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27 November 2024

World's First Parallel Satellite Pair

Context: India's Polar Satellite Launch Vehicle (PSLV) will launch the Proba-3 mission on December 4, 2024. In collaboration with the European Space Agency (ESA), this mission will deploy the world's first pair of satellites flying in parallel formation to study the Sun's outer atmosphere, the solar corona.

About Proba-3 Mission:

- The mission involves two satellites:
  - One with a coronagraph to observe the Sun, and the other with an occulting device to block the Sun's intense light, enabling the study of the solar corona.
- The satellites will fly in formation, 150 meters apart, for six hours daily, then separate and rendezvous.

Laser Guidance:

- A laser from one satellite will be reflected off the other to maintain precise alignment with millimeter-level accuracy.

Collision Avoidance and Autonomy

- The satellites will autonomously adjust their positions to prevent collisions or drifting, demonstrating advanced navigation for future missions.

Highly Elliptical Orbit

- The satellites will be launched into an elliptical orbit with a perigee of 600 km and apogee of 60,530 km, before entering a parallel orbit for their mission.

Advantages of Two Satellites:

- Separate satellites allow for larger instruments, capturing fainter signals and improving solar study depth.
- This setup enables more detailed analysis of the solar corona's structure and behavior.

Key Milestones:

- **Formation Flying Precision:** Proba-3 will maintain millimeter-level accuracy in formation flying, surpassing previous missions, and enabling more complex space operations.
- **Autonomous Navigation:** The satellites' ability to autonomously adjust positions for collision avoidance demonstrates critical advancements for future space missions involving multiple spacecraft.

PSLV's Role

- India's PSLV will launch the Proba-3 mission, showcasing ISRO's reliability and leadership in space exploration.

Collaboration with ESA

- The mission highlights India's growing role in global space research through its partnership with the European Space Agency (ESA).

About ISRO:

- The Indian Space Research Organisation (ISRO) is India's national space agency, established in 1969, headquartered in Bengaluru, Karnataka. It is responsible for the development of space technologies and the application of these technologies for various national and international purposes.

Key Achievements:

- **Orbital Launch Capability:** ISRO became the 7th country to send objects into orbit with own launch vehicle, with the successful launch of SLV-3 in 1980.
- **Operational Cryogenic Rocket Engine:** ISRO developed a cryogenic engine, making India one of six nations with this technology.
- **Water on the Moon:** Chandrayaan-1 discovered water on the Moon, making India the fourth country to reach the lunar surface.
- **Mars Orbiter Mission (MOM):** India became the first nation to reach Mars on its first attempt, and the fourth globally to do so.
- **Chandrayaan-3:** Successfully soft landing on Moon s south pole, making India the fourth country to achieve this.
- **Aditya-L1 Mission:** India's first mission to study the Sun's outer layer (solar corona).

PAN 2.0 Project: Transforming Taxpayer Services in India

Context: The Government of India recently launched the PAN 2.0 Project, an ambitious initiative aimed at

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overhauling the existing Permanent Account Number (PAN) system. With an investment of ₹1,435 crore, this project seeks to modernize taxpayer registration services, enhancing efficiency, accessibility, and security.

What is PAN?

- The Permanent Account Number (PAN) is a unique 10-digit alphanumeric identifier issued by the Income Tax Department. It plays a crucial role in ensuring transparency and accountability in India's tax system and is used for various financial and business transactions, such as:
  - » Filing income tax returns.
  - » Opening bank accounts.
  - » Conducting high-value transactions.

Key Objectives of PAN 2.0 Project

- **Technology-Driven Transformation:** Leverages advanced technology to streamline taxpayer registration and automate PAN/TAN issuance and validation services.
- **Ease of Access & Speedy Service Delivery:**
  - » Integrates PAN with other digital government services for seamless interaction with tax and financial systems.
  - » Ensures faster processing of PAN issuance and verification.
- **Data Consistency:** Establishes a single source of truth to minimize errors and inconsistencies in taxpayer data.
- **Eco-Friendly Processes:** Shifts from paper-based applications to fully digital processes, reducing the carbon footprint.
- **Cost Optimization:** Incorporates automation and digital tools to lower operational costs and enhance taxpayer service efficiency.
- **Enhanced Security:** Strengthens infrastructure for secure, reliable, and efficient service delivery.

Vision: Digital India and Common Business Identifier

- The PAN 2.0 Project aligns with the Digital India initiative, aiming to make India a digitally empowered society. By using PAN as a common business identifier, the project simplifies interactions across all digital government systems.

Benefits of PAN 2.0

- **Taxpayer Convenience:** Simplified and faster processes for managing and applying for PAN.
- **Integration:** PAN's alignment with digital systems enables responsive and personalized government services.
- **Government Efficiency:** Centralized data improves management of taxpayer information and public service delivery.
- **Financial Inclusion:** Encourages formal transactions, boosting sectors like banking and financial inclusion.
- **Digital Economy Growth:** Enhances data management, inclusivity, and smooth digital interactions.

The PAN 2.0 Project represents a significant step toward achieving Digital India's vision, fostering transparency, efficiency, and inclusivity in India's financial ecosystem.

Supreme Court Upholds 'Socialist' and 'Secular' in Preamble

Context: On November 25, 2024, the Supreme Court of India upheld the inclusion of the terms 'socialist' and 'secular' in the Preamble of the Indian Constitution.

- The ruling dismissed challenges to the 42nd Amendment of 1976, which inserted these terms during the Emergency imposed by Prime Minister Indira Gandhi's government.

Key Terms:

- **Secularism:**
  - » Initially not included in the Constitution, the term 'secular' refers to a state that neither supports nor

penalizes any religion.
  - » **Constitutional Basis:** Articles 14, 15, and 16 guarantee equality before the law and prohibit discrimination based on religion, race, caste, sex, or place of birth.
- **Socialism:**
  - » In the Indian context, 'socialist' does not refer to a specific economic structure but signifies the state's commitment to welfare and social justice.
  - » Socialism does not restrict economic policies but reflects the goal of promoting equality and uplifting marginalized sections of society.

Ruling on Constitutional Amendments:

- **Article 368:** The Court upheld that Parliament's power to amend the Constitution, including the Preamble, is unquestionable and includes the ability to modify its provisions as needed over time.
- **Dynamic Constitution:** The inclusion of 'socialist' and 'secular' in 1976 was a reflection of the Constitution's ability to evolve to meet the nation's socio-political needs.
- **Retrospective Amendment:** The Court rejected the argument that these terms could not be retrospectively included due to the cut-off date of November 26, 1949. The date of adoption does not limit Parliament's power to amend the Constitution.

Impact on Governance and Policy:

- **Socialism and Economic Policy:** The ruling emphasized that socialism in India does not inhibit private enterprise or market-oriented policies. It ensures economic justice and equality, benefiting all citizens.
- **Secularism and Religious Freedom:** While ensuring freedom of religion, secularism also allows the government to address harmful religious practices that may hinder national development. The ruling supports the promotion of a Uniform Civil Code (UCC), as encouraged under Article 44 of the Directive Principles of State Policy.

Future Implications:

- **Settling the Debate:** The Supreme Court's ruling settled the debate over the inclusion of 'socialist' and 'secular' in the Constitution, reinforcing Parliament's power to amend the Constitution as necessary.
- **Evolution of Secularism and Socialism:** The judgment highlights the evolution of Indian secularism and socialism, aligning with India's democratic, pluralistic, and welfare-oriented goals.
- **Flexible Constitution:** The Court's decision affirms that the Constitution is a living document, capable of addressing new challenges while upholding fundamental rights and promoting social justice.
- **Potential for Legislative Reforms:** This judgment could propel future reforms, including the Uniform Civil Code, focusing on equality and non-discrimination for all citizens, regardless of their faith or background.

National Mission on Natural Farming (NMNF)

Context: The National Mission on Natural Farming (NMNF) initiative was recently launched as a Centrally Sponsored Scheme under the Ministry of Agriculture and Farmers' Welfare.

- With a budget of ₹2,481 crore (₹1,584 crore from the Centre and ₹897 crore from states), the mission targets 1 crore farmers by 2025-26, promoting chemical-free, sustainable farming practices that align with traditional agro-ecological knowledge.

Objectives and Features:

- NMNF aims to reduce input costs, enhance soil health, promote biodiversity, and ensure nutritious, chemical-free food. It encourages natural farming methods like Jeevamrit and Beejamrit preparation using livestock and locally available resources.
- The mission will:
  - » Operate in 15,000 clusters across Gram Panchayats, covering 7.5 lakh hectares within two years.
  - » Establish 10,000 Bio-input Resource Centres (BRCs) to supply ready-to-use natural farming inputs.
  - » Develop 2,000 Model Demonstration Farms at Krishi Vigyan Kendras (KVKs), Agricultural Universities, and farmers' fields.
  - » Train 18.75 lakh farmers and deploy 30,000 Krishi Sakhis/Community Resource Persons for awareness and guidance.

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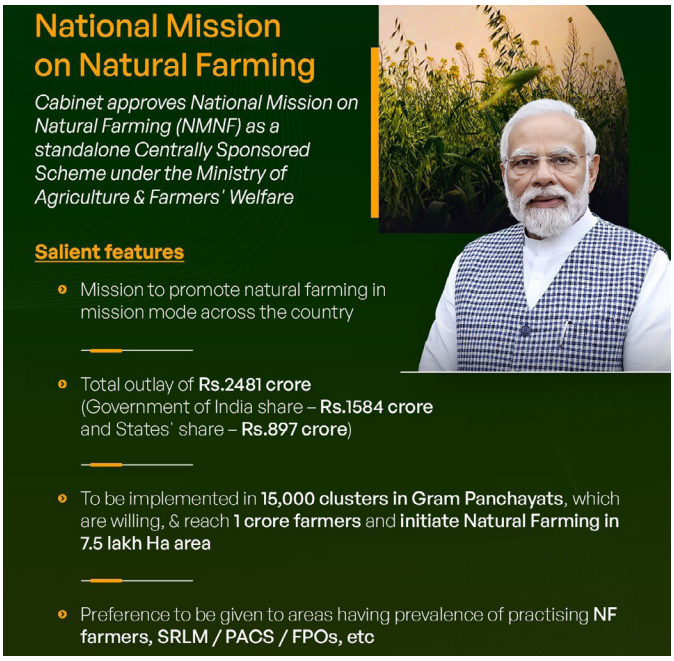

Implementation and Monitoring

- Real-time monitoring through geo-tagged portals will ensure transparency. Certification and branding of natural farming produce will simplify market access, and convergence with other government schemes will support local livestock, market linkages, and infrastructure development.
- Students will also be engaged through the RAWE program and dedicated courses in natural farming.

Benefits:

- **Environmental Sustainability:** Improves soil fertility, water use efficiency, and biodiversity while reducing greenhouse gas emissions.
- **Economic Gains:** Reduces dependency on costly external inputs, lowering cultivation costs and boosting farmer incomes.
- **Health Advantages:** Provides chemical-free, nutritious food, minimizing health risks.
- **Climate Resilience:** Enhances farming adaptability to floods, droughts, and other climate risks.
- The NMNF envisions a robust ecosystem that integrates traditional and sustainable practices, ensuring a "Healthy Soil, Healthy Food, and a Healthy Nation." This initiative marks a transformative shift in Indian agriculture, benefiting farmers, consumers, and the environment alike.

Power Packed News

Approval of Rs 7,927 Crore Multitracking Projects to Boost Rail Connectivity

- The Cabinet Committee on Economic Affairs, chaired by Prime Minister Narendra Modi, has approved three major multitracking projects worth approximately Rs 7,927 crore for Indian Railways. The projects aim to enhance rail connectivity, alleviate congestion, and promote economic development.
- The approved projects include:
  - » Jalgaon-Manmad 4th line (160 km),
  - » Bhusaval-Khandwa 3rd and 4th lines (131 km), and
  - » Prayagraj (Irdatganj)-Manikpur 3rd line (84 km), covering a total of 639 km.
- These initiatives are part of the PM-Gati Shakti National Master Plan, which seeks to integrate multi-modal connectivity for seamless movement of goods and people.
- The projects span seven districts in Maharashtra, Madhya Pradesh, and Uttar Pradesh, impacting 1,319 villages and benefiting approximately 38 lakh people.
- The improved connectivity will enhance the Mumbai-Prayagraj-Varanasi rail corridor, benefiting aspirational districts like Khandwa and Chitrakoot.
- Additionally, the eco-friendly infrastructure is expected to reduce carbon dioxide emissions by 271 crore kg annually, aligning with India's climate goals.

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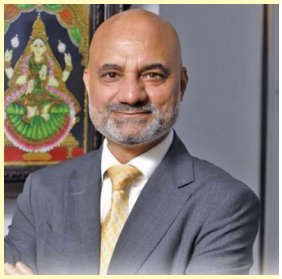
Dinesh Bhatia Appointed as India's Ambassador to Brazil



- The Ministry of External Affairs has appointed Dinesh Bhatia, a 1992 batch Indian Foreign Service officer, as the next Ambassador of India to Brazil.
- Currently serving as India's Ambassador to Argentina, Bhatia will take over his new role after his tenure in Argentina, where he assumed office on August 21, 2019.
- Bhatia's diplomatic career includes significant assignments such as Consul General of India in Toronto and Ambassador to Côte d'Ivoire, Guinea, and Liberia.
- He also held a role in the Department of Atomic Energy in Mumbai and served as Private Secretary to the Minister of Tourism of India.
- Bhatia is also an author, having written Devi Purana, a version of the Srimad Devi Bhagavatam, published by Bloomsbury in 2023, and Physics for the Civil Services Preliminary Examination, published in 1994.

Rare Imperial Eagle Spotted in Pulluzhi Kole Wetlands

- A rare Imperial Eagle (Aquila heliaca) has been spotted in the Pulluzhi kole wetlands. This marks the first sighting of the species in the region since its last reported presence in Kannur in 2003, according to data from eBird.
- The Imperial Eagle primarily breeds in southeastern Europe, western and central Asia, migrating to northeastern Africa, West Asia, and parts of Southeast Asia during the winter.
- The species is listed as at risk of extinction by the International Union for Conservation of Nature (IUCN), underscoring the urgency of its conservation, as noted by ornithologist Manoj Karingamadathil.
- The Thrissur-Ponnani kole fields, a significant birdwatching hub managed by the Kole Birders Collective, have seen multiple sightings of endangered eagle species this season, including the greater spotted eagle and the Indian spotted eagle.

Sadhaya Vizha Celebration

- The Sadhaya Vizha, held annually during the Tamil month of Aippasi (mid-October to mid-November), commemorates his birth anniversary in Thanjavur, Tamil Nadu.
- The celebration birth anniversary of Raja Raja Chola I centers around the Brihadeeswarar Temple, a masterpiece of Chola architecture dedicated to Lord Shiva, where Raja Raja's devotion is honored. The event includes religious ceremonies like the sacred abhishekam (holy bath) and a procession of the deity. Cultural performances, such as classical dance and hymn singing, add to the festivities.

About Raja Raja Chola I:

- Raja Raja Chola I, born Arulmozhi Varman in 947 CE, was one of the most renowned rulers in history, whose reign (985–1014 CE) marked both military triumph and cultural prosperity.
- Revered as Raja Raja the Great, he expanded the Chola Empire to Sri Lanka and the Maldives. His life is immortalized in Kalki Krishnamurthy's novel Ponniyin Selvan and its subsequent film adaptations.
- The Brihadeeswarar Temple also houses inscriptions detailing its construction, rituals, and Raja Raja's personal contributions.