

FORTUNE IAS NEWS DAILY EXPLAINER

The case for building India's coal chemistry capability

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

Mains: General Studies - 3
Infrastructure: Energy, Ports, Roads, Airports, Railways etc

1. How did India handle the 2026 Hormuz energy crisis?

- India managed the crisis using **diversification, diplomacy, and quick policy action**.
- Refineries were **flexible**, so they could process different types of crude oil.
- India quickly started buying oil from **many regions like the Americas, Africa, Russia, etc.**
- Share of non-Hormuz oil increased from **55% to 70% in a few weeks**.
- LPG production increased from **35 to 54 Thousand Metric Tonnes (TMT)/day in just 5 days** due to engineering changes.
- Overall, **technical strength + smart management** helped India avoid a major crisis.

2. Why was refinery flexibility important? What is the lesson?

- Different countries supply **different types of crude oil**, so flexibility is important.
- If a refinery depends on only one type, it becomes **risky during disruptions**.
- India invested in **technology, research, and skilled workers**, making refineries adaptable.
- Engineers can quickly change processes and handle different inputs.
- Lesson: India needs the **same level of preparation in coal-based technologies** like gasification.

3. Why is LPG dependence still a problem? How can DME help?

- LPG imports come mainly from **a few regions**, so dependence is risky.
- Unlike crude oil, LPG sources **cannot be diversified much**.
- Solution: produce a similar fuel in India → **Dimethyl Ether (DME)**.
- DME:
 - ⊖ Works like LPG
 - ⊖ Can be used in existing cylinders
 - ⊖ Made from **non-coking coal (which India has in large amounts)**
- India allows **20% mixing of DME with LPG**.
- Benefits:
 - ⊖ Reduce **6.3 million tonnes of LPG imports yearly**
 - ⊖ Save about **₹34,000 crore**

4. What is the government doing and what are the challenges?

- Government launched a **₹37,500 crore scheme for coal gasification** with a target of **100 million tonnes by 2030**.

Coal gasification is the process of converting coal into a useful gas (syngas) by heating it with limited oxygen and steam at high temperatures.

- The scheme provides **20% financial support for plant costs and ensures long-term coal supply for 30 years**.
- Indian scientists have already **developed indigenous DME technology** for LPG substitution.
- A major challenge is that **Indian coal has high ash content, making it less efficient**.

- India also faces **limited current gasification capacity and lags behind countries like China**.
- To succeed, India needs **more investment, better technology, and large-scale expansion**.
- The key idea is that **developing indigenous technology ensures long-term energy security**.

A unified policy architecture for India's energy future

Prelims: General Studies Paper - 1
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1. Why does India need a Unified National Energy Framework?

- India **aims to achieve energy self-reliance by 2047 and net-zero emissions by 2070**.
- Energy **demand will continue to rise due to industrialisation, urbanisation and economic growth**.
- India **remains dependent on imports** for a significant share of oil and natural gas.
- Renewable energy capacity increased from ~40 GW (2015) to ~260 GW (2025)**, making coordination across energy systems essential.
- The **Indian National Science Academy recommends a unified framework** to align energy resources, technologies and institutions.

2. What are the Four Pillars of the Proposed Framework?

- Adequacy:** Ensure reliable and diversified energy supply through conventional and emerging sources, modern infrastructure, storage and digital technologies.
- Access:** Strengthen last-mile delivery, improve service quality and expand decentralised energy solutions.
- Affordability:** Promote innovative financing and consumer safeguards to ensure an inclusive transition.
- Appropriate Sustainability:** Adopt Indian specific, development-oriented sustainability with support for local communities and workforce development.

- Balance energy security, affordability, sustainability and economic growth through integrated planning.

3. What are the Key Enablers and Priority Actions?

- Promote circular economy practices** across the energy sector.
- Deploy Carbon Capture, Utilisation and Storage** to reduce industrial emissions.
- Accelerate renewable energy deployment and support green hydrogen** and energy storage.
- Strengthen generation, transmission, storage and distribution** through modern infrastructure.
- Build institutional mechanisms for long-term coordination** and integrated governance.

4. What is the Roadmap for India's Energy Transition?

- Expand renewable energy, strengthen infrastructure** and support emerging clean technologies.
- Integrate low-carbon technologies** and expand the use of bio-resources.
- Develop a resilient, interconnected and diversified energy ecosystem**.
- Treat coal, renewables, biomass, natural gas, waste-to-energy and emerging clean technologies as complementary parts of one energy system**.
- Build a resilient, affordable and sustainable energy system to strengthen energy security** and support long-term national development.

In the Strait of Hormuz, Iran firmly draws its red lines

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. What is the issue over the Strait of Hormuz?

- The **Strait of Hormuz** is a **strategic maritime chokepoint** connecting the **Persian Gulf** with the **Arabian Sea**.
- After the **U.S.-Israel attack on Iran**, Iran asserted greater control over the strait, disrupting **free navigation**.

- Despite a **U.S.-Iran Memorandum of Understanding (MoU)**, tensions continue over the **future management of the strait**.

2. What does the U.S.-Iran MoU say about the Strait of Hormuz?

- Iran agreed to allow **safe passage of commercial ships** for **60 days**.
- It also agreed to remove **mines** and other **obstacles affecting navigation**.
- The MoU states that **Iran**, along with **Oman** and other **Persian Gulf countries**, will discuss the **future administration** of the strait.
- The agreement does **not** permanently guarantee **free or toll-free navigation**.

3. Why is the Strait of Hormuz important?

- It is one of the **world's busiest energy trade routes**, through which a significant share of **global oil and LNG exports** passes.
- Any disruption can affect **global energy supplies**, increase **oil prices**, and impact the **world economy**.
- Control over the strait gives a country significant **strategic** and **geopolitical leverage**.

4. What are the implications of Iran's growing control?

- Iran seeks to establish a greater role in the **long-term management** of the **Strait of Hormuz**.
- It proposes that ships use designated routes and coordinate with a new **Persian Gulf Strait Authority (PGSA)**.
 - ➔ The **Persian Gulf Strait Authority (PGSA)** is an **Iranian government agency**, established in **May 2026**, to **regulate maritime traffic** and **manage transit through the Strait of Hormuz**.
- The developments indicate that **Iran remains a major regional power** despite military pressure.
- For **India**, stability in the **Strait of Hormuz** is crucial for **energy security**, **maritime trade**, and **regional stability**.

Why has the govt. notified a new set of telecom rules?

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

Mains: General Studies - 3
Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

1. What are the key objectives of the Telecommunications Act, 2023 and the new 2026 Rules?

- The Union Government notified three rules under the Telecommunications Act, 2023:
 - ➔ The Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026
 - ➔ The Telecommunications (Authorisation for Captive Telecommunication Services) Rules, 2026
 - ➔ The Telecommunications (Authorisation for Provision of Miscellaneous Telecommunication Services) Rules, 2026
- The **Act replaces the Indian Telegraph Act, 1885 and the Wireless Telegraphy Act, 1933**.
- It **introduces an authorisation regime in place of the traditional licensing framework**.
- It **simplifies compliance and documentation for telecom operators** and Internet Service Providers (ISPs).
- It makes anti-spam enforcement a statutory obligation under the Act.

2. What are the major changes introduced for telecom operators and users?

- Telecom licences are **replaced by an authorisation system, simplifying regulation**.
- Existing telecom operators can **either switch to the new authorisation regime now or continue under their current licences until they expire**.
- The **Act's broad definition of "telecommunication" may allow the government to regulate messaging apps**.

- The Department of Telecommunications **proposed SIM-linked messaging and 6-hour WhatsApp Web logouts to curb spam.**

3. What important provisions of the Telecommunications Act have already been implemented?

- The **Universal Service Obligation Fund (USOF)** was renamed as the **Digital Bharat Nidhi**.

Digital Bharat Nidhi is a fund established under the Telecommunications Act of 2023 that replaced the erstwhile Universal Service Obligation Fund (USOF). It is managed by the Department of Telecommunications (DoT) to fund telecommunication services, research and development (R&D), and pilot projects in underserved rural, remote, and urban areas.

- The **government can take control of telecom infrastructure during war** or national security emergencies.
- The **Act retains the government's power to authorise phone and internet interception** through senior officials.

4. Why does uncertainty remain under the new telecom regime?

- The final rules **do not clearly mention satellite communication services such as Global Mobile Personal Communications by Satellite (GMPCS)**

Global Mobile Personal Communications by Satellite: It refers to satellite-based mobile communication services that provide voice, data, and internet connectivity directly through satellites, especially in remote and underserved areas.

- Approval for** satellite internet providers like **Starlink** is still pending.
- The **government is still deciding how to regulate or shut down satellite internet during national security emergencies.**
- Several implementation details, such as **eligibility criteria, exemption limits, and technical guidelines, are yet to be announced.**
- The **new authorisation system will be fully implemented only after the government issues further rules and directions.**

KEYWORDS

Civil Registration System (CRS) 2024 Report

- The Civil Registration System (CRS) 2024 **report records 99.1% birth registration and 99.4% death registration, reflecting near-universal registration coverage in India.**
- In 2024, **India registered 25.47 million births, 8.94 million deaths, and 81,117 stillbirths, with 69% of stillbirths occurring in urban areas.**
- The national **Sex Ratio at Birth (SRB) under CRS 2024 is 917 females per 1,000 males.**
- Among States/UTs, the **highest Sex Ratio at Birth based on registered events was recorded in Arunachal Pradesh (1,050)**, followed by Andaman and Nicobar Islands (984), Meghalaya (974), Mizoram (972), and Kerala (970), while the **lowest was recorded in Nagaland (865), Lakshadweep (865), and Jharkhand (890).**
- The **Office of the Registrar General & Census Commissioner**, India compiles and publishes the annual Civil Registration System (CRS) report, which provides official statistics on registered births, deaths, and stillbirths across the country.

Cholera

- Cholera** is a **highly infectious bacterial disease** that causes **severe acute watery diarrhoea** and can be **fatal within hours** if left untreated.
- It is caused by the bacterium **Vibrio cholerae (V. cholerae).**
- Globally, cholera causes an estimated **1.3-4 million cases** and **21,000-143,000 deaths** every year.
- Most infected people have no or mild symptoms, but they can spread the bacteria through their faeces for 1-10 days.**
 - ☞ The disease spreads rapidly in areas with **poor sanitation and unsafe drinking water.**
- Most cases can be treated with **Oral Rehydration Solution (ORS)**, while **severe cases** require **intravenous (IV) fluids, ORS, and antibiotics.**
- The **Oral Cholera Vaccine (OCV)** is an important tool for the **prevention and control** of cholera.

National Stock Exchange (NSE)

- The **National Stock Exchange (NSE)** was **incorporated in 1992**.
- It was **recognised as a stock exchange by SEBI in April 1993**.
- **NSE** was the **first stock exchange in India** to introduce **electronic (screen-based) trading**, revolutionising securities trading in the country

Fusiform Gyrus

- Scientists recently discovered that this brain region becomes active when we hear simple, visual, and playful words like **“killjoy”** or **“scatterbrain.”** This suggests that early humans may have used this visual part of the brain while developing the first forms of language.
- It is an **ancient part of the brain**, meaning it evolved long before the newer regions that handle complex grammar and modern language.
- Its main role is **visual processing**, not language, and it helps us understand metaphors and descriptive words by allowing us to **mentally picture abstract ideas**.
- It also has a **special role in facial recognition**, acting like a scanner that helps us quickly identify familiar faces.
- If this area malfunctions, it can cause problems like **face blindness (prosopagnosia)**, where a person cannot recognize familiar faces, and it may also be linked to **reading difficulties like dyslexia**.

Inverted Duty Structure

- It is in the news because, as **GST completed nine years in July 2026**, experts highlighted it as a **persistent structural issue** that still remains unresolved.
- It is defined as a taxation mismatch where the tax rate applied to **raw materials and intermediate inputs** is higher than the tax rate levied on the final finished product.
- It unintentionally **harms domestic manufacturing** by making **local production more expensive**, thereby giving an unfair cost advantage to cheaper imported finished goods.

- The primary challenge in resolving it is that **rationalizing the tax rates** is difficult; lowering input taxes causes revenue loss for the government, while raising output taxes inflates prices for the end consumer.