

FINDER

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What is the state of the environment in India?

Prelims: General Studies Paper - 1
Current events of national and international importance

Mains: General Studies - 2
Conservation, environmental pollution and degradation, environmental impact assessment.

1. Context

- Centre for Science and Environment released the **'State of India's Environment 2026' report** on February 25, a publication it has been producing since 1982.
- The **report provides an overview of major environmental challenges in India**, including floods, extreme weather events, air pollution, and changes in tiger behaviour.
- It also **places India's environmental issues** within the broader global climate change context.

2. Rise in Extreme Weather Events in India (2023–2025)

- **2025 saw the highest rise in extreme weather events** in the last four years.
- Data from January 1 to November 30, 2025 show events occurred on **99% of days in 2025**, causing **4,419 deaths** and affecting **17.41 million ha of crops**.
- In **2024**, events occurred on **88% of days**, causing **3,393 deaths** and affecting **3.61 million ha**.
- In **2023**, events occurred on **89% of days**, causing **3,208 deaths** and damaging **2.09 million ha**.
- **Himachal Pradesh (267 days)** was worst affected by extreme events, followed by **Kerala (173)** and **Madhya Pradesh (162)**.

3. Increasing Flood Risks in India

- Climate change is increasing flood risks in India.
- **Warming temperatures are affecting rivers and cities**, making floods more likely.
- **India must shift from relief-based response** to disaster resilience.
- **Climate science should guide planning** and infrastructure.
- **Nature-based solutions like wetland restoration** and rainwater harvesting are recommended.

4. Changing Tiger Behaviour

- **Tiger attacks on humans are increasing, with 43 deaths** reported near reserves (Jan–June 2025).
- Attacks occur when tigers are old, injured, or lack natural prey.
- **Human settlements** near tiger habitats **increase conflict**.
- **Overcrowding in reserves and habitat loss push tigers outside** protected areas.

5. Air Pollution Monitoring in India

- **Only 15% of India's population** (~200 million) lives **within 10 km of a continuous air quality monitor**.
- **About 85% of people (over 1.2 billion) breathe air** outside measurable monitoring coverage.
- **Monitoring is mainly limited** to major cities, State capitals, and metropolitan areas.
- Many districts, industrial belts, and peri-urban areas **lack monitoring stations**.
- Several smaller towns with high pollution levels have no real-time air quality data, showing gaps in environmental governance.

Why does the Strait of Hormuz's closure matter?

Prelims: General Studies Paper - 1
Current events of national and international importance

Mains: General Studies - 2
Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

1. Background

- The **Strait of Hormuz**, only 33 km wide at its narrowest, lies between **Iran, Oman and the UAE**.
- It is a critical **global chokepoint** through which over **20% of global oil and gas shipments** pass.
- Around **40%** of India's oil imports move through this route.
- The strait connects energy exports from **Saudi Arabia, Qatar, Kuwait, Iraq and Iran** to global markets.

2. Current Situation

- Since **February 28**, after U.S. and Israeli strikes on Iran and Iran's retaliation, ship traffic through the strait has fallen by **about 95%**.
- Nine ships have been **attacked** in or near the strait.
- Around **600 ships are stranded**, including 250 bulk carriers, 200 oil tankers and 50 gas carriers.
- Insurance premiums for ships have increased 10-15 times**, with a one-week insurance cost equal to roughly a year's normal premium.

3. Strategic and Legal Dimensions

- International law treats seas largely as **global commons**, allowing merchant ships innocent passage.

Global commons:

- Global commons are **natural resources or spaces beyond national jurisdiction**, such as the high seas, atmosphere, Antarctica and outer space.
- They are **shared by all humanity** and governed collectively under international law.

- No country has sovereign authority** to close natural straits such as Hormuz or Malacca, but **insecurity can effectively halt shipping**.
- Iran has historically used the strait as **strategic leverage**, including during the **Iran-Iraq war** in the 1980s.

4. Implications for India and Global Economy

- 40% of India's oil imports** and **half of its liquefied natural gas (LNG)** imports from Qatar pass through the strait.
- Qatar supplies **50% of India's LNG**, which meets about **half of India's natural gas needs**.
- Natural gas supports **city gas, power generation** and about **30% of fertilizer production**.
- Around **60% of India's Liquefied Petroleum Gas (LPG) imports** also come from this region, making supply disruptions a major concern.
- Rising oil prices could force fuel price increases, affecting **inflation** and **economic stability**.

5. Response and Alternatives

- India is exploring **alternative LNG sources** such as the U.S., Russia and Australia.
- The U.S. has proposed **naval escorts for ships** and **insurance support** through the **International Development Finance Corporation**.

International Development Finance Corporation (DFC)

- The U.S. **International Development Finance Corporation (DFC)** is the development bank of the United States.
- It partners with the private sector to **finance projects** addressing key challenges in **developing countries**.
- Saudi Arabia can **move oil via pipelines to Red Sea** ports like Yanbu, though Red Sea shipping faces risks due to **Houthi attacks** since 2023-24.

How does Canada's uranium deal help India?

Prelims: General Studies Paper - 1
Current events of national and international importance

Mains: General Studies - 2
Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

1. Background

- On March 2, India signed a **\$2.6-billion uranium supply** deal with **Cameco (Canada)**.
- The agreement ensures supply of **10,000 tonnes of uranium from 2027 to 2035**.
- The deal supports India's goal of strengthening **energy security** and **expanding nuclear power**.

2. India's Uranium Resources

- India has **4.2-4.3 lakh tonnes of uranium ore reserves** in **Jaduguda, Turamdih** (Jharkhand) and **Tummalapalle** (Andhra Pradesh).
- Extractable uranium** metal is only 76,000-92,000 tonnes because **Indian ore is low grade** (0.02–0.45% concentration).
- Canadian uranium ore is 10-100 times richer**, making imports more efficient.
- Imports currently meet about **three-fourths** of India's civilian uranium requirement.

3. Strategic Importance of the Deal

- The deal operates under the **India-Canada Civil Nuclear Cooperation Agreement** (2010).
- This agreement followed the **2008 Nuclear Suppliers Group waiver**, which allowed India to participate in global nuclear trade.
- Importing uranium for civilian use allows **domestic uranium** to be reserved for **strategic purposes**.
- India is also building a **five-year strategic uranium reserve** to manage supply disruptions.

4. Use of Uranium in India

- India operates **24 nuclear reactors** with about 9 GW capacity.
- 700-MW **Pressurised Heavy Water Reactors (PHWRs)** generate 6-7 GW, around **3% of India's electricity**.
- Uranium is also used in **research reactors** to produce medical isotopes such as **technetium-99m and iodine-131**.
- Domestic uranium supports **nuclear warheads** (around 170 estimated) and **INS Arihant nuclear submarines**.

5. Future Nuclear Programme

- India aims to expand **nuclear capacity to 100 GW by 2047**.
- The **three-stage nuclear programme** uses uranium first, then fast breeder reactors, and finally thorium-based reactors.
- India holds **20-25% of global thorium reserves**, making this long-term strategy significant.
- However, delays and cost overruns in projects like the Prototype **Fast Breeder Reactor (PFBR)** at **Kalpakkam** have slowed progress.

KEYWORDS

Probabilistic Seismic Hazard Assessment (PSHA)

- PSHA estimates the **probability of earthquake ground shaking** at a site over a given time period.
- It considers **all possible earthquakes**, their magnitude, location, frequency, and distance to assess seismic risk.
- Results are shown through **hazard curves and seismic hazard maps**, used for earthquake-resistant design of structures.
- The method was proposed by **seismologist Allin Cornell in 1968**.
- In India, it supports **earthquake zoning and structural design standards** under **IS 1893** issued by the **Bureau of Indian Standards (BIS)**.
- The **IS 1893 (Part 1): 2025 revised seismic zoning code was withdrawn** in March 2026 due to concerns over increased construction costs, restoring IS 1893 (Part 1): 2016.

Terminal High Altitude Area Defense (THAAD)

- THAAD is an **advanced missile defence system** developed by the **United States** to intercept **short, medium, and limited intermediate-range ballistic missiles**.
- It intercepts missiles during the **terminal phase of flight**, both **inside and outside the Earth's atmosphere**.
- THAAD uses **"hit-to-kill" technology**, destroying targets through **direct kinetic impact** instead of explosive warheads.
- It can intercept ballistic missiles at ranges of about **150-200 km** and at high altitudes.
- Key components include **interceptor missiles, truck-mounted launchers**, radar, and a fire-control and communication unit.
- A typical THAAD battery has about **six launchers** and several interceptors operated by around **90 personnel**.

- It operates as part of a layered **Ballistic Missile Defence (BMD) system** and can integrate with **Patriot and Aegis missile defence systems**.
- The first operational deployment was in **Guam in 2013**, and the **United Arab Emirates was the first foreign buyer in 2011**.
- THAAD has **recently been deployed in West Asia** amid tensions involving Iran.

Exercise MILAN 2026

- Exercise MILAN 2026 is the **13th edition of the Indian Navy's biennial multilateral naval exercise**, held in **Visakhapatnam from February 15–25, 2026**, with the theme **"Camaraderie, Cooperation, Collaboration"**.
- It is a **major, large-scale exercise focusing on interoperability, anti-submarine warfare**, and maritime domain awareness in the Indo-Pacific, involving over 70 nations.
- The exercise **includes Sea Phase drills like Anti-Submarine Warfare, Air Defence, and Search and Rescue operations**.
- It also **hosts the International Fleet Review 2026 and the IONS Conclave of Chiefs**.
- It **promotes defence cooperation and showcases indigenous platforms** like INS Vikrant.

Species in news

Koala

- Koala is a **tree-dwelling marsupial** native to **eastern and southern Australia**.
- It mainly lives in **eucalyptus forests** and feeds on eucalyptus leaves.
- Koalas have **strong claws and opposable digits** that help them grip tree branches.
- They have a **low-energy diet** and spend long hours **resting or sleeping** in trees.
- The young is called a **joey**, which develops in the **mother's pouch**.
- The **International Union for Conservation of Nature (IUCN)** lists the koala as a **Vulnerable** species due to habitat loss, bushfires, disease, and climate change.
- Studies show **Victorian koala populations are recovering from a genetic bottleneck** due to rapid population growth, which has increased genetic variation.
- However, koala populations in **Queensland and New South Wales** are declining and carry **higher levels of harmful mutations**



Places In News

Periyar Tiger Reserve

- Periyar Tiger Reserve is **located in Idukki district and is named after the Periyar River**.
- It lies in the **Cardamom Hills and Pandalam Hills of the Western Ghats**, near the Tamil Nadu border.
- The **reserve surrounds Periyar Lake, formed in 1895** after the construction of the Mullaperiyar Dam.
- The **terrain is hilly and undulating, with Kottamala (2016 m)** as the highest peak.
- The **area is drained by the Periyar and Pamba rivers** and is home to tribal communities like the **Mannans and Palians**.

