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## Current Affairs - 13 January 2026

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### NATIONAL ENVIRONMENTAL STANDARD LABORATORY



Recently, the CSIR-National Physical Laboratory established the National Environmental Standard Laboratory (NESL).

- It was **established to test** and recalibrate instruments used for **air pollution monitoring systems** and environmental sensors under Indian environmental conditions.
- It provides ensured credible data for **the National Clean Air Programme**.
- **Location:** CSIR–National Physical Laboratory, New Delhi
- **Features of National Environmental Standard Laboratory:**
  - NESL allowed manufacturers, industries, and municipal agencies to validate performance within the country,
  - It provides Industrial emission audits, and smart-city monitoring networks, and provided reference gases, protocols.
- **Significance:** It is expected to **help MSMEs, start-ups, and indigenous manufacturers** to demonstrate product quality at lower cost, meet tightening regulatory guidelines on quality and transparency.

### **Key Facts about Council of Scientific and Industrial Research (CSIR):**

- CSIR is a cutting edge R&D organisation dealing in diverse **fields of science and technology**.
  - It undertakes research, **design & development of scientific & industrial instruments**, components and systems.
  - It facilitates service, maintenance, testing & **calibration of instruments**.
  - It **promotes Human Resource Development** in the area of instrumentation.
  - It offers **technical assistance** to industry and provides ecosystem support.
  - **Headquarter:** New Delhi.
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### MUSTARD CROP



- It is a predominantly **self-pollinating crop**.
- **Common Name:** Sarason (Hindi), Rai (Punjabi), Katuku (Tamil), Kaduk (Malayalam), Avalu (Telugu).
- **Crop Season:** Rabi season
- Mustard seeds and its oil is used for **culinary purpose**. Young leaves are used for vegetable purpose. Its oil cake is **used for feeding cattle**.

### Climatic Requirements for Mustard crop

- **Soil Requirements:** Sandy loam soil is the most ideal textural classification for the cultivation of mustard crop.
- Mustard thrives well in **dry and chilled** environmental conditions.
- **Temperature:** It requires temperatures ranging between 10°C to 25°C
- **Rainfall:** An annual rainfall between 625 to 1000 mm is suitable for cultivation of mustard crop.
- It is highly **sensitive to frost damage**.
- **Major Mustard Production States:** Rajasthan (largest producing state), Gujarat, Uttar Pradesh, West Bengal, Haryana, Punjab, Madhya Pradesh.

### Key Facts about Orobanche aegyptiaca

- It is a **parasitic weed** that attaches to mustard roots and **siphons off water and nutrients**, leading to poor plant growth and reduced seed yields.
- This leads to **wilting, yellowing**, stunted plant growth and ultimately sharp declines in seed yields.
- This parasite **remains hidden below the soil initially**, damage is already extensive by the time it becomes visible.



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### INDIAN CUSTOMS ELECTRONIC GATEWAY



- It is known as ICEGATE which was **established in 2007**.
- It is the national portal of Indian Customs of **Central Board of Indirect Taxes and Customs (CBIC)**.
- It provides **e-filing services to the Trade**, Cargo Carriers and other Trading Partners electronically.
- It serves as a centralized hub for all **electronic interactions between Indian customs** and the trading community.
- It is the main infrastructure for connecting trade users with the Indian government's customs department, and acts as a hub for **exchanging information** between external trading partners involved in international trading.
- It is internally linked with **multiple partner agencies including RBI, Banks, DGFT, DGCIS, Ministry of Steel, Directorate of Valuation** and other various Partner Government Agencies **involved in EXIM**.
- **Functions:** It collectively contributes to streamlining customs procedures, enhancing trade facilitation and promoting transparency and efficiency in cross – border trade activities in India by providing multiple features for its users.

### **Integration of ICEGATE -Land Port Management System**

- The integration focuses on **critical customs data elements**, including Bill of Entry, Shipping Bill, Out of Charge (OOC), and Let Export Order (LEO).
- It enables real-time, **bidirectional exchange of data between ICEGATE** and the Land Port Management System, creating a seamless digital ecosystem at land ports.
- It also helps in **early risk assessment**, identification of anomalies, and selective application of controls.
- This approach improves compliance outcomes while minimising disruption to compliant trade.

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### SETBACK FOR PSLV: WHAT TWO CONSECUTIVE MISSION FAILURES SIGNAL FOR ISRO

- Polar Satellite Launch Vehicle (PSLV) is a **four-stage** launch vehicle, with each stage using its own engine and fuel to sequentially propel the mission before detaching once its role is complete.

#### **First Stage: Lift-off and Atmospheric Ascent**

- The first stage handles lift-off and a near-vertical climb to about 50–60 km.
- Using **solid propellant**, it overcomes gravity and atmospheric drag, consuming massive fuel in under two minutes before being jettisoned.

#### **Second Stage: Vertical-to-Horizontal Transition**

- Powered by the indigenously developed **Vikas engine** and a **liquid fuel**, the **second stage** continues ascent while building horizontal velocity.
- It takes the rocket to roughly 220–250 km altitude and accelerates it to about 14,000 km/h, significantly reducing overall mass.

#### **Third Stage: Rapid Acceleration**

- In this phase, the vehicle moves almost entirely horizontally on a sub-orbital path.
- Burning **solid fuel**, the third stage rapidly accelerates the rocket to orbital speeds of around 26,000–28,000 km/h—crucial for preventing it from falling back to Earth.
- The third stage is, therefore, about rapid acceleration. The PSLV rocket burns solid fuel to achieve this.

#### **Fourth Stage: Precise Orbital Insertion**

- The final stage uses **liquid propulsion** to precisely place satellites into their designated low-Earth orbits, typically between 250 and 2,000 km.
- Once payload deployment is complete, all stages have separated, having fulfilled their roles.



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### The Critical Role of PSLV's Third Stage

- The third stage is one of the most delicate phases of a launch.
- If the rocket fails to achieve the required velocity, it cannot sustain orbit and is pulled back by Earth's gravity, as seen in the PSLV-C61 failure last year.
- In this stage, **solid fuel** burns and turns into gas, increasing pressure inside the combustion chamber.
- The high-pressure gas exits through a nozzle, producing thrust that rapidly accelerates the rocket to near-orbital speeds.
- Higher chamber pressure results in greater thrust and acceleration. Any pressure drop—due to leakage or other faults—reduces thrust, preventing the rocket from attaining the speed needed to maintain orbit.
- **What Went Wrong Earlier?**
  - Last year's failure was attributed to a **manufacturing defect** that caused leakage and reduced pressure in the combustion chamber.
  - If the latest failure is due to a similar issue, it could pose a reputational challenge for Indian Space Research Organisation.

### Fallout of Repeated PSLV Failures for ISRO

- Space missions allow little margin for error, and while failures are not uncommon globally, back-to-back setbacks involving the trusted PSLV are a serious concern for ISRO.
- However, ISRO's strong history of recovery from crises offers hope that it can restore confidence after the latest mission.

### The Bigger Picture

- Launching PSLV-C62 just eight months after a major failure, without public disclosure of investigation findings, has intensified questions about transparency, quality control, and risk management—now placing ISRO under sharper technical and reputational scrutiny.
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### UNILATERAL USE OF FORCE AND INTERNATIONAL LAW

- International law is founded on the principle of sovereign equality of states and the prohibition of force in inter-state relations.
- These principles were codified after the Second World War through the **United Nations Charter**, with the objective of preventing unilateral military aggression and preserving global peace.
- Article 2(4) of the Charter explicitly prohibits the threat or use of force against the territorial integrity or political independence of any state.
- The only two exceptions recognised under international law are:
  - Use of force authorised by the UN Security Council, and
  - The inherent right of self-defence under Article 51 is applicable only in response to an armed attack.
- Despite this legal framework, powerful states have increasingly justified military interventions outside these exceptions, raising concerns about the erosion of the international legal order.

### **Violation of the UN Charter Framework**

- The recent U.S. military action against Venezuela represents a significant departure from established international legal norms.
- The operation was undertaken without authorisation from the **UN Security Council** and did not meet the legal threshold of self-defence.
- As such, it constitutes a direct violation of Article 2(4) of the UN Charter.
- The action also undermines the principle of non-intervention in domestic affairs, a cornerstone of international law.
- By forcibly intervening in the political leadership of a sovereign state, the operation challenges the legitimacy of multilateral institutions designed to regulate global security.



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### Expansion of Pre-emptive Military Doctrine

- A notable feature of contemporary U.S. foreign policy has been the increasing reliance on pre-emptive and preventive military action.
- The justification for such actions often rests on broad claims related to terrorism, weapons proliferation, or transnational crime.
- Available data suggest that Venezuela is not a major source of narcotics affecting the U.S., raising questions about the proportionality and necessity of military action.
- Instead, strategic and economic considerations, particularly access to natural resources, appear to play a significant role.

### Implications for the Global Order

- The repeated bypassing of international legal norms has serious implications for global governance.
- It weakens the authority of the United Nations, normalises unilateralism, and sets dangerous precedents for other powerful states to follow.
- In the emerging geopolitical context, China is increasingly viewed as the only potential counterweight capable of restoring a degree of balance.
- While Russia and China may form tactical alignments, structural differences limit the prospects of a stable multipolar order in the near term.

### Implications for India's Foreign Policy

- For India, these developments highlight the risks inherent in a weakened rules-based international order.
  - India has traditionally relied on international law and multilateralism to safeguard its sovereignty and security interests.
  - The current global environment underscores the need for India to strengthen its strategic autonomy, invest in its defence-industrial base, and pursue diversified partnerships.
  - A credible military and economic capacity remains essential for safeguarding national interests in an increasingly unilateral world order.
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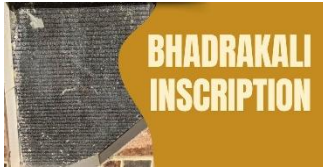
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### BHADRAKALI INSCRIPTION



The Bhadrakali inscription is a key 12th-century record that confirms the history and development of Somnath Temple and patronage given by the Solanki dynasty.

- **Location:** It is situated in **Prabhas Patan, Gujarat** specifically on the wall of the **Bhadrakali Temple**.
- It was **carved in 1169 CE** and currently protected by the State Department of Archaeology.
- It is a eulogistic inscription of **Param Pashupata Acharya Shriman Bhavabrihaspati**, the (spiritual preceptor of **Maharajadhiraj Kumarapala of Anhilwad Patan**).
- **Historical Details in Bhadrakali Inscription:**
  - It mentions the construction of **Somnath Temple** in all four yugas.
  - The historic Bhadrakali inscription reflects the devotion of the **Solanki rulers and scholars like Bhavabrihaspati**.
- **Protection:** State Department of Archaeology, Gujarat.

### NATIONAL FEDERATION OF COOPERATIVE SUGAR FACTORIES LIMITED



- It was established in 1960 to build a strong and vibrant cooperative sugar sector in India.
- It is deemed to be under the **Multi State Cooperative Societies Act, 2002**.
- **Functions of National Federation of Cooperative Sugar Factories Limited:**
  - It participates in **sugar policy formulation** at national and state level and helps set agenda for the development and growth of the sector in India.



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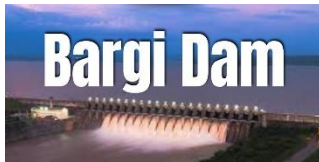
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- It advocates, **promotes and safeguards the collective interests** of its members in accordance with the cooperative principles.
  - It also offers **Techno-commercial services to establish, expand and modernize sugar factories, within India and Overseas.**
  - **Governance:** It functions under the **overall guidance of an elected Board of Directors**, comprising of representatives of Cooperative Sugar Factories and State Sugar Federations across India.
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### BARGI DAM



## Bargi Dam

- It is a **major multi-purpose dam**, serving irrigation, water supply and power generation.
- It is **on the Narmada River**.
- **Location:** It is located in **Madhya Pradesh**.

### What is National Dam Safety Authority?

- It is a **statutory body** set up by the Central Government under **the Dam Safety Act, 2021**.
  - It operates with a clear mandate to regulate, oversee, and inspect dams.
  - It is **headed by a chairman** and assisted by **five members to lead its five wings** – policy and research, technical, regulation, disaster and resilience, and administration and finance.  
**Headquarter:** New Delhi.
  - **Functions of the Authority include:**
    - implementing the policies formulated by the National Committee on Dam Safety;
    - resolving issues between State Dam Safety Organisations (SDSOs), or between a SDSO and any dam owner in that state;
    - specifying regulations for inspection and investigation of dams;
    - providing accreditation to agencies working on construction, design, and alteration of dams.
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