

WHAT IS IN-SPACE?



Nine Indian space-tech companies, which were part of the delegation led by the Indian National Space Promotion and Authorisation Centre (IN-SPACE), have signed multiple partnerships and collaborations at the recently held Space Meetings Veneto 2026 in Venice, Italy.

- **Indian National Space Promotion and Authorization Center (IN-SPACE)** is a **single-window, independent, nodal agency** that functions as an **autonomous agency** in the **Department of Space (DOS)**.
- It is formed following the Space sector reforms to enable and **facilitate the participation of private players**.
- IN-SPACE is responsible to **promote, enable, authorize and supervise various space activities of non-governmental entities (NGEs)** including
 - **building launch vehicles & satellites** and providing space-based services;
 - **sharing space infrastructure** and premises **under the control of DOS/ISRO**; and
 - **establishing of new space infrastructure** and facilities.
- The agency acts as an **interface between ISRO and NGEs** and assesses how to utilize India's space resources better and increase space-based activities.
- It also **assesses the needs and demands of private players**, including educational and research institutions, and explores ways to accommodate these requirements in consultation with ISRO.
- **Headquarters: Ahmedabad, Gujarat**
- **Three Directorates, Promotion Directorate (PD), Technical Directorate (TD) and Program Management and Authorization Directorate (PMAD)** are carrying out the functions of IN-SPACE.

PM SHRI SCHEME



- The Pradhan Mantri Schools for Rising India (PM-SHRI) Scheme is a centrally sponsored initiative launched by the Government of India under the guidance of the Ministry of Education.
- It aims to transform school education across the nation by **developing over 14,500 model schools** that reflect the spirit and vision of the **National Education Policy (NEP) 2020**.
- These schools will be managed by the **Central Government, State** and Union Territory Governments, local bodies, **Kendriya Vidyalaya Sangathan (KVS)**, and **Navodaya Vidyalaya Samiti (NVS)**.
- **Key Features of PM SHRI Schools**
 - **Enhanced infrastructure:** Labs, libraries, art rooms.
 - **Integration of technology:** Smart classrooms and digital learning tools.
 - **Holistic learning approach:** Play-based learning in the early years, with flexible teaching methods.
 - **School Quality Assessment Framework (SQAF):** Regular evaluation to maintain high standards.
 - **Time Period:** 5 years (2022-23 to 2026-27).
- **Funding Pattern:**
 - **For General States and UTs with Legislature:** The funding ratio is **60:40**, where 60% of the funds are provided by the Central Government and 40% by the State or UT Government.
 - **Northeastern and Himalayan States, including Jammu & Kashmir:** The funding ratio is **90:10**, with the Centre contributing 90% of the total cost.
 - **For Union Territories without a Legislature:** The scheme is **fully funded by the Central Government (100%)**.

NATIONAL ONE HEALTH MISSION



- **National One Health Mission** was launched in 2024.
- It is a **collaborative, multidisciplinary approach** that unites human, animal, and environmental health sectors.
- It recognizes the **interconnectedness of these domains**, aiming to optimize health outcomes and address challenges across the sectors.
- It was launched to **safeguard national health by unifying human, animal, and environmental** surveillance systems to ensure robust pandemic preparedness and integrated disease control.
- **Nodal Agency: Indian Council of Medical Research (ICMR)** under Office of the Principal Scientific Adviser (PSA).

Governance of the National One Health Mission:

- It is **two tiered**:
 - **Executive Committee:** It is chaired by the **Ministry of Health & Family Welfare (MoHFW)** with **Principal Scientific Adviser** as vice chair and Member Health, NITI Aayog is a permanent invitee.
 - Secretaries of various stakeholder departments and two states (on rolling basis) are members.
 - The committee provides **overall policy guidance** for the progress of the mission and its associated activities.
 - **Scientific Steering Committee:** It is **chaired by the PSA** and has Secretaries/DGs of all stakeholder departments and two states (on rolling basis) as members.
 - It **provides overall scientific direction**, oversight and guidance to the National One Health Mission.

JAGGERY



India accounts for over 70% of global jaggery production, firmly establishing itself as the world leader in natural sweeteners.

- It is **commonly known as gur** and is a traditional, unrefined, natural sweetener.
- It is **produced by concentrating sugarcane juice** without the use of chemicals.
- It **retains essential minerals and micronutrients** that are typically lost during the sugar-refining process.
- **Minerals:** It retains minerals like **calcium, magnesium, potassium, phosphorus, sodium, iron, zinc, copper, and manganese**.
 - It also contains trace amounts of vitamins, including **follic acid and B-complex vitamins**, as well as **vitamins A, C, D, and E**.
- **Production:**
 - **India accounts for over 70 percent of global jaggery production.** This makes it the world's largest jaggery producer.
 - **Uttar Pradesh** contributed 48.5 percent of total production, followed by **Maharashtra** (24.1 percent) and **Karnataka** (10.5 percent).
- **Geographical Indication (GI) Tagged Jaggery Varieties in India:**
 - **Kolhapur Jaggery** (Maharashtra): It is valued for its golden colour and high sucrose content.
 - **Muzaffarnagar gur** (Uttar Pradesh): It is export-oriented and made from high-quality cane.
 - **Marayoor and Central Travancore jiggery** (Keralam): These are recognized for their purity, medicinal value, traditional processing and regional distinctiveness.



SMILE MISSION

- SMILE (Solar wind Magnetosphere Ionosphere Link Explorer) is a joint ESA (European Space Agency) and Chinese Academy of Sciences (CAS) mission.
- It will study the interaction of the solar wind with the Earth's magnetosphere and ionosphere.
- **Aim:** It aims to capture the first X-ray images of Earth's protective magnetic shield in action as it battles and deflects harmful charged particles and energies coming from the Sun.
- It will be positioned at about 1.21 lakh km above Earth's north pole and be able to observe the edge of the magnetosphere in its entirety.
- **Mission Life:** SMILE weighs about 2,600 kg and has a mission life of about three years.
- **Instruments:** The mission is carrying four scientific instruments,
 - ESA has developed the **Soft X-ray Imager (SXI)**, whereas the Chinese team has developed the other three payloads — **Magnetometer, Light Ion Analyser (LIA) and Ultraviolet aurora Imager (UVI)**.
 - The four instruments will operate both on X-ray and ultraviolet wavelengths of the electromagnetic spectrum.
 - All these payloads will use remote sensing and make in situ (on site) observations along the near-Earth regions.
- **Significance:**
 - It is designed to get answers interaction of a stream of solar wind with Earth's magnetic shield and the magnetic glitches occurring on the dark side of Earth.
 - It will help solar physicists better understand space weather.
 - It will also help forecasting any impending solar storm or likely perturbations to space weather.

THE WARNING SIGNS IN INDIA'S IMPORT BILL

- India's merchandise trade deficit reached a record \$333 billion in 2025-26, rising over 17% from the previous year.
- This was driven by imports surging 7% to an all-time high of \$775 billion, while exports remained almost stagnant at \$442 billion.
- **Key Drivers of Import Growth**
 - Four major product groups drove India's import surge:
 - **Precious Metals** - Gold and silver imports exceeded \$90 billion
 - Accounted for about 12% of total imports
 - Became the third-largest import category after crude oil and electronics
 - **Other major contributors** to the rising import bill were: Edible oils; Fertilizers; Electronic components.
 - While imports of precious metals increased sharply, gems and jewellery exports declined by over 5%, indicating that most imported gold and silver were absorbed by domestic consumption rather than export production.

Rising Import Dependence: Key Areas of Concern

- India's gold import dependence remains a major concern, with gold imports rising 82% in April 2026 compared to the previous year, despite the government increasing customs duty on gold and silver to 15% and urging citizens to defer non-essential purchases.
- Continued stock market volatility has pushed retail investors toward gold as a safe asset, both in physical form and Gold ETFs. Higher duties on physical gold may further encourage investment through ETFs rather than significantly reducing overall demand.
- **Edible Oil Import Dependence**
 - Edible oil imports rose over 12% in 2025-26
 - With domestic oilseed production failing to keep pace, the government is seeking reduced household consumption to contain foreign exchange outflows.

- **Fertilizer Import Vulnerability**
 - India's dependence on imported fertilizers has worsened amid rising global prices and geopolitical disruptions.
 - Over the past 5 years, fertilizer imports met 31–37% of India's requirements, but this share is expected to cross 50% in 2025-26 due to 60% surge in urea imports.
- **Structural Concern**
 - The continued dependence on imports for critical commodities like gold, edible oils, and fertilizers raises questions about why domestic production capacity has not been strengthened sufficiently to reduce external vulnerability.

Rising Trade Deficit and Pressure on the Rupee

- **Limited Progress in Import Substitution** - Despite the Atmanirbhar Bharat Abhiyan, launched in 2020 to reduce import dependence, especially on China, progress has been limited in several strategic sectors.
- **Electronics Dependence Persists** - Even after substantial incentives under the Production-Linked Incentive (PLI) scheme, India remains heavily dependent on imported electronic components, whose imports grew by over 20% in the previous fiscal year.
- **Battery and EV Import Dependence** - Efforts to boost domestic production of accumulators and batteries to support electric vehicle manufacturing have also fallen short, with imports of these products rising by 50% in 2025-26.
- **Cost of Technological Upgradation** - India's move towards greater technological advancement and clean mobility is increasing dependence on imported components, leading to significant foreign exchange outflows.
- **Pressure on the Rupee** - A widening trade deficit poses additional risks to the already weakened rupee.
- **RBI's Intervention** - The Reserve Bank of India (RBI) has been selectively intervening in currency markets to prevent a sharp depreciation of the rupee.
- **Declining Forex Reserves** - Foreign exchange reserves have fallen by over \$21 billion since the end of February 2026, making further reserve depletion a matter of concern.

IMPROVING EFFICIENCY OF FERTILIZER USE IN INDIA

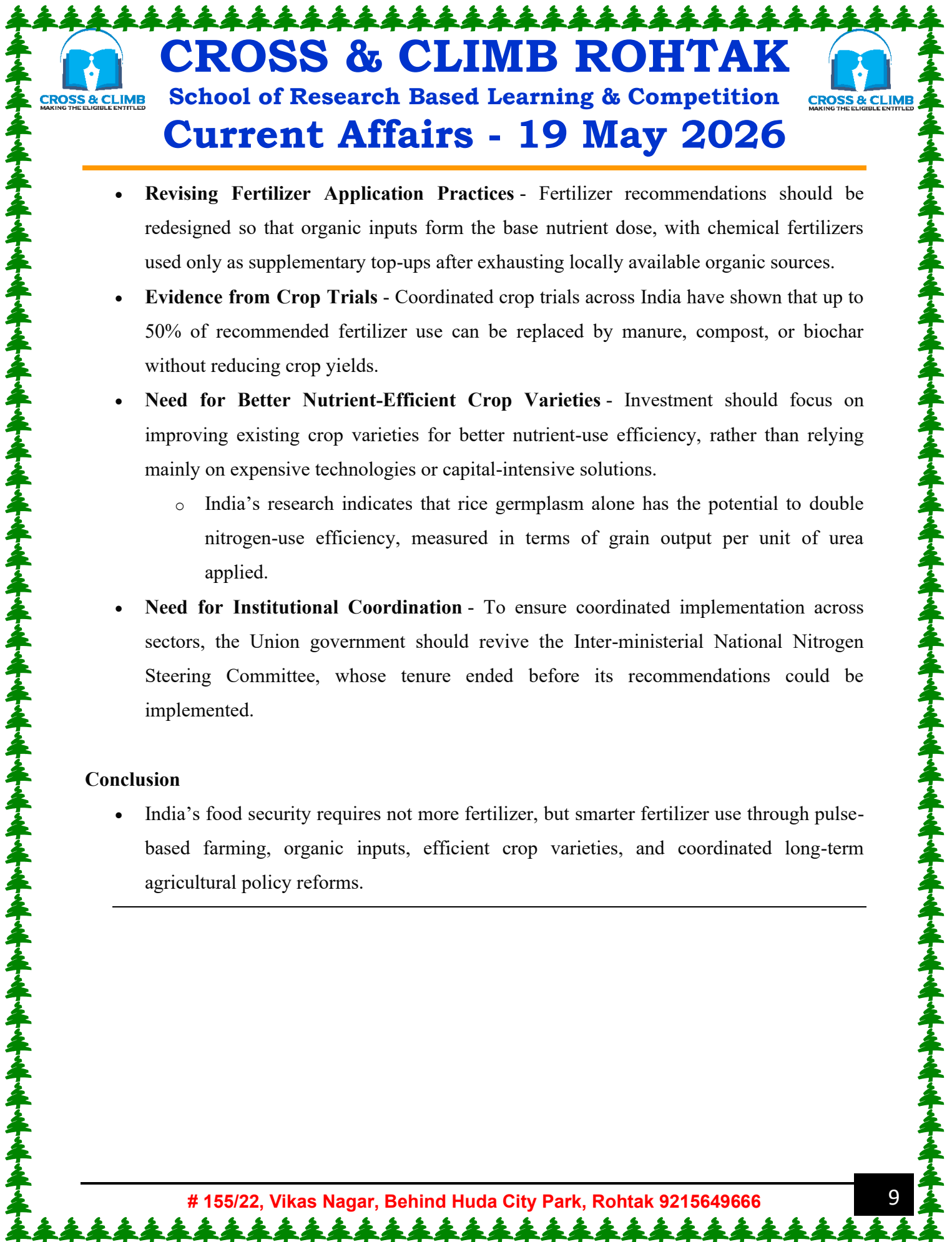
- Excessive, unbalanced, and inefficient use of fertilizers not only wastes public resources but also harms soil health, water quality, air quality, biodiversity, human health, and contributes to climate change.
- Excess fertilizer use depletes **soil organic matter** and reduces the soil's ability to retain water and nutrients. This lowers crop productivity over time, forcing farmers to apply even more fertilizers, creating a self-reinforcing “**fertilizer trap.**”
- This cycle explains why India's fertilizer demand continues to grow despite decades of increased supply, showing the limitations of a supply-focused approach.
- The focus must shift from simply increasing supply to **improving fertilizer use efficiency**—either by producing more crop per kilogram of fertilizer used or maintaining yields with lower fertilizer input.

Limits of Existing Policy Measures

- **Nutrient-Based Subsidy (NBS)** - The government's nutrient-based subsidy scheme failed to significantly improve efficiency or reduce demand because urea was excluded.
- **Neem-Coated Urea** - Although introduced to improve nitrogen-use efficiency, neem-coated urea could not prevent substantial nitrogen loss as ammonia emissions, contributing to air pollution.
- **Phosphatic Fertilizers** - A large share of phosphatic fertilizers is also lost through runoff, contributing to water pollution.

Measures to Enhance Fertilizer Use Efficiency

- **Greater Use of Organic Alternatives** - India needs to significantly increase the use of manure, compost, and biochar (biogas residue) to reduce dependence on chemical fertilizers and improve soil health.



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- **Revising Fertilizer Application Practices** - Fertilizer recommendations should be redesigned so that organic inputs form the base nutrient dose, with chemical fertilizers used only as supplementary top-ups after exhausting locally available organic sources.
- **Evidence from Crop Trials** - Coordinated crop trials across India have shown that up to 50% of recommended fertilizer use can be replaced by manure, compost, or biochar without reducing crop yields.
- **Need for Better Nutrient-Efficient Crop Varieties** - Investment should focus on improving existing crop varieties for better nutrient-use efficiency, rather than relying mainly on expensive technologies or capital-intensive solutions.
 - India's research indicates that rice germplasm alone has the potential to double nitrogen-use efficiency, measured in terms of grain output per unit of urea applied.
- **Need for Institutional Coordination** - To ensure coordinated implementation across sectors, the Union government should revive the Inter-ministerial National Nitrogen Steering Committee, whose tenure ended before its recommendations could be implemented.

Conclusion

- India's food security requires not more fertilizer, but smarter fertilizer use through pulse-based farming, organic inputs, efficient crop varieties, and coordinated long-term agricultural policy reforms.