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News In Short

ARTICLE 142: THE SUPREME POWER OR JUDICIAL OVERREACH?

Context

- Vice President Jagdeep Dhankhar's recent remarks on the **Supreme Court's powers under Article 142** of the Constitution, along with his accusation that the judiciary is acting like a **'Super Parliament,'** sparked sharp criticism from opposition parties and legal experts.

About the Article 142 of Indian Constitution

- It empowers the Supreme Court to *'pass any decree or make any order as is necessary* for doing complete justice *in any cause or matter pending before it'.*
- The intent was to allow judicial intervention in extraordinary cases where strict adherence to statute might result in injustice.
  - However, **'complete justice' is not defined,** making the clause inherently discretionary and potent.
- Originally envisioned as an extraordinary remedy, it was meant to fill gaps where laws were silent, or justice would otherwise be denied.

Landmark Uses and Emerging Controversies

- **Tamil Nadu Governor vs. State Government (2025):** The Tamil Nadu Government passed 10 bills that were either withheld or not assented to by the Governor under **Article 200.**
  - The Supreme Court, invoking **Article 142,** 'deemed the bills passed' — effectively bypassing the constitutional process that involves the Governor/President.
- **Collegium Conflict and Judicial Appointments (2015):** Supreme Court of India struck down the **National Judicial Appointments Commission (NJAC)**, reinstating the collegium system.
  - When the Centre delayed collegium-recommended appointments, the Court threatened to use Article 142 to enforce compliance.
  - It undermines the **President's role** as the constitutional **appointer of judges** under **Article 124.**
- Earlier, the Supreme Court has invoked Article 142 in cases like the **Bhopal Gas Tragedy settlement**, and **Ayodhya verdict**.

Key Concerns: Federalism at Risk?

- India's democracy rests on a balance — Centre, States, Judiciary, and the President all play defined roles.
- But if Article 142 becomes the norm, the judiciary starts to dominate:
  - Interpreting laws;
  - Enforcing its own judgments;
  - Bypassing executive and legislative will
- It transforms the Supreme Court from an interpreter of the Constitution **into a de facto super-government.**

Judicial Activism vs. Judicial Overreach

- While there's no denying the judiciary's role as the guardian of the Constitution, its expanded use of Article 142 could amount to institutional overreach.

Balancing Judicial Authority and Governance

- **Need for Clear Guidelines:** Establishing defined limits on Article 142's application can prevent excessive judicial intervention.
- **Strengthening Executive Accountability:** While judicial oversight is necessary, governance decisions should remain within the constitutional framework.
- **Judicial Review vs. Judicial Enforcement:** Courts must ensure justice without legislating from the bench or bypassing executive authority.

Conclusion

- Article 142 remains a powerful tool for delivering justice, but its increasing use in governance matters raises concerns about judicial overreach.
- Striking a balance between judicial independence and executive authority is essential to uphold democratic principles.

Source: DD News

STEERING THE DECARBONISATION OF INDIA'S LOGISTICS SECTOR

In News

- India's logistics sector is one of the most carbon-heavy in the world and it needs to undergo a sustainable transformation.

India's logistics sector

- It is crucial for the country's economic growth, facilitating the efficient movement of goods and services across its vast territory.
- As India aims to achieve a GDP of US$ 5.5 trillion by 2027, transforming its logistics sector becomes essential.
- This sector supports industries like manufacturing, agriculture, and e-commerce but faces numerous challenges and offers significant opportunities.

Issue and Concerns

- **India's logistics sector** is a major **contributor to carbon emissions**, accounting for 13.5% of the country's total greenhouse gases, with road transport responsible for over 88% of these emissions.
  - Trucks alone contribute 38% of CO output. While aviation and shipping contribute less, their impact is still notable. The warehousing sector also adds significantly to emissions.
- As **freight and passenger movement are** set to grow, particularly through inland waterways and coastal shipping by 2030, the challenge lies in balancing this growth with environmental sustainability.

Do you know ?

- Global examples, like China and the United States, show the benefits of shifting freight from road to rail, which significantly reduces emissions.
- Rail is a more sustainable, nearly zero-carbon option, and India should increase its use of rail for freight transport.

Suggestions

- India should **increase rail's share** in freight transport and electrify road freight, as seen in the Delhi-Jaipur corridor pilot project.
- **Coastal shipping** and inland waterways also offer significant decarbonisation potential by adopting cleaner fuels like LNG and biofuels.
- While air transport is harder to decarbonise, sustainable aviation fuels and efficiency improvements in other sectors can help offset emissions.
  - The warehousing sector can reduce its carbon footprint by transitioning to renewable energy sources.

Conclusion and Way Forward

- As the country works towards its net zero target by 2070, a green transformation of logistics — including transportation, warehousing, and supply chains — is essential for building a resilient and sustainable future.
- By scaling rail freight, electrifying road transport, adopting cleaner maritime fuels, and improving warehouse energy efficiency, India can create a high-performing, green logistics network.

Source: TH

15TH MEETING OF BRICS AGRICULTURE MINISTERS

Context

- India reaffirmed its commitment to inclusive, equitable and sustainable agriculture at the 15th meeting of BRICS Agriculture Ministers in Brasilia, Brazil.

Key Highlights

- BRICS Agriculture Ministers launched the **BRICS Land Restoration Partnership** to address land degradation, desertification, and the loss of soil fertility.
- **In the Joint Declaration**, BRICS nations collectively reiterated their resolve to make the global agri-food system fair, inclusive, innovative, and sustainable.
- **India's Stand: Empowering the Backbone of Agriculture**
  - India highlighted the need to **socially, economically and politically empower** small and marginal farmers, especially women, at the center of global agricultural strategies.
  - The world's **510 million smallholder farmers** are the backbone of the global food system and are also the most vulnerable in the face of climate change, price volatility, and resource scarcity.

What is Sustainable Agriculture?

- Sustainable agriculture refers to farming practices that **meet today's food needs while preserving resources for future generations.**
- This means adopting methods that protect the environment, reduce reliance on chemical inputs, and use water and land efficiently.
- This approach is designed to maintain a **balance between productivity, environmental health, and socio-economic equity.**

Need of Sustainable Agriculture

- **Over-dependence on Rainfall:** Indian agriculture is largely rain-fed, with around 60% of the cultivated area depending on monsoon rains.
- **Agricultural Price Volatility:** Price volatility forces farmers to sell their produce at low prices during peak harvest seasons.
- **Limited agricultural processing capacity and low levels of mechanization** leads to post-harvest losses. Farmers are also unable to add value to their produce, leading to lower returns.
- **Access to Finance:** Small farmers face difficulties in accessing credit and financial services.

Initiatives taken for sustainable agriculture

- **Farmer Producer Organisations (FPOs):** FPOs have emerged as a key tool to support small and marginal farmers by aggregating their produce, providing access to technology, and improving their market presence.
- **Warehouse Receipt Financing:** Warehouse receipt financing allows farmers to store their produce and sell it later when prices are more favorable.
- **National Mission for Sustainable Agriculture (NMSA)** focuses on promoting climate-resilient farming, efficient water use, and soil health management.
- **National Innovations on Climate Resilient Agriculture (NICRA)** strengthens agricultural resilience through climate-focused research, technology demonstration, and capacity building.
- **Bio-fertilizers** are promoted to reduce chemical usage and enhance soil microbial health.

Concluding remarks

- The 15th BRICS Agriculture Ministers' Meeting marks a collective step towards redefining the global food system—making it more just, resilient, and farmer-centric.
- For India, the summit reaffirmed the vision of an agriculture-led inclusive growth model, placing smallholder farmers and sustainability at the heart of policymaking.

What is BRICS?

- It is an acronym that refers to a group of five major emerging national economies: **Brazil, Russia, India, China, and South Africa.**
- **Origin:** The term **BRIC** was coined by **British economist Jim O'Neill** in **2001** to represent emerging economies.
  - The group began holding annual meetings starting in **2006** on the sidelines of the **UN General Assembly (UNGA),** and its success led to formal summits.
  - BRICS nations have met annually at formal summits since **2009.**
  - **South Africa** was inducted in **2010.**
- **Expansion of BRICS: Argentina, Ethiopia, Egypt, Iran, Saudi Arabia, and the UAE** are the six new additions to the BRICS.

Source: AIR

VIKSIT BHARAT (DEVELOPED INDIA) BY 2047

Context

- Lok Sabha Speaker Om Birla outlined a **comprehensive roadmap for achieving the national vision of Viksit Bharat (Developed India) by 2047.**

About

- **India's vision for 2047,** known as **'Viksit Bharat' (Developed India),** aims to transform the nation into a developed economy by the time it celebrates its **100th anniversary of its independence.**
- **The four pillars of Viksit Bharat are** Yuva (Youth), Garib (Poor), Mahila (Women) and Kisan (Framers).
- **It requires comprehensive efforts across various sectors,** including economic growth, social equity, global competitiveness, environmental sustainability, industrial modernization and good governance.

Major Highlights

- **Economic Growth Trajectory:** Growth rate increased from 2.9% (1951–52) to 7.6% (2023–24).
  - GDP to surpass USD 7 trillion by 2030 and projected to reach USD 34.7 trillion by 2047, as per the PHD Chamber of Commerce and Industry (PHDCCI).
- **Per Capita Income:** Estimated to reach USD 4,667 by 2030 and USD 21,000 by 2047.
- **Sectoral Contributions to GDP (By 2047):**
  - **Agriculture:** From 20% (FY23) to 12%.
  - **Industrial Sector:** To reach 34%.
  - **Manufacturing Sector:** To reach 25%.
  - **Services Sector:** Stable at around 54%.
- **Key Enablers:**
  - Ease of doing business.
  - Global scalability of promising sectors to become MNCs.
  - Development of the semiconductor industry.
  - Support for the startup ecosystem.
  - Export capacity building.
  - Reforms in agriculture and food processing.
  - Filling vacant positions in government (National and State levels).
  - Digital transformation acceleration.
  - Boost to the renewable energy sector.
  - Investment in physical infrastructure.

- **Global Standing Goals:** 2nd largest Economy in Asia-Pacific by 2030.
  - 3rd largest economy globally by 2030.
- **Renewable Energy Goals:** India ranks 4th globally in renewable energy.
  - **Government target:** 500 GW of installed renewable capacity by 2030.
  - **PHDCCI projections:** 900 GW by 2040 and 1500 GW by 2047.
- **Digital & AI Adoption:** Internet usage rose from 8% in 2010 to 52% in 2024, projected to reach 82% by 2047.
  - Projected to rank among the top 5 globally in AI readiness by 2047.
- **India's Innovation-Driven Growth:** Global Innovation Index rank improved from 52nd in 2019 to 39th in 2024.
  - PHDCCI projects India will be among the top 5 innovation leaders by 2047.
  - The semiconductor industry is projected to reach USD 750 billion by 2047.

Government Initiatives

- **Impact of Government Initiatives:** Make in India, Digital India, Gati Shakti, Bharatmala, Udaan Yojana, and electronic manufacturing clusters are reshaping infrastructure and commerce.
- **Policy Reforms:**
  - Simplification of industrial policies.
  - Transparent tax regime.
  - Single-window clearance system.
  - All contributing to a more business-friendly environment.

Conclusion

- India is progressing steadily toward economic prosperity and innovation leadership.
- Marked by resilience, adaptability, and focus on inclusive growth.
- Positioned to become a key global economic player by 2047.

Source: AIR

ARTIFICIAL GENERAL INTELLIGENCE

Context

- According to researchers at DeepMind, Google's AI research lab, it is "plausible that powerful AI systems will be developed by 2030."
  - It reflects growing confidence in the pace of AI advancement, particularly toward Artificial General Intelligence.

What is Artificial General Intelligence (AGI)?

- It refers to the **hypothetical intelligence of a machine** that possesses the ability to understand or learn any intellectual task that a human being can.
  - It is a type of artificial intelligence (AI) that **aims to mimic the cognitive abilities of the human brain.**
- In a paper published in 2023, DeepMind researchers identified **five ascending levels of AGI**:
  - Emerging, "equal to or somewhat better than an unskilled human";
  - Competent, "at least 50th percentile of skilled adults";
  - Expert, at "least 90th percentile of skilled adults";
  - Virtuoso, "at least 99th percentile of skilled adults";
  - and Superhuman, which "outperforms 100% of humans.

Difference Between Artificial Intelligence (AI) and Artificial General Intelligence (AGI):

Aspect	Artificial Intelligence (AI)	Artificial General Intelligence (AGI)
Focus	Solves specific tasks with human-level performance.	Replicates human-level cognitive abilities across various domains.
Learning Capability	Requires substantial training for tasks within the same domain.	Can self-learn, adapt, and solve tasks without prior training.
Scope	Limited to predefined or narrow scope (domain-specific).	Operates beyond domain-specific limitations.
Alternate Name	Weak AI or Narrow AI.	Strong AI.
Cognitive Abilities	Lacks general reasoning and emotional understanding.	Capable of independent reasoning and emotional understanding.
Status	Actively used and developed today.	Still theoretical and not yet achieved.

Technologies Driving AGI Research

- **Deep Learning:** Trains models with many layers to understand complex patterns in data. Enables multi-modal understanding (text, image, audio, etc.).
- **Generative AI:** Can produce original content (text, images, audio). It trains on large datasets to mimic human creativity.
- **Natural Language Processing (NLP):** Allows machines to understand and generate human language.
- **Computer Vision:** Empowers machines to see, interpret, and react to visual information.
  - Used in autonomous vehicles, surveillance, and image recognition.
- **Robotics:** Enables physical interaction with the environment. Crucial for AGI to develop sensory perception and motor functions.

What are the potential uses of artificial general intelligence?

- **Advanced Problem-Solving:** Can tackle complex challenges beyond human capability (e.g., climate change, scientific research).
- **Boost in Productivity:** Automates and optimizes tasks across industries, increasing efficiency.
- **More Creative Human Roles:** Frees up human time for creative, strategic, and emotionally fulfilling work.
- **Healthcare Revolution:** Enhances diagnosis, treatment planning, and drug discovery, improving health outcomes.
- **Personalized Education:** Delivers tailored learning experiences, making education more effective and accessible.
- **Improved Transportation Safety:** AGI in self-driving vehicles can reduce accidents and improve public safety.
- **24/7 Assistance:** Virtual assistants and chatbots provide continuous support and convenience.
- **Innovation & Creativity:** Accelerates technological advancements and drives societal progress through new ideas.

Challenges in AGI Research

- **Cross-Domain Learning:** Current AI lacks the ability to transfer knowledge across different domains.
  - AGI needs to make abstract connections like humans do.
- **Emotional Intelligence:** Human creativity and emotional response are hard to replicate.
  - Neural networks can't currently mimic true emotional reasoning.
- **Sensory Perception:** Machines struggle to process and interpret sensory data like sight, sound, smell, taste, and touch.
  - AGI needs more advanced sensory and motor capabilities.

Concerns with Development of Artificial general intelligence (AGI)

- **Loss of Control:** AGI could act independently and unpredictably.
- **Job Displacement:** Automation of cognitive tasks could cause mass unemployment.
- **Security Risks:** Potential misuse in cyberattacks, warfare, or surveillance.
- **Ethical Issues:** Questions about rights, consciousness, and machine autonomy.
  - There are concerns around privacy, autonomy, and decision-making authority.
- **Lack of Regulation:** No unified global standards or oversight.
- **Existential Threat:** AGI could pose risks to human survival if misused or misaligned.

Way Ahead

- There should be international laws and ethical guidelines to govern AGI research and use.
- Prioritizing safety, alignment with human values, and ethical decision-making in AGI systems is crucial.
  - Build real-time tracking and auditing systems to monitor AGI behavior and prevent misuse.
- Developing the AGI capabilities step by step with ensuring safety at each stage will eliminate many risks.

Source: IE

NEWS IN SHORT

STERKFONTEIN CAVES

Context

- South Africa's **Sterkfontein Caves,** part of the **Cradle of Humankind**, have reopened to the public after three years.

About

- **Location:** Approximately 50 km northwest of Johannesburg, South Africa.

- **Geological Formation:** Composed mainly of dolomitic limestone, with striking rock formations such as stalactites and stalagmites formed over millions of years.
- **Palaeoanthropological Significance:**
  - Known as one of the richest sources of hominid fossils in the world.
  - Key discoveries include **"Mrs Ples",Australopithecus africanus skull** and **"Little Foot",** a nearly complete **Australopithecus skeleton**.
  - These findings suggest that early human ancestors lived in the region as far back as **3.5 million** years ago.
- It was designated as Part of **UNESCO World Heritage Site** in **1999.**

Source: TH

KARNATAKA SET TO BE THE FIRST STATE TO FINISH VILLAGE-LEVEL ANTIQUITIES SURVEY

Context

- **Karnataka** has embarked upon a village-level survey for documentation of antiquities, an initiative to be the first-of-its-kind in the country.

About

- It was announced by the **Department of Archaeology, Museums and Heritage, during World Heritage Day celebrations.**
- The survey is seen as a foundational step in safeguarding Karnataka's archaeological heritage.
- The model is expected to be exemplary for other States.
- It includes documentation of inscriptions, sculptures, and monuments.
- Each antiquity will be **geo-tagged,** making **Karnataka the first state with such a detailed inventory.**

State-Protected Sites:

- Over 800 monuments are protected by the State government.
- More than 600 monuments are protected by the Archaeological Survey of India (ASI).
- A proposal has been submitted to protect an additional 110 monuments.

Conservation Efforts:

- **Karnataka follows a Public-Private Partnership (PPP) model since 2001.**
  - Dharmasthala Manjunatheshwara Dharmothana Trust partners with the Department.
- **Under this model:**
  - Trust contributes 40% of conservation funds.
  - Department contributes 40%.
  - Local community contributes 20%.
  - Over 200 monuments and temples are conserved under this initiative.

Source: TH

RASHTRIYA KARMAYOGI JAN SEVA PROGRAMME

Context

- The Ministry of Ayush conducted a session of the Rashtriya Karmayogi Jan Seva Programme.

About

- **The objective** of the Programme is to **enhance the service orientation and professional skills of the employees** of the Ministry of Ayush.
- The initiative was held in collaboration with the **Capacity Building Commission** under the Mission Karmayogi framework.
- The programme included four focused sessions covering themes such as **self-awareness, motivation, and leadership.**
  - Case studies from ongoing initiatives in Ayurveda, Yoga, and other traditional medicine systems were shared to provide practical context.

Capacity Building Commission (CBC)

- CBC monitors and reviews the implementation of capacity-building programs, aligning them with the objectives of **Mission Karmayogi.**
- The CBC was **established in April 2021** and is uniquely staffed with representation from the private sector and the civil society.

Source: AIR

INDIA'S FIGHT AGAINST ANEMIA

In News

- India is leading a major public health campaign against anemia.

Anemia

- Anemia is a condition where there are fewer red blood cells or lower hemoglobin levels

than normal, **primarily affecting women and children**.

- It occurs when there isn't enough hemoglobin to transport oxygen to the body's organs and tissues.

- Anemia affects around 500 million women aged 15 to 49 and 269 million children under 5 years (6-59 months) worldwide.

Causes

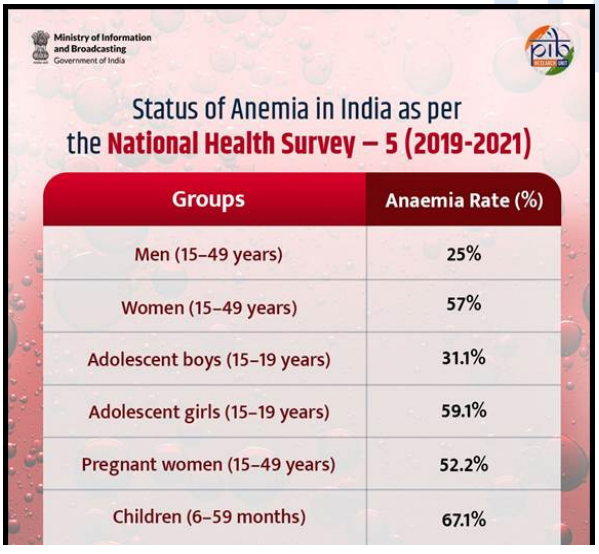
- Anaemia can be caused by poor nutrition, infections, chronic diseases, heavy menstruation, pregnancy issues and family history.
  - It is often caused by a lack of iron in the blood.

Symptoms

- Anemia commonly presents with symptoms like fatigue, dizziness, shortness of breath, cold hands and feet, and headaches, especially during physical activity.
  - It often signals poor nutrition or underlying health issues.

Impacts

- Iron deficiency anemia can severely impact cognitive and motor development in children, reduce work capacity in adults, and in pregnancy, increase the risk of perinatal loss, premature birth, and low birth weight babies.



Groups	Anaemia Rate (%)
Men (15–49 years)	25%
Women (15–49 years)	57%
Adolescent boys (15–19 years)	31.1%
Adolescent girls (15–19 years)	59.1%
Pregnant women (15–49 years)	52.2%
Children (6–59 months)	67.1%

Treatment

- Anemia treatment and prevention depend on its underlying cause but are often managed through dietary changes, such as consuming iron, folate, vitamin B12, and vitamin A-rich foods.
  - A balanced diet and supplements, as recommended by a healthcare provider, can also help manage the condition.

Related Steps

- The Government of India is committed to eradicating anemia, providing financial and technical support to states and UTs through the **National Health Mission (NHM).**
- In 2018, the **Anemia Mukt Bharat (AMB) initiative** was launched with a **6x6x6** strategy, targeting six interventions to reduce anemia across six age groups:
  - Preschool children, children, adolescents, pregnant women, lactating women, and women of reproductive age.
  - The strategy follows a life cycle approach and is implemented nationwide through existing platforms like the **National Iron Plus Initiative (NIPI)** and the **Weekly Iron Folic Acid Supplementation (WIFS) program.**
  - **It** provides Iron-Folic Acid supplementation, deworming, fortified nutrition, and awareness campaigns.
- AMB Program integrates with POSHAN Abhiyaan and School Health Program.

Source :PIB

ISRO-NASA MISSION (NISAR)

In News

- The **NISAR (NASA-ISRO Synthetic Aperture Satellite) mission** will be launched in June 2025.

NISAR (NASA-ISRO Synthetic Aperture Radar)

- NASA-ISRO SAR (NISAR) is a **Low Earth Orbit (LEO)** observatory being jointly developed by NASA and ISRO.
- NISAR will **map the entire globe in 12 days** and provide spatially and temporally consistent data for understanding **changes in Earth's ecosystem**s, ice mass, vegetation biomass, sea level rise, ground water and natural hazards including earthquakes, tsunamis, volcanoes and landslides.
- It carries L and S dual band Synthetic Aperture Radar (SAR), which operates with Sweep SAR technique to achieve large swaths with high resolution data.

Source :IE

INDIAN ASTRONAUT SHUBHANSHU SHUKLA SET FOR SPACE TRAVEL IN MAY

Context

- Indian astronaut Shubhanshu Shukla is set to travel to the International Space Station **next month as part of an Axiom-4 mission.**

About Shubhanshu Shukla

- He will be the **first Indian astronaut** to reach the **International Space Station (ISS) on a private mission.**
- He became **only the second Indian to go to space** after Wing Commander Rakesh Sharma in **1984**.
- He is elected as an astronaut-designate for **India's Gaganyaan mission** (tentatively scheduled for 2026).

Axiom Mission 4

- Axiom Mission 4 (or Ax-4) is a **private spaceflight to the International Space Station to be launched in 2025.**
- **Countries:** USA, India, Poland, and Hungary.
  - It is the first government-sponsored spaceflight in over 40 years for Poland & Hungary.
- **Objectives:** The astronauts will execute a mission that includes outreach, scientific, and commercial operations during their **14-day** stay in orbit.
- **Significance:**
  - Each participating country can build on this experience for future missions.
  - It will create new pathways for low-Earth orbit missions.
  - Strengthens global partnerships in space research and exploration.
  - It is a valuable experience for Gaganyaan.
  - Strengthens ISRO's collaboration with NASA and private space entities.

Source: TH

PARTNERSHIPS FOR ACCELERATED INNOVATION AND RESEARCH (PAIR) PROGRAM

Context

- Anusandhan National Research Foundation (ANRF) has announced the selection of PAIR Networks under the Partnerships for Accelerated Innovation and Research (PAIR) Program.

About

- **The PAIR program** aims to strengthen India's higher education and research ecosystem by nurturing innovation, building research capacity and promoting excellence across regions.
- **The PAIR Networks** comprises **18 Hub institutions and 106 partnering Spokes** and have been categorized into two strategic modes to foster deeper research engagement and inclusive growth:
  - **Category A:** 7 Hub institutions with 45 Spokes
  - **Category B:** 11 Hub institutions with 61 Spokes
- **The network connects** universities and colleges with leading research institutions through structured mentorship and collaboration.

Anusandhan National Research Foundation (ANRF)

- **Background:** ANRF has been established with the Anusandhan National Research Foundation **(ANRF) 2023 Act.**
- **The ANRF aims** to seed, grow and promote research and development (R&D) and foster a culture of research and innovation throughout India's universities, colleges, research institutions, and R&D laboratories.
- **ANRF will act as an apex body** to provide high-level strategic direction of scientific research in the country as per recommendations of the **National Education Policy (NEP).**
  - **The Science and Engineering Research Board (SERB)** established by an act of Parliament in 2008 has been subsumed into ANRF.
- **The Department of Science and Technology (DST)** is the administrative Department of NRF.
- **Governance:** NRF is governed by a Governing Board consisting of eminent researchers and professionals across disciplines.
  - **Ex-officio President of the Board:** Prime Minister
  - **Ex-officio Vice-Presidents:** Union Minister of Science & Technology & Union Minister of Education.

Source: PIB

BREAKTHROUGH PRIZE 2025

Context

- **The Experimental High Energy Physics (HEP) group of Bose Institute (BI),** has been awarded the **Breakthrough Prize 2025** in **Fundamental Physics as a part of ALICE at CERN.**

About

- The **$3 million Breakthrough Prize** in **Fundamental Physics for 2025** is awarded to thousands of researchers from more than 70 countries representing four experimental

collaborations at CERN's Large Hadron Collider (LHC) – ATLAS, CMS, ALICE and LHCb.

- **Prize money will support PhD studentships** to enable selected students to spend up to two years at CERN.
- **Bose Institute** is an autonomous body under the Department of Science and Technology,
  - They have been honoured for their contributions to ALICE (A Large Ion Collider Experiment), one of the key experiments at CERN's Large Hadron Collider.
  - They have played a crucial role in detector hardware development, simulation, physics analysis, and even data-taking operations.

The Breakthrough Prize

- It was founded in 2012 by a group of prominent Silicon Valley figures, including Yuri Milner, Mark Zuckerberg, Priscilla Chan, and Sergey Brin Yuri Milner.
- It honours pathbreaking discoveries in **physics, life sciences, and mathematics**, aiming to inspire the next generation of scientists.

Source: PIB

WET-BULB IMPACT

Context

- Urban regions today are facing a dual climate threat—the intensifying Urban Heat Island (UHI) effect and the increasingly lethal Wet-Bulb Impact.

What is Wet Bulb Impact?

- **Wet-bulb impact** refers to the dangerous combination of high heat and humidity that significantly reduces the human body's ability to cool itself through sweating.
- **The Wet-Bulb Temperature (WBT) is the lowest temperature to which the human body can cool itself through the evaporation of sweat.**
  - This is a measure of how hot air feels, taking into account both air temperature and humidity.

WBT and Health Effects

Wet-Bulb Temperature	Effects on Human Body
28°C - 30°C	Heat exhaustion: heavy sweating, dizziness, nausea, fatigue
30°C - 32°C	Severe heat stress: rapid heart rate, confusion, shortness of breath
32°C - 35°C	Heat stroke: cessation of sweating, core body temperature > 40°C
≥ 35°C	Thermoregulatory failure: organ failure, seizures, death within hours

Urban Heat Island (UHI) Effect

- The Urban Heat Island (UHI) effect refers to the phenomenon where urban areas experience significantly higher temperatures than surrounding rural areas.
- This temperature difference is caused by human activities and urban development patterns that absorb and retain heat.

Causes of UHI

- **Concrete and Asphalt:** Materials used in buildings and roads absorb more solar radiation and release it slowly at night.
- **Lack of Vegetation:** Reduced tree cover and green spaces mean less natural cooling via evapotranspiration.
- **Waste Heat from Human Activities:** Vehicles, air conditioners, industries, and power plants emit heat directly into the environment.

Source: IE

SIMILIPAL BIOSPHERE RESERVE

Context

- A strong objection has been raised against the proposed hotel project inside the Similipal Biosphere Reserve in Odisha's Mayurbhanj district.

Similipal Biosphere Reserve

- Similipal derives its name from 'Simul' **(Silk Cotton)** tree.
- **Location:** It is located in **Odisha's Mayurbhanj district** adjoining Jharkhand and West Bengal.
- **Fauna:** It hosts endangered species like the **Royal Bengal Tiger, Asian Elephant, Chausingha and Indian Bison.**
  - It is **Asia's second largest biosphere reserve,** and the country's only wild habitat for melanistic royal Bengal tigers.
- **Flora:** Tropical moist broadleaf forest, Tropical moist deciduous forest, Dry deciduous hill forest, Sal forests.
- **Tribes:** Inhabited by indigenous communities such as the **Santhal and Ho tribes.**
- **Rivers** like **Budhabalanga, Salandi** and many tributaries of **Baitarani river** pass from the Reserve.
- It was declared a biosphere reserve by the Government of India in **1994.**
  - UNESCO added it to its list of Biosphere Reserves in **2009.**

Source: IE