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Institute of Research Based Learning & Competition



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## Current Affairs - 28 November 2025

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### KEY FACTS ABOUT VITAMIN B12



- It is a **water-soluble** vitamin.
  - It is also called **cobalamin**.
  - It is a vitamin the **body uses to make and support healthy nerve cells**.
  - It's also **used to make healthy red blood cells** and the **genetic material inside cells** called **DNA**.
  - Human body **cannot produce B12 on its own**, so it must be obtained through foods high in vitamin B12 or supplements.
    - It is **naturally found in animal foods** such as **fish, meat, poultry, eggs, milk, and milk products**.
  - It is **not present in plant foods** unless fortified.
  - The **body stores** vitamin B12 **in the liver**.
  - The **body can store** vitamin B12 **for 2 to 5 years**, and it can get rid of any excess or unwanted vitamin B12 in the urine.
  - **Vitamin B12 Deficiency:**
    - **People who follow a vegetarian** or **vegan diet** can sometimes have low levels of Vitamin B12. This is because plant foods don't have vitamin B-12.
    - **Older adults** and **people who have had stomach surgery** also are at risk because they **may not absorb the vitamin** as well.
    - **People with digestive conditions** such as celiac disease and Crohn's disease also are at risk of low vitamin B-12 levels.
    - People with **very low vitamin B-12 levels** can have **symptoms** such as **fatigue, muscle weakness, stomach problems, nerve damage, vision problems, and mood changes**.
    - They also may have **low iron, called anemia, or low blood counts**.
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### INDIA'S EVOLUTION FROM GM CROPS TO GE CROPS

- Genetically modified (GM) crops introduce **foreign genes** from unrelated species, such as Bt genes from *Bacillus thuringiensis* used in cotton to produce insect-killing proteins.
- Genome editing (GE), however, **modifies** only the plant's own native genes.
  - Using protein enzymes that act as “**molecular scissors**,” GE alters specific DNA sequences to change how a gene functions—without adding foreign DNA.
  - A custom-designed guide RNA directs these scissors to the exact spot in the genome.
- For India's new GE rice and mustard lines, scientists used CRISPR-Cas technologies:
  - Cas9 edited the drought-and-salt tolerance gene in MTU-1010 rice and 10 glucosinolate transporter genes in mustard.
  - Cas12a edited the cytokinin oxidase 2 (Gn1a) gene in Samba Mahsuri rice to increase cytokinin levels, boosting the number of spikelets and grain yield.
- Importantly, Cas proteins—sourced from bacteria—appear only in the first-generation GE plants and are removed in subsequent breeding.
- The final GE plants are transgene-free, unlike GM crops that retain permanently inserted foreign genes.

### **Policy Push for Genome-Edited (GE) Crops in India**

- GE plants that contain no foreign DNA are exempt from the stringent biosafety regulations applied to GM crops.
- Under a March 2022 MoEFCC memorandum, GE crops require only approval from an Institutional Biosafety Committee, which must certify that no exogenous DNA is present.
- This bypasses the earlier requirement of clearance from the Genetic Engineering Appraisal Committee (GEAC) for field trials, seed production, or environmental release.
- Because GE crops are considered similar to normal plant varieties, they face minimal regulatory hurdles, enabling faster research, trials, and eventual deployment compared to GM crops.



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- **Strong Government Funding Support**
  - The government has backed GE crop development through major funding allocations.
  - Research on improved GE rice varieties began in 2018 through the National Agricultural Science Fund.
  - The 2023–24 Union Budget allocated **₹500 crore** specifically for genome editing.
- **Large Pipeline of GE Targets Identified**
  - ICAR scientists have mapped and prioritised key genes across major crops for targeted editing:
    - 178 target genes identified in 24 field crops (cereals, pulses, oilseeds, cotton, sugarcane, jute, tobacco).
    - 43 genes identified in 16 horticultural crops (vegetables, fruits, spices).
  - Most of these crops now have full genome sequences available, allowing researchers to locate each gene precisely on its chromosome.
  - Once a gene's role in a trait is known, it can be specifically edited to improve yield, stress tolerance, nutrition, disease resistance, and more.
- **A Clear Signal of Policy Shift**
  - Together, relaxed regulations and major funding underscore the government's intent to make genome editing a mainstream tool in India's crop-breeding strategy — a shift from the stalled GM crop pathway.

### INTERNATIONAL INSTITUTE FOR DEMOCRACY AND ELECTORAL ASSISTANCE



International **IDEA**  
INTERNATIONAL INSTITUTE FOR DEMOCRACY AND ELECTORAL ASSISTANCE

- It is an **inter-governmental organisation** established in 1995.
- It works to **strengthen democratic institutions** and electoral processes worldwide.
  - International IDEA has been **granted UN observer status**.



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- **Objective:** To support stronger democratic institutions and processes, and more sustainable, effective and legitimate democracy.
  - **India is a founding member** of International IDEA.
  - **Governance:** The Institute's governance consists of a **Council of Member States**, a Steering Committee, a Finance and Audit Committee, a Board of Advisers and a **Secretariat**, led by the Secretary-General.
    - Each year, the **Council** elects a Chair and two Vice Chairs among its Members States.
  - **Core Functions:** Its working modalities includes four elements: **knowledge production, capacity development, advocacy as well as convening of dialogues.**
  - It focuses on **six work streams namely:**
    - Electoral Processes
    - Constitution-Building
    - Democracy Assessment
    - Political Participation and Representation
    - Climate Change and Democracy
    - Digitalization and Democracy
  - **Secretariat:** Stockholm, Sweden
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### KEY FACTS ABOUT ALOE VERA



- It is a **succulent plant** belonging to the Aloaceae family, known for its **medicinal and therapeutic properties.**
- **Scientific Name:** Aloe barbadensis Mill
- **Distribution:**
  - It is **native to** the arid, desert regions of the **Arabian Peninsula**, particularly in Oman, Yemen, and Saudi Arabia.
  - It thrives in **hot, dry climates** with **well-drained, sandy, or rocky soils.**



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- It is **widely cultivated** in various warm regions around the world, including parts of North Africa, the **Canary Islands, India,** and the southwestern **United States**.
  - It is a **thick, short-stemmed** plant that **stores water in its leaves**.
  - It is known for its **thick, pointed,** and **fleshy green leaves**.
    - Each leaf contains a slimy tissue that stores water, making the leaves thick.
    - This **water-filled tissue is the “gel”** that people associate with aloe vera products.
    - The **gel contains beneficial bioactive compounds,** including **vitamins, minerals, and antioxidants**.
  - **Uses:**
    - Aloe vera is known for its **antibacterial, antiviral, and antiseptic properties**.
    - It is **best known for treating skin injuries**.
    - It **inhibits the growth of different types of bacteria**.
    - It is used in arid regions for **erosion control** due to its shallow root system and ability to stabilize soil.
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### TEX-RAMPS SCHEME



- It will be implemented as a **Central Sector Scheme,** fully funded by **the Ministry of Textiles**.
- It is **designed to address critical gaps** in research, data systems, and innovation support and capacity development.

#### **Components of Tex-RAMPS Scheme:**

- **Research & Innovation:** It promotes advanced research in smart textiles, sustainability, process efficiency, and emerging technologies.
- **Data, Analytics & Diagnostics:** It creates **robust data systems** including employment assessments, supply chain mapping, and the India-Size study.



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- **Integrated Textiles Statistical System (ITSS):** A real-time, **integrated data and analytics platform** to support structured monitoring and strategic decision-making.
- **Capacity Development & Knowledge Ecosystem:** It strengthens State-level planning, dissemination of best practices, capacity building workshops, and organisation of sectoral events.
- **Start-up & Innovation Support:** It supports for incubators, hackathons, and academia-industry collaborations to nurture **high-value textile start-ups** and entrepreneurship.

### CHANAKYA DEFENCE DIALOGUE (CDD) -2025



- CDD is an **annual platform** that encourages **discussion on contemporary security issues, technological advancements in defense, and strategic partnerships.**
- It is **organised by the Indian Army, in collaboration with the Centre for Land Warfare Studies (CLAWS).**
- It is the **third edition** of the dialogue.
- Scheduled as a **two-day conference**, the gathering will feature **military leaders, global strategic experts, diplomats, industry leaders, and young scholars.**
- The 'Chanakya Defence Dialogue', **named after the ancient Indian strategist Chanakya**, aims to create a comprehensive platform for strategic deliberation on India's future security architecture.
- It examines India's security challenges and technological frontiers in an increasingly contested global landscape.
- The dialogue's **outcomes are expected to inform future military policies** and enhance cooperative security arrangements, potentially influencing regional peace and stability.



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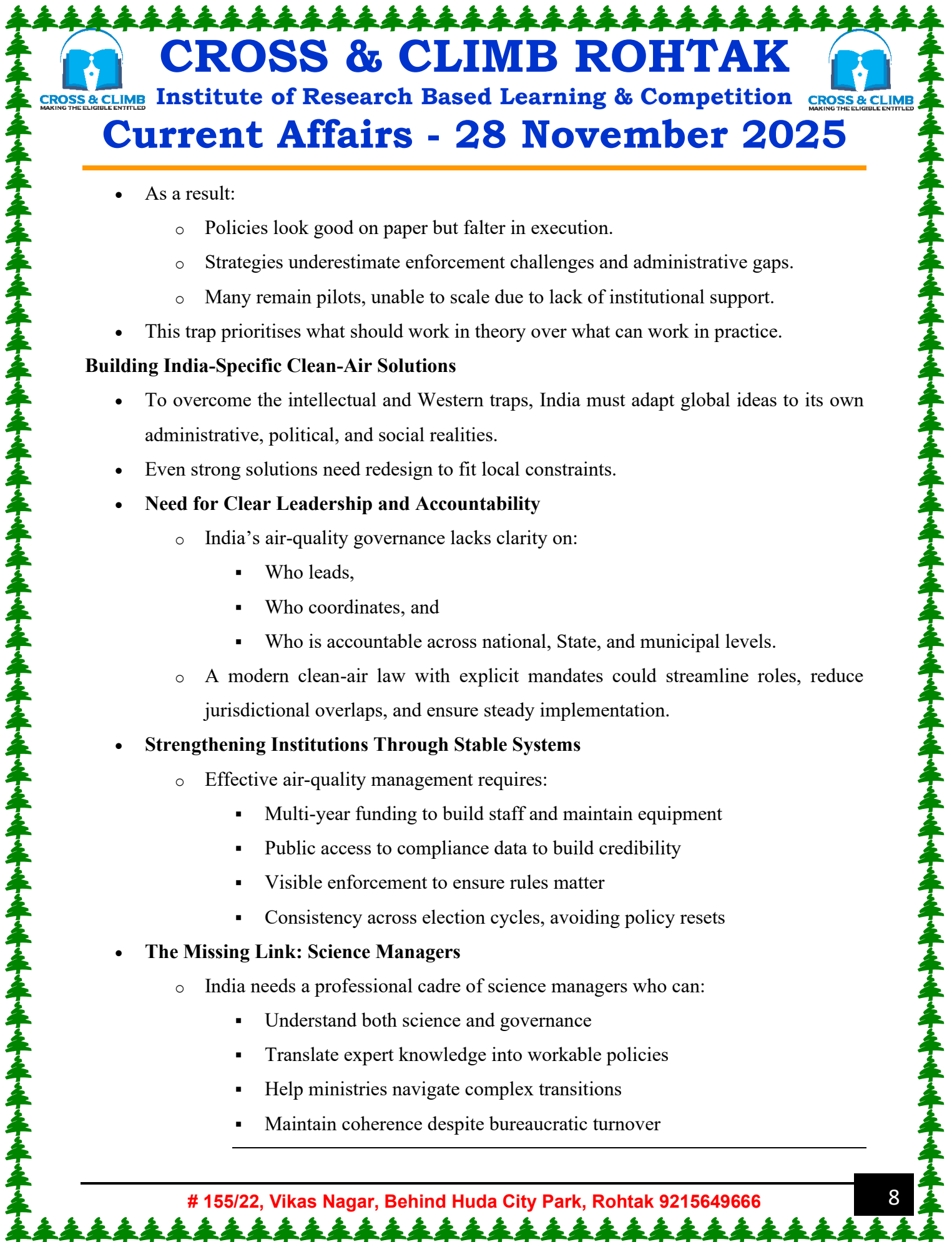
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### WHY INDIA'S AIR POLLUTION CRISIS PERSISTS

- India's repeated reliance on short-term pollution fixes stems from a **deeper structural flaw**: air-quality management is fragmented across numerous agencies.
- Responsibilities are split among the Environment Ministry, CPCB, SPCBs, CAQM, DPCC, municipal bodies, and sectoral departments such as agriculture, transport, industry, and energy.
- With each institution overseeing only a slice of the problem, no agency has full authority or accountability for clean air.
- **Short-Term Measures Dominate**
  - The dominance of quick fixes is also rooted in political incentives.
  - High-visibility measures — cloud seeding, smog towers, anti-smog guns, odd-even rules — allow governments to show immediate action without challenging powerful polluting sectors like construction, transport, and agriculture.
  - They cost little, fit easily into annual budgets, and avoid political backlash.
  - These interventions respond to headlines rather than the science of pollution control, providing momentary relief while doing little to improve public health.
- **Political Optics Over Public Health**
  - Short-term measures help officials signal responsiveness during pollution spikes but fail to address structural issues such as waste burning, fuel quality, industrial emissions, and crop residue management.

### Why India's Pollution Policies Fail: The Intellectual and Western Traps

- India's pollution strategies are often shaped by elite institutions, think tanks, and top scientific bodies.
- While analytically strong, these actors are frequently removed from the lived realities of municipal governance — understaffing, limited budgets, informal economies, and political constraints.



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- As a result:
  - Policies look good on paper but falter in execution.
  - Strategies underestimate enforcement challenges and administrative gaps.
  - Many remain pilots, unable to scale due to lack of institutional support.
- This trap prioritises what should work in theory over what can work in practice.

### Building India-Specific Clean-Air Solutions

- To overcome the intellectual and Western traps, India must adapt global ideas to its own administrative, political, and social realities.
  - Even strong solutions need redesign to fit local constraints.
  - **Need for Clear Leadership and Accountability**
    - India's air-quality governance lacks clarity on:
      - Who leads,
      - Who coordinates, and
      - Who is accountable across national, State, and municipal levels.
    - A modern clean-air law with explicit mandates could streamline roles, reduce jurisdictional overlaps, and ensure steady implementation.
  - **Strengthening Institutions Through Stable Systems**
    - Effective air-quality management requires:
      - Multi-year funding to build staff and maintain equipment
      - Public access to compliance data to build credibility
      - Visible enforcement to ensure rules matter
      - Consistency across election cycles, avoiding policy resets
  - **The Missing Link: Science Managers**
    - India needs a professional cadre of science managers who can:
      - Understand both science and governance
      - Translate expert knowledge into workable policies
      - Help ministries navigate complex transitions
      - Maintain coherence despite bureaucratic turnover
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### SIRPUR ARCHAEOLOGICAL SITE



- **Location:** It is located in **Chhattisgarh** located on the **banks of river Mahanadi**.
- It was the flourishing capital of **Dakshina Kosala** under the **Panduvanshi** and later **Somavamshi kings**.
- It was discovered by **Alexander Cunningham**.

#### **Key Features of Sirpur Archaeological Site:**

- Excavations revealed temples, **Buddhist and Jaina**.
  - **Notable Structures:**
    - **Lakshmana Temple** (dedicated to Vishnu), one of India's finest brick temples which was built around the 7th Century.
    - **Surang Tila complex:** It is built on a high terrace and has multiple shrines in the panchayatana style (one main shrine surrounded by four subsidiary ones).
    - **Tivaradeva Mahavihara:** It houses a significant Buddha statue.
  - It was a major **Buddhist centre** with large viharas, meditation halls and excavated stupas.
  - Archaeologists have also uncovered a 6th Century market complex, showing Sirpur was both a religious and commercial hub.
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