- **Pursue diplomatic engagement:** India should engage both the U.S. and Russia to protect its energy-security interests while advocating that sanctions and tariff measures should not destabilise global energy markets.
- **Strengthen strategic petroleum reserves:** Expanding and efficiently managing strategic petroleum reserves can provide a buffer against sudden geopolitical or supply disruptions.
- **Deepen energy partnerships:** India should strengthen cooperation with major energy-consuming countries on emergency stockpiles, alternative supply routes and energy-resilience mechanisms.
- **Balance affordability with strategic autonomy:** The immediate priority should be ensuring affordable and uninterrupted energy supplies while gradually reducing vulnerability to geopolitical pressure.

Source: TH

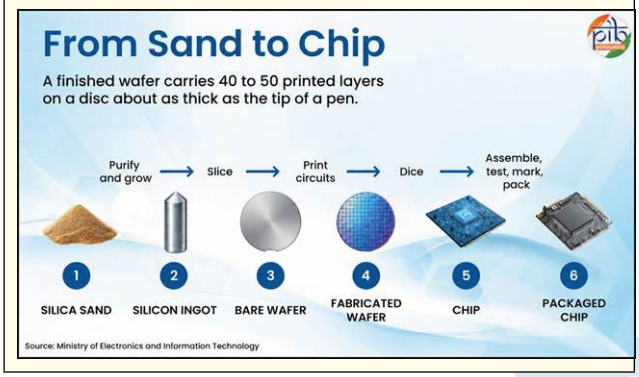
INDIA'S EMERGING SEMICONDUCTOR ECOSYSTEM

Context

- Prime Minister inaugurated the **SEMICON India 2026** exhibition features six Country Pavilions representing Japan, South Korea, Malaysia, the Netherlands, Singapore, and Sweden.
- **Theme:** "Silicon to Systems: Building the Ecosystem.

Semiconductors and Chip Making

- **A semiconductor** is a material whose electrical conductivity can be controlled.
  - **Conductors** such as copper allow current to flow easily, while insulators strongly resist it.
  - **Semiconductor materials can be engineered** to switch, amplify, sense or control electrical signals.
- **Silicon** is the most widely used **semiconductor material.** It is obtained from **silica,** which occurs abundantly in **sand**.



Semiconductor Ecosystem

- **Global Status:** Semiconductors have emerged as a strategic resource for economic growth, technological leadership, and national security.
  - The global semiconductor market grew at a compound annual growth rate (CAGR) of 6.5 per cent between 2014 and 2024. It is projected to grow at 8.5 per cent over the next 5–10 years.
  - However, recent disruptions have exposed vulnerabilities in the interconnected global semiconductor value chain.
  - Geopolitical tensions have further highlighted the risks of supply dependence.
  - Today, Taiwan, South Korea, Japan, China, and the United States dominate global semiconductor manufacturing.
  - Taiwan alone accounts for over 60% of global chip production and nearly 90% of advanced chips.
- **India's Position:** India is witnessing rapidly rising semiconductor demand.
  - It is projected to reach USD 110 billion by FY2030 and exceed USD 200 billion by FY2035, while domestic manufacturing remains at a nascent stage. India spent almost USD 150 billion on semiconductor product imports during FY17–FY25.
  - Imports grew at a CAGR of 23 per cent during this period.
  - If this trend continues, annual imports could reach USD 240 billion by 2035. Building a comprehensive semiconductor ecosystem is therefore an urgent national priority.

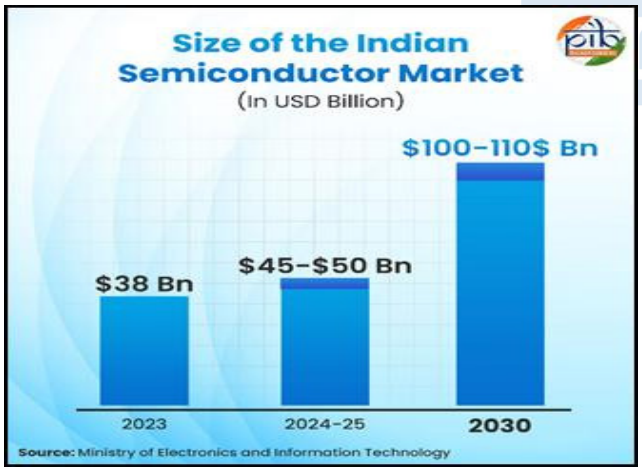
Various Steps

- **India Semiconductor Mission 1.0**
  - India Semiconductor Mission 1.0 is a flagship programme launched in **2021** under the **Ministry of Electronics and Information Technology (MeitY)** to develop a comprehensive semiconductor and display manufacturing ecosystem in India.
  - The Mission is supported by an incentive framework of **₹76,000 crore**, offering fiscal support of up to **50%** for silicon fabs, compound semiconductor facilities, assembly and testing units, and chip design.
  - As many as **12 semiconductor** manufacturing projects have been approved with an investment pipeline of about **₹1.64 lakh crore** under the mission.
  - These include **silicon fabrication units, silicon carbide fabs, advanced and memory packaging facilities, and specialised assembly and testing infrastructure.**
- **India Semiconductor Mission 2.0**
  - It was announced in the Union Budget **2026–27.**
  - **ISM 2.0** will focus on **producing semiconductor equipment and materials in India,** designing full stack Indian semiconductor intellectual property, and fortifying both domestic and global supply chains.

- Semicon 2.0 seeks to build the semiconductor ecosystem through **six pillars- Design, Machines and materials, Setting up more fabs, Further strengthening the ATMP-OSAT industry, Research and Development and Talent development.**

Why are Semiconductors Strategically Important?

- **Foundation of the Digital Economy:** Semiconductors form the core component of almost every modern electronic device and digital technology.
- **National Security:** Semiconductor chips are indispensable for defence equipment, surveillance systems, satellites, cybersecurity infrastructure and strategic communication networks.
- **Industrial Competitiveness:** Countries with strong semiconductor manufacturing capabilities are leveraging technological leadership and industrial competitiveness.
- **Technological Sovereignty:** Domestic semiconductor production is necessary to reduce the dependence on foreign suppliers and strengthen self-reliance.



Indigenous Microprocessors and Core Semiconductor Technologies

- Microprocessors form the **foundational layer** of modern digital infrastructure, **powering devices and systems across telecommunications**, mobility, healthcare, industry, defence, and space.
- India has made **focused investments to build sovereign capabilities** in advanced processor design as a core pillar of semiconductor self-reliance.
- A key milestone in this journey is the launch of **DHRUV64**, a fully indigenous **64-bit microprocessor** developed by C-DAC under the **Microprocessor Development Programme (MDP).**

Schemes under ISM

- **Semiconductor Fabs Scheme**: Provides up to 50 per cent fiscal support for setting up semiconductor wafer fabrication units, covering advanced and mature technology nodes.
- **Display Fabs Scheme**: Offers up to 50 per cent financial support to establish AMOLED and LCD display fabrication units in India.
- **Compound Semiconductors and ATMP/OSAT Scheme**: Supports compound semiconductor and chip assembly, testing and packaging units with up to 50 per cent capital assistance.
- **Design Linked Incentive Scheme**: With an outlay of ₹1,000 crore, supports chip design startups and MSMEs through R&D support and incentives of up to ₹15 crore per company.

What are the Challenges?

- **High Capital Investment:** The establishment of semiconductor fabrication plants requires investments of several billion dollars and long gestation periods.
- **Technology-Intensive Industry:** Semiconductor manufacturing requires highly sophisticated technologies that are continuously evolving.
- **Dependence on Imported Equipment:** India remains dependent on foreign suppliers for advanced semiconductor manufacturing equipment and specialised machinery.
- **Infrastructure Requirements:** Semiconductor fabrication requires uninterrupted electricity, ultra-pure water and highly reliable logistics infrastructure.
- **Skill Gaps:** The industry requires a highly specialised workforce trained in semiconductor engineering, fabrication processes and chip design.

Conclusion

- India Semiconductor Mission 2.0 marks a decisive shift from **ecosystem creation to ecosystem consolidation** and global integration.
- By deepening support for manufacturing, design, and advanced skills, ISM 2.0 **positions semiconductors as a strategic national capability**—central to economic resilience, digital infrastructure, and technological sovereignty.

Source: TH

MELTING OF GLACIERS: CAUSES & IMPACTS

Context

- Recent **floods in Nepal** following an ice-and-rock avalanche have renewed concerns over rapidly warming Himalayan glaciers, glacial-lake outbursts, and their implications for India's water and economic security.

About Melting of Glaciers

- The Himalayas are the **ecological mainstay of the Indian Subcontinent,** as they shape the monsoon, sustain biodiversity and pilgrimage economies, and feed the **Indus, Ganga and Brahmaputra** systems.
- Glaciers act as **natural water reservoirs**, releasing meltwater particularly during dry periods.
- However, accelerating warming is causing glacier retreat.
- Himalayan river basins may reach **'Peak Water' around mid-century**, after which declining ice reserves can reduce long-term river flows.
- The **Hindu Kush Himalaya (HKH)** could lose **up to 80% of its present glacier volume by 2100**.

India's Vulnerability

- 'A Resilient Himalaya: protecting a region at risk and securing future prosperity' report (2024) estimates that **₹64.8 lakh crore, or 21.5% of India's FY24 GDP**, is dependent on the Himalayas.
  - It is **not a projection of GDP loss**; it measures economic activity dependent on Himalayan water.
  - Its three layers are:
    - **Direct:** GSDP of Himalayan states.
    - **Indirect:** downstream agriculture, manufacturing, hydropower and services dependent on Himalayan-fed rivers and groundwater recharge.
    - **Induced:** supply-chain and wage-spending effects.
  - The Himalayas occupy **18% of India's land but account for around 35% of its disasters**.

Key Reasons for Glacier Melting

- **Global Warming:** rising temperatures accelerate ice loss.
- **Black Carbon:** incomplete combustion deposits soot on snow, reducing albedo and increasing solar absorption. Recent modelling attributes about **one-third of Himalayan glacier mass loss to South Asian black carbon**.
  - **Black carbon** darkens snow, reducing reflectivity and increasing solar absorption.
- **Local Anthropogenic Pressures:** brick kilns, cookstoves, transport and crop-residue burning.
- **Infrastructure & Land-use Change:** roads, hydropower and tourism facilities increase exposure and vulnerability in unstable mountain terrain.

Why Glacier Retreat Matters?

- Glacier retreat represents both a **slow economic drain and a sudden disaster risk**.
  - The Nepal floods demonstrated how disturbances at high altitude can rapidly become downstream catastrophes.
  - The **failure of the Bhote Koshi** warning system to detect the sudden debris surge highlights the limits of existing monitoring.
- **Black carbon** offers a comparatively actionable intervention.
  - **Zigzag brick kilns** can reduce black-carbon and particulate emissions by roughly **70%** and fuel use by **20–30%**.
  - **Punjab and Haryana** have completed the transition, while **Uttar Pradesh**, India's largest brick producer, has reached **56% adoption**.

Impacts of Melting Glaciers

- **Water Insecurity:** eventual decline in glacier-fed river flows.
- **Agriculture:** risks to wheat and rice in the Indo-Gangetic Plain and tea in Assam and Bengal.
- **Energy:** implications for hydropower, particularly in the Northeast.
- **Disasters:** expanding glacial lakes can burst through unstable moraine dams, producing **Glacial Lake Outburst Floods (GLOFs)**, flash floods, landslides, and avalanches.
- **Macroeconomic stress:** disasters disrupt supply chains, displace people and increase reconstruction costs, potentially intensifying fiscal and sovereign-debt pressures.
  - The **South Lhonak Lake** warning in **Sikkim** illustrates the challenge: a 2021 scientific study identified instability; the lake subsequently burst, killing **at least 50 people**.

Related Measures & Efforts

- **National Mission for Sustaining the Himalayan Ecosystem (NMSHE)** under India's National Action Plan on Climate Change (NAPCC).
- Strengthening **GLOF early-warning systems**, glacier monitoring and hazard mapping.
- **India-Nepal-China information sharing** on Himalayan ecology and transboundary hazards.
- Climate pacts and technology-transfer mechanisms.
- International experience such as **Switzerland's 2025 Blatten glacier-collapse response**, where advance monitoring and evacuation helped limit casualties.

Way Forward

- Adopt a **Himalayan-wide, risk-informed development model**: cumulative environmental assessments, mountain-specific construction standards, continuous glacier and lake monitoring, community-based evacuation systems, and transboundary data sharing.
- India should establish a **targeted brickmaking transition fund**, retire inefficient kilns, and simultaneously address **kilns, cookstoves, transport, and crop-residue burning at the airshed scale**.
- Thus, climate mitigation, disaster resilience and sustainable mountain development must proceed together.

Source: IE

NEWS IN SHORT

SUPREME COURT ON THREE-LANGUAGE POLICY

In News

The Supreme Court has urged the Union government to defer mandatory implementation of the three-language policy for Class 6 to January 1, 2027, instead of applying it to the current batch with only about four months remaining in the academic year.

Three Language Policy

- NEP 2020 continues with the three-language formula of NEP 1968 with more flexibility.
  - NEP 1968 advocated for Hindi to be a compulsory language across the nation.
    - Hindi-speaking States were required to teach Hindi, English, and a modern Indian language — preferably a South Indian language.
    - Non-Hindi-speaking States were expected to teach the local **regional language, Hindi, and English.**
- **NEP 2020** offers greater flexibility, technically not imposing any specific language on any State.
  - The three languages can be chosen by the states, regions, and students, provided at least two are Indian languages. Therefore, pupils do not have to learn Hindi necessarily but one Indian language other than the State/ regional language.
  - The strategy also supports the idea of bilingual education, notably through the home/mother tongue and English, and gives Sanskrit a significant place as an optional choice.

CBSE circular on Three-language policy

- It is part of the CBSE's alignment of its scheme of studies with the National Education Policy 2020 (NEP) and the National Curriculum Framework for School Education 2023 (NCF-SE).
- Under a circular issued, the study of three languages, with at least two being native Indian languages, was made compulsory for Class 9 students beginning July 1.

The CBSE circular outlined the following framework:

- **Language Mandate:** "Every student in Class 9 would study three languages.
  - Out of the three languages, at least two would be Bhartiya Bhashas. Examples of Bhartiya Bhashas: Hindi, Sanskrit, Tamil, Telugu, Kannada, Malayalam, Marathi, Bengali, Punjabi, Gujarati, Odia, Assamese, etc. Examples of non-native languages: English, French, German, Arabic, Spanish, etc."
- **Foreign Languages:** Students opting for a foreign language may do so only as a third language after studying two native Indian languages, or as an additional fourth language.
- **Timeline**: "With effect from July 1, 2026, for Class 9, the study of three languages (R1, R2, R3) shall be compulsory, with at least two languages being native Indian languages."

- The board made two Indian languages mandatory for Class 6, providing some relaxation for students in Classes 7, 8, and 9 who were already studying two non-native languages.

Latest Observations of Supreme Court

- Supreme Court observed that the policy, envisaged in the 2020 National Education Policy, should be introduced gradually and with sufficient "breathing space"
- It suggested that the government could develop incentives and engaging methods to encourage students to learn a third language.
- It suggested that the third language could alternatively remain optional for the current batch and become mandatory from January 1, 2027.

Source: TH

PRADHAN MANTRI KHANIJ KSHETRA KALYAN YOJANA

In News

Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY) is promoting education, healthcare, drinking water, and livelihood opportunities in the mining-affected areas.

Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)

- It was established in September 2015 to ensure that communities affected by mining benefit from mineral extraction and receive suitable social and physical infrastructure.
- It is administered through District Mineral Foundations (DMFs), which are non-profit trusts constituted under the 2015 modification to the MMDR Act, 1957, and the DMFs work under the control of the State Government.

Features

- It aims to conduct development and welfare projects, reduce the environmental, health, and socio-economic repercussions of mining, and promote sustainable livelihoods.
- Special safeguards have been provided to the Scheduled and Tribal Areas by Constitutional provisions, PESA, 1996, and the Forest Rights Act, 2006.
- DMFs are funded by mining royalty-related contributions, which amount to 10% for leases awarded from 12 January 2015 and 30% for leases given before this date.
  - Up to 70% of funding has to be spent on high-priority sectors such as drinking water, healthcare, education, environment, sanitation, housing, skill development and livelihoods
  - 30% can be utilised for infrastructure, irrigation, energy and watershed development.

Source: PIB

ELECTRONICS COMPONENTS MANUFACTURING SCHEME

In News

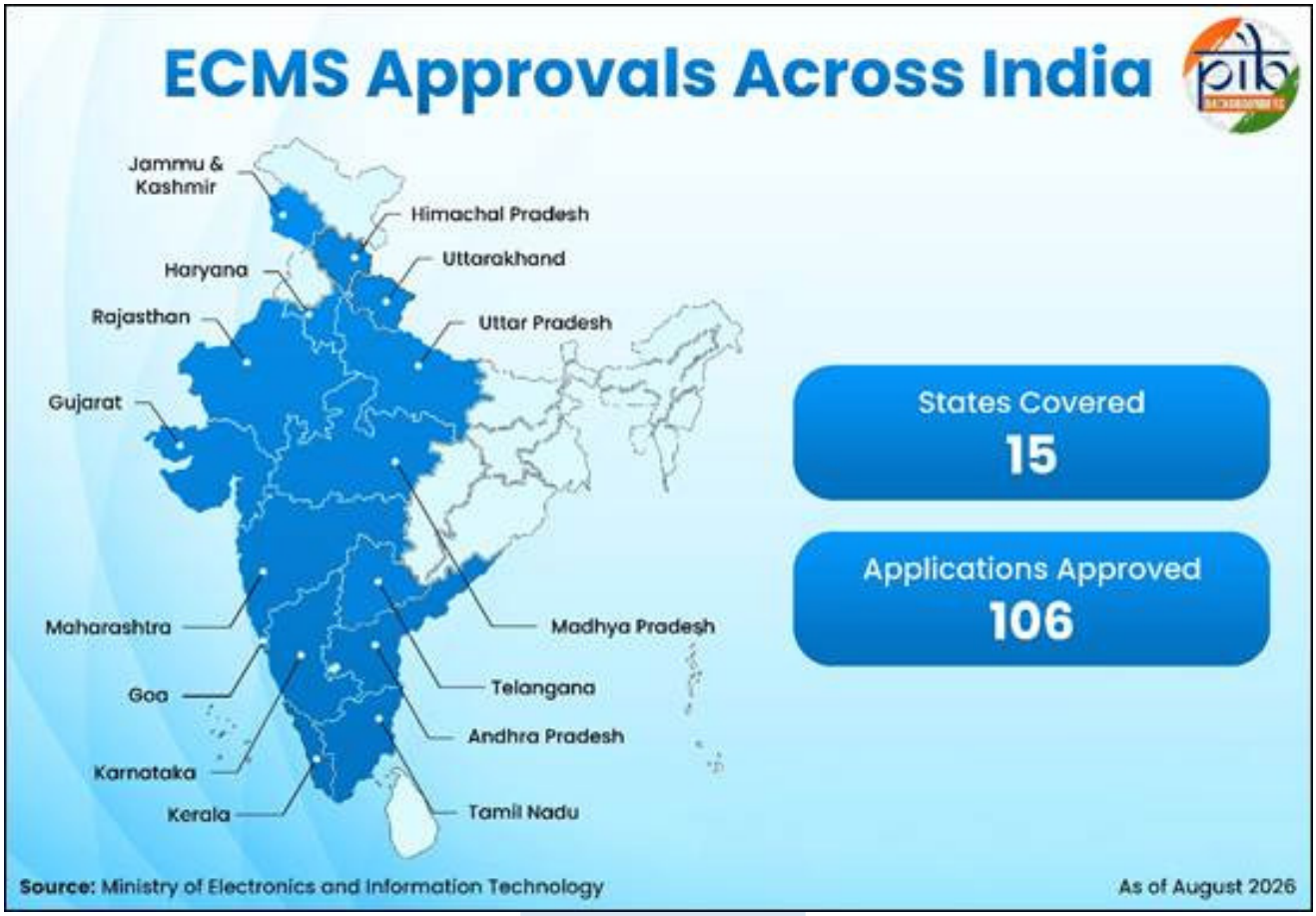
The Electronics Component Manufacturing Scheme is accelerating the development of a robust and deep-rooted 'Swadeshi' electronics value chain, moving beyond assembly to domestic manufacturing of critical components and essential raw materials.

Electronics Components Manufacturing Scheme

- It was notified on April 8, 2025, with an original outlay of ₹22,919 crore, equivalent to about USD 2.7 billion.
- It has a tenure of six years, with an optional one-year gestation period.
  - Capex Incentive is available for five (5) years
- The Union Budget 2026–27 increased the ECMS outlay to ₹40,000 crore. The enhanced allocation will further deepen domestic electronics component manufacturing.
- It aims to build a strong and self-sustaining ecosystem for electronics component manufacturing in the country.
- Its focus is on attracting both domestic and global investment across the value chain, promoting higher domestic value addition, and positioning India as a key player in global electronics trade.

Objectives

- It complements the India Semiconductor Mission (ISM), working alongside it to strengthen the domestic semiconductor and electronics ecosystem.
- It seeks to integrate India's electronics industry with global value chains by encouraging production of essential components, sub-assemblies, and raw materials within the country.



Did you know?

- India's electronics manufacturing sector has undergone tremendous growth. Electronics manufacturing rose from ₹1.9 lakh crore in 2014-15 to ₹13.11 lakh crore in 2025-26.
- In the same period, electronics exports rose from ₹38,000+ crore to ₹4.24 lakh crore.
- Such continuous growth has provided a solid basis for India's electronics manufacturing aspirations.

Source: PIB

CHEETAH REINTRODUCTION AND EMERGING SOCIAL BEHAVIOUR

Context

- Kuno National Park has reported an unusual coalition of two unrelated male cheetahs, highlighting the emergence of natural social behaviour in the reintroduced population.

What is Project Cheetah?

- Project Cheetah, launched in 2022 under the aegis of the Ministry of Environment, Forest and Climate Change and spearheaded by the National Tiger Conservation Authority
- It is India's cheetah relocation programme. It aims to bring back India's only extinct large mammal.
  - The cheetah was **officially declared extinct** by the Indian government in **1952.**
- Kuno National Park in Madhya Pradesh was selected as **India's first cheetah reintroduction site** because it offers ideal habitat, abundant prey, and minimal human disturbance, thanks to earlier village relocations.
  - The first batch of **eight cheetahs** arrived in **2022 from Namibia** and another batch of **12 cheetahs** from **South Africa** arrived in 2023 in **Kuno National Park.**
- Two male cheetahs were moved from Kuno National Park to **Gandhi Sagar Wildlife Sanctuary in 2025**, making it the second home for cheetahs in India as part of Project Cheetah.

Current population of Cheetahs

- Currently, the population is **52 cheetahs**, comprising **49 in Kuno National Park** and **3 in Gandhi Sagar Wildlife Sanctuary**.
- Of these, **32** were born in India, while **17 of the 49 cheetahs** at Kuno are currently living in the wild, and the rest remain in soft-release enclosures.

Kuno National Park

- The park is located in the **Vindhyan Hills** of Central India in Madhya Pradesh.
- It was established in **1981** as a wildlife sanctuary. In 2018, it was given the status of a national park.
- The **Kuno River** flows through the national park.

Cheetah

- **Cheetah (Acinonyx jubatus),** is one of the world's most recognizable cats, known especially for its speed.
- **Distribution**: Historically widespread across Africa and southwestern Asia, cheetahs are now known to occur in only 9% of their past distributional range, with their remaining strongholds in Southern and Eastern Africa
  - Since the 1940s, the cheetah has gone extinct in 14 other countries – Jordan, Iraq, Israel, Morocco, Syria, Oman, Tunisia, Saudi Arabia, Djibouti, Ghana, Nigeria, Kazakhstan, Pakistan and Afghanistan.
- **Status in India:** In India, the cheetah population used to be fairly widespread.
  - The cheetah is believed to have **disappeared from the Indian landscape in 1947** when Maharaja Ramanuj Pratap Singh Deo of Koriya princely state hunted down and shot the last three recorded Asiatic cheetahs in India.
  - The cheetah was officially **declared extinct** by the Indian government in **1952.**
- IUCN Red List Status: It is listed as **Vulnerable**

Reason for Extinction

- **Over-hunting** was a major contributing factor.
- The decimation of its relatively **narrow prey** base species and
- The **loss of its grassland-forest habitat.**

Source: IE

FIRST SOIL CARBON PAYMENTS TO FARMERS

Context

- India has initiated its first soil-carbon payments to over 2,500 farmers in Punjab and Haryana, linking adoption of regenerative farming practices with additional farm income through carbon credits.

Regenerative agriculture

- It is an agricultural technique that puts soil health, biodiversity and natural ecosystem processes first.
- Healthy soil is the basis for food production, carbon storage, homes for microbes, insects and fungi, and also aids with things like drainage and pollination.
- This is important because intensive farming – with heavy machinery and overuse of fertilisers and pesticides – may degrade and erode soils, reducing soil carbon and releasing carbon dioxide (CO) into the atmosphere.

About soil-carbon payments under 'Aadi' farmer carbon programme

- The payments are linked to the **'Aadi' farmer carbon programme**, launched by **Grow Indigo in 2019** with technical guidance from ICAR.
- Under the programme, farmers adopted practices including **Direct Seeded Rice (DSR), reduced tillage and crop-residue management** between **2019 and 2022**.
- The resulting greenhouse gas reductions and increases in soil carbon were measured and independently verified before carbon credits were issued.
- The Aadi programme currently covers more than two million acres and over 100,000 farmers across seven states and has issued agricultural carbon credits under the Verra VM0042 methodology.
  - It is part of a wider transition towards regenerative agriculture in Punjab and Haryana, focusing on crop-residue management, water conservation and farming practices aimed at improving soil health and climate resilience.

Importance

- Soil-carbon payments **provide farmers with financial** returns for adopting practices that increase soil carbon sequestration or reduce greenhouse gas emissions.
- The carbon benefits are quantified, independently verified and converted into carbon credits, which can generate revenue for participating farmers.

Source: DD News

MELANOMA

Context

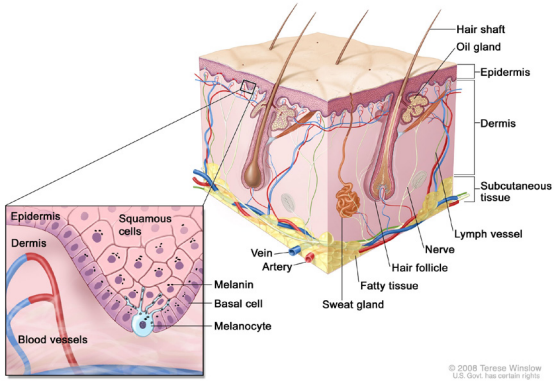
- Thousands of patients in India are **diagnosed with melanoma,** a type of skin cancer, each year.

About

- **Melanoma** is a **type of skin cancer** that develops from **melanocytes,** the cells responsible for **producing the pigment melanin.**
- **It is less common** than some other skin cancers but can be more aggressive because it can spread to other parts of the body.
- **Major risk factor:** Excessive exposure to ultraviolet (UV) radiation, particularly from sunlight and tanning devices.
- **Appearance:** It may develop as a new dark spot or arise from an existing mole.
- **Melanoma can be treated successfully if it is found early.**

Human Skin

- The skin is the **body's largest organ.** The skin has several layers, but the **two main layers are the epidermis** (upper or outer layer) and the **dermis** (lower or inner layer).
- Skin cancer begins in the epidermis, which is made up of **three kinds of cells:**
  - **Squamous cells:** Thin, flat cells that form the top layer of the epidermis.
  - **Basal cells:** Round cells under the squamous cells.
  - **Melanocytes:** Cells that make melanin and are found in the lower part of the epidermis. Melanin is the pigment that gives skin its natural color.



Source: TH

A NEW CAT SPECIES IDENTIFIED IN OVER A CENTURY

Context

- A diminutive wild cat in Bolivia has been identified as a previously unknown species, marking the **first time** a new living cat species has been formally named and described **in more than a century.**

About

- The cat, called **Tilcayo** by local communities, is part of a group called **tiger cats found across much of South America.**
- Tilcayo cat is **light brown, with rosettes across its body.**

- It was found in **Bolivia's lush Yungas forest,** a mountainous region where forests are often covered by clouds and surrounded by high humidity.
- It measures **about 18 inches (46 cm) long and weighs around 3 pounds** (1.4 kg), making it **smaller than the average domestic cat.**
- Researchers used genetic data to confirm that the cat is a new species, and gave it the scientific name **Leopardus tilcayo,** retaining its local name.

Source: TH

KOSOVO

Context

- Hashim Thaci, the former President of Kosovo, has been sentenced to 25 years in prison after being found guilty of war crimes by a special European Union-backed court at The Hague.

About Kosovo

- Kosovo is a self-declared independent country in the Balkans region of Europe.
  - It declared its independence from Serbia on February 17, 2008.
- It is bordered by **Serbia** to the north and east, **North Macedonia** to the south, **Albania** to the west, and **Montenegro** to the northwest.
- It is a **landlocked country** and has no access to the **Mediterranean Sea** and can only access the **Adriatic Sea** through either Montenegro or Albania.
- **Capital:** Pristina.
- Kosovo has diverse relief and landscape, with the **Sharr Mountains** dominating the southeastern and southern edges.

Source: TH

CANADA TO BECOME FIRST 'ASSOCIATE MEMBER' OF EUROPEAN UNION (EU)

Context

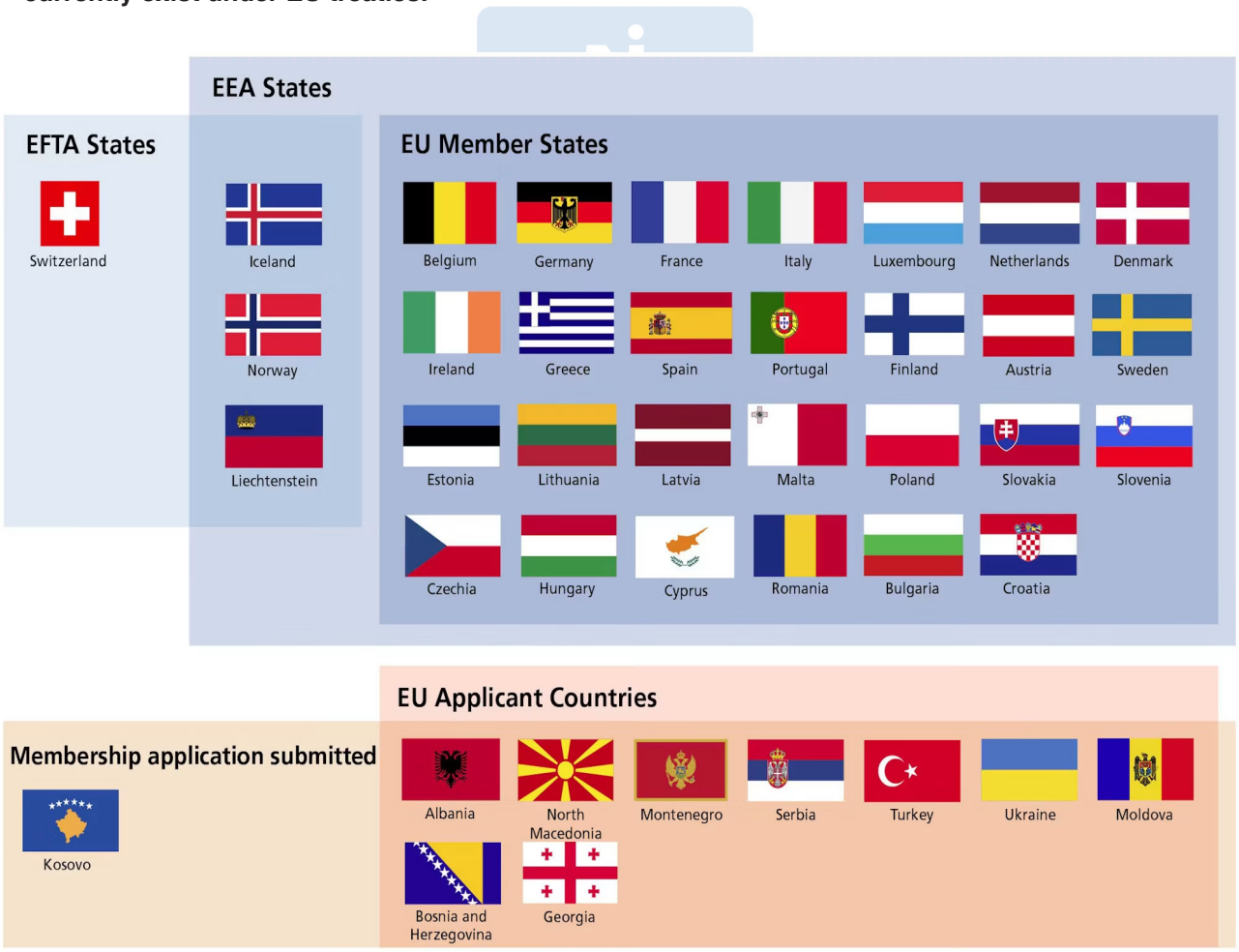
- The European Commission President Ursula von der Leyen has proposed opening the door for Canada to become the EU's first "associate member."

What would "associate member" mean?

- It would mean closer integration with the **EU without becoming a full member**. The proposed partnership could cover **trade, technology, defence, energy, critical minerals, AI and the Arctic**, creating a broader strategic and economic partnership between Canada and Europe.
- However, the exact rights and obligations are yet to be negotiated, as this status **does not currently exist under EU treaties.**

European Union (EU)

- The European Union is a political and economic union of **27 European countries**.
- **Background:** The EU traces its roots to the **European Coal and Steel Community**, established in **1951** by six countries: Belgium, France, Germany, Italy, Luxembourg and the Netherlands.
  - In **1957**, these six countries established the **European Economic Community (EEC)** through the **Treaty of Rome**.
  - The **European Union** was established in **1993** through the **Maastricht Treaty**, building on the earlier European Communities.
- **21 of the 27 EU countries use the euro** as their official currency.



Source: IE

NET ZERO PORTAL AND NAPCC DASHBOARD LAUNCHED

Context

- Union Minister of State for Environment, Forest and Climate Change launched India's Net Zero Portal and the National Action Plan on Climate Change (NAPCC) Dashboard on the occasion of World Ozone Day 2026.

Net Zero Portal

- The Net Zero Portal is a **centralised digital platform** for **voluntary** registration and disclosure of Net Zero commitments by Indian entities.
  - Participating entities can disclose their greenhouse gas (GHG) emissions, declare Net Zero targets and provide annual progress updates.
- Entities are encouraged to report Scope 1 and Scope 2 emissions, while reporting of Scope 3 emissions remains voluntary.
  - Scope 1, 2, and 3 emissions are greenhouse gases that are released across an organization's entire value chain. Scope 3 emissions are the most complex, as they are released before and after a product is delivered or consumed.

NAPCC Dashboard

- The NAPCC Dashboard provides a consolidated digital view of implementation and progress across the National Missions under the NAPCC.
  - The NAPCC, launched in 2008, is India's comprehensive framework for addressing climate change and comprises eight core missions.
- It will strengthen inter-ministerial coordination, support evidence-based assessment of national climate actions, help assess sectoral progress, identify implementation gaps and consolidate relevant inputs.

Did you know?

- India's Nationally Determined Contribution (NDC) for the period **2031 to 2035**, enhancing the country's ambition under the UNFCCC and its Paris Agreement.
- India after the **update in 2022**, has now announced its targets for 2031-35, marking a significant step towards the goal of achieving net-zero by 2070.
- India's original climate commitments, i.e., the NDC submitted in 2015, laid a strong foundation, with targets by 2030 of **33–35% reduction in the emissions intensity of GDP** and a **40% share of non-fossil-based** electric power installed capacity, both of which were met 11 years and 9 years ahead of the committed timelines, demonstrating a credible and action-oriented approach to climate governance.
- Emissions intensity has since reduced by **36% during 2005 to 2020, and the target has now been enhanced to 47**% to be achieved by 2035.
- The country has achieved **52.57 % non-fossil capacity** (February 2026), successfully meeting the target five years ahead of the timeline, and now the ambition has been further raised to a **60% share of non-fossil fuel-based** energy resources in installed electric power capacity to be achieved by 2035.

Source: DDNews

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