POLITY AND GOVERNANCE

4 IAF pilots named as possible Gaganyaan crew

CONTEXT: India's Gaganyaan mission takes a significant leap as Prime Minister Narendra Modi unveils four IAF pilots as potential crew members during his visit to the Vikram Sarabhai Space Centre, marking a pivotal moment in India's journey towards human space exploration.

BACKGROUND: India has been aiming to send Indian astronauts to space for some time. India's Gaganyaan mission marks a milestone with Prime Minister Narendra Modi unveiling four IAF pilots as potential crew members. Trained in Russia and ISRO's Bengaluru facility, they're set for a historic journey to Low Earth Orbit in 2025. ISRO's ambitious plans include lunar exploration by 2040, backed by substantial technical advancements.

MAJOR POINTS

Gaganyaan Mission Update

Announcement of Astronaut-Designates:

- Four IAF pilots have been named as possible crew members for the Gaganyaan mission.
- The announcement was made by Prime Minister Modi at the Vikram Sarabhai Space Centre.
- The final crew will be chosen from among these four individuals:
  ◦ Group Captain Prasanth Balakrishnan Nair
  ◦ Group Captain Ajit Krishnan
  ◦ Group Captain Angad Pratap
  ◦ Wing Commander Shubhanshu Shukla

Mission Details:

- The Gaganyaan mission aims to send Indian astronauts to Low Earth Orbit (LEO).
- This mission is a stepping stone for a long-term Indian human space exploration program.
- ISRO is currently conducting various tests before the crewed mission, including unmanned flights.
- ISRO also has plans to send astronauts to the moon by 2040.

Prime Minister's Visit:

- Prime Minister Modi visited the Vikram Sarabhai Space Centre and reviewed the progress of the Gaganyaan Mission.
- He also dedicated three newly developed technical facilities:
  ◦ Trisonic Wind Tunnel
  ◦ PSLV Integration Facilities
  ◦ Semi-cryogenic Integrated Engine and Stage Test Facility

CONCLUSION: This announcement signifies a significant step forward for India's aspirations in human space exploration, paving the way for future endeavours like lunar missions.

POLITY AND GOVERNANCE

Land reforms top of agenda in third term

CONTEXT: Finance Minister Nirmala Sitharaman asserts that a potential third term under Prime Minister Narendra Modi's leadership will prioritize comprehensive reforms in land, labour, and capital, alongside digital infrastructure, aiming to elevate India to the world's third-largest economy. This declaration, made at a FICCI event, underscores a renewed focus on long-pending reforms, including labour laws and agricultural value addition, to drive economic growth and attract global investments.

MAJOR ISSUES:

Government's Vision for Economic Transformation:

- Finance Minister Nirmala Sitharaman emphasizes comprehensive reforms in land, labour, and capital.

Addressing Long-Pending Issues:

- Sitharaman's statement at FICCI marks the first major reference to land law reforms since 2015.

Progress in Labor Reforms:

- Reforms amalgamated over two dozen labour laws into four Codes, awaiting nationwide implementation.

Focus Areas for Future Development:

- Emphasis on space, artificial intelligence, and warehousing for robust economic growth.

Enhancing Agricultural Sector:

- Prioritizing agricultural value addition and productivity improvements.

Boosting Tourism:

- Aim to bolster tourism with legislative and fiscal support.

Encouraging Investment:

- Urging Indian industry to match global investor confidence for economic independence.

Commitment to Continued Reforms:

- Assurance of ongoing systemic and next-generation reforms if the present regime is re-elected.

CONCLUSION: The finance minister's clarion call for holistic reforms underscores the government's commitment to catalyse India's economic ascendancy. With a focus on diverse sectors and modern infrastructure, the pledge for continued reform signifies a resolute pursuit of economic independence and global competitiveness under Modi's leadership.

"Education is the ability to listen to almost anything without losing your temper or your self-confidence." - Robert Frost

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POLITY AND GOVERNANCE

SC asks T.N. Collectors to follow ED summons

CONTEXT: In light of the Enforcement Directorate's investigation into alleged illegal sand mining, the Supreme Court compelled four Tamil Nadu district collectors to comply with the agency's summons, deeming the state's opposition "unfounded" and emphasizing the collectors' legal obligation to cooperate.

BACKGROUND: Tamil Nadu faced allegations of illegal sand mining, a potential environmental and economic threat. The central ED, investigating financial crimes, summoned four district collectors for information. The state challenged the summons in court, obtaining a temporary stay.

MAJOR POINTS:

- Supreme Court directs four Tamil Nadu Collectors to respond to Enforcement Directorate (ED) summons in sand mining case.
- Justices criticize Tamil Nadu's legal resistance against ED as "strange, unusual, and misconceived."
- SC overturns Madras HC's stay on ED summons to the Collectors.
- Collectors instructed to promptly appear and respond to ED summons.
- Legal empowerment of ED under Section 50(2) of PMLA to summon individuals for evidence or records production highlighted.
- Mandatory attendance mandated under Section 50(3) for summoned individuals, either in person or through authorized agents.

CONCLUSION: The Supreme Court's decisive stance underscores the imperative of legal cooperation in matters of national interest, notably in addressing allegations of illegal activities such as sand mining. By lifting the stay and emphasizing compliance, the court reaffirms the primacy of law enforcement in upholding justice.

POLITY AND GOVERNANCE

Stop the dithering and encourage green elections in India

CONTEXT: As the urgency of combating the climate crisis grows, the Election Commission of India's (ECI) call for eco-friendly elections underscores the need for a paradigm shift in electoral practices, emphasizing sustainability alongside civic participation.

STORY SO FAR: As the climate crisis intensifies, the Election Commission of India (ECI) highlights environmental concerns ahead of Assembly elections in five states, urging a shift to eco-friendly practices in electoral campaigns. With every election contributing to a significant carbon footprint, the call for 'green elections' gains urgency, aligning environmental stewardship with civic engagement. Sri Lanka and Estonia serve as examples of environmentally conscious electoral processes. As India prepares for its next general election, prioritizing environmental considerations becomes imperative, setting the stage for sustainable electoral practices.

WHY IS THERE A NEED FOR A PARADIGM SHIFT?

Overlooked issue: The environmental footprint of elections, often substantial, is frequently overlooked.

Significant impact: Traditional methods, with paper, rallies, and disposable items, contribute significantly to environmental damage and can impact health.

Case study: Campaign flights in the 2016 US elections by one candidate generated emissions equivalent to 500 Americans' annual carbon footprint.

India's impact: Large-scale elections in India amplify the environmental impact due to a large voter base and extensive rallies.

Green solutions: Green elections promote eco-friendly practices throughout the process, from campaigning to polling.

Primary source: Transportation of voters and logistics to polling booths is the primary source of emissions (research by Willemson & Krips, 2023).

Digital solutions: Transitioning to digital voting systems could reduce the carbon footprint by up to 40%.

Challenges: Implementation faces technological, financial, and behavioral challenges.

- **Technological:** Requires robust infrastructure (especially in rural areas) and robust security against hacking.
- **Financial:** Upfront costs for materials and technology can be high, especially for financially constrained governments.
- **Behavioral:** Cultural preference for physical presence at polling stations, public skepticism of new approaches, and fear of compromised vote security.
- **Solution:** Transparency and effective auditing of new adaptations are crucial to overcome public scepticism.

SUCCESSFUL ECO-FRIENDLY ELECTORAL INITIATIVES: EXAMPLES

- **Kerala (India, 2019):**
  - Encouraged eco-friendly alternatives like wall painting and paper posters instead of single-use plastics.
  - Government bodies collaborated for training and awareness campaigns.
  - Kerala held its first clean and green election in 2019,

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following a ban on flex and non-biodegradable materials by the Kerala High Court.

- **CEO of Kerala, Shri TR Meena IAS,** issued an advisory urging political parties to avoid single-use plastic materials and opt for eco-friendly alternatives like wall graffiti and paper posters.
- Collaboration with **Kerala Suchitwa Mission** ensured the successful implementation of eco-friendly practices across the state.
- Focus was on using reusable alternatives like glass, stainless steel, and porcelain cutlery while avoiding plastic banners and hoardings.
- Polling stations and election offices were directed to use eco-friendly materials, including water bottles, and green-model polling booths were set up across districts.
- The Chief Electoral Officer created a booklet outlining green protocol guidelines, with all state and district-level activities promoting plastic-free initiatives.
- Special events such as cycle rallies, student processions, and signature campaigns were organized to raise awareness about green elections.
- **Election Literacy Clubs (ELCs)** contributed handmade paper pens and paper bags for polling materials distribution.
- Public engagement was encouraged to report violations, resulting in the removal of over 17 lakh flex boards, banners, posters, and stickers.
- While progress towards complete adherence to the green protocol was not 100%, it marks a significant step forward in promoting eco-friendly practices in elections across Kerala.

- **Goa (India, 2022):**
  - Used eco-friendly polling booths made from biodegradable materials by local artisans.
- **Sri Lanka (2019):**
  - Launched the world's first carbon-sensitive campaign:
    - Measured and offset carbon emissions from campaign activities by planting trees.
    - Raised awareness about the importance of forest cover.
- **Estonia:**
  - Implemented online voting system to reduce transportation emissions and increase participation.

These examples demonstrate the feasibility and benefits of eco-friendly electoral initiatives:

- **Reduce environmental impact:** By minimizing waste, using renewable materials, and encouraging digital solutions.
- **Raise environmental awareness:** Through innovative campaigns and public participation.
- **Increase voter participation:** Through convenient and accessible voting methods like online voting.

BLUEPRINT FOR GREEN ELECTORAL PRACTICES:

Legislation: Enact laws mandating eco-friendly practices, incorporated into the Model Code of Conduct by the ECI.

Campaigning:
- Utilize digital platforms and door-to-door campaigns (reduce large rallies).
- Encourage public transportation for election work.

Polling booths:
- Replace plastic and paper with sustainable alternatives like natural fabrics, recycled paper, and compostable plastics.
- Support local artisans in their production.

Digital voting:
- ECI pushes for digital voting while:
- Training officials to increase capacity.
- Government educates and supports voters for equitable access.

Civil society: Acts as a catalyst promoting green practices.

Media: Highlights the environmental impact of current methods and showcases eco-friendly alternatives.

This framework can set an example for other democracies worldwide.

BENEFITS OF GREEN PROTOCOLS IN ELECTIONS

- Reduced environmental impact: Less reliance on energy-intensive rallies, use of sustainable materials, and potentially lower energy consumption from digital voting can contribute to a smaller carbon footprint.
- Support for the local economy: Encouraging the use of local, sustainable materials like natural fabrics and recycled paper can benefit local businesses and artisans.
- Improved waste management: Replacing plastic and paper materials with compostable alternatives can aid in waste management and potentially reduce reliance on landfills.
- Enhanced voter trust: Implementing eco-friendly practices can demonstrate a commitment to sustainability and potentially increase voter confidence in the electoral process.

POTENTIAL MONETARY IMPACTS:

Potential cost increases:
- Training and capacity building: Training officials for digital voting and potentially voters who need assistance could incur costs.
- Implementation of green alternatives: Replacing existing materials with sustainable options like natural fabrics and compostable plastics might initially be more expensive.
- Technology infrastructure: Expanding access to digital voting could require investments in technology infrastructure, impacting costs.

Potential cost savings:
- Reduced energy consumption: Shifting away from large, energy-intensive rallies and encouraging public transportation for election work could lead to cost reductions in energy bills.
- Lower waste management costs: Replacing non-biodegradable materials with compostable alternatives could potentially save costs associated with waste disposal in landfills.
- Increased efficiency: Digital voting, if implemented efficiently, could potentially reduce costs associated with paper ballots and printing.

CONCLUSION:

Time to act: Embracing green elections is no longer a choice, but a necessity. From legislation to digital solutions, a multi-pronged

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approach can ensure sustainable, accessible, and eco-friendly elections, setting a precedent for the world. Let's stop dithering and champion an environment-friendly future for our democracy.

POLITY AND GOVERNANCE

Burden of power

CONTEXT: India is set to launch its first human spaceflight mission, Gaganyaan, but the endeavor should be driven by scientific exploration and societal value, not by the pursuit of becoming a "space superpower".

MAJOR ISSUES:

- The final shortlist of candidates for India's human spaceflight mission, Gaganyaan, is announced by Prime Minister Narendra Modi.
- ISRO aims to conduct two test flights of the human-rated Launch Vehicle Mark-3 rocket in 2024 and 2025, with the crewed launch scheduled for 2025.
- The Union Cabinet approved Gaganyaan in 2018, allocating ₹10,000 crore for the mission.
- Despite challenges, including delays due to the COVID-19 pandemic and commercial commitments, India is nearing the culmination of the ambitious project.
- While acknowledging the potential for political influence, it's crucial for Gaganyaan to transcend purely political motives and focus on scientific exploration and societal advancement.
- The Indian Space Policy 2023 emphasizes the need for maintaining India's edge in human spaceflight and developing a roadmap for sustained human presence in space.
- The mission should be driven by a desire for scientific exploration and expanding human horizons rather than a quest for 'space superpower' status, fostering a culture of democratic space exploration.

CONCLUSION: Emphasizing scientific and societal goals over geopolitical ambitions is paramount for India's Gaganyaan mission to truly serve humanity's quest for knowledge and progress.

POLITY AND GOVERNANCE

Home Secretary gets power to destroy interception orders

CONTEXT: Amid growing concerns over surveillance abuse, the Indian government has granted the Home Secretary the authority to destroy interception orders, previously held solely by security agencies, raising questions about transparency and accountability.

MAJOR ISSUES:

- Union government empowers the Home Secretary to destroy interception orders, previously held by security agencies alone.
- The move comes amid heightened surveillance of opposition figures, journalists, and activists.
- The 2018 Home Ministry order granted 10 agencies, including the Enforcement Directorate and Intelligence Bureau, authority to monitor communications.
- Agencies are required to destroy intercept orders within six months, except when needed for operational purposes.
- Recent amendment expands destruction powers to Home Secretary, raising transparency concerns.
- Digital rights activists express apprehension over potential misuse and lack of accountability.
- History of government surveillance for political purposes cited, including allegations against former Tamil Nadu Chief Minister Jayalalithaa.
- Some critics aregue that ignificant increase in surveillance activities noted during the National Democratic Alliance's tenure.

POTENTIAL IMPACT OF THE GOVERNMENT ORDER ON INDIA:

Increased Concerns about Transparency and Accountability:

- **Centralized Power:** Shifting the authority to destroy interception orders from security agencies to the Home Secretary raises concerns about **centralized control** over information and **reduced oversight.**
- **Lack of Independent Scrutiny:** Critics argue that the Home Secretary, being part of the executive branch, may be less likely to scrutinize orders objectively compared to independent bodies.
- **Potential for Abuse:** The lack of independent oversight and centralized control could create opportunities for **misuse of power** and **selective targeting** of individuals or groups.

Impact on Privacy and Civil Liberties:

- **Erosion of Privacy Rights:** The order could contribute to a **chilling effect** on free speech and dissent, as individuals may be more hesitant to express themselves freely due to fear of surveillance.
- **Erosion of Civil Liberties:** Increased surveillance capabilities could lead to **greater restrictions on civil liberties** and hinder dissent and political participation.

Potential for Legal Challenges:

- **Violation of Fundamental Rights:** The order might be challenged in courts for potentially **violating the fundamental right to privacy** guaranteed under the Indian Constitution.
- **Demand for Stronger Legal Safeguards:** The controversy surrounding the order could fuel calls for **stronger legal**

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safeguards and independent oversight mechanisms for surveillance activities.

Uncertainty and Lack of Clarity:

• **Limited Information:** The lack of clear public information about the rationale behind the order and the specific procedures for destroying interception orders creates **uncertainty and confusion** about its implications.

• **Need for Clear Guidelines:** The order necessitates the development of clear and **transparent guidelines** to ensure accountability and prevent misuse of power.

It is important to note that the full impact of the order will depend on how it is implemented in practice. However, the concerns raised by critics highlight the need for **transparent and accountable surveillance practices** that safeguard individual privacy and civil liberties in India.

POSITION IN OTHER MAJOR DEMOCRACIES

In many other major democracies, the position of authorities entrusted with the destruction of interception orders differs significantly from the recent case in India:

1. Independent Oversight:

Judicial Review: Countries like the United States and Germany rely on judicial review to ensure the legality and necessity of interception orders. Courts can scrutinize orders and demand justification from agencies before granting surveillance permission.

Independent Review Bodies: Some democracies, like Canada and France, have established independent review bodies specifically tasked with overseeing intelligence and surveillance activities. These bodies investigate complaints, provide recommendations, and report to the public, fostering greater transparency.

2. Decentralized Authority:

Multiple Actors Involved: Unlike India's recent move towards centralized power, several democratic nations, including Australia and the United Kingdom, distribute the authority to issue, oversee, and destroy interception orders across multiple independent agencies. This helps to prevent the concentration of power and promotes checks and balances.

3. Legislative Scrutiny:

Parliamentary Oversight: In many democracies, like Germany and the United Kingdom, parliamentary committees play a crucial role in scrutinizing the use of surveillance powers. These committees have the authority to investigate agencies, demand reports, and hold public hearings, ensuring greater legislative oversight.

United States:

◦ The Foreign Intelligence Surveillance Act (FISA) Court oversees the issuance and monitoring of interception warrants for foreign intelligence purposes.

◦ Orders are retained for a minimum of seven years and can be accessed by designated officials for oversight purposes.

United Kingdom:

◦ The Investigatory Powers Act establishes independent oversight through the Investigatory Powers Commissioner's Office (IPCO).

◦ Interception warrants are subject to judicial review, and destruction procedures are outlined in the act with safeguards to prevent abuse.

Germany:

◦ The G10 Commission, an independent body, oversees the activities of intelligence agencies and approves surveillance measures.

◦ Interception orders are subject to judicial authorization and are retained for a specific period for potential review.

France:

◦ The National Commission for the Control of Intelligence Techniques (CNCIS) provides independent oversight of intelligence activities, including surveillance.

◦ Destruction of interception orders requires justification and follows specific procedures outlined in relevant legislation.

Canada:

◦ The Communications Security Establishment Commissioner (CSEC) provides independent oversight of signals intelligence activities.

◦ Warrants for interception require judicial authorization and are subject to strict retention and destruction guidelines.

Australia:

◦ The Independent National Security Legislation Monitor (INSLM) oversees the operation of national security laws and practices.

◦ Interception warrants are issued by a designated judge and are subject to specific record-keeping and destruction procedures.

Conclusion

The Indian government's decision to grant the Home Secretary the power to destroy interception orders has ignited significant debate. While the stated purpose is to streamline processes, the move raises critical concerns about transparency, accountability, and the potential for misuse. Moving forward, addressing these concerns through clear guidelines, independent oversight, and robust legal safeguards will be crucial to ensuring that surveillance practices in India uphold fundamental rights and foster a truly democratic society.

INTERNATIONAL RELATIONS

EU wary as Macron hints at Western troops in Ukraine

CONTEXT: French President Emmanuel Macron's suggestion of potentially sending Western ground troops to aid Ukraine in its conflict with Russia has stirred unease among European allies and drawn warnings from the Kremlin about the possibility of a NATO-Russia confrontation.

BACKGROUND:

• Russia continues its invasion of Ukraine, raising concerns about European security.

• France: President Macron advocates for "everything necessary" to defeat Russia, including potentially sending Western ground troops.

• Other European leaders: Mixed reactions, with some expressing reluctance and others fearing a potential confrontation with Russia.

• Russia: Warns of "inevitable" confrontation if NATO deploys troops in Ukraine.

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- Current status: No consensus among European leaders on sending troops, with Germany and Sweden explicitly opposing the idea.

KEY POINTS TO REMEMBER:

◦ This potential escalation marks a significant development in the ongoing conflict.

◦ The West has previously avoided deploying ground troops in Ukraine to prevent confrontation with Russia.

◦ Macron's stance highlights differing opinions within Europe regarding the level of military support for Ukraine.

◦ Russia's warning underscores the potential for further escalation of the conflict.

POTENTIAL IMPACT OF MACRON'S STATEMENT ON STAKEHOLDERS:

France:

- **Positive:** Demonstrates strong commitment to Ukraine's defence, aligning with public opinion that increasingly favours stronger action.

- **Negative:** Risks potential military confrontation with Russia, potentially straining relations and impacting French security.

Other European Allies:

- **Positive:** Signals France's willingness to escalate, if necessary, potentially pressuring other European nations to increase support for Ukraine.

- **Negative**: Creates divisions within the alliance, raising concerns about potential escalation and unintended consequences. Raises fears of being drawn into a wider conflict with Russia.

Ukraine:

- **Positive:** Offers hope of a more decisive response from the West, potentially strengthening their position against Russia.

- **Negative:** Potential escalation raises the risk of wider conflict and increased civilian casualties. Uncertain whether other European nations will follow suit, leaving Ukraine in a vulnerable position.

Russia:

- **Negative:** Views the statement as a threat and provocation, potentially leading to further escalation and stricter military measures.

- **Positive:** May solidify domestic support for the war by portraying the West as aggressive.

NATO:

- **Negative:** This creates internal division and raises concerns about potential direct involvement in the conflict, which could have significant consequences for member states.

- **Positive:** May signal a more unified and resolute stance against Russia, potentially deterring further aggression.

Global Community:

- **Negative:** Heightens international tensions, raising concerns about a wider conflict and potential impact on global security and economic stability.

- **Positive:** Signals a strong response from the West against a major power violation of international law, potentially setting a precedent for deterring future aggression.

CONCLUSION

Macron's suggestion of Western troops in Ukraine has sparked significant debate, raising the spectre of escalation while igniting hope for a more decisive response against Russia. This development underscores the complex dynamics at play, with European nations wrestling between supporting Ukraine and avoiding direct confrontation. The coming days will be crucial in determining how Europe navigates this potential turning point, with global repercussions hanging in the balance.

SCIENCE AND TECHNOLOGY

'10,000 genome' project completed, says govt.

CONTEXT: DBT completes '10,000 genome' project, establishing a comprehensive database of whole-genome sequences from India, a milestone in genetic research.

BACKGROUND: Inspired by the Human Genome Project, the Indian initiative commenced in 2020 to decode genetic variations and disease-causing mutations within the diverse Indian population. Led by the Centre for Brain Research at the Indian Institute of Science, it involves 20 institutions aiming to unveil genetic insights for personalized therapies.

News Highlights

- Genome Sequencing Initiative: India aims to create a comprehensive database reflecting its population's genetic diversity, crucial for tailoring drugs and therapies.

- Project Leadership and Collaboration: Led by institutions like IISc Bengaluru and CCMB Hyderabad, the project involves about 20 institutions across India.

- Population Diversity: India's 1.3 billion population comprises over 4,600 diverse groups, with many being endogamous, contributing to significant genetic diversity.

- Medical Implications: Understanding unique genetic variations aids in improving diagnostics, medical counselling, drug development, and gene therapy, benefiting personalized healthcare.

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- Biobank Establishment: The initiative includes the creation of a biobank housing 20,000 blood samples at the Centre for Brain Research, IISc, fostering transparency and collaboration in future research.

The project aims to deepen understanding of India's population diversity, enhance diagnostic and counselling methods, uncover genetic predispositions to diseases, develop personalized drugs, and improve gene therapy. Y. Narahari highlighted the creation of a biobank and data archiving as emblematic of the project's transparency, collaboration, and future research aspirations.

ECOLOGY AND ENVIRONMENT

Similipal seeks more female tigers from other regions

CONTEXT: Odisha requests NTCA to address inbreeding in Similipal Tiger Reserve by introducing female tigers from different areas to mitigate pseudo-melanistic population.

HIGHLIGHTS: The Odisha government is concerned about pseudo-melanistic tigers due to inbreeding in Similipal Tiger Reserve (STR) and has urged the National Tiger Conservation Authority (NTCA) to introduce female tigers from other areas. With 24 adult tigers, STR holds the largest share of the State's tiger population and houses all adult female tigers.

News Highlights

- Pseudo-Melanistic Tigers in Similipal: Thirteen adult tigers, exhibiting pseudo-melanistic traits, were discovered in Similipal, a unique occurrence globally.
- Genetic Diversity Concerns: The presence of pseudo-melanistic tigers indicates inbreeding within Similipal's tiger population, prompting a need for introducing female tigers from other regions.
- Proposed Solution: Officials plan to introduce female tigers from outside Similipal to increase genetic diversity, pending thorough studies and assessments.
- Prevalence of Pseudo-Melanistic Tigers: Research suggests that approximately 37% of tigers in Similipal Tiger Reserve exhibit pseudo-melanistic characteristics, characterized by wide, merged stripes.

- Challenges and Past Efforts: Despite efforts to introduce tigers from other regions, challenges such as poaching incidents have hindered successful relocation initiatives in the past.

Similipal Tiger Reserve

- Geographical Features: Similipal Tiger Reserve, situated in Odisha's Mayurbhanj District, boasts undulating terrain with hills, grasslands, and wooded areas. It rises abruptly from coastal plains, converging with the Chhota Nagpur plateau.
- Flora Diversity: The reserve encompasses moist mixed deciduous forests, tropical semi-evergreen forests, and sporadic dry deciduous forests. It hosts a diverse range of plant species, including endemic orchids, linking South Indian and North Eastern Sub-Himalayan species.
- Forest Types: Various forest types inhabit Similipal, such as Northern Tropical Moist Deciduous Forest, Dry Deciduous Hill Forests, High-Level Sal Forest, and Grassland and Savanna, each occupying specific geographical niches.
- Fauna Abundance: Similipal's rich habitat supports a diverse faunal composition, including 55 mammal species, 361 bird species, 62 reptile species, 21 amphibian species, and numerous insect species. It hosts significant populations of elephants, Indian Bison, and various deer species.
- Carnivores and Reptiles: The reserve is home to carnivores like tigers, leopards, leopard cats, and hyenas. Additionally, it houses a variety of reptiles, including Mugger Crocodiles, pythons, king cobras, and various snake species.

SCIENCE AND TECHNOLOGY

Why science needs sustainable funding?

CONTEXT: India aims for 'developed nation' status by prioritizing R&D investment, requiring at least 3% of GDP annually until 2047, surpassing developed countries' spending.

BACKGROUND: The 2024 National Science Day theme, "Science for Sustainable Development," underscores India's commitment to leveraging science and technology for its journey toward development. This aligns with its sustainable goals, evident through its Paris Agreement commitments and global participation. However, sustainable funding is essential for science to effectively transform India.

How much is India spending on research and development?

- Low R&D Funding: India's investment in fundamental research is one of the world's lowest, standing at 0.64% of GDP, hindering its science and technology aspirations.
- Declining Trend: R&D expenditure has decreased from 0.8% of GDP in 2008-2009 to 0.64% presently, despite calls from government agencies to double spending.
- National Goal: Previous policies aimed at increasing Gross

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Expenditure on R&D (GERD) to 2% of GDP, reflecting a long-standing national objective.

- International Comparison: Developed nations allocate between 2% and 4% of their GDP to R&D, with OECD countries averaging 2.7%. The U.S. and U.K. consistently exceed 2% annually.

- Recommendations: Experts suggest India should allocate at least 1% to 3% of its GDP annually until 2047 to R&D, emphasizing its crucial role in national development.

How can India improve its R&D spending?

- Need for Increased Investment: India must boost R&D spending beyond developed countries' levels to achieve 'developed nation' status, necessitating at least 3% of GDP annually until 2047.

- Current Funding Insufficiency: India's reliance on public funds for R&D highlights an immature financing system. In 2020-2021, the private sector contributed only 36.4% to Gross Expenditure on R&D (GERD).

- Challenges in Private Sector Participation: Private sector hesitancy stems from difficulties in evaluating R&D, unclear regulatory roadmaps, limited exit options, and concerns about intellectual property rights theft.

- Delayed Implementation of Initiatives: The Anusandhan National Research Foundation, intended to address financial challenges, faces implementation delays. Its budget allocation has been reduced, and strategies to raise funds from the private sector remain unclear.

The status of R&D expenditure in India

The 2024 theme for National Science Day is "Science for Sustainable Development". However, any conversation on science is incomplete without one key aspect ---- for science to transform India, it has to be sustainably and consistently funded

Chart 1 : The chart shows the year-wise national expenditure on R&D in ₹ crore (left axis) and the gross domestic expenditure on R&D as a share of GDP (right axis)
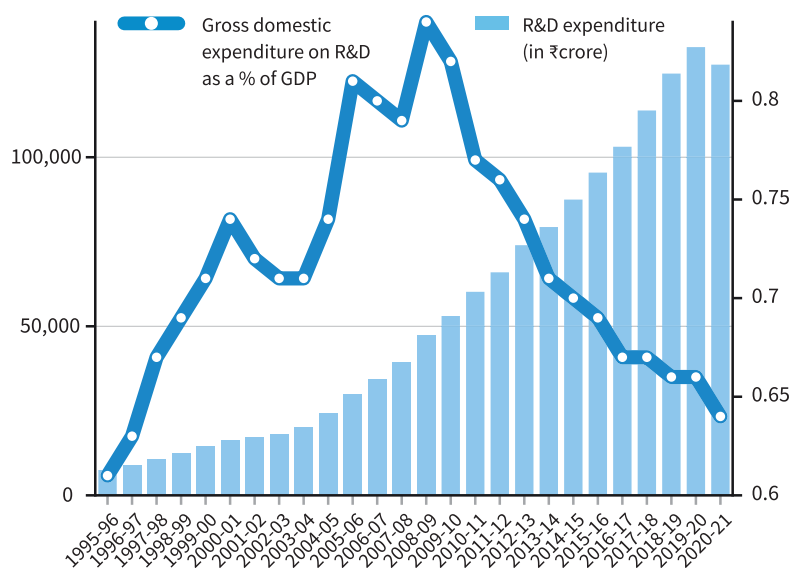
Chart 2: The chart shows the sector-wise national expenditure on R&D across years. Figures in ₹ crore
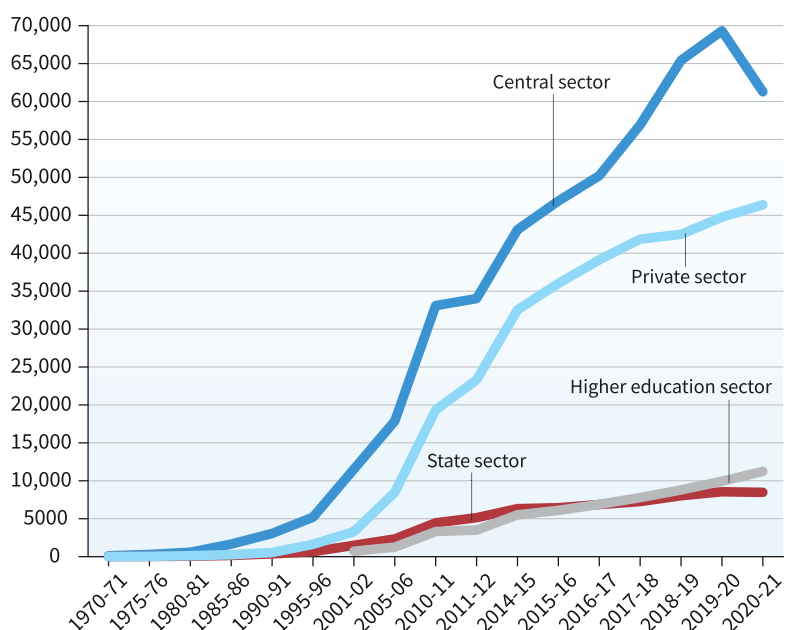
- Clarification Needed: There's a perceived need to define the overall quantum of R&D funding and its primary sources to align with India's goal of becoming a developed country by 2047.

How is the R&D budget utilised?

- Under-utilization of R&D Budgets: Ministries like the Department of Biotechnology (DBT) and Department of Science and Technology (DST) consistently under-utilize their allocated budgets, hindering science outcomes despite calls for increased funding.

- Budget Allocation Discrepancy: In 2022-2023, DBT spent 72% of its budget allocation, while DST and DSIR spent only 61% and 69% respectively, on centrally sponsored schemes/projects.

- Persistent Issue: Underutilization is not sporadic but a recurring problem, suggesting systemic issues. India's general under-spending on R&D exacerbates the impact of inefficient budget utilization.

- Unclear Reasons for Under-utilization: Causes include bureaucratic hurdles, capacity constraints, unclear approval processes, and inadequate prioritization of science funding by relevant ministries.

In the latest Budget, Finance Minister Nirmala Sitharaman emphasized increasing private sector contributions to R&D. Addressing under-spending and under-utilization of R&D funds is crucial, requiring political prioritization across ministries, especially within the Ministry of Finance. Incentives for private investment and bureaucratic capacity building are vital for India's journey to becoming a science power by 2047, underscoring the importance of sustainable funding for science on National Science Day.

SCIENCE AND TECHNOLOGY

India to have its own space station by 2035, says Modi

CONTEXT: India plans to establish its own space station by 2035, as announced by Prime Minister Narendra Modi following the unveiling of Gaganyaan mission astronauts.

BACKGROUND: Addressing scientists at the Vikram Sarabhai Space Centre, Prime Minister Modi announced India's plans to

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return to the moon and retrieve lunar samples. He highlighted ISRO's focus on exploring Venus and outlined ambitions for a crewed lunar mission by 2040, symbolizing "Amrit Kaal." Referring to the Gaganyaan programme's astronaut-designates, he emphasized their representation of India's aspirations in space as "shaktiyaan" (powers) carrying the hopes of 1.4 billion Indians.

News Highlights

- Historic Moment: Prime Minister Modi hailed the upcoming space mission as a significant milestone, marking India's progress in space exploration after 40 years.

- National Pride: He emphasized the importance of the mission for India, highlighting that it symbolizes the nation's achievements across various domains, including space.

- Indigenous Endeavor: Modi underscored the significance of India's self-reliance in space technology, noting that the mission involves Indian-made equipment and technology.

- Support for Astronauts: The Prime Minister called for support and cooperation from the public and media to ensure that the astronaut-designates can focus on their training without distractions.

- Gaganyaan's Significance: Modi emphasized that the Gaganyaan mission will elevate India's space sector to new heights, coinciding with the country's aspirations to become one of the top global economies.

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ECONOMICS AND DEVELOPMENT

Decoding spending

CONTEXT: The Union Ministry of Statistics unveiled the broad findings of the Household Consumption Expenditure Survey conducted every five years by the National Sample Survey Office (NSSO).
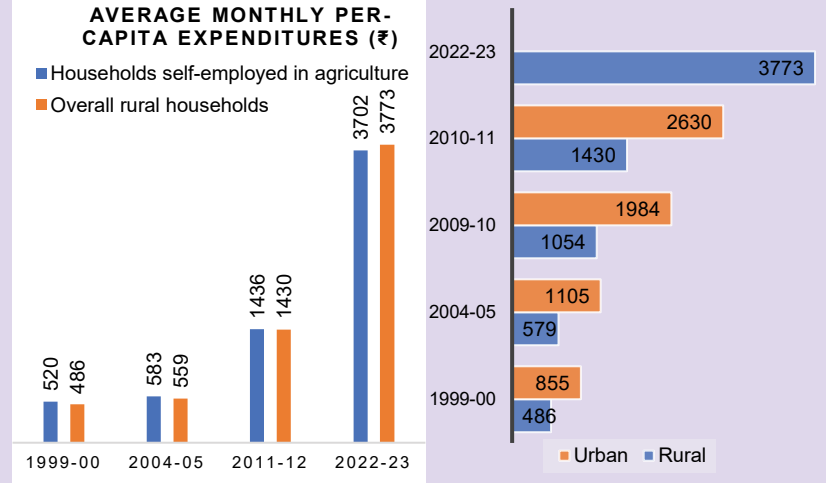
Comprehensive findings

Detailed Household Consumption Expenditure Survey (HCES) findings will now come soon after elections, says a top official

- HCES is key for updating macroeconomic indicators including CPI and GDP

- Two consecutive surveys to enable choice of appropriate period for 'base year' reset

- HCES now covers 405 items compared with 347 in 2011-12: says official

The survey carried out between August 2022 and July 2023 is the first major survey-based data released since 2011-12 that captures ground realities at the household level — especially with the once-a-decade Census, due since 2021, nowhere in sight. The previous Household Consumption Expenditure Survey in 2017-18 were junked with the government citing "quality issues" with the data. the results of the last such consumption survey in 2017-18.

Households' average monthly per capita consumer expenditure (MPCE) rose 33.5 % since 2011-12 in cities to reach ₹ 3,510, and 40.4 % in rural India to ₹ 2,008. The government has sought to paint this as a signal of rising incomes, narrowing

AVERAGE MONTHLY PER-CAPITA EXPENDITURES (₹)

- Households self-employed in agriculture
- Overall rural households

Year	Households self-employed in agriculture	Overall rural households
1999-00	520	486
2004-05	583	559
2011-12	1436	1430
2022-23	3702	3773

Year	Urban	Rural
2022-23	3773	
2010-11	2630	1430
2009-10	1984	1054
2004-05	1105	579
1999-00	855	486

■ Urban ■ Rural

inequality, and a sharp slippage in poverty levels. But this only implies a 3.5% compounded annual growth in rural spends over 11 years, with a 3% growth for urban households — well below the inflation and GDP growth rates in this period. Puzzlingly, even after adding the imputed values of free goods received through a myriad of welfare schemes such as the PM Garib Kalyan Anna Yojana, the average MPCE only rose to ₹ 2,054 for rural households and ₹ 3,544 for urban peers. The proportion of monthly spends on food has slipped below 50 % in rural homes (to 46.4 %), and under 40 % in urban homes, with cereals seeing the sharpest drop, is remarkable, and may ease inflation trends if used to rejig Consumer Price Index weightages. However, it is pertinent to recall that food inflation began spiking last June just ahead of the Survey's completion, and has remained elevated since. So, proportional spends have likely changed. A clearer picture, devoid of pent-up demand and inflation flip-flop effects, is expected from the fresh Survey that concludes this July. So, any recalibration of poverty, inflation or GDP calculations must wait till those results are compiled, and released as well.

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