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Dear Aspirants,

Welcome to the April edition of CSB IAS's iMPACT. As the intensity of Civil Services preparation rises with Prelims approaching in May, this edition brings you key insights into critical issues shaping India's political, economic, and social landscape.

This month, we cover important topics such as **militancy in Kashmir, the Indus Water Treaty, the Waqf Amendment Bill, and the Periodic Labour Force Survey.** We also analyse **75 years of India-China diplomatic relations and the WHO Pandemic Treaty**, among other significant developments.

By connecting these topics to the UPSC syllabus, iMPACT remains your trusted resource for refining analytical skills and improving mains answer-writing proficiency.

Happy Learning!

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GENERAL STUDIES-I

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1. RARE EARTH ELEMENTS

iMPACT ANALYSIS

SYLLABUS:

GS 1 > Geography > Resource geography

REFERENCE NEWS:

- Recently, China announced new **export restrictions on seven rare earth elements (REEs)**. This move comes shortly after US President Donald Trump reimposed tariffs on several trade partners, signalling escalating trade tensions.

MORE ON NEWS:

- Rare earth elements are crucial for **manufacturing high-value goods**, including in the fields of defence and clean energy, as well as everyday items **like smartphones and electronic displays.**
- Since the 1990s, **China has held an unrivalled dominance** over rare earths, supplying **85 to 95 per cent of the world's demand.**
- **Several shipments of rare earths have come to a halt** in recent days. Amid a rapidly changing global trade landscape, several media reports have warned that prolonged delays and restrictions could have **major repercussions for multiple industries.**

WHAT ARE RARE EARTH ELEMENTS (REE)?

- Rare Earths are a group of **17 elements starting with lanthanum in the periodic table** of elements and include scandium and yttrium.
- They are **moderately abundant** in earth's crust **but not concentrated enough** to make them economically exploitable.
- The REEs find key applications in **defence, electronics, energy systems etc.**
- For instance, **magnets made from rare earths are many times more powerful than conventional ones.**
- Along with **energy critical elements (ECE), such as, lithium** which has become ubiquitous battery material, REEs have emerged as **strategic elements** essential for sustainable energy systems.
- The Rare-earth Elements (REE) are **a collection of 17 elements**, namely, scandium, yttrium and lanthanides (15 elements in the periodic table with atomic numbers 57 to 71, namely, lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), promethium (Pm), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb) and lutetium (Lu).

The term "rare earth" originates from the early discoveries of these elements in **oxide-type minerals (then called "earths")** like gadolinite, which was first extracted from a mine in Ytterby, Sweden. Despite the name, **most rare-earth elements (REEs) are not particularly rare in the Earth's crust.**

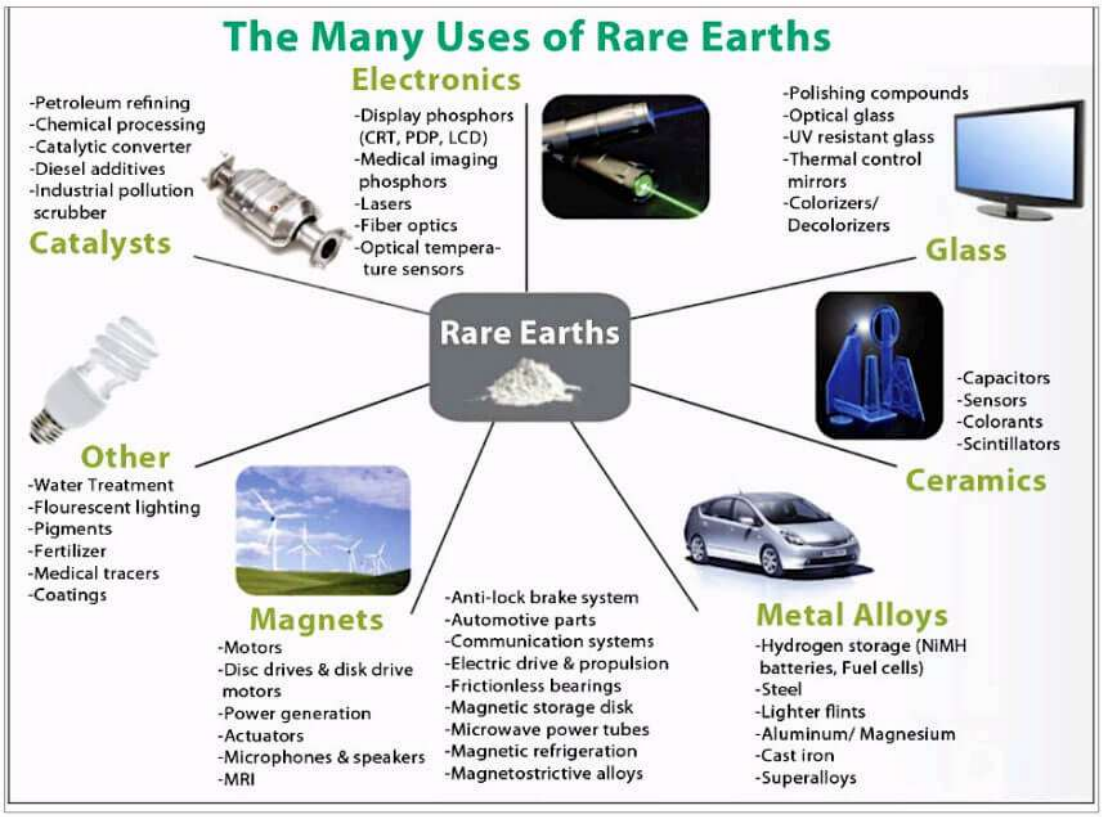
- **They are relatively abundant**, though **economically mineable concentrations are less common.**
- For example, **cerium**, one of the REEs, is the **25th most abundant element** in the Earth's crust, found at about 68 parts per million. The only **exception is promethium**, which is highly unstable and radioactive, making it extremely rare in nature.

REE Types:

- **Light REEs (LREEs):** La, Ce, Pr, Nd, Pm, Sm, Eu
- **Heavy REEs (HREEs):** Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu

Key properties:

- **High melting point, thermal conductivity, density, and conductivity.**
- Some REE-bearing minerals contain **thorium and uranium.**



STATS:

- India holds approximately **6.9 million tonnes** of rare earth oxide (REO) equivalent reserves, making it the **5th largest holder globally** after China, Vietnam, Brazil, and Russia (source: Rare Earths – Indian Minerals Yearbook 2022)
- Globally, the total rare earth reserves are **130 million tonnes**, **with China accounting for 44 million tonnes, or about 34% of the total** (source: Rare Earths – Indian Minerals Yearbook 2022).

- The **government aims to triple REO production by 2032** and enhance domestic industrial use, especially for **EVs and green energy**.
- **In India, monazite is the principal source** of rare earths and thorium. Monazite is a complex phosphate of thorium and Rare-earth minerals [(Ce, La,Nd, Th,Y) PO4] and this is **radio active in nature.**
- India's **monazite resources** are estimated at **12.73 million tonnes**, mainly located in **Andhra Pradesh, Odisha, Tamil Nadu, and Kerala.**
- India faces a **supply surplus in light rare earths (e.g., La, Ce, Nd), but a deficit in heavy rare earths** like Dysprosium and Terbium, which are not extractable in significant quantities from domestic deposits .
- In 2020–21, India imported **470.61 tonnes of rare earth metals (mainly from China)** and exported 3.67 tonnes, primarily to the UAE and Bhutan.

THE STRATEGIC SIGNIFICANCE OF RARE EARTH ELEMENTS (REES)

- **Backbone of Critical Technologies:**
  - The foremost significance of REEs lies in their **central role in high-tech applications**.
  - For instance, REEs like neodymium, dysprosium, and samarium are essential for manufacturing **high-performance magnets**, which are used in virtually every **compact and efficient electric motor—from laptop cooling fans to electric vehicle (EV) drivetrains and wind turbines.** This makes REEs **foundational to the clean energy transition**.
  - Their ability to enable **smaller, lighter, and more efficient components** gives them technological value that few other materials can match.
- **Irreplaceability in Defense and Security:**
  - REEs are used in **missile guidance, satellite communication, radar systems, sonar, and advanced optics**.
  - For instance, gadolinium is a neutron absorber in nuclear submarines, while samarium-cobalt magnets are favored in aircraft engines due to their thermal stability.
  - **A disruption in supply could directly impair a country's military readiness**.
- **Indispensability in Modern Consumer Life:**
  - **Smartphones, LED screens, rechargeable batteries, and digital cameras** all depend on rare earths.
  - Without elements such as europium and terbium, **modern display technologies** would lack the capacity to render the **vivid and precise color output.**
- **Economic Leverage and Trade Dependence:**
  - From a geopolitical perspective, REEs represent **economic leverage in global trade relations**.

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- **With China controlling over 70% of global rare earth production and nearly all refining capacity**, any restriction—such as the one imposed recently on seven REEs—is not just a supply issue, but a political signal.
- Countries dependent on these materials become **vulnerable to trade policy shifts**, making rare earths a **diplomatic bargaining chip** in broader conflicts **like the U.S.–China trade war.**

- **Limited Substitutability and Recycling Challenges:**
  - While research continues, **substitutes for REEs are either inferior or economically unviable**.
  - For instance, while **alternatives to neodymium magnets exist, they are less efficient or require costly redesigns** of motors and systems.
  - **Recycling REEs is also technologically complex and economically limited** due to their dispersion in tiny amounts across various devices. This means demand cannot be met by secondary sources in the near future, **sustaining dependence on mining and processing**.
- **Environmental and Regulatory Complexity:**
  - Paradoxically, while REEs are key to green technologies like EVs and wind power, **their extraction is environmentally damaging**. Mining often releases radioactive waste and toxic byproducts like cadmium and arsenic. This makes them significant from an environmental policy perspective, as nations must balance climate goals with sustainable resource extraction. India, for example, faces difficulty tapping into its 12.73 million tonnes of monazite resources due to radioactivity concerns and the legal classification of monazite as a "prescribed substance" under the Atomic Energy Act.
- **National Resource Strategy and Industrial Development:**
  - For developing economies like India, REEs hold the promise of **industrial self-reliance and high-value manufacturing**.
  - With ambitious goals to **expand EV production, smart grids, and aerospace technology**, India sees rare earths as a pillar of **"Atmanirbhar Bharat" (self-reliant India).** But unlocking this potential demands investment in refining, skill development, and environmentally safe practices—signaling their role in long-term economic planning and industrial policy.

CHALLENGES IN RARE EARTH PRODUCTION, AVAILABILITY, AND MINING IN INDIA:

- **Regulatory and Institutional Challenges:**
  - The **Indian Rare Earths Limited (IREL),** a state-owned entity, maintains a **near-monopoly over REE production**. This dominance has **discouraged private sector participation**, limiting competition and innovation.
  - Also, because **monazite sands contain thorium, which is radioactive**, mining them is **strictly regulated by the Department of Atomic Energy**. This makes getting licenses and running operations more difficult.

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- **Environmental and Social Concerns:**
  - REE mining and processing are environmentally intensive, **generating toxic and radioactive waste.**
  - For instance, **mining one ton of rare earths can produce up to 2,000 tons of toxic waste.** Additionally, mining activities often intersect with ecologically sensitive zones and indigenous communities, leading to social conflicts and environmental degradation.
- **Infrastructure and Technological Limitations:**
  - India lacks adequate infrastructure and technological capabilities for efficient REE extraction and processing.
  - The **absence of advanced separation and refining facilities** hampers the country's ability to move up the value chain, resulting in the export of raw materials and import of finished products.
- **Global Supply Chain Dependencies:**
  - Despite possessing significant REE reserves, **India remains dependent on imports, particularly from China**, for certain critical rare earths, especially **Heavy REEs**. This dependency exposes the country to geopolitical risks and supply chain disruptions.
- **Exploration and Data Deficiencies:**
  - **Comprehensive geological surveys and data on REE deposits are limited** in India. This lack of detailed information hinders strategic planning and investment in the sector.
- **Policy and Investment Gaps:**
  - While the government has initiated reforms to attract private investment, challenges persist in terms of policy clarity, ease of doing business, and financial incentives. These factors deter potential investors and slow down sectoral growth.

INDIA'S KEY INITIATIVES ON RARE EARTH ELEMENTS (REES):

- **Government-Led Operations**: The rare earth sector in India is primarily driven by two public sector entities—**IREL (India) Ltd.**, a central government undertaking under the Department of Atomic Energy, and **KMML (Kerala Minerals and Metals Ltd.)**, a Kerala state government enterprise. Mining of monazite, the primary rare earth-bearing mineral, is restricted to government agencies due to its **thorium content**, which is regulated under atomic energy laws.
- **Capacity Expansion**: India plans to **triple REO production by 2032**. Current refining capacity is 5,000 tonnes/year, with expansion underway.
- **Technology Projects**: The **Rare Earth Permanent Magnet Plant** in Vizag and **Theme Park in Bhopal** focus on magnets and R&D, with support from BARC and DMRL.
- **Exploration Efforts**: New REE-bearing areas are being explored in Gujarat, Odisha, Tamil Nadu, and Chhattisgarh by AMD.
- **Import Reduction**: India reduced its rare earth import dependence on China from 90% in 2010 to 60% in 2023.

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- **Policy & Industrial Use**: REEs are included in India's **PLI scheme** to boost their use in EVs, defense, and renewable energy.

WAY FORWARD:

- **Regulatory Reforms**: Streamline licensing processes and ease regulatory constraints to enable greater private sector participation, particularly in exploration and refining.
- **Technology and Infrastructure Investment**: Invest in advanced separation and refining technologies to strengthen India's position across the REE value chain.
- **Public-Private Partnerships**: Encourage collaborations between PSUs, research institutions (like BARC/DMRL), and private players for R&D and industrial application.
- **Environmental Safeguards**: Establish strict yet efficient environmental management systems to mitigate the ecological impacts of REE mining and processing.
- **Strategic Reserves and Recycling**: Develop REE stockpiles and invest in recycling technologies to reduce external vulnerabilities.
- **Global Collaborations**: Strengthen bilateral ties with REE-rich countries and tech partners to secure supply chains and share expertise.

CONCLUSION:

- Rare earth elements are central to India's clean energy, defense, and industrial ambitions. By addressing existing challenges and leveraging its reserves strategically, India can become a key global player in the rare earth ecosystem

PRACTICE QUESTION

Q. "Rare earth elements are not just another set of industrial materials; they are *strategic enablers* of modern civilization and national power". Discuss the strategic significance of rare earth elements (REEs). Highlight the key challenges India faces in harnessing its rare earth potential. (15 marks, 250 words)

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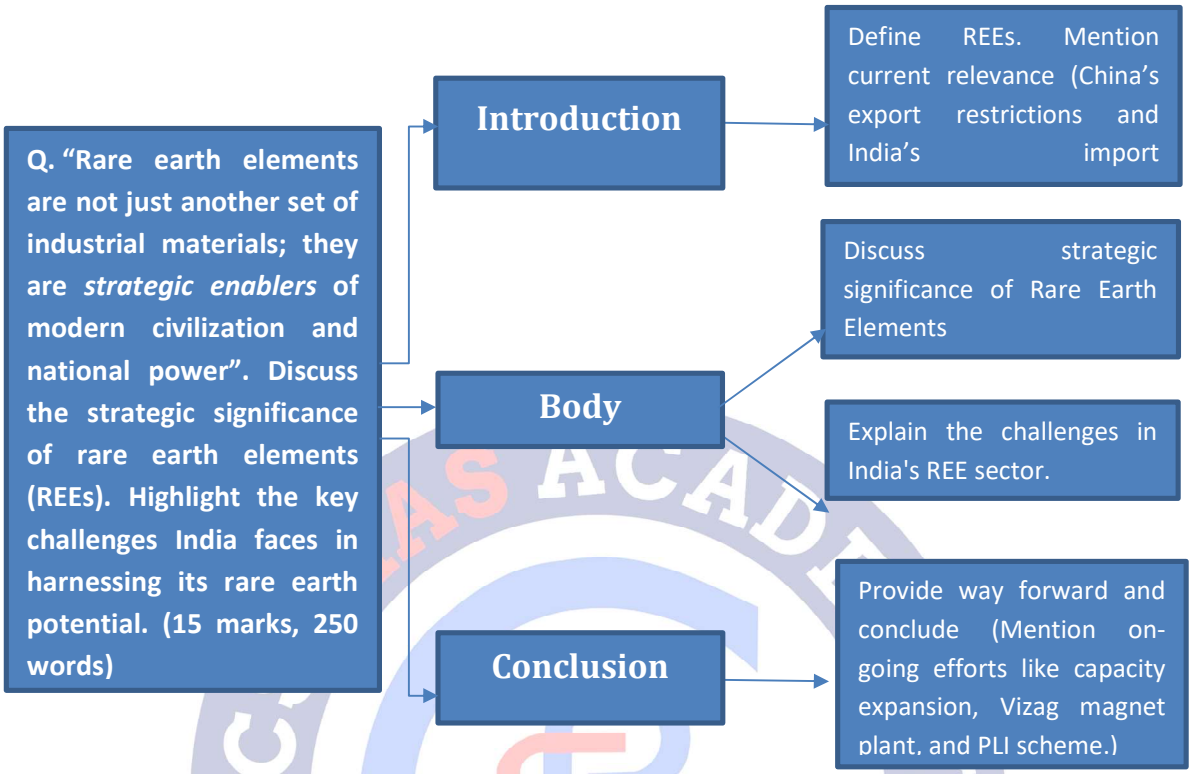
APPROACH



MODEL ANSWER

Rare Earth Elements (REEs) are a group of 17 metals **vital to advanced technologies across energy, defense, and electronics.** Far from being just industrial inputs, they are *strategic assets* that shape national power and technological leadership. Though India holds the **world's fifth-largest REE reserves**, **it remains import-dependent—especially on China**, which dominates global supply. Harnessing these resources is thus critical for India's strategic autonomy and future readiness.

Strategic Significance of Rare Earth Elements:

1. **Foundation of Clean and Advanced Technologies**: REEs like neodymium, samarium, and dysprosium are essential for making **high-performance permanent magnets** used in electric vehicles (EVs), wind turbines, and drones—making them vital to the global clean energy transition.

2. **Critical to National Defense and Security**: REEs are irreplaceable in defense systems including **missile guidance, radar, satellite communications, nuclear submarines**, and aircraft engines. Disruption in REE supply directly impacts military readiness and national security.

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3. **Widespread Use in Consumer Electronics**: Everyday products such as **smartphones, LED displays, cameras, and rechargeable batteries** rely on REEs like europium and terbium, which enhance color, efficiency, and miniaturization.

4. **Backbone of Strategic Industries**: REEs are indispensable for **space, aerospace, robotics, and medical imaging technologies**. Their unique magnetic, optical, and thermal properties make them crucial for high-end applications.

5. **Limited Substitutes and Recycling Barriers**: Alternatives to REEs are either less effective or too costly. Recycling is also technologically difficult and economically limited due to **tiny, dispersed quantities** in electronic waste.

6. **Geopolitical and Economic Leverage**: With **China controlling over 70%** of global REE production and refining, these elements serve as a powerful **geopolitical tool**. Export restrictions, like the recent Chinese move, show their role in **global strategic influence and trade politics**.

Challenges in India's REE Sector:

1. **Regulatory and Institutional Constraints:** India's REE sector is dominated by **IREL (India) Ltd.**, a central PSU under the Department of Atomic Energy. Due to the **radioactive thorium content** in monazite, mining is heavily regulated, limiting private sector entry and innovation.

2. **Environmental and Social Impact:** REE mining generates **radioactive and toxic waste**, such as cadmium and arsenic. Mining activities often overlap with **ecologically sensitive areas**, creating environmental and social challenges.

3. **Infrastructure and Technology Gaps:** India lacks **advanced refining and separation technologies**, resulting in **low value-addition**. Most REE output remains in raw or intermediate form, limiting domestic industrial application.

4. **Dependence on Imports:** India has a **surplus of light REEs (e.g., La, Ce, Nd)** but lacks significant deposits of **heavy REEs** like **dysprosium and terbium**, leading to **continued import dependence**, primarily on China.

5. **Poor Geological Data and Exploration:** There is a lack of comprehensive, modern exploration data on inland and deep-sea REE deposits, making **strategic planning and investment** difficult.

6. **Policy and Investment Hurdles:** Despite reforms, **policy uncertainty**, **slow approvals**, and **limited financial incentives** continue to deter private and foreign investment in the sector.

Way Forward:

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- **Regulatory Reforms**: Ease licensing norms, especially for exploration and non-nuclear uses of monazite-based REEs.
- **Invest in R&D**: Promote domestic innovation in REE refining and magnet production through public-private-academic partnerships.
- **Environmental Safeguards**: Enforce sustainable mining guidelines and improve waste management infrastructure.
- **Diversify Supply Chains**: Collaborate internationally with REE-rich countries to secure alternate sources and reduce dependence on China.
- **Strengthen Data and Exploration**: Enhance geological surveys and deep-ocean exploration under missions like **Deep Ocean Mission**.
- **Expand Industrial Ecosystem**: Use schemes like the **Production-Linked Incentive (PLI)** to support EVs, electronics, and defense manufacturing using REEs.

Rare earth elements are not just industrial commodities—they are **strategic enablers of India's clean energy, digital, and defense future**. The government has taken notable steps such as developing the **Rare Earth Permanent Magnet Plant (Vizag)**, launching **exploration drives across coastal and inland regions**, and setting a goal to **triple REO production by 2032**. However, to become a global player, India must scale its policy, technology, and sustainability efforts to unlock the full potential of its rare earth resources.

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2. INDIA AND THE ARCTIC REGION

iMPACT ANALYSIS

SYLLABUS:

GS 1 > Geography > Economic geography > Resource geography

REFERENCE NEWS:

- The Arctic, often viewed as a harbinger for climate change, is undergoing rapid transformations, especially with the **shrinking of its sea ice**. Global trade is also swinging like a pendulum, with potential headwinds from the U.S. pushing **nations to explore alternative trade strategies.**
- In this changing landscape, the Arctic region is becoming a **critical point of geopolitical leverage. As the ice melts, new trade routes are opening**, presenting **both opportunities and challenges.** Nations like India are considering how to position themselves in this evolving global order, balancing economic opportunities with the **need to protect the fragile Arctic ecosystem.**

THE ARCTIC REGION

The Arctic region, or the Arctic, is a geographic region spreading around the North Pole.

Location:

- The **Arctic Circle (66° 33' N)** delimits the Arctic in terms of solar radiation.
- It consists of the Arctic Ocean, adjacent seas, and parts of Alaska, Northern Canada, Scandinavian countries, and Russia.

Climate:

- The Arctic's climate is characterized by **cold winters and cool summers**.
- The monthly average temperature in the Arctic is **below 10 ° C throughout the year.**

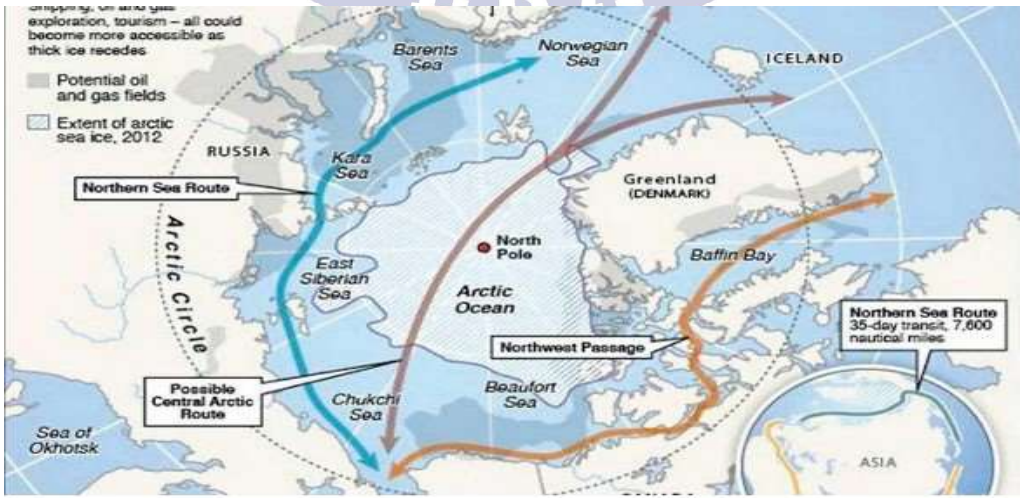
Vegetation:

- Arctic vegetation is composed of plants such as **dwarf shrubs, herbs, lichens, and mosses**, which all grow relatively close to the ground, forming tundra.
- Trees rarely grow in the Arctic, but in its warmest parts, shrubs are common and can

reach 2m in height.
Human inhabitations: ○ Only about **4 million people** live in the Arctic worldwide. ○ The economy mostly comprises of **oil and gas extraction, fishing and tourism.**

SIGNIFICANCE OF ARCTIC REGION:

- **Influence on global climate:**
  - Arctic is one of the **major cryosphere in the world** and have a **profound impact on the global climate and sea levels.**
  - Its **permafrost is a major carbon sink** which helps regulate the global temperatures.
- **Metallic and energy resources:**
  - The territories in the Arctic Circle have **large minerals, particularly, iron ore, gold, nickel, copper and uranium.**
  - Projections show that the **area is home to an estimated 13% of Earth's reserves.**
  - Also, the explorations are expected to pick up as Arctic shipping develops further in the future.
- **Biotic resources:**
  - Apart from the minerals, the **Arctic regions is also a source of fishing and is often called the 'kitchen of Europe'.**
  - Also, the releases of new lands as a result of melting of ice will lead to potential development of agriculture in the region.
- **Navigation:**
  - The melting sea ice in the region could potentially open a new trade route from Europe to east Asia.
  - Trial voyages have already begun along the Northern Sea route.
  - Experts say **it could reduce the travel distance from east Asia to Europe from the 21,000 kms it takes to go via the Suez Canal, to 12,800 kms.**



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- **Geopolitical:**
  - The opening of the new sea routes and the **scramble for resources makes for new geopolitics in the region.**
  - It could **redefine the significance of strategic choke points such as the Suez Canal and Malacca strait**.
  - Countries have already started making inroads into the region.**For example,** China has referred to itself as **a 'Near-Arctic state'** in its Arctic Policy and put forth the idea of a **'Polar Silk Road'** as part of its larger Belt and Road Initiative (BRI).

OPPORTUNITIES AND CHALLENGES ASSOCIATED WITH MELTING ARCTIC ICE:

Opportunities:

- **New Trade Routes:** The opening of the **Northern Sea Route (NSR)** offers a shorter and more efficient shipping route **between Europe and Asia**, saving time and reducing freight costs. This could revolutionize global trade and is a major opportunity for nations like India.
- **Access to Resources:** The Arctic holds vast **untapped natural resources, including oil, gas, and minerals.** As the ice melts, these resources become more accessible, presenting economic opportunities for nations looking to secure energy supplies.
- **Maritime Infrastructure Development:** The demand for icebreakers and Arctic-compatible vessels creates opportunities for countries to expand their **maritime infrastructure and technology**, boosting economic sectors like shipbuilding.
- **Geopolitical Influence:** The changing Arctic landscape grants nations leverage over new trade routes and resource access. This geopolitical power is critical for countries **like Russia, the U.S., and emerging players like India.**

Challenges:

- **Environmental Risks:** The Arctic ecosystem is fragile, and increased human activity, including shipping and resource extraction, poses significant environmental threats, such as oil spills and habitat destruction, contributing to global warming.
- **Geopolitical Tensions:** As the Arctic opens up, territorial disputes intensify. Nations are vying for control over resources and shipping lanes, complicating international relations and posing challenges for cooperation.
- **Sustainability vs. Economic Growth:** Exploiting the Arctic's resources conflicts with the need to protect the environment. Nations must balance economic gains with sustainable practices to avoid long-term ecological damage.
- **Impact on Indigenous Populations:** Arctic indigenous communities face disruptions to their traditional lifestyles due to environmental changes and industrial activities, raising concerns about their rights and livelihoods.
- **Regulatory Complexity:** The legal frameworks governing Arctic resource extraction and shipping are evolving, leading to potential disputes over territorial claims and

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control. Effective international cooperation is essential for managing these challenges.

INDIA'S INVOLVEMENTS IN THE ARCTIC:

- **Himadri:**
  - **Till date, India's Arctic research objectives are centered on ecological and environmental aspects, with a focus on climate change.** India, for one, opened Himadri, **its only research station in the region in 2008.**
  - In December 2023, India launched its first winter expedition to the Arctic region to conduct unique scientific observations **during polar nights**, where there is no sunlight for nearly 24 hours and sub-zero temperatures (as low as -15 degrees Celsius).
  - **Since 2008**, India operates a research base in the Arctic named **Himadri**, which has been mostly hosting scientists during the summer (April to October).
- **India is an observer state in the Arctic council since 2013.**
- National Centre for Polar and Oceanic Research.
- Mineral exploration:
  - Indian firms have made significant investments in the region's mineral explorations. **Example: India's Oil and Natural Gas Corporation (ONGC) Videsh Ltd. holds 20% stake in Russia'a Sakhalin-I project.**

- **INDIA'S ARCTIC POLICY:**
  - **The policy, titled "India and the Arctic: building a partnership for sustainable development" represents a comprehensive approach that** balances scientific inquiry, environmental sustainability, and strategic interests **in the Arctic region.**
    - Its objectives are:
      - **Understanding the Arctic's impact on Indian monsoons.**
      - **Linking Arctic and Himalayan research.**
      - **Sustainable exploration of Arctic resources.**
      - **Investing in Arctic infrastructure.**
      - **Developing cryogenic seed storage facilities.**
      - **Encouraging sustainable tourism in the Arctic.**
      - **Cultural and educational exchanges with Arctic communities.**
      - **Monitoring environmental impacts of Arctic shipping.**

WHY INDIA NEEDS ARCTIC?

- **Expand energy basket:**
  - **Diversification of energy imports** remains a crucial endeavor for India.

- The Arctic, with its untapped reserves and friendly neighbours, offers an opportunity in this regard.

- **Address climate change:**
  - India's focus on the Arctic stems from its impact on sea level rise and the **potential but yet unclear effects of Arctic ice-melt on Indian monsoons**, which are crucial for agriculture vital to its economy and population.
- **Potential investments:**
  - With **13% of Earth's reserves, including iron ore and petroleum**, the Arctic offers investment opportunities for Indian companies like **GAIL and ONGC Videsh**, which are already active in the region.
- **Export of manpower:**
  - The discovery of resources and new shipping routes in the Arctic highlights the growing need for infrastructure, offering opportunities for **Indian collaboration and skilled labor** in developments like port construction.
- **Strategic benefits:**
  - Strong cooperation with the Arctic countries provides an opportunity to expand India's 'Act East' approach.
  - **For example: Linking the coastal city of Chennai to Vladivostok with a maritime route** essentially means Russia's Far East would extend to India as well. This can also help India counter China's Belt and Road initiative.

- **Benefit research activities:**
  - Partnering with top polar research institutions in Arctic countries can aid India's Arctic efforts and help address its domestic challenges
  - **For example:** Arctic research will help India's scientific community to study melting rates of the **third pole — the Himalayan glaciers**.

CONCERNS OVER ARCTIC REGION:

- **Global Warming Impact**: The Arctic is warming at twice the global rate, leading to significant sea ice reduction and large carbon reserves in permafrost.
- **Territorial Disputes**: Climate change is prompting more intense territorial claims in the Arctic, despite UNCLOS ratification by most Arctic littoral states.
- **Global Commons Dispute**: There's debate over the Arctic's status as a global commons, with potential future disputes as the EU and China show interest.

> **Global commons** refer to regions or resources that are not owned by any one country and are accessible to all, such as the **high seas, outer space, and the Arctic.**

- **Lack of Guidelines**: Unlike Antarctica, the Arctic lacks comprehensive guidelines for stakeholder engagement in resource utilization, with the **Arctic Council** serving mainly as a **political forum without legal authority or frameworks** for sea routes and resource management.

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- **Rising Accidents Risk**: Increased commercial activities like oil extraction and shipping in the Arctic raise the risk of accidents and environmental disasters.

CHALLENGES FOR INDIA:

- **Question of global commons:**
  - Unlike Antarctica, the **Arctic isn't viewed as a 'Global Common'** by littoral nations, posing a challenge for India's engagement;
  - However, to avoid a confrontation in this regard, India has not used the term global commons in the policy, but instead uses the **term 'common heritage'.**
- **Geographical barrier:**
  - While countries such as China, Japan and South Korea may benefit considerably from connectivity and resources of the region, **India is not strategically located** to extract commercial advantages of the region.
- **Chinese dominance:**
  - China has engaged in energy deals and investments and has taken concrete steps in formulating **close ties with certain Arctic countries.**
  - China has referred to itself as a **'Near-Arctic state'** in its Arctic Policy. Hence, the Chinese presence will make it difficult for India to make significant inroads in the region.

WAY FORWARD:

- **Increased Research and Scientific Engagement:** India should expand its scientific presence in the Arctic by setting up additional research stations and procuring a polar research vessel. Strengthening research will enhance India's understanding of climate change and bolster its role in global scientific diplomacy.

- **Strengthening Diplomatic Engagement:** India needs to actively engage with Arctic nations and participate in multilateral forums like the Arctic Council. This will enable India to influence Arctic governance and foster collaborations in scientific research and climate mitigation.

- **Private Sector Participation:** Encouraging Indian businesses to invest in Arctic energy, infrastructure, and resource exploration is crucial. Public-private partnerships can drive technology and infrastructure development while enhancing India's economic footprint in the region.

- **Strengthening Arctic Policy:** India should periodically update its Arctic Policy to address emerging opportunities, particularly in energy security and sustainable development, aligning it with the broader "Act East" strategy.

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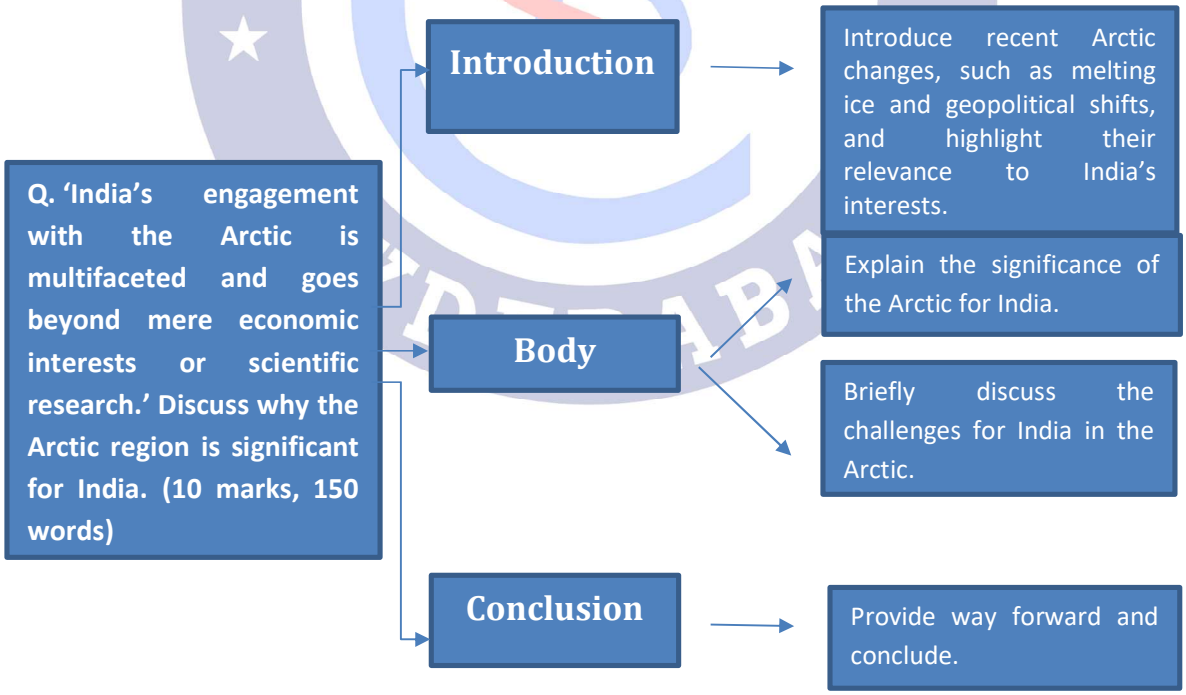
- **Addressing Geopolitical Concerns:** India must counter China's growing influence in the Arctic by building stronger ties with nations like Japan and South Korea. Joint initiatives and transparent governance will help balance China's presence.
- **Sustainable Resource Extraction:** India should advocate for sustainable and equitable resource extraction in the Arctic, ensuring that its participation aligns with global environmental standards while fostering economic growth.
- **Support for Indigenous Communities:** India should support initiatives that protect the rights and livelihoods of indigenous Arctic communities, strengthening its global reputation as a responsible actor in the region.

CONCLUSION: India's approach to the Arctic should be balanced, focusing on scientific research, strategic partnerships, and sustainable resource management. By expanding its presence and engaging responsibly, India can safeguard its interests while contributing to global Arctic governance.

PRACTICE QUESTION

Q. 'India's engagement with the Arctic is multifaceted and goes beyond mere economic interests or scientific research.' Discuss why the Arctic region is significant for India. (10 marks, 150 words)

APPROACH



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MODEL ANSWER

The Arctic, with its rapidly melting ice and growing geopolitical significance, is becoming a **focal point for global trade, resource exploitation, and climate change.** As the region transforms, nations like India must navigate the evolving opportunities and challenges it presents. India's engagement with the Arctic is driven not only by economic and scientific interests but also by the need to **address climate change, secure energy supplies, and maintain geopolitical influence** in this critical region.

Significance of the Arctic for India:

1. **Energy Security and Resource Exploration**:
    - The Arctic holds vast untapped **reserves of oil, gas, and minerals.** With India's growing energy needs, accessing these resources would d**iversify its energy supplies** and reduce dependence on unstable regions. Indian companies, like **ONGC Videsh**, are already involved in Arctic energy projects, ensuring long-term energy security.
2. **Access to New Shipping Routes**:
    - The **Northern Sea Route (NSR)**, as Arctic ice melts, presents a shorter, more **efficient trade route between East Asia and Europe**. This could save time and reduce costs, benefiting India's global trade links with both regions.
3. **Geopolitical Influence and Strategic Position**:
    - The Arctic's geopolitical importance is rising, especially with new trade routes and resource claims. India must assert itself to ensure its **economic and strategic interests are protected** in the face of competition from **major powers like the U.S., Russia, and China.**
4. **Scientific Research and Collaboration**:
    - Engaging with the Arctic helps India understand **global climate patterns, including the monsoon system**. India's **Himadri station**, operational since 2008, allows it to contribute to international scientific research and address climate challenges at home, such as the impact on Himalayan glaciers.
5. **Environmental Impact and Climate Change**:
    - The Arctic's melting ice contributes to **rising sea levels**, which threaten India's coastal cities and agricultural systems. The **region's permafrost**, crucial for regulating global temperatures, is also at risk, **affecting India's monsoons and agriculture.** Understanding these changes is vital for India's climate resilience.

Challenges for India in the Arctic:

1. **Geographical Disadvantage**: India's distance from the Arctic limits direct access to resources and shipping routes, requiring reliance on partnerships with Arctic nations.

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2. **Chinese Influence**: China's growing involvement as a "Near-Arctic state" complicates India's ability to assert its presence, with China's investments overshadowing India's interests.
3. **Environmental and Regulatory Risks**: The Arctic's fragile ecosystem and lack of clear regulatory frameworks increase environmental risks and complicate India's participation.
4. **Territorial Disputes**: Ongoing territorial claims and geopolitical tensions between Arctic nations may hinder India's ability to secure its role in the region.
5. **Indigenous Rights**: The rights of indigenous Arctic communities must be respected to ensure that India's involvement does not harm their livelihoods.

Way Forward:

- **Increase Scientific Engagement**: Expand research and invest in polar research vessels to enhance India's understanding of Arctic conditions and climate change.
- **Strengthen Diplomatic Ties**: Actively engage in Arctic Council forums and build strategic partnerships, particularly with Russia.
- **Encourage Private Sector Investment**: Promote private sector participation in Arctic energy, infrastructure, and resource exploration.
- **Advocate for Sustainable Practices**: Support responsible and sustainable resource extraction to protect the Arctic's ecosystem.
- **Support Indigenous Communities**: Ensure that India's Arctic engagement respects indigenous rights and promotes equitable development.

India's involvement in the Arctic is essential for addressing climate change, securing energy resources, and enhancing geopolitical influence. By expanding its scientific research, strengthening diplomatic relations, and advocating for sustainable practices, India can play a significant role in shaping the future of the Arctic while safeguarding its own long-term interests.

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GENERAL STUDIES-II

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3. WAQF (AMENDMENT) BILL 2025

iMPACT ANALYSIS

SYLLABUS:

GS 2 > Governance

REFERENCE NEWS:

- Recently, the Lok Sabha passed the Waqf (Amendment) Bill 2025 after a long and heated debate, with **288 members voting in favour** and **232 members voting against** the Bill.

MORE ON NEWS:

- Union Minority Affairs Minister Kiren Rijiju moved the Bill in the Lok Sabha. While moving the Bill, the Minister stated that it has **nothing to do with the religious practices of Muslims and pertains only to properties related to Waqf Boards.**
- He said the government wants to make the **Waqf Boards inclusive and secular**.
- He also added that the legislation is **not intended for the management of Masjid.**
- The Minister termed this legislation a prospective saying that it is **not retrospective** and **not intended to confiscate anyone's property.**
- Alongside the Waqf (Amendment) Bill, the Lok Sabha also passed the **Mussalman Wakf (Repeal) Bill, 2024**, which formally repeals the **Mussalman Wakf Act of 1923**, a colonial-era law that had **been rendered obsolete by the Waqf Act, 1995.**
- By repealing the outdated Mussalman Wakf Act, 1923, the Mussalman Wakf (Repeal) Bill, 2024, seeks to **consolidate the legal framework under the more recent Waqf Act, 1995, as amended by the Waqf (Amendment) Bill, 2025.**

WHAT IS 'WAQF'?

- Waqf refers to **properties dedicated exclusively for religious or charitable purposes under Islamic law**, and any other **use or sale of the property is prohibited**.
- Waqf means that the ownership of the property is now taken away from the person making Waqf and transferred and detained by Allah. **'Waqif'** is a person who creates a waqf for the beneficiary.
- As Waqf properties are bestowed upon Allah, in the absence of a physically tangible entity**, a 'mutawalli'** is appointed by the waqif, or by a competent authority, to **manage or administer a Waqf**. Once designated as waqf, the ownership is transferred from the person making the waqf (waqif) to Allah, making it irrevocable.

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ORIGIN OF THE CONCEPT OF WAQF

- In India, the concept of waqf dates back to the **Delhi Sultanate**, when **Sultan Muizuddin Sam Ghaor** dedicated two villages to the **Jama Masjid of Multan**, assigning their administration to Shaikhul Islam. As Islamic rule expanded, waqf properties grew in number.
- In the late 19th century, a dispute reached the **Privy Council in London**, where British judges described waqf as *"a perpetuity of the worst and most pernicious kind."* They declared it invalid.
- However, India did not accept this decision. The **Mussalman Waqf Validating Act of 1913** preserved waqf in India. Since then, waqf has remained legally protected.
- Later **Mussalman Waqf Validating Act of 1913** was replaced by the **Mussalman Wakf Act, 1923.**

KEY LEGISLATIVE DEVELOPMENTS IN WAQF ADMINISTRATION (POST INDEPENDENCE)

- **The Waqf Act, 1954:**
  - Post-independence, this Act marked the beginning of **centralised waqf governance**. The **Central Waqf Council** was established in 1964 to oversee state waqf boards created under Section 9(1) of the Act.
- **The Waqf Act, 1995**
  - **The Waqf Act, 1954 was replaced by the Waqf Act, 1995.**
  - This **Waqf Act, 1995** further strengthened waqf administration. It:
    - Gave overriding status to waqf law.
    - Defined roles for the Central Waqf Council, State Waqf Boards, and **mutawallis**.
    - Established **Waqf Tribunals** with powers equivalent to civil courts under the **Code of Civil Procedure, 1908**.
    - Made tribunal decisions **final and not appealable in civil courts**.
- **2013 Amendments:**
  - Amendments were introduced to **improve transparency and efficiency.** However, implementation showed that the **changes were insufficient** in resolving administrative and legal issues in waqf governance.

State Waqf Boards:

State Waqf Boards are **statutory bodies established under the Waqf Act, 1995**, responsible for managing waqf properties in each state. Their main functions include:

- Administering waqf assets in line with religious or charitable intent
- Approving property transactions (sale, lease, mortgage, etc.)
- Appointing **mutawallis (custodians)** to manage individual waqfs
- Reclaiming encroached properties and resolving local disputes

Central Waqf Council (CWC):

Set up in 1964, the CWC is an advisory body under the Ministry of Minority Affairs. It provides guidance on:

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- Policy and legal matters concerning waqf management
- Monitoring state waqf boards
- Promoting development and digitisation of waqf properties

The Council also helps **ensure uniform standards across states.**

Waqf Tribunals:

Waqf Tribunals are special courts created to settle waqf-related disputes. Their features include:

- Exclusive jurisdiction over waqf matters (ownership, management, etc.)
- Powers equivalent to civil courts under the Civil Procedure Code
- Tribunal decisions were final under the 1995 Act, but the **2025 amendment allows High Court appeals within 90 days**

STATS:

- Wakf Boards currently control **8.7 lakh properties spanning 9.4 lakh acres across India** with an estimated value of 1.2 lakh crores.
- **India has the largest waqf holding in the World.**
- Further, Waqf Board is the **largest landowner in India after the Armed Forces and the Indian Railways.**

Source: Ministry of Minority Affairs

KEY CHANGES INTRODUCED BY THE WAQF (AMENDMENT) BILL, 2025:

- **Revised Criteria for Establishing a Waqf:**
  - Only individuals who have **practiced Islam for at least five years** may now create a waqf, ensuring a sustained religious connection.
  - The amendment **abolishes the doctrine of "waqf by user"**, which previously allowed **properties to be declared waqf based on continuous communal use—even without documentation.**
  - This aims to prevent **unauthorized or undocumented claims** over property.
- **Inclusion of Non-Muslim Members in Waqf Institutions:**
  - The Bill alters the composition of both the **Central Waqf Council (CWC)** and **State Waqf Boards** by mandating the inclusion of **at least two non-Muslim members**.
  - This could potentially lead to a non-Muslim majority in some boards.
  - The government argues this promotes **diversity and transparency**, but critics say it undermines the **autonomy of Muslim communities** in managing their religious endowments.

The current composition (under Waqf Act 1995) of the Central Waqf Council (CWC) and State Waqf Boards is as follows:

- **Central Waqf Council (CWC):**
  - Chaired by the Union Minister in charge of Waqf.
  - Consists of up to 20 appointed members, **all of whom are Muslims**, with at **least two being Muslim women.**
- **State Waqf Boards:**

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- Members are elected from electoral colleges comprising Muslim Members of Parliament (MPs), Members of the Legislative Assembly (MLAs), and State Bar Council members.
- **All members are required to be Muslims.**

- **Enhanced Role of District Collector in Property Surveys:**
  - The Bill shifts the responsibility for **surveying and identifying waqf properties** from the **Survey Commissioner** to the **District Collector** or a designated Deputy Collector.
  - This change **centralizes decision-making**, especially in cases where waqf and government land claims overlap.
- **Restructuring of Waqf Tribunals:**
  - Under the **current law (Waqf Act 1995)**, Waqf Tribunals are typically composed of **three members**:
    1. A judicial officer (often a District Judge)
    2. A civil service officer
    3. **An expert in Muslim law and jurisprudence**
  - The **amended Bill revises this composition**, removing the requirement for a Muslim law expert.
  - The new structure includes:
    1. A **District Court Judge** as Chairperson
    2. A **Joint Secretary-level state government officer**
  - This restructuring is intended to enhance **efficiency, neutrality**, and ensure **administrative balance** in resolving waqf-related disputes.
- **Establishment of Separate Boards for Specific Sects:**
  - The Bill allows the creation of **separate waqf boards** for **Bohra and Agakhani sects**, where applicable.
  - This acknowledges the **distinct administrative needs** of different Muslim communities.
- **Application of the Limitation Act, 1963:**
  - The Bill **removes Section 107** of the Waqf Act, 1995, which had previously exempted waqf disputes from the **Limitation Act**.
  - Now, waqf-related claims must be filed within the prescribed legal timeframes, typically **12 years** for property recovery.
  - This brings waqf litigation in line with **standard civil procedure norms** and aims to reduce indefinite claims.
- **Judicial Appeals to High Court:**
  - Under the 1995 Act, **Waqf Tribunal decisions were final** and not subject to appeal.
  - The amendment introduces a provision allowing **aggrieved parties to file appeals in the High Court within 90 days**.
  - This change seeks to enhance **judicial oversight** and safeguard legal remedies for affected parties.

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WHY THE WAQF (AMENDMENT) ACT, 2025 WAS INTRODUCED TO AMEND THE WAQF ACT, 1995?

- **To Prevent Misuse of Land Provisions**:
  - The government aimed to stop the alleged misuse of **Section 40 of the Waqf Act**, under which lands were being arbitrarily declared as waqf without proper verification or ownership documents.
- **To Formalise Waqf Creation**:
  - The removal of the **"waqf by user" doctrine** and the requirement that a waqif must have practiced Islam for at least five years were introduced to ensure that waqf declarations are based on valid ownership and genuine intent.
- **To Improve Survey and Record Management**:
  - Shifting the survey responsibility from the **Survey Commissioner to the District Collector** is meant to streamline land surveys, align records with revenue data, and avoid duplication or confusion.
- **To Enhance Efficiency in Dispute Resolution**:
  - Restructuring Waqf Tribunals aims to improve their functioning **by including judicial and administrative officers**, simplifying the process and reducing delays.
- **To Increase Inclusivity and Transparency**:
  - Changes in the composition of the Central Waqf Council and State Waqf Boards—including the **addition of non-Muslim members and mandated representation from different Muslim sects such as Shia, Sunni, and backward Muslim communities**—are intended to promote inclusive governance and reflect the internal diversity of the Muslim community.
- **To Strengthen Central Oversight**:
  - The central government has been given greater powers to regulate registration, audit accounts (including via the CAG), and publish waqf-related information, **improving accountability and uniformity across states**.

CONCERNS ASSOCIATED WITH THE WAQF (AMENDMENT) ACT, 2025:

- **Inclusion of Non-Muslim Members in Waqf Boards:**
  - The Act mandates the inclusion of at least **two non-Muslim members** in the **Central Waqf Council** and **State Waqf Boards**. Critics argue this could **undermine the autonomy of Muslim communities** in managing their religious endowments and potentially lead to **non-Muslim majorities** in these religious institutions. They also raise concerns that non-Muslim members may **lack familiarity with Islamic practices**, which could impact the quality of decision-making.
- **Increased Government Oversight and Control:**

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- The Act gives **greater authority to government officials**, particularly **District Collectors**, to decide disputes over waqf land ownership—replacing Waqf Tribunals in some functions. Critics fear this may lead to **bureaucratic overreach**, **delays**, and potentially, **biased outcomes**. They argue this shift compromises the community-led nature of waqf governance and paves the way for **executive interference** in religious affairs.

- **Abolition of the "Waqf by User" Doctrine:**
  - By eliminating this doctrine, properties **long used for religious purposes without formal documentation** may no longer qualify as waqf. This change risks affecting **historical mosques, graveyards, shrines**, and other charitable institutions that were established through customary practices and communal use, not written deeds.
- **Violation of Religious Rights:**
  - **Many view the Act as a violation of Article 26 of the Constitution**, which guarantees the right of religious denominations to manage their own affairs in matters of religion. Critics argue that it restricts the Muslim community's autonomy over waqf governance, which is deeply rooted in Islamic law and tradition..
- **Restructuring of Waqf Tribunals:**
  - The removal of the requirement for an **expert in Muslim law** from the composition of Waqf Tribunals raises doubts about whether religious and legal nuances specific to waqf can be properly understood and adjudicated. Replacing them with administrative officers may **weaken the depth of legal understanding** in faith-sensitive cases.

- **Potential for Increased Disputes:**
  - By transferring certain powers from Waqf Tribunals to **District Collectors**, the amendment may create **confusion in jurisdiction**, lead to **increased legal challenges**, and **delay dispute resolution**. Critics fear this could further complicate property claims rather than streamline them.
- **Lack of Community Consultation:**
  - The Bill has been criticized for being introduced **without meaningful consultation** with Muslim stakeholders. Several organisations, including the **All India Muslim Personal Law Board**, have stated that the government did not seek their views. This raises broader concerns about **transparency, representation**, and **democratic process** in policy-making affecting minority rights.

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WAY FORWARD:

- **Ensure Wider Consultation:** Future amendments or rules should involve **inclusive consultations** with key stakeholders, including Muslim religious bodies, legal experts, and civil society, to build consensus and trust.
- **Safeguard Religious Autonomy:** The government should consider **limiting the role of non-Muslim members** in purely religious decisions to respect the community's right under **Article 26** to manage its own religious institutions.
- **Clarify Powers of District Collectors:** Detailed guidelines and **checks on the powers** given to district officials in land dispute resolution must be framed to avoid executive overreach and ensure fair adjudication.
- **Retain Religious Expertise in Tribunals:** While streamlining tribunal structures, **inclusion of experts in Muslim law**—even in an advisory capacity—can ensure religious and legal sensitivity in waqf-related judgments.
- **Transparent and Time-Bound Surveys:** Digitisation and property surveys must be carried out in a **transparent, time-bound, and consultative** manner to reduce disputes and misclassification of land.
- **Strengthen Internal Accountability:** Waqf Boards should be empowered with internal **audit mechanisms and performance monitoring** to prevent misuse by mutawallis or board officials.
- **Judicial Oversight and Grievance Redressal:** Timely appeals to High Courts and **independent grievance redressal systems** can help protect property rights and address community concerns.
- **Public Awareness and Education:** Efforts should be made to educate waqf stakeholders, particularly in rural areas, about **legal rights, registration processes, and reforms** under the new Act.

CONCLUSION:

- The Waqf (Amendment) Act, 2025 represents a significant shift in the management of religious endowments in India. While the government sees it as a move toward **greater transparency and inclusivity, critics view it as overreach into religious affairs.** The success of this reform will depend on **balancing administrative efficiency with constitutional protections,** ensuring that the **rights of religious communities are respected while promoting good governance and accountability.**

PRACTICE QUESTION

Q. Discuss the key changes introduced by the Waqf (Amendment) Bill, 2025. What is the rationale behind these changes, and what concerns have been raised against them? (15 marks, 250 words)

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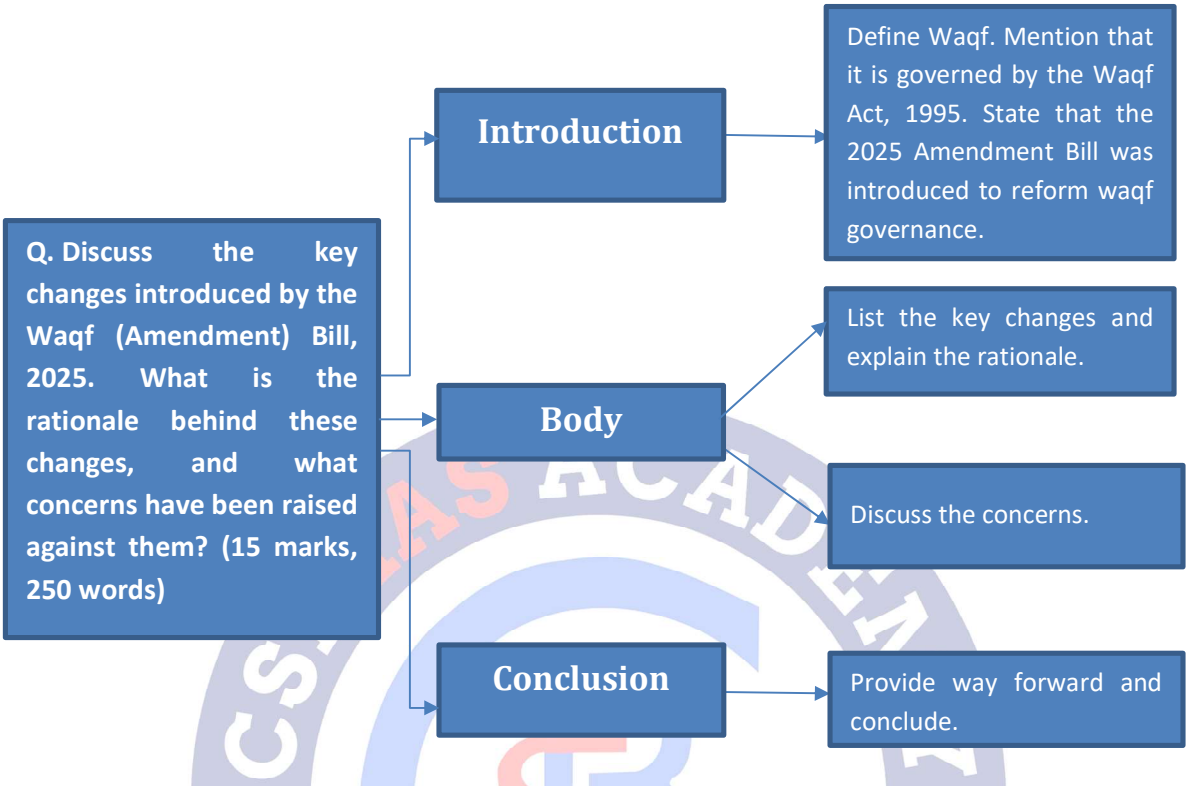
APPROACH



MODEL ANSWER

Waqf refers to the permanent dedication of property for religious or charitable purposes under Islamic law. In India, it has been regulated through laws like the Mussalman Wakf Act (1923), Waqf Act (1954), and currently the **Waqf Act, 1995**. To modernise and address gaps in this framework, the **Lok Sabha passed the Waqf (Amendment) Bill, 2025** with 288 votes in favour and 232 against, alongside the repeal of the colonial-era 1923 Act.

Key Changes Introduced:

1. **Revised Criteria for Creation of Waqf:** Only Muslims who have practiced Islam for at least five years can now declare waqf. The doctrine of "waqf by user" is abolished to prevent undocumented claims.
2. **Inclusion of Non-Muslim Members:** Both the **Central Waqf Council (CWC)** and **State Waqf Boards** must include at least two **non-Muslim members**, potentially altering board composition.
3. **Tribunal Restructuring:** The earlier requirement for a Muslim law expert in waqf tribunals has been removed. New composition includes a **District Judge** and a **Joint Secretary-level officer**.

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4. **Increased Role of District Collectors:** Authority over land surveys and ownership disputes now lies with **District Collectors**, shifting power from tribunals to bureaucracy.
5. **Application of Limitation Act:** Repeal of Section 107 makes the **Limitation Act, 1963** applicable to waqf disputes, imposing time limits for claims.
6. **Appeal to High Court:** Waqf Tribunal decisions, earlier final, are now appealable in the High Court within 90 days.
7. **Separate Waqf Boards:** Provision to establish **sect-specific boards** for Bohra and Agakhani communities.

Rationale Behind the Amendment:

1. **To Prevent Land Misuse:** Section 40 was reportedly used to declare land as waqf without proper ownership documents.
2. **To Improve Transparency and Efficiency:** Centralised surveys, audits, and digital record-keeping aim to strengthen property management.
3. **To Promote Inclusivity:** Broader representation of Muslim sects, women, and even non-Muslims is intended to make waqf governance more inclusive and professional.
4. **To Ensure Legal Clarity:** Applying the Limitation Act and allowing judicial appeals introduces legal certainty and oversight.
5. **To Address Complaints:** The government cited cases of encroachment, mismanagement, and lack of transparency in waqf institutions from both Muslim and non-Muslim citizens.

Concerns Raised:

1. **Religious Autonomy and Article 26:** Inclusion of non-Muslim members and removal of religious legal experts may infringe upon the Muslim community's right to manage its own religious affairs.
2. **Executive Overreach:** Giving District Collectors the power to decide land disputes raises concerns of **bureaucratic interference** and potential bias.
3. **Exclusion of Historical Waqf Sites:** The abolition of "waqf by user" could **invalidate undocumented religious properties** used communally for generations.
4. **Legal Uncertainty:** Shifting roles from specialised tribunals to administrative officers may cause **confusion and delays** in resolving disputes.

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5. **Lack of Stakeholder Consultation:** Groups like the **All India Muslim Personal Law Board** allege the amendments were made **without adequate community input**.

Way Forward

- **Ensure Stakeholder Engagement:** Future reforms must involve consultation with Muslim organisations, legal experts, and civil society.
- **Safeguard Religious Autonomy:** Clearly demarcate administrative and religious roles, especially regarding the participation of non-Muslims in waqf institutions.
- **Retain Religious Expertise:** Maintain a role for Islamic legal experts, even in advisory capacity, to ensure faith-sensitive adjudication.
- **Strengthen Oversight and Accountability:** Improve audit mechanisms, digitisation, and performance tracking of waqf boards.
- **Limit Bureaucratic Overreach:** Define the scope of District Collectors in dispute resolution with avenues for appeal and review.

The **Waqf (Amendment) Act, 2025** is a significant attempt at reforming religious endowment governance in India. While it seeks transparency, inclusivity, and modernisation, the concerns around religious autonomy and state control cannot be ignored. The way forward lies in **balancing governance reforms with constitutional protections**, ensuring that minority rights are respected while promoting efficient and accountable management of waqf properties.

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4. GOVERNOR

iMPACT ANALYSIS

SYLLABUS:

GS 2 > Constitution

REFERENCE NEWS:

In a significant ruling on the powers of a Governor, the Supreme Court set aside Tamil Nadu Governor R N Ravi's decision to withhold assent to 10 pending Bills, terming it illegal and erroneous in law.

The decision has a bearing on the **Governor's role in Opposition-ruled states,** which share a politically fraught relationship with the Centre.

OFFICE OF THE GOVERNOR:

The **Governor** is the **constitutional head of a state** in India, just as the President is at the Union level. The Governor acts as a **link between the Union and the States**, performing **ceremonial, executive, legislative, and discretionary functions**.

- **Appointed by**: President of India (Article 153)
- **Term**: 5 years (not fixed; holds office during the **pleasure of the President**)
- **Qualifications**: Must be a citizen of India/At least 35 years of age/Not be a member of Parliament or state legislature/Should not hold any office of profit.

Powers of the Governor

Executive Powers (Article 154)

- Appoints Chief Minister and other ministers.
- Appoints Advocate General, State Election Commissioner, and members of the State Public Service Commission.
- Acts as Chancellor of state universities.

Legislative Powers

- Summons, prorogues, dissolves the State Legislature (Article 174).Addresses the first session after elections and annual session.
- Lays the budget before the Assembly.
- Gives assent to Bills (Article 200), returns them, or reserves them for President.

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Discretionary Powers

- Appointing a CM in a hung assembly.
- Dismissing a government that has lost majority.
- Sending reports under **Article 356** recommending President's Rule.
- Reserving Bills for Presidential assent (Article 200).

CONSTITUTIONAL ROLE OF THE GOVERNOR IN ASSENT TO BILLS:

The Governor's powers with respect to assent to state legislation are governed primarily by **Article 200** of the Constitution, and supported by **Article 163**. When a Bill is passed by the **State Legislature**, the Governor has **four options** under Article 200:

- **Grant assent to the Bill** – It becomes law.
- **Withhold assent** – The Bill fails.
- **Return the Bill (non-money Bill only)** – For reconsideration by the Legislature.
- **Reserve the Bill for the consideration of the President** – Often done when the Bill conflicts with Union laws or involves matters of national interest.
- Importantly, the proviso to Article 200 states that if the legislature **passes the Bill again** (after reconsideration), the Governor **shall not withhold assent**.

Key Constitutional Interpretation and Judicial Rulings

- **Supreme Court in Nabam Rebia Case (2016):** Held that **Governor cannot sit on a Bill indefinitely**. Must **either return it with a message** or act on it "as soon as possible." Recognized the **mandatory tone** of the word "shall" used in Article 200.
- **State of Punjab v. Principal Secretary to the Governor (2023):** The Governor **withheld assent** on the ground that the Assembly sessions were "illegal." The Court ruled Governor **cannot obstruct the legislative process**. If assent is withheld, **returning the Bill with a message is the proper course**, not indefinite inaction.

ISSUES OF CURRENT ROLE OF GOVERNOR IN PASSING BILLS:

- **No Time Limit Specified in the Constitution:** The phrase "**as soon as possible**" has led to **Governors indefinitely sitting on Bills**.
    - This **"pocket veto"** by inaction was used by Governors in **Tamil Nadu, Punjab, and Kerala**, frustrating elected governments.
- **Discretionary Power Being Used Arbitrarily:** Governors have claimed **discretion** in withholding assent. The court clarified that this **discretion must be constitutional**, not arbitrary or personal.
- **Violation of Democratic Principles:** Governor, being an **unelected constitutional head**, is using his role to **override the will of the elected Assembly**. This **disrupts federalism** and the **balance of power** between the legislature and executive at the state level.

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- **Judicial Intervention Necessary:** With **no legislative clarity**, the Supreme Court had to step in under **Article 142** to **"do complete justice."** This reflects **institutional imbalance**, where courts have to resolve what should be constitutional processes.

DETAILS OF THE JUDGMENT:

The **Tamil Nadu Government** filed a writ petition in 2023 challenging the **delay and inaction** of Governor **R.N. Ravi**, who **withheld or delayed assent** to 10 Bills passed by the State Legislature, some for over three years.

The Governor **reserved the re-passed Bills for Presidential consideration**, which the state claimed was **constitutionally impermissible**.

Key Judicial Observations & Rulings

- **Governor Has No "Absolute Veto" or Discretion to Sit on Bills Indefinitely:** The Supreme Court, led by **Justice J.B. Pardiwala**, held that **once a Bill is re-enacted by the legislature**, the **Governor must grant assent**.
  - Reserving the Bill for Presidential assent **after it is re-passed** is **illegal and unconstitutional**.
  - The **first proviso to Article 200** mandates that the Governor **cannot withhold assent** when a Bill is returned and re-enacted.
- **Delay in Assent is Unconstitutional – No "Pocket Veto":** The Governor's **indefinite inaction** amounts to a **"pocket veto"**, which is **not permitted** under the Constitution. The phrase **"as soon as possible" in Article 200** implies **urgency and a constitutional obligation to act swiftly**.
- **Supreme Court Deemed Assent to the 10 Bills:** Using **Article 142** (power to do complete justice), the Court held that the **10 pending Bills shall be deemed to have received assent** on the day they were presented to the Governor the second time.
- The Governor's conduct was called **"not bona fide"**, and his actions showed **"scant respect"** for prior SC rulings, particularly the **State of Punjab v. Governor case (2023)**.
- **Timelines Prescribed for Governor's Action:** To prevent future delays, the Court prescribed **binding time limits** under Article 200:
  - If Governor **withholds assent** or **reserves Bill for President** (on ministerial advice): action within 1 month
  - If Governor **withholds assent contrary** to ministerial advice: the bill must be returned to the legislature within 3 months
  - If Governor **reserves the Bill** contrary to advice, this too must be done within 3 months.
  - If **Bill is re-passed** by legislature and re-presented: mandatory assent within 1 month.
  - The Court emphasized that these timelines are **not an amendment**, but a **judicial enforcement of constitutional expediency**.
- **Role and Conduct of the Governor Clarified:** The Governor is not a **political actor** but a **constitutional head** who must act in accordance with **democratic conventions**.

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He should act as a **"friend, philosopher, and guide," not as an inhibitor** of the legislative process. The Court emphasized that **political considerations should not influence** gubernatorial decisions.

- On the question of discretion, the bench noted that the phrase "**in his discretion"—** originally present in **Section 75 of the Government of India Act, 1935**—was **deliberately omitted when Article 200 was drafted**. This, the Court held, was a conscious decision meant to strip the Governor of any discretionary power.
- **Quote from Justice Pardiwala's Judgment:** "We are in no way undermining the office of the Governor… He must act in accordance with the settled conventions of Parliamentary democracy." "**The Governor must serve as a catalyst and not an inhibitor**… must work in harmony with the state machinery."

Implications of the Judgment

- **Precedent-setting decision** that curbs **executive overreach by Governors**.
- Will influence **pending and future disputes**, including the similar case involving the **Kerala Governor**.
- **Ends Constitutional Ambiguity**: For the first time, clear **time-bound duties** for the Governor are outlined.
- **Strengthens Federalism**: Reinforces that **elected state legislatures** cannot be undermined by **unelected constitutional heads**.
- **Judicial Innovation**: The use of Article 142 reflects the Court's **activism to protect democratic functioning** in the absence of legislative clarity.

WAY FORWARD:

- **Sarkaria Commission (1988) Recommendations**
  - Governor should be **apolitical**, not recently active in politics.
  - Should be appointed after **consultation with the Chief Minister**.
  - Use of Article 356 must be **a last resort**.
  - Should not misuse **discretionary powers** to interfere with the elected government.
- **Punchhi Commission (2010) Recommendations**
  - The **Governor must act as a neutral constitutional authority**.
  - Defined **clear limitations on discretion**.
  - **Impeachment procedure** for Governors to be introduced for accountability.
- **UK**: Ceremonial Monarch with no legislative or political interference.
- **Australia/Canada**: Governor-General acts only on advice of elected representatives.
- These models **reinforce respect for democratic mandates**, which Indian Governors must emulate.

Landmark Cases & Judicial Interpretation

- **Shamsher Singh v. State of Punjab (1974):** SC held that the **Governor must act on the aid and advice** of the **Council of Ministers**, except in a few well-defined situations, "The Governor is a constitutional or formal head; real power rests with the elected government."

- **Nabam Rebia v. Deputy Speaker (2016) – Arunachal Pradesh Case:** Governor **cannot summon the Assembly without the advice of the Council of Ministers**. Held that **Governor's discretion is limited** and must be **exercised constitutionally**.
- **Rameshwar Prasad v. Union of India (2006):** The Supreme Court struck down the **arbitrary use of Article 356** by the Governor in Bihar. Reasserted that the Governor's report **must be based on objective material** and subject to judicial review.
- **S. R. Bommai v. Union of India (1994):** One of the most important cases on Centre-State relations. Held that **Governor's report under Article 356** is subject to judicial review. Floor test is the only **legitimate way to test majority**.
- **State of Punjab v. Principal Secretary to Governor (2023):** Governor cannot refuse to assent to Bills by citing procedural issues. Must **either give assent or return the Bill** with a message for reconsideration.

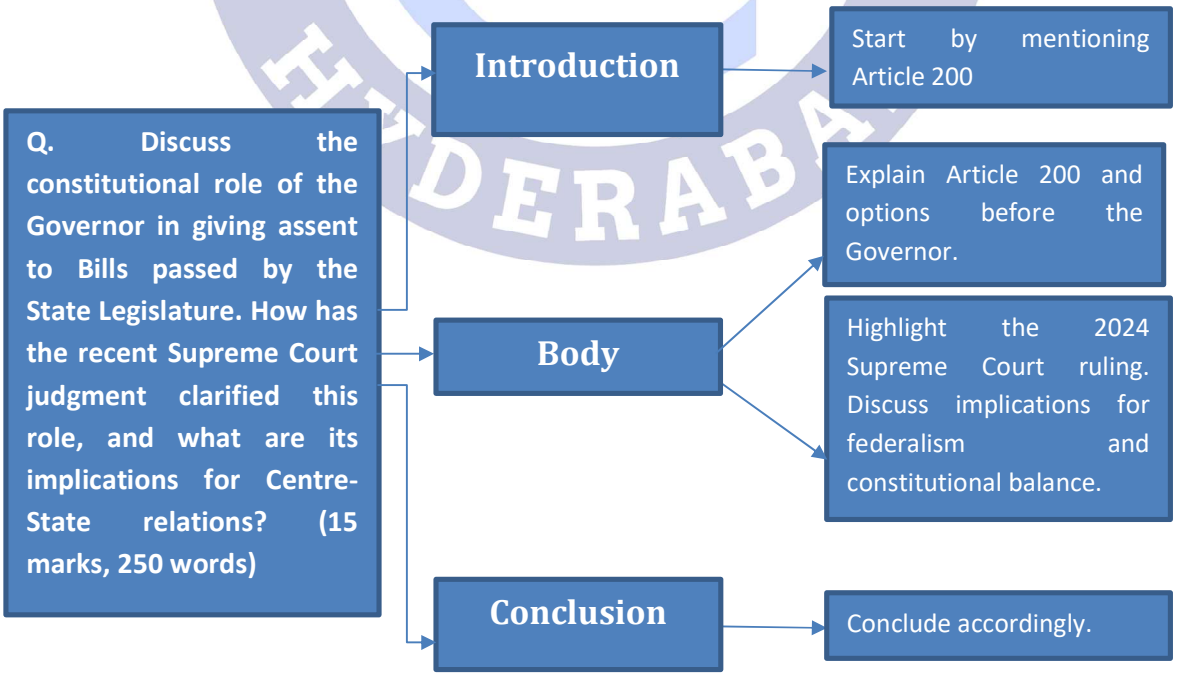
CONCLUSION:

This judgment marks a **major assertion of constitutional accountability** and a rebalancing of power between the Governor and the elected State Legislature. It ensures that **governors act as constitutional functionaries**, not political arbiters, thereby protecting the **sanctity of democratic processes and cooperative federalism** in India.

PRACTICE QUESTION

Q. Discuss the constitutional role of the Governor in giving assent to Bills passed by the State Legislature. How has the recent Supreme Court judgment clarified this role, and what are its implications for Centre-State relations? (15 marks, 250 words)

APPROACH



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MODEL ANSWER

The Governor, as per Article 200 of the Constitution, holds legislative authority to grant or withhold assent to Bills passed by the State Legislature. This role is intended to act as a constitutional safeguard, but recent practices have brought this power under scrutiny for causing legislative deadlock and undermining the spirit of federalism.

Governor's Role under Article 200

Once a Bill is passed by the State Legislature, the Governor has four options:

1. **Assent to the Bill** – It becomes law.
2. **Withhold assent** – The Bill fails.
3. **Return the Bill** (except money Bills) – For reconsideration.
4. **Reserve the Bill** for the President's consideration.

The **proviso to Article 200** mandates that if the legislature re-passes a returned Bill, the Governor **must grant assent**.

Recent Controversy and Supreme Court Ruling (2024)

Governors in states like Tamil Nadu, Kerala, and Punjab delayed assent to multiple Bills for extended periods, often without justification, leading to a virtual **"pocket veto."** In the **Tamil Nadu case (2024)**, the Supreme Court ruled:

- **Indefinite delays are unconstitutional**.
- Governors must act **within 3 months** to reserve a Bill and **grant assent within 1 month** if a Bill is re-passed.
- The Court invoked **Article 142** to deem assent to 10 Bills that were kept pending unreasonably.
- This builds upon earlier precedents such as **Nabam Rebia (2016)** and **Punjab Governor case (2023)**, which limited gubernatorial discretion and emphasized timely action.

IMPLICATIONS FOR CENTRE-STATE RELATIONS

- **Strengthening Cooperative Federalism:** The judgment reinforces the **co-equal status of the States** in India's federal scheme by curbing unilateral action by the Governor, an appointee of the Union government.
    - It promotes **mutual respect between Centre and State institutions**, essential for collaborative governance.
    - This supports the spirit of **"Union of States"** as envisioned in Article 1 of the Constitution.

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- **Limiting Central Overreach through the Governor's Office:** Governors have often been accused of acting on behalf of the Union government to delay or block Bills in opposition-led states.
    - The judgment draws a clear **boundary to the Union's influence** through the Governor, restoring **state autonomy** in the lawmaking process.
    - It re-emphasizes that **Governors are constitutional heads**, not political agents.
- **Restoration of Legislative Supremacy in States:** By mandating time limits for assent and disallowing re-reservation of re-passed Bills, the Court **protects the legislative process from arbitrary disruption**. It ensures that **Governors cannot undermine legislative intent** by stalling Bills indefinitely.
- **Promoting Constitutional Accountability:** The judgment transforms the Governor's role from a vague discretionary actor to a **constitutionally accountable functionary**. It reinforces that **"discretion" must be guided by constitutional norms**, not personal or political reasoning. This enhances transparency and **rule-based governance** in Centre-State interactions.
- **Judicial Safeguards for States against Abuse of Power:** By invoking **Article 142**, the Court exercised its power to do **complete justice**, setting a precedent for intervention in future cases of deliberate gubernatorial inaction. This provides **legal recourse for States** to challenge unconstitutional delays, strengthening institutional checks on executive power.
- **Reinforcing the Federal Spirit in Constitutional Interpretation:** The Court's reasoning adopts a **federalist reading of the Constitution**, favouring decentralization and state empowerment. It departs from earlier passive judicial interpretations and adopts a **proactive stance to uphold constitutional morality**.
- **Political Stability and Functional Governance:** By preventing Governors from paralysing state legislatures, the ruling ensures **uninterrupted legislative functioning** and **stable governance**. This is particularly crucial in politically divided governments where **friction between Raj Bhavan and the State Cabinet** has delayed key policy initiatives.

The Governor's role in legislative assent must be exercised with constitutional restraint, timeliness, and in alignment with democratic norms. The Supreme Court's judgment ensures the office does not become a **bottleneck to state governance**, preserving the delicate balance of India's federal structure.

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5. REPRODUCTIVE RIGHTS AND ABORTION IN INDIA

iMPACT ANALYSIS

SYLLABUS:

GS 2 > Social justice > Health > Women and Child issues

REFERENCE NEWS:

- Recently, the Bombay High Court has granted a 32-year-old woman's plea to **terminate her 26-week pregnancy** over foetal anomalies at a private hospital of her choice, emphasising **her right to reproductive freedom, bodily autonomy, and the right to choice.**

MORE ON NEWS:

- According to the **Medical Termination of Pregnancy (MTP) Act**, termination of pregnancy **beyond 24 weeks requires court approval**. The court's decision to allow the procedure was based on the **medical board's assessment of the foetal anomaly**, which recommended termination.
- The woman sought to terminate her pregnancy after discovering a **foetal anomaly** at 24 weeks. The condition, diagnosed as **skeletal dysplasia**, was likely to result in severe morbidity.
- The division bench of Justices Revati Mohite Dere and Neela Gokhale ruled in favor of the woman, allowing her to undergo the procedure **at a private hospital of her choice.**
- The court emphasized **her right to make decisions regarding her body and reproductive health.**
- The provisions of the **MTP Act don't allow termination of pregnancy** beyond the 24-week gestation to be conducted **in private hospitals without the court's permission.**
- This provision was acknowledged by the court in its ruling. The court granted permission for the procedure to be carried out in a private hospital, ensuring that the **hospital would comply with all the requirements of the MTP Act**, which include **submitting an affidavit** confirming that it meets the necessary standards for such a procedure.

INDIAN LAWS ON ABORTION:

- **Medical Termination of Pregnancy (MTP) Act, 1971:**
  - This law permits termination of pregnancy on certain grounds, by a registered medical practitioner in a hospital established or maintained by the Government or a place being approved for the purpose of this Act by the Government.

- This law is an **exception to the Indian Penal Code (IPC) provisions of 312 and 313** and sets out the rules of how and when a medical abortion can be carried out.
- **Section 3 of the MTP Act** allows for abortion by medical doctors on certain grounds:
  - Continuance of pregnancy would involve a risk to the life of the pregnant woman, cause grave **injury to her mental or physical health** (including rape and failure of birth control measures); or
  - In the case of **foetal abnormalities**.
  - Termination is also allowed at any point during the pregnancy if there is an **immediate necessity to save the woman's life**.
- **The Act was amended in 2021**.

Time since conception	Requirement for terminating pregnancy	
	MTP Act , 1971	MTP (Amendment) Act, 2021
Up to 12 weeks	Advice of one doctor	Advice of one doctor
12 to 20 weeks	Advice of two doctors	Advice of one doctor
20 to 24 weeks	Not allowed	Two doctors for some categories of pregnant women
More than 24 weeks	Not allowed	Medical Board in case of substantial foetal abnormality
Any time during the pregnancy	One doctor, if immediately necessary to save pregnant woman's life	

- **Maternity Benefit Act, 1961:**
  - In case of miscarriage or **medical termination of pregnancy**, a woman shall, be entitled to leave with wages at the rate of maternity benefit, for a period of six weeks immediately following the day of her miscarriage or, as the case may be, her medical termination of pregnancy.
- **Indian Penal Code (IPC) Provisions:**
  - **Section 312** of the IPC criminalizes intentional causing of miscarriage, if it was not done in good faith for the purpose of saving the Life of the woman. This section effectively makes unconditional abortion illegal in India.
  - **Section 313** of the IPC states that a person who causes the miscarriage without the consent of the pregnant woman, whether or not she is in the

advanced stages of her pregnancy, shall be punished with life imprisonment or a jail term that could extend to 10 years, as well as a fine.

- **Judicial interventions:**
  - Even before the 2021 amendments, High Courts across the country have passed several **orders permitting termination of pregnancy above 20 weeks in exceptional cases** relating to rape or foetal abnormalities.
  - A division bench of Kerala High Court observed in an order passed in 2020 that "Right to make reproductive choices is also **a facet of her personal liberty as understood under Article 21** of our Constitution".
  - Even after the 2021 amendment came into force, there have been Court interventions. **Eg**: In February 2022, the Calcutta High Court allowed the termination of a 35-week foetus on the ground of severe abnormalities.

Supreme Court Ruling on Abortion Rights:

- **September 29, 2022 Judgment:** The Indian Supreme Court ruled that all women, **regardless of marital status**, have the right to access safe and legal abortions up to 24 weeks of gestation, **removing the previous distinction between married and unmarried women** under the Medical Termination of Pregnancy (MTP) Act. This landmark decision strengthened **women's reproductive rights** by ensuring their **right to terminate pregnancies without discrimination.**

ARGUMENTS SUPPORTING ABORTION:

- **Bodily Sovereignty**:
  - Each woman has the sole **right to make decisions about what happens to her body**: no one should force her either to carry or terminate a pregnancy against her will.
- **Protect life of mother:**
  - Medical abortions are much safer, and combined with advancements in technology, this has contributed to a **76% global decline in the treatment rate for severe complications from abortion since 1992**, according to the World Health Organization (WHO).
- **Reduce threats from illegal abortion:**
  - The WHO asserts that unsafe abortions are the leading cause of maternal death. In this situation, a ban on abortion or more stringent restrictions will result in **more illegal abortion clinics** and **increased possibility of unsafe abortions.** While legalising abortion may lead to more abortions in counties like the US, it would also lead to an increase in safe practices.
- **Right to a dignified life:**
  - According to the WHO, **unwanted babies are more likely to be neglected**, abused or stuck in cycles of poverty. This violates their right to **have a dignified life.**

- **Reduce chances of abandonment:**
  - If abortion is banned, then chances of **a woman abandoning the new born child is high**. This would be more dangerous to the life of the baby. Thus, it is better to terminate the pregnancy at an earlier stage.
- **Break the vicious cycle of poverty:**
  - A poor woman is more likely to have an **unintended pregnancy** than a well-off. This can **further deepen the divides in income, family stability, and child outcomes** in health and education. Here, offering a choice of abortion may result in more benefits than harm.
- **Uphold universal human rights:**
  - Access to safe abortions has been established as a human right by a number of frameworks, the United Nations, the European Court of Human Rights and the African Commission on Human and People's Rights. In 1994, at the International Conference on Population and Development, 179 governments signed a commitment to prevent unsafe abortions.
- **Supreme Court Ruling on Abortion Rights (2022):**
  - The Indian Supreme Court ruled that all women, **regardless of their marital status**, have the right to safe and legal abortion up to 24 weeks of gestation, striking down the previous distinction between married and unmarried women under the Medical Termination of Pregnancy (MTP) Act. This reinforced the **idea of reproductive autonomy and bodily sovereignty.**
- **Late-Term Abortions and Mental Health:**
  - **The 2023 case**, where a **woman with a history of postpartum depression and psychosis sought an abortion at 26 weeks**, highlights the emotional and mental health burden that can arise from unwanted pregnancies.
  - The apex court's decision to **prioritize the fetus's life over the woman's mental health** demonstrates the critical need for ensuring that women's health, both mental and physical, is fully considered in reproductive rights cases. This further emphasizes the importance of **access to abortion as a choice for maintaining mental well-being.**

In 2023, the Supreme Court declined permission for a married woman to **terminate her pregnancy beyond 26 weeks**, stating that **the AIIMS medical board had found "no substantial foetal abnormalities"** and that a pre-term delivery carried the risk of the baby being born with physical and mental deformities. Reportedly, the woman had approached the top court seeking permission to terminate her pregnancy **due to her inability to take care of the child due to post-partum psychosis and other health issues.**

ARGUMENTS OPPOSING ABORTION:

- **Abortion is homicide:**

- Many believe that life begins at conception and therefore **has a right to life that must be respected**. According to this argument, the fetus is an innocent life and the killing of a foetus can be considered a crime.
- For instance, **medical professionals** often **express discomfort in performing abortions**, with some even referring to **the procedure as "committing murder."** This reluctance becomes stronger **as the gestation period advances**, with the ethical burden intensifying during later-term abortions.

- **"Foetal viability" and the rights of the unborn child:**
  - The issue of the foetus' life raises the question of **whether one person's desire for autonomy can extend to ending another's existence**.
  - **Roe v. Wade**, the 1973 case that made abortion a right in America, ruled that abortion would be **allowed up to the point of foetal viability.**
  - **Foetal viability** is often seen as the **point at which the rights of the woman can be separated from the rights of the unborn foetus.**

ROE V. WADE:

- In *Roe v. Wade*, the Supreme Court ruled that the United States Constitution provides a fundamental "**right to privacy**" that protects a person's **right to choose whether to have an abortion.**
- *Roe v. Wade* struck down laws that made abortion illegal in several states, and ruled that abortion would be allowed up to the point of **foetal viability.** *(Foetal viability is the time after which a **foetus can survive outside the womb.** It is often seen as the point at which the rights of the woman can be separated from the rights of the unborn foetus. However, **this point is not fixed and can vary** depending on medical advances and the conditions of the pregnancy.)*
- The Court also held that the right to abortion is not absolute and must be balanced against the government's interests in protecting women's health and prenatal life. For this, the Court created the **trimester framework:**
  - The state cannot restrict a woman's right to an abortion during the first trimester.
  - The state can regulate the abortion procedure during the second trimester "in ways that are reasonably related to maternal health".
  - In the third trimester, demarcating the viability of the fetus, a state can choose to restrict or even to proscribe abortion as it sees fit.
- The **US Supreme Court in 2022** issued a ruling on Dobbs vs Jackson Women's Health Organization, **overruling Roe vs Wade, eliminating the constitutional right to abortion after almost 50 years.**
- Now, with *Roe v. Wade* overturned, abortion is still legal in much of the US, but **individual states are now free to make abortion illegal.**
- *Roe v. Wade* became one of the most politically significant Supreme Court decisions in history, **dividing the nation into "pro-choice" and "pro-life" camps.**

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- **The 'slippery slope' argument:**
  - Anti-abortion activists claim that when abortion is legalised, it becomes far more prevalent.
- **Against human morality:**
  - A key argument against abortion is rooted in the assertion that the foetus can feel pain, and that termination is therefore a brutal affair.
- **Violation of Hippocratic oath:**
  - Some physicians believe that life begins at conception and cite the Hippocratic oath's tenet **to do no harm** as their reason for opposing the practice.
- **Impact of Medical Advancements:**
  - As medical technology improves, **resuscitating premature babies has become more feasible**, raising ethical questions about when abortion should be allowed, particularly in relation to the fetus's viability and the availability of healthcare resources.
- **Discrimination:**
  - Aborting fetuses because they may be disabled sends an implicit message of rejection to people with disabilities.
  - Permitting abortion can also **lead to sex selective abortions** in a patriarchal society.
- **Impact on health:**
  - Anti-abortion campaigners argue that many women suffer significant emotional trauma and complications to the uterus and the Fallopian tubes after having an abortion.
- **Religious arguments:**
  - Several religions oppose abortion. they believe that the issue encompasses profound issues of life and death, right and wrong, human relationships and the nature of society, that make it a major religious concern.
- **Moral and Ethical Dilemmas in Late-Term Abortions:**
  - In some legal decisions, the fetus's right to life has been prioritized over the woman's **mental health**. This raises ethical concerns, particularly in cases where **mental and emotional well-being** is significantly affected by continuing a pregnancy. Such decisions highlight the moral tension between **maternal autonomy** and the fetus's potential for survival.
- **Fear of Legal Repercussions for Healthcare Providers:**
  - Healthcare providers often face **legal anxiety** in abortion cases, especially with unmarried women or in situations where **sex-selective abortions** might be suspected. This fear can make providers hesitant to perform abortions, potentially limiting access for women who need the procedure.

- **Health Risks and Emotional Trauma:**
  - Many women experience **emotional trauma** and potential **physical complications**, particularly in cases of **late-term abortion**. These health risks are often cited by **anti-abortion campaigners** who argue that the procedure can have long-term effects on the woman's well-being.

WAY FORWARD:

While the question of whether or not to legalize abortion will always be a contested and sensitive one, there are a number of takeaways that could influence policy, including the need to provide comprehensive family planning services and adequate support for women who experience unintended births:

- **Address developmental deficit:**
  - Human development is the best contraceptive. Hence, governments should focus on enhancing the quality of life through measures like better nutrition, education, employment, and access to healthcare.
- **Permit flexibilities:**
  - Many women identify pregnancy only after the sixth week, and **pre-viability timelines leave women with very little time and opportunity to make a decision to abort**. **Thus, laws should ensure the flexibility to address such scenarios**, ensuring women are not forced to make decisions under undue time constraints.
  - **The recent Bombay High Court ruling** emphasized a woman's right to reproductive freedom and autonomy, showcasing the importance of allowing women to make decisions in their own best interests, particularly when medical anomalies are discovered later in pregnancy.
- **Ensure effective use of legal and practical barriers:**
  - Despite having legislations permitting abortions, unsafe abortions in India account for 20% of all maternal deaths. Hence, the government should focus on enhancing the accessibility and quality of health services provided to those in need of abortions.
  - **Healthcare providers often face legal anxiety**, especially in situations involving unmarried women or sex-selective abortion concerns. This fear may deter them from providing services, limiting women's access to essential care. The **government must work on ensuring that healthcare providers are protected and that women have clear access to safe, legal abortions**.
- **Expand access to reproductive health services:**
  - As seen in judicial rulings like the **Indian Supreme Court's decision in 2022**, expanding access to reproductive health services without discrimination is critical. Ensuring that all women, regardless of marital status, have the right to make reproductive choices is vital for safeguarding their autonomy and health.

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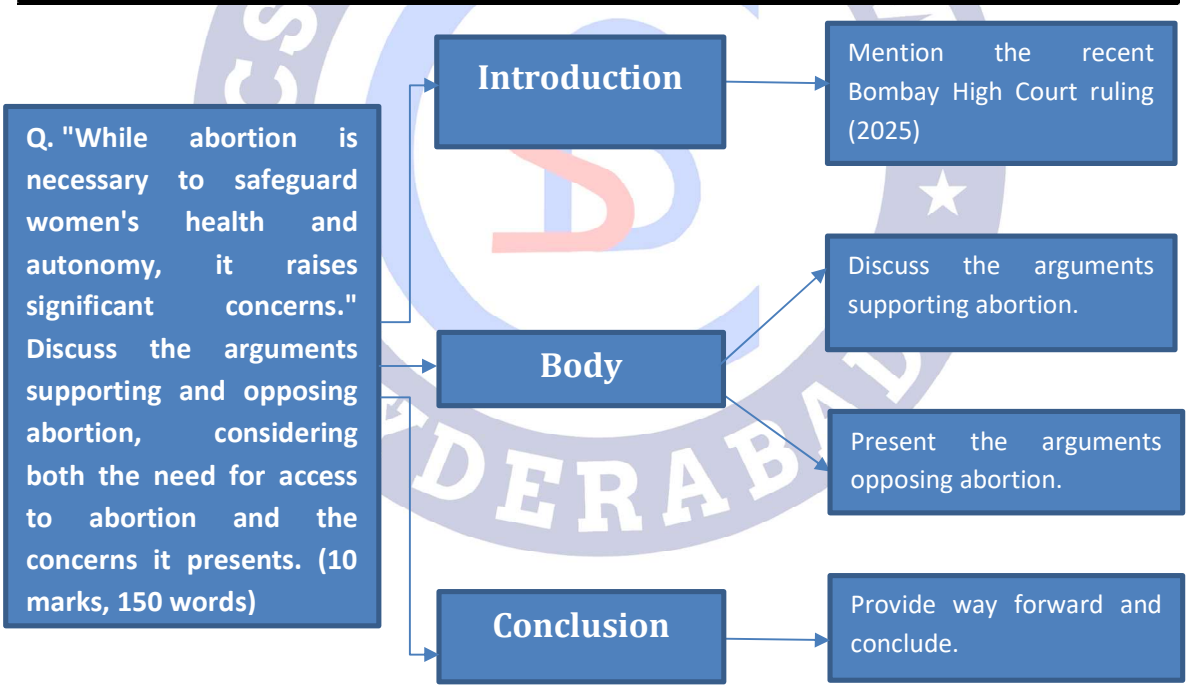
CONCLUSION:

- In conclusion, while reproductive rights, particularly concerning abortion, remain a sensitive issue globally, India's evolving legal framework demonstrates a commitment to protecting women's health and autonomy. However, challenges remain, including the fear of legal repercussions for healthcare providers and the need for improved accessibility to safe abortion services. The way forward lies in creating a more flexible, accessible, and supportive system, ensuring that women's reproductive choices are respected and safeguarded within a legal and medical framework that prioritizes their well-being.

PRACTICE QUESTION

Q. "While abortion is necessary to safeguard women's health and autonomy, it raises significant concerns." Discuss the arguments supporting and opposing abortion, considering both the need for access to abortion and the concerns it presents. (10 marks, 150 words)

APPROACH



MODEL ANSWER

Abortion remains a significant issue of legal, ethical, and medical debate globally, with evolving frameworks to address women's rights. Recently, the **Bombay High Court** granted a **32-year-old woman's** plea to terminate her **26-week pregnancy** due to **foetal anomalies**, emphasizing her **right to reproductive freedom**, **bodily autonomy**, and the **right to choose**. The decision followed the **Medical Termination of Pregnancy (MTP) Act**, which permits

termination beyond 24 weeks with court approval in exceptional cases. This highlights the conflict between the need for abortion access and ethic al concerns, especially regarding foetal viability and maternal health risks.

Arguments Supporting Abortion:

1. **Bodily Sovereignty:**
    - Abortion is essential for protecting a woman's autonomy over her own body. As illustrated in the **Bombay High Court's 2025 ruling**, women should have the right to make decisions about their pregnancies, especially in cases involving severe fetal abnormalities or health risks.
2. **Protecting the Life of the Mother:**
    - Medical abortion has become much safer, with advancements in technology contributing to a **76% global decline in severe complications** from abortion since 1992, according to the **World Health Organization (WHO)**. Legal access to abortion helps safeguard women's health by preventing the risks associated with unsafe abortion practices.
3. **Reducing Threats from Illegal Abortions:**
    - The **WHO** highlights that unsafe abortions remain a leading cause of maternal deaths worldwide. If abortion is banned or restricted, women are more likely to seek unsafe, illegal abortions, which endanger their lives. Legal abortion ensures safer medical practices and reduces maternal mortality.
4. **Right to a Dignified Life:**
    - Unwanted children often face neglect, abuse, and poverty, violating their right to a dignified life. Legal abortion allows women to make choices that protect both their own well-being and that of their potential children.
5. **Mental Health Considerations:**
    - In the **2025 case**, a woman with postpartum depression and psychosis sought an abortion at 26 weeks, highlighting the need for abortion access to protect mental health. The **Bombay High Court** recognized that mental health risks should be fully considered when making decisions about reproductive rights.

Arguments Opposing Abortion:

1. **Fetal Rights and the "Right to Life":**
    - Many believe that life begins at conception, and the fetus has an inherent right to life. This argument is especially relevant for late-term abortions, where the fetus has developed to a stage where it could survive outside the womb, raising ethical concerns about ending its potential life.
2. **Viability of the Fetus:**
    - Fetal viability—the point at which the fetus can survive outside the womb—has become a significant marker for determining abortion limits. With

advances in medical technology, the viability of the fetus has increased, complicating the ethics of late-term abortions.

3. **Slippery Slope Argument:**
    - Opponents of abortion argue that legalizing it may lead to an increase in its frequency, including in cases where it may not be medically necessary, such as for gender preference or convenience.

4. **Moral and Religious Objections:**
    - Many religious and moral beliefs oppose abortion, considering it morally wrong. They argue that human life begins at conception, and ending it is a violation of the sanctity of life.
5. **Psychological and Physical Impact:**
    - There are concerns that abortion, particularly later in pregnancy, can have lasting psychological and emotional effects on women. Some also point to physical complications that may arise, including damage to reproductive organs.

Way Forward:

- **Flexibility in Abortion Laws:** Given that many women may not identify pregnancy until after six weeks, **pre-viability timelines** should be made more flexible to provide women with more time to make informed decisions. Judicial interventions, like the **Bombay High Court's 2025 ruling**, should take into account health risks and fetal anomalies.

- **Improved Healthcare Access:** To reduce unsafe abortions, the government must ensure that women have access to safe, legal abortions. Healthcare providers should be protected from legal repercussions to encourage them to perform abortions when medically necessary.

- **Comprehensive Family Planning and Education:** Increased access to family planning services and reproductive health education can help reduce the number of unintended pregnancies and allow women to make better-informed decisions.

In conclusion, reproductive rights, particularly abortion, remain a complex issue. India's legal framework, including the **Bombay High Court's 2025 decision**, reflects a growing recognition of women's rights to make reproductive choices, while also considering ethical concerns surrounding fetal rights. The balance between safeguarding women's autonomy and addressing the ethical implications of abortion, especially late-term, is delicate. Moving forward, a flexible, accessible, and supportive system is needed to ensure women's reproductive choices are respected within a legal and medical framework that prioritizes their health and well-being.

6. RIGHT TO INFORMATION ACT

iMPACT ANALYSIS

SYLLABUS:

GS 2 > Governance

REFERENCE NEWS:

Union Information and Technology Minister Ashwini Vaishnaw dismissed INDIA bloc leaders' concerns that **the Digital Personal Data Protection Act would render the RTI Act toothless and make investigative journalism difficult and said that it was in harmony with both privacy and transparency in public life.**

RIGHT TO INFORMATION ACT, 2005:

The Right to Information (RTI) Act, 2005, is a law that empowers citizens to seek information from public authorities. It plays a crucial role in promoting **transparency, accountability, and good governance** in public administration.

Evolution of the Right to Information in India

- **Pre-Legislative Phase:** Until the 1990s, India followed the **Official Secrets Act, 1923**, which prioritized secrecy over transparency.
- The **RTI movement gained momentum in Rajasthan** through the Mazdoor Kisan Shakti Sangathan (MKSS) in the 1990s, demanding access to government records to expose corruption in wage payments and ration distribution.
- The Supreme Court in **State of U.P. v. Raj Narain (1975)** held that the **right to know is a part of the fundamental right to freedom of speech and expression** under Article 19(1)(a).
- Other key cases like **S.P. Gupta v. Union of India (1982)** reaffirmed the public's right to know about government functioning.
- **Freedom of Information Act, 2002** was enacted but remained ineffective due to lack of enforcement.
- Eventually, the **Right to Information Act was passed in 2005**, replacing the 2002 law and enforcing **citizens' right to access information held by public authorities**.

PROVISIONS OF THE RTI ACT:

- **Section 3 – Right to Information:** Every citizen has the right to seek information from any public authority.

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- **Section 4 – Suo Moto Disclosure:** Public authorities must proactively disclose certain categories of information (organization, functions, rules, decisions, directory of employees, etc.)
- **Section 6 – Application for Information:** Citizens can file an RTI application with a simple request and a nominal fee (₹10). **No need to state reasons for seeking information.**
- **Section 7 – Disposal of Requests:** Information must be provided within 30 days, or 48 hours if it concerns life and liberty.
- **Section 8 – Exemptions from Disclosure:** Certain information is exempted:
    - **Trade secrets, intellectual property**
    - **Personal information with no public interest**
    - **Sub-section 8(3)** indicates that most exemptions cease to exist **20 years after the incident occurs,** except in specific cases.
    - **National Security and Sovereignty Concerns:** Information that affects India's sovereignty, security, strategic interests, and relations with foreign countries
    - **Parliamentary and Legislative Privilege:** Information that breaches the privilege of Parliament or State Legislature.
    - **Cabinet Papers:** Cabinet deliberations, including discussions of the Council of Ministers, Secretaries, and senior officers, remain protected under the RTI provisions.
- **Section 19 – Appeals Mechanism:** First appeal to the Appellate Authority within the same department. Second appeal to the Central or State Information Commission.
- **Section 20 – Penalties:** Public Information Officers (PIOs) can be penalized ₹250 per day up to ₹25,000 for delay or refusal to provide information without reasonable cause.
- **Certain intelligence and security organizations are exempted from the provisions of the RTI Act unless cases of corruption or human rights violations are involved**. These organizations are listed **in Schedule 2 of the RTI Act** and include: Central Intelligence Bureau, Research and Analysis Wing, Directorate of Enforcement, National Technical Research Organization, Central Reserve Police Force, Border Security Force, National Security Guard.
- **Central and State Information Commissions (CIC/SICs):** Autonomous bodies to adjudicate disputes, monitor implementation, and enforce RTI compliance.

ACHIEVEMENTS OF THE RIGHT TO INFORMATION (RTI) ACT, 2005:

- **Empowerment of Citizens and Deepening of Democracy:** RTI has **transformed the relationship between the state and the citizen**, empowering the latter to demand transparency.
    - It reinforces **Article 19(1)(a)** of the Constitution—the **right to freedom of speech and expression**, which includes the **right to know**.

- **Over 2.2 crore RTI applications** have been filed since the law came into effect.
- Villagers in Rajasthan used RTI to expose corruption in NREGA wage payments, sparking a broader accountability movement.

- **Exposure of Major Scams and Corruption:** RTI has played a pivotal role in **exposing corruption and mismanagement** across sectors.
  - **Adarsh Housing Scam**: RTI uncovered the misuse of land meant for war widows.
  - **Commonwealth Games (CWG) Scam**: Overpricing and procedural violations were revealed.
  - **Vyapam Scam (Madhya Pradesh)**: RTI helped unearth irregularities in recruitment and examinations.
- **Increased Transparency in Public Services:** RTI has led to greater openness in areas such as, **public distribution system (PDS), land records, pension disbursement and file movement tracking.**
  - In Delhi, activists used RTI to expose ghost ration cards and pilferage in the PDS system. **Shehla Masood** and **Parivartan** (Arvind Kejriwal's NGO) used RTI to uncover ration distribution and PDS scams in Delhi.
- **Judicial Recognition of RTI as a Fundamental Right:** In **CBSE v. Aditya Bandopadhyay (2011)**, the Supreme Court held that even **exam answer sheets** fall under RTI.
  - In **RBI v. Jayantilal Mistry (2015)**, RBI was directed to disclose **inspection reports of banks**, despite fiduciary objections.
- **Institutionalization of Information Access:** Establishment of **Central and State Information Commissions (CIC/SIC)**. Thousands of **Public Information Officers (PIOs)** appointed across departments.
  - Development of **online RTI portals** like https://rtionline.gov.in, enabling digital access.
- **Greater Accountability in Governance:** Officials and departments are now more cautious in decision-making due to fear of **public scrutiny**. Promotes **better record-keeping**, file documentation, and timely service delivery.
  - In Maharashtra, RTI inquiries led to increased scrutiny of delays in infrastructure project approvals.
- **Promotion of Participatory Governance and Social Justice:** RTI has been used by **marginalized communities**—women, Dalits, tribals—to claim **entitlements and rights**. Enhances citizen participation in **developmental planning and local governance**.
  - Tribal groups in Odisha used RTI to contest illegal mining on community forest lands under Forest Rights Act.

- **Strengthening of Media and Investigative Journalism:** RTI has become a **powerful tool for journalists** to uncover stories of public interest. Enhances the role of media as the **fourth pillar of democracy**.

CHALLENGES IN RTI ACT:

- **Backlogs and Delays in Information Commissions:** Over **3 lakh second appeals and complaints** are pending across CIC and SICs (as per 2023 data).
  - **Average wait time for appeal disposal** in states like West Bengal and Odisha is more than **1 year**.
- **Poor Implementation of Suo Motu Disclosure (Section 4):** A 2023 audit by **Commonwealth Human Rights Initiative (CHRI)** found **less than 30% compliance** with proactive disclosure norms.
- **Dilution through Amendments:** The **RTI Amendment Act, 2019** removed fixed tenure and salary protection for Information Commissioners, **undermining independence**.
- **Threats to RTI Activists:** Over **90 RTI activists have been killed** since 2005 (as per CHRI and National RTI Forum).
  - **Whistleblower Protection Act (2014)** is not yet fully operationalized.
- **Lack of Awareness and Capacity:** Many citizens, especially in rural and marginalized communities, **lack awareness** about filing and following up on RTI. **Public Information Officers (PIOs)** are poorly trained or **unwilling to disclose information**, citing vague exemptions.
- **Vacancies and Weak Institutional Capacity:** Many **Information Commissions function without a Chief Information Commissioner** or adequate number of commissioners.
  - Maharashtra SIC was non-functional for months due to absence of commissioners.
- **Vague and Broad Exemptions under Section 8:** Authorities often **misuse exemption clauses** like "national security" or "fiduciary relationship" to deny legitimate information.
  - RBI initially refused to disclose inspection reports citing fiduciary clause—later overturned in Jayantilal Mistry v. RBI (2015).

The **Digital Personal Data Protection (DPDP) Act, 2023** introduces strong protections for personal data, but its provisions **could conflict with the transparency objectives of the RTI Act**.

- **Section 8(1)(j) of the RTI Act vs. DPDP Act:** Section 8(1)(j) allows denial of **personal information that is not related to public interest**, but **permits disclosure if larger public interest exists**.

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- The DPDP Act, however, **prohibits sharing of personal data without consent**, without explicitly allowing for a public interest override.
- This could lead to **blanket denial of information** about public servants, beneficiaries of welfare schemes, or electoral affidavits.

- **DPDP Act May Override RTI in Practice:** The DPDP Act has a **non-obstante clause**, meaning it can override other laws where conflicts arise.
  - This risk **curtailing citizen access to information** about corruption, public appointments, and misuse of public funds under the guise of data privacy.
- **Opaque Criteria for Public Interest Exceptions:** The DPDP Act does not clearly define **"public interest exceptions"** like the RTI does. It may lead to **subjective denial of information** by data fiduciaries and officials.
- **Lack of Harmony with RTI Principles:** The RTI Act promotes **citizen-centric accountability**. DPDP focuses on **individual data ownership**, but without a clear mechanism for balancing it with the citizen's right to know.

WAY FORWARD:

- **Strengthen Institutional Capacity of Information Commissions: Fill all vacancies** in Central and State Information Commissions promptly. Ensure **adequate staff, technical infrastructure, and financial independence**. Set **time-bound disposal norms** to address long backlogs (currently over 3 lakh appeals pending nationwide).
  - **2nd Administrative Reforms Commission (ARC) Report on RTI (2006)** recommended capacity enhancement and digitalization of commissions.
- **Enforce Section 4: Suo Motu Disclosure:** Mandate **proactive disclosure of key information** (budgets, decisions, tenders, service delivery benchmarks) by all public authorities. Integrate **suo motu data with department websites** and public dashboards for easy access.
  - **Karnataka's Mahiti Kanaja portal** aggregates suo motu disclosures in a searchable format.
- **Protect Whistleblowers and RTI Users:** Operationalize the **Whistleblowers Protection Act, 2014**. Ensure **legal, police, and judicial protection** to RTI activists under threat. Create an **RTI User Grievance Redress Mechanism** for retaliation cases.
- **Align RTI with Privacy and Data Protection Laws:** Harmonize RTI with the **Digital Personal Data Protection (DPDP) Act, 2023**. Ensure that **Section 8(1)(j)** of the RTI Act—allowing disclosure in public interest—**is not overridden** by the DPDP Act's blanket consent clauses. Develop **clear guidelines** on balancing transparency with individual privacy.
  - **Justice B.N. Srikrishna Committee on Data Protection (2018)** called for public interest exceptions and balance between transparency and privacy.
- **Digitize RTI Process and Improve Accessibility:** Universalize **online RTI filing portals** across all states (currently, not all states are part of RTIOnline.gov.in). Ensure **offline**

and assisted digital filing options for digitally marginalized groups. Enable **real-time status tracking** of RTI applications and appeals.

- **Rajasthan Sampark Portal** integrates RTI queries with citizen services and grievance redressal.

- **Capacity Building and Training:** Train **Public Information Officers (PIOs)** and appellate authorities on timely, lawful disclosures. Conduct **RTI awareness campaigns** in schools, colleges, panchayats, and civil society groups.
  - 2nd ARC recommended **mandatory training for PIOs** and involvement of civil society in spreading awareness.
- **Regular Monitoring and Auditing:** Annual audits of RTI compliance by **Comptroller and Auditor General (CAG)** or an independent transparency body. Publish **state-wise performance scorecards** on RTI implementation (number of applications received, disposed, pending, etc.).
  - **Tamil Nadu Information Commission** published disposal statistics monthly, enhancing accountability.
- **Strengthen Penalty Enforcement:** Ensure that **penalties under Section 20** for unjustified denial or delay in information are actually imposed. Publicize penalty orders to deter negligence by PIOs.
  - A study by Satark Nagrik Sangathan (2022) found that **penalties were imposed in less than 4%** of cases where they were clearly warranted.

For the RTI Act to remain a **vibrant tool for democratic empowerment**, it must be **strengthened, not diluted**. This requires a **multi-pronged strategy** of institutional reform, digital integration, citizen engagement, and legal clarity.

PRACTICE QUESTION

Q. Critically analyze the achievements and limitations of the RTI Act. Suggest measures to strengthen its functioning. (15 marks, 250 words)

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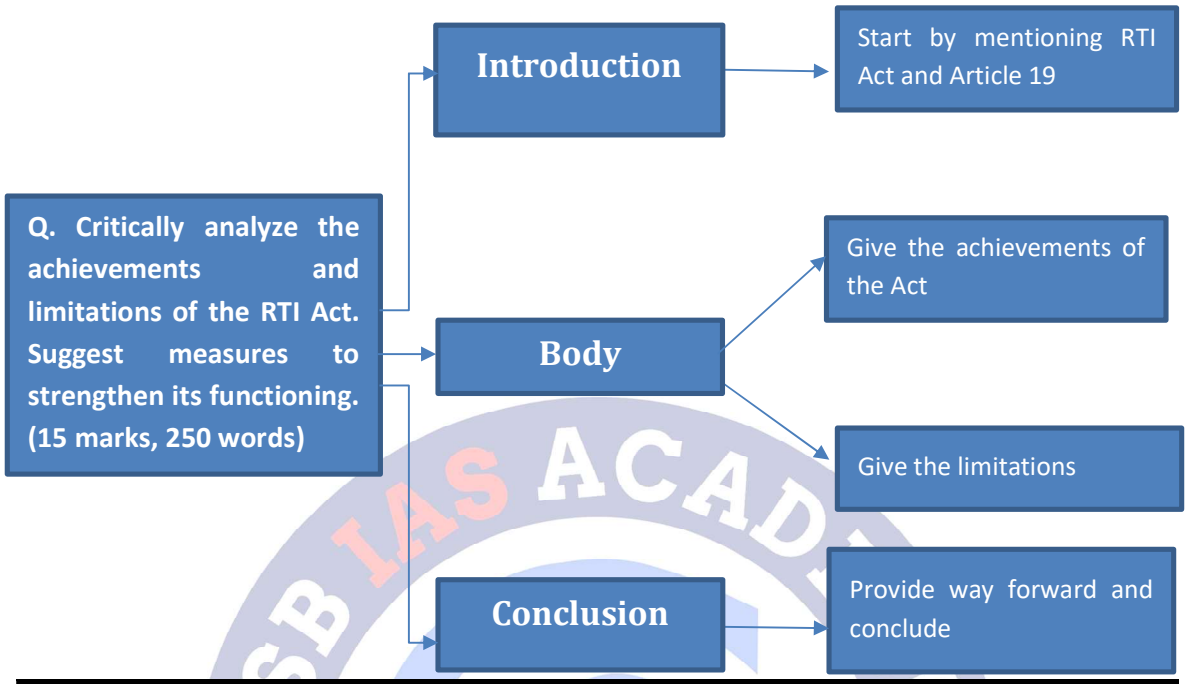
APPROACH



MODEL ANSWER

The **Right to Information (RTI) Act, 2005** is a landmark legislation aimed at promoting **transparency, accountability, and participatory governance** in India. Derived from **Article 19(1)(a)** of the Constitution, it enables citizens to seek information from public authorities, thereby **bridging the gap between the government and the governed**.

Achievements of the RTI Act

1. **Citizen Empowerment**: Over **2.2 crore RTI applications** filed since 2005. Strengthened grassroots movements like the **MKSS in Rajasthan**.
2. **Exposure of Corruption**: **Adarsh Scam**, **CWG Scam**, and **Vyapam Scam** exposed through RTI queries.
3. **Transparency in Governance**: Improved access to **PDS, land records, and pension data**. **Judicial recognition** in cases like *CBSE v. Aditya Bandopadhyay* and *RBI v. Jayantilal Mistry*.
4. **Institutional Framework Established**: Creation of **CICs and SICs**, online portals like RTIOnline.gov.in.
5. **Promotion of Participatory Governance and Social Justice:** RTI has been used by **marginalized communities**—women, Dalits, tribals—to claim **entitlements and rights**.

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6. **Strengthening of Media and Investigative Journalism:** RTI has become a **powerful tool for journalists** to uncover stories of public interest.

Challenges in Implementation

1. **Backlogs and Delays**: Over **3 lakh appeals pending**; wait time >1 year in some states.
2. **Vacancies and Weak Enforcement**: Many Commissions lack **Chief Information Commissioners**.
3. **Threats to Activists**: Over **90 RTI activists killed** since 2005; **Whistleblower Protection Act** not enforced.
4. **Conflict with New Laws**: **Digital Personal Data Protection Act (2023)** may override RTI via non-obstante clause and restrict public interest disclosures.
5. **Dilution of Institutional Autonomy**: **RTI Amendment Act, 2019** weakened fixed tenure and independence of Commissioners.

Way Forward

1. **Institutional Strengthening**: Fill vacancies; implement 2nd ARC's recommendation for capacity building and digitization.
2. **Harmonize with Privacy Laws**: Ensure **Section 8(1)(j)** is preserved to allow **public interest disclosures** under the **DPDP Act**.
3. **Protect RTI Activists**: Operationalize **Whistleblower Protection Act**; create redressal mechanisms for harassment.
4. **Improve Suo Motu Disclosures**: Replicate **Karnataka's Mahiti Kanaja portal** for real-time proactive transparency.
5. **Strengthen Penalty Enforcement**: Publicize orders; Satark Nagrik Sangathan (2022) found penalties were rarely imposed despite clear violations.

The RTI Act is a **cornerstone of Indian democracy**, enabling informed citizen participation. However, its potential is under threat from **legislative dilution, institutional neglect, and legal conflicts**. Strengthening the RTI regime through **reform, protection, and alignment with new data laws** is essential to uphold the right to know and ensure **transparent, accountable governance**.

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7. MATERNAL HEALTH

iMPACT ANALYSIS

SYLLABUS:

GS 2 > Social justice > Health > Women and Child issues

REFERENCE NEWS:

- The Union Health Ministry of India has expressed strong objections to comparisons made between India and Nigeria regarding maternal mortality, following the release of the **United Nations Maternal Mortality Estimation Inter-Agency Group (MMEIG)** report titled **"Trends in Maternal Mortality 2000–2023"**.

MORE ON NEWS:

- The report has indicated that India has made **significant strides in reducing MMR but it registered 19,000 maternal deaths in 2023** contributing almost **7.2% to global mortality.**
- The **biggest contributor was Nigeria (28.7%), followed by India** and the Democratic Republic of Congo (7.2%), and then, Pakistan (4.1%).
- The Health Ministry criticized the **India–Nigeria comparison**, citing disparities in **population size (Nigeria: 23.26 crore, India: 145 crore).**
- The report adds that **every day in 2023, over 700 women died from preventable causes** related to pregnancy and childbirth - meaning that approximately **one woman is dying every two minutes.**

WHAT IS MATERNAL MORTALITY RATIO OR MMR?

- Maternal mortality rate is **defined by the WHO** as the death of a woman **while pregnant or within 42 days of termination of pregnancy**, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or other causes.
- **WHO notes that MMR is a crucial metric** to track the progress of maternal health and identify areas for improvement in healthcare systems.
- Sustainable Development Goal **(SDG) target 3.1** is to reduce maternal mortality to **less than 70 maternal deaths per 100,000 live births by 2030. 8 states have already achieved SDG target**.

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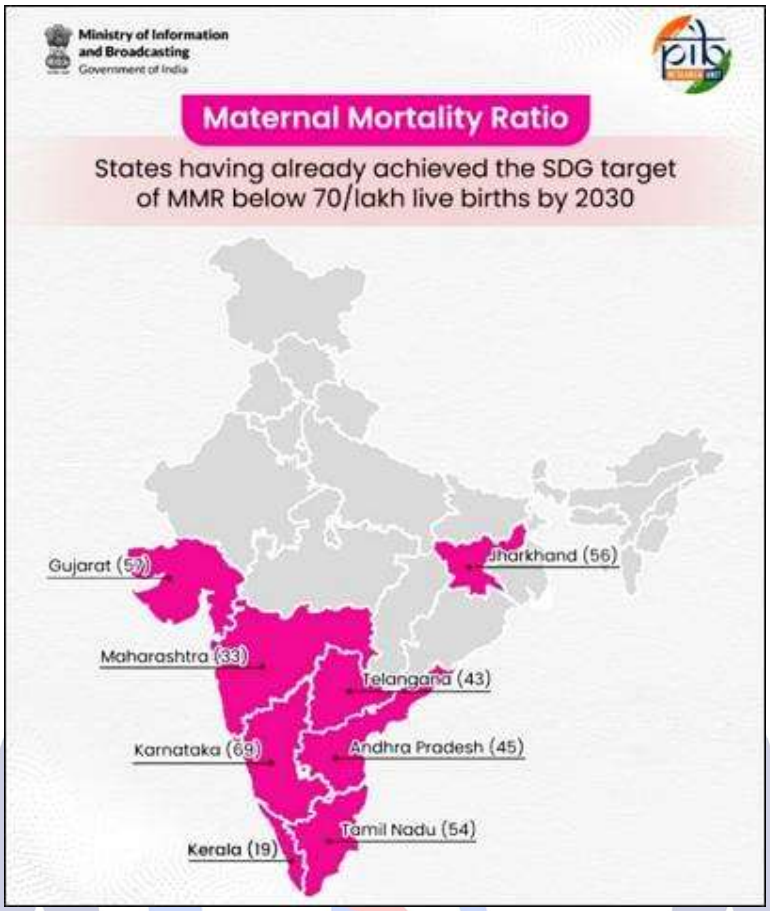

STATISTICS:

- In India, **maternal health has been a key issue for successive governments since independence** with the **Maternal Mortality Ratio (MMR) being as high as 2,000 per one lakh live births in the 1940s.**
- **In the 1950s, this came down to 1,000** and subsequently **improved to 600 in the 1990s** (at that time, the global MMR was 400), thanks to a rapid improvement in healthcare infrastructure, that rate has been reduced significantly.
- **According to Sample Registration System (SRS):**
  - There is a "progressive reduction" in MMR from **130 in 2014-2016 to 122 in 2015-17 to 113 in 2016-18, and 103 in 2017-19.**
  - The target 3.1 of **Sustainable Development Goals (SDG)** is to reduce the global MMR to less than **70 per 1,00,000 live births.**
  - **Nine states** have already achieved SDG target - Kerala (30), Maharashtra (38), Telangana (56), Tamil Nadu (58) etc.
- **According to the National Family Health Survey (NFHS-4):**
  - **Institutional deliveries** have increased **from 39% in 2005-06 to 79% in 2015-**
  -
  - **16.**

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INDIA-SPECIFIC MATERNAL MORTALITY STATISTICS (FROM MMEIG "TRENDS IN MATERNAL MORTALITY 2000–2023" REPORT):

- India has made significant strides in reducing MMR going from **103 per lakh live births to 80 per lakh live births.**
- The **MMR of India has now declined by 86%** compared to the **global reduction of 48% over** the past 33 years from 1990 to 2023.
- Also, the number of estimated maternal deaths in India has also reduced from **24,000 to 19,000**, states the report.

SIGNIFICANCE OF MATERNAL HEALTH:

- **Better Human Capital and Labour Productivity:**
  - Epidemiological studies show that a mother's health significantly affects the biological development of the foetus.
  - Events occurring in **utero (in the womb) influence long-term cognitive development and adult health.**
  - **Low birth weight** is associated with a **15% reduction in adult income and a higher risk of school dropout** (Source: PMC study on foetal origins of adult disease).
  - Improved maternal health leads to **healthier future workers, increasing national productivity.**
- **For Better Outcomes in Schooling:**
  - A healthy mother is more likely to give birth to a healthy child who performs better academically.
  - Children of well-nourished, educated mothers are more likely to stay in school longer and achieve better cognitive development.
  - Studies show that a **mother's education and health are strong predictors of children's learning outcomes (Source: ScienceDirect).**
- **Tackling Neonatal and Infant Mortality**
  - A key driver of **neonatal deaths is low birth weight**, often caused by maternal under nutrition.
  - Undernourished mothers are far more likely to have underweight babies, who are at a higher risk of mortality.
  - For instance, India's **Janani Suraksha Yojana (JSY)** increased institutional deliveries and helped reduce both maternal and neonatal mortality (Source: Ministry of Health & Family Welfare).
- **Nutritional Security of Children**
  - Maternal care and institutional delivery improve children's nutritional absorption and immunity.
  - The **Pradhan Mantri Matru Vandana Yojana (PMMVY)** offers financial assistance to pregnant women, supporting better nutrition and rest during pregnancy.

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- Community-based models like the **Comprehensive Rural Health Project (CRHP)** have shown success in reducing malnutrition among children through maternal health education.

- **Reducing Risk of Neurodevelopmental Disorders:**
  - **Maternal conditions like diabetes** during pregnancy are linked to increased risk of neurodevelopmental disorders in children.
  - **Children born to diabetic mothers have a 28% higher likelihood of developing disorders like autism or ADHD** (Source: Reuters, 2025 meta-analysis).
- **Enhancing Maternal Mental Health and Postpartum Well-being**
  - Mental health conditions are the most common complications during and after pregnancy.
  - Poor maternal mental health can affect infant nutrition, emotional bonding, and long-term development.
  - Studies show that **depression or anxiety during pregnancy increases the risk of premature birth and underweight babies.**
- **Strengthening Health Systems and Emergency Care**
  - Investment in maternal healthcare leads to improved health infrastructure, staff training, and emergency services.
  - Programs like **Averting Maternal Death and Disability (AMDD) have helped double emergency obstetric care capacity in West Africa.**
  - Stronger maternal services also prepare health systems to **handle other crises, including pandemics.**

CHALLENGES IN MATERNAL HEALTH IN INDIA:

- **Malnutrition Among Women**
  - According to NFHS-5 (2019–21), **18.7%** of Indian women aged 15–49 **are underweight (BMI below 18.5),** indicating a significant prevalence of undernutrition among women of reproductive age.
  - The prevalence of anaemia among pregnant women has increased to **52.2% in NFHS-5 from 50.4% in NFHS-4**, highlighting a worsening situation.
- **Low Weight Gain During Pregnancy**
  - While specific national data on average weight gain during pregnancy is limited, studies suggest that **Indian women often gain less weight than the 12 kg recommended by the WHO** for underweight women, potentially impacting fetal growth and development.
  - For instance, in Sonebhadra district, Uttar Pradesh, a survey found that pregnant women gained an average of **just 4 kg during pregnancy**, significantly less than the **12 kg recommended by the WHO** for underweight women.

- **Social Norms**
  - Prevailing social norms often accord young women low status in joint households, leading to **reduced nutritional intake and limited autonomy in health-related decisions.**
- **Lack of Resources Within Public Sector Facilities**
  - Public healthcare systems frequently lack a**dequate equipment and trained personnel** to provide comprehensive maternity care, particularly in rural areas.
  - For instance, in 2014, **in Chhattisgarh, 15 women died after undergoing sterilization surgeries** in government-run camps. Investigations revealed that the surgeries were conducted under unhygienic conditions with contaminated equipment, highlighting the dire state of public healthcare facilities.
- **Unsafe Abortions**
  - Unsafe abortions are the **third leading cause of maternal mortality in India**, and close to **8 women die** from causes related to **unsafe abortions each day**, according to the United Nations Population Fund (UNFPA)'s State of the World Population Report 2022.
  - Between 2007-2011, **67 per cent of abortions in India were classified as unsafe.**
- **Lack of Institutional Delivery**
  - India has made progress in increasing institutional deliveries, with **89%** of births occurring in health facilities as per NFHS-5, up from **79%** in NFHS-4.
  - However, **11% of births still occur outside institutional settings**, posing risks to both mother and child

GOVERNMENT INITIATIVES:

- **LaQshya (Labour room Quality Improvement Initiative):**
  - It aims to **improve the quality of care in the labour room** and maternity operation theatres in public health facilities.
  - A comprehensive strategy has been adopted that includes **infrastructure up-gradation, ensuring the availability of vital equipment, improved and adequate human resources and improving skills** of healthcare workers.
  - The quality of the labour rooms and maternity operation theatres will be **assessed through the National Quality Assurance Standards (NQAS).**
- **POSHAN Abhiyaan - National Nutrition Mission**
  - It aims to improve nutritional outcomes among pregnant women, lactating mothers and children by reducing the level of stunting, underweight, anaemia and low birth weight by 2022.

- **Janani Suraksha Yojana (JSY):**
  - It integrates **cash assistance with delivery and post-delivery care** to reduce the maternal and neonatal mortality rate and **promote institutional delivery** of the pregnant women, especially with weak socio-economic status.
- **Pradhan Mantri Surakhit Matritva Abhiyan (PMSMA):**
  - It aims to **provide free comprehensive and quality antenatal checkups** for pregnant women across the country.
- **Pradhan Mantri Matru Vandhana Yojana (PMMVY):**
  - It **provides a cash benefit to the pregnant women** in their bank account **directly to address their nutritional needs and compensate for their wage loss.**
- **Surakhit Matritva Aashwasan Initiative (SUMAN):**
  - It aims to **provide free quality healthcare to all pregnant women**, mothers up to 6 months after delivery and all sick newborns who are visiting a public health facility.
- **The National Food Security Act of 2013:**
  - It has provisions for universal cash entitlement for pregnant women of at least 6,000 rupees.
- **Anaemia Mukt Bharat (AMB):**
  - Targets **anaemia reduction among women and children** through iron-folic acid supplementation, testing, and awareness.
  - Integrated with POSHAN Abhiyaan and school/Anganwadi health programs.
- **Maternal Death Surveillance and Response (MDSR):**
  - A nationwide system for tracking and investigating **maternal deaths** to identify preventable causes and improve healthcare responses.
  - Supports **facility-based and community-based reviews**.
- **Reproductive and Child Health (RCH) Portal:**
  - A **digital platform** for tracking pregnancies, antenatal care, institutional deliveries, and immunization of children.
  - Improves delivery of time-bound maternal and child healthcare services.
- **Ayushman Bharat Digital Mission (ABDM):**
  - Facilitates the creation of **Ayushman Bharat Health Accounts (ABHA)** to store digital health records.
  - Enhances **continuity of maternal care** and easier access to healthcare providers and facilities.

WAY FORWARD:

- **Strengthen Primary Healthcare Systems**: Improve infrastructure, staffing, and referral systems, especially in rural and tribal areas.

- **Expand Awareness and Outreach**: Launch targeted campaigns on nutrition, safe motherhood, antenatal care, and reproductive rights, especially among adolescent girls and marginalized communities.
- **Ensure Universal Access to Safe Abortion**: Improve access to trained providers and destigmatize abortion through policy clarity and public education.
- **Tackle Social Determinants**: Address early marriage, gender inequality, and low female literacy that contribute to poor maternal outcomes.
- **Enhance Digital Monitoring**: Scale up platforms like the RCH Portal and ABHA accounts to ensure better tracking of maternal care and timely interventions.
- **Incentivize Institutional Deliveries**: Continue schemes like JSY and PMSMA while improving service quality and patient experience in public health facilities.

CONCLUSION:

- Maternal health is a critical pillar of national development, directly linked to the well-being of future generations. While India has made commendable progress in reducing maternal mortality, sustained investment, systemic reforms, and community empowerment are essential to achieve the SDG targets and ensure that no woman dies giving life

PRACTICE QUESTION

Q. Discuss the significance of maternal health for national development. Highlight the key challenges associated with ensuring maternal health in India. (10 marks, 150 words)

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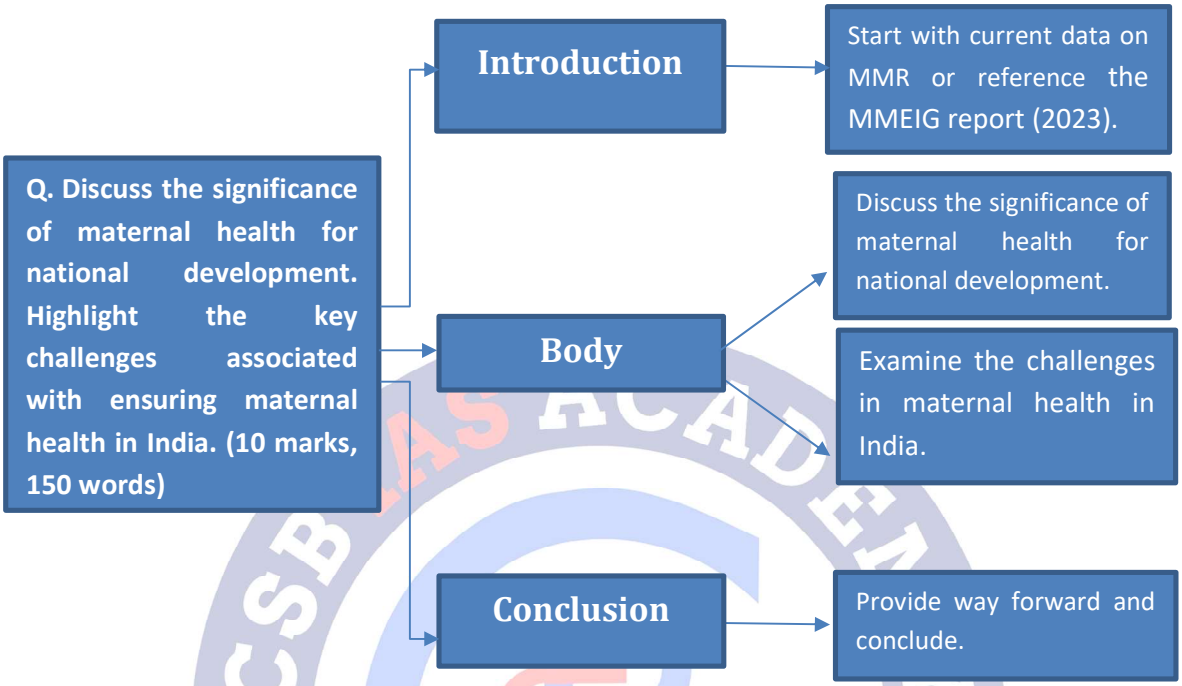
APPROACH



MODEL ANSWER

Maternal health is a core indicator of a nation's overall health and social development. According to the *United Nations Maternal Mortality Estimation Inter-Agency Group (MMEIG)* report (2023), India registered **19,000 maternal deaths**, contributing **7.2% to global maternal mortality**. While India's **Maternal Mortality Ratio (MMR)** has declined significantly from **2,000 per 1 lakh live births in the 1940s** to **80 per 1 lakh live births in 2023**, critical challenges persist.

Significance of Maternal Health for National Development:

1. **Better Human Capital and Labour Productivity**
   - Poor maternal health can impact fetal development, leading to **lower cognitive ability and reduced adult productivity**.
   - Low birth weight is linked to a **15% reduction in adult income** and higher school dropout rates (*PMC study*).
2. **Improved Educational Outcomes**
   - Healthy mothers give birth to healthier children, who perform better in school.
   - A mother's health and education strongly influence **child learning outcomes** (*ScienceDirect*).
3. **Reduction in Neonatal and Infant Mortality**

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- Maternal undernutrition leads to **low birth weight**, a major factor in neonatal deaths.
- Schemes like **Janani Suraksha Yojana (JSY)** have significantly improved institutional deliveries and outcomes.

4. **Nutritional Security of Children**
   - Maternal care improves children's **nutrient absorption and immunity**.
   - Initiatives like **PMMVY** and **CRHP** offer financial and educational support to pregnant women.
5. **Prevention of Long-Term Disorders**
   - Maternal diabetes and poor prenatal health are linked to **neurodevelopmental disorders** such as autism and ADHD (*Reuters 2025 meta-analysis*).
6. **Maternal Mental Health and Postpartum Well-being**
   - Poor maternal mental health affects **infant bonding, nutrition, and long-term health**.
   - Depression during pregnancy increases the risk of **preterm and low-birth-weight babies**.
7. **Strengthening Health Systems**
   - Investment in maternal care boosts the **overall healthcare system**, staff capacity, and infrastructure.
   - Programs like **AMDD** have improved emergency care across developing regions.

Challenges in Maternal Health in India:

1. **Malnutrition and Anaemia**
   - **18.7%** of women aged 15–49 are underweight; **52.2%** of pregnant women are anaemic (*NFHS-5*).
   - These numbers have worsened from **NFHS-4**, showing gaps in nutrition and outreach.
2. **Low Weight Gain During Pregnancy**
   - Women gain only **4–7 kg**, below the **12 kg recommended by WHO**.
   - In **Sonebhadra, UP**, average weight gain was just **4 kg**, raising risks for both mother and child.
3. **Regressive Social Norms**
   - Low status of young women in **joint families** reduces access to nutrition and autonomy in health decisions.
4. **Weak Public Health Infrastructure**
   - Many rural hospitals lack **trained staff and necessary equipment**.
   - In **Chhattisgarh (2014)**, 15 women died after sterilizations in unhygienic conditions in government camps.

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5. **Unsafe Abortions**
    - **67%** of abortions were unsafe (2007–11); **8 women die daily** due to unsafe abortion-related complications (*UNFPA 2022*).
6. **Non-Institutional Deliveries**
    - While institutional deliveries have risen to **89% (NFHS-5)**, **11% of births still occur at home**, risking complications.

Way Forward:

- **Strengthen Primary Healthcare**: Equip rural facilities with skilled staff and emergency obstetric care.
- **Enhance Awareness**: Run nationwide campaigns targeting adolescent girls and pregnant women.
- **Ensure Safe Abortion Access**: Strengthen availability of safe and legal services while addressing stigma.
- **Tackle Social Inequality**: Focus on empowering women through education, nutrition, and community participation.
- **Leverage Digital Tools**: Expand platforms like **ABHA**, **RCH Portal**, and **MDSR** for real-time maternal health tracking.
- **Improve Quality of Institutional Deliveries**: Through schemes like **LaQshya** and **SUMAN**, ensure safety, dignity, and quality in maternity wards.

Maternal health is not only a moral imperative but also a developmental necessity. India has made **notable progress**, with states like **Kerala (MMR 19)** and **Tamil Nadu (58)** achieving the **SDG 3.1 target**. However, achieving universal maternal health requires **policy consistency, community empowerment, and robust health systems** — so that no woman dies while giving life.

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8. ANAEMIA

iMPACT ANALYSIS

SYLLABUS:

GS 2 > Social Justice >> Issues relating to Poverty and Hunger.

REFERENCE NEWS:

More than 67 per cent of children between six to 59 months are anaemic in India, according to the data released by the Union Health Ministry on 18th April.

The National Health Survey-5 (2019-2021) data on the status of anaemia in India puts the rate of anaemia among women between 15-49 years at 57 per cent, pregnant women in the same age group at 52.2 per cent, and at 59.1 per cent among adolescent girls between 15-9 years.

ANAEMIA:

Anaemia is a medical condition where the **number of red blood cells (RBCs)** or the **amount of haemoglobin** in the blood is **lower than normal**, resulting in **reduced oxygen-carrying capacity** of the blood.

Causes of Anaemia: Decreased production of RBCs, **increased destruction** of RBCs (hemolysis), **blood loss** (e.g., menstruation, internal bleeding), **nutritional deficiencies** (iron, vitamin B12, folate).

- **Iron Deficiency Anaemia (IDA): Most common type** globally and in India. Caused by **inadequate iron intake, absorption issues, or chronic blood loss** (e.g., heavy menstruation, intestinal ulcers). RBCs appear **microcytic (small) and hypochromic (pale)**.
    - Common among women and children; ~57% of Indian women aged 15–49 are anaemic (NFHS-5).
- **Vitamin B12 Deficiency Anaemia (Pernicious Anaemia):** Caused by **low intake or poor absorption of vitamin B12**. Leads to **megaloblastic anaemia** — RBCs are **large and immature**. Symptoms include **neurological issues** like numbness, memory loss, and imbalance.
- **Folate Deficiency Anaemia:** Folic acid is essential for **DNA synthesis** and red blood cell formation. Common in **pregnancy**, alcoholics, or those on certain medications (e.g., methotrexate). Also leads to **megaloblastic anaemia**.
- **Aplastic Anaemia:** A **rare but serious** condition where the bone marrow fails to produce enough RBCs, WBCs, and platelets. Can be caused by **autoimmune diseases, toxins, chemotherapy**, or viral infections.

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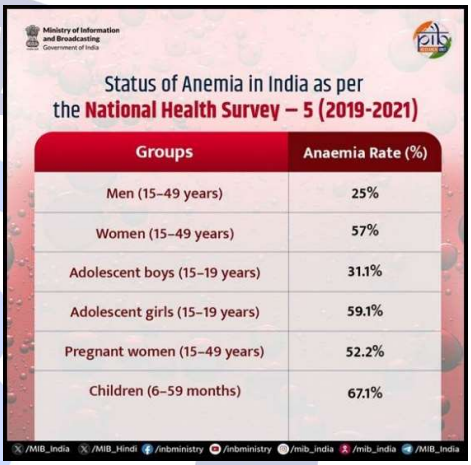
- **Hemolytic Anaemia:** Occurs when **RBCs are destroyed faster than the bone marrow can replace them**. Caused due to **autoimmune diseases, malaria, sickle cell disease, G6PD deficiency**. Can be **hereditary or acquired**.
- **Sickle Cell Anaemia:** A **genetic disorder** where RBCs become **crescent-shaped** and sticky. These cells block blood flow and break easily. Common in **tribal populations of India and African countries**.
- **Thalassemia:** A **hereditary anaemia** caused by abnormal haemoglobin production. Leads to **chronic anaemia**, requiring **frequent blood transfusions**. Common in parts of **India, Pakistan, Mediterranean, and Southeast Asia**.

ANAEMIA IN INDIA:

- 67.1% of children and 59.1% of adolescent girls in India are anaemic (NFHS-5).
- 3 in 4 Indian women have low dietary iron intake.
- Anaemia prevalence among women of reproductive age increased from 53.2% (NFHS-4) to 57.2% (NFHS-5).
- Women (15–49 years): 41.1% (study) vs. 60.8% (NFHS-5).
- **Iron Deficiency**: Only 9% of anaemia cases were due to iron deficiency, while 22% were from unknown causes.



- **Geographic Variation:** States like Assam reported high anaemia prevalence (50%-60%) but low iron deficiency (18%).
- Anaemia affects around 500 million women aged 15 to 49 and 269 million children under 5 years (6-59 months) worldwide.

FACTORS BEHIND THE HIGH PREVALENCE OF ANAEMIA IN INDIA:

- **Poor Dietary Intake and Nutritional Deficiencies:** Diets low in **iron, vitamin B12, and folate** are widespread, especially in rural and low-income populations.
  - A balanced diet should provide not more than 45 per cent calories from cereals, and millets and up to 15 per cent of calories from pulses, beans and meat. Rest of the calories should come from nuts, vegetables, fruits and milk.
  - In tribal and rural areas, diets are rich in cereals but deficient in **green leafy vegetables, pulses, and animal protein**, which are better sources of iron and B12.
  - In Central India, the intake of total calories (1825 Kcal), protein (50.2g), fat (49.8g) and carbohydrate (277g) were lower than that of pooled average intake in urban areas.

- **High Burden of Parasitic Infections: Hookworm, malaria, and schistosomiasis** lead to **chronic blood loss and iron depletion**. Poor sanitation and open defecation increase the spread of intestinal parasites.
    - In states like **Odisha and Chhattisgarh**, the coexistence of anaemia and malaria is common among tribal populations.
- **Frequent Pregnancies and Poor Maternal Health:** Short birth intervals and early marriages lead to **high fertility and repeated iron depletion**. Anaemia during pregnancy increases the risk of **preterm delivery and low birth weight**.
    - Over **50% of pregnant women** in India are anaemic (NFHS-5), despite the government's iron-folic acid supplementation programs.
- **Adolescent and Menstrual Health Neglect:** Adolescent girls often suffer from **undernutrition** and **heavy menstrual bleeding**, with little access to health services or awareness. Iron demand increases during adolescence, but intake remains inadequate.
    - The **Rashtriya Kishor Swasthya Karyakram (RKSK)** targets adolescents, but coverage and implementation remain patchy in several states.
    - Menstruation is still a taboo and highly neglected in many rural areas leading to inadequate hygiene and nutrition.
- **Gender and Social Disparities:** Women often **eat last and least** in households, especially in patriarchal societies. Girls and women from **marginalised communities (SC/ST/OBC)** have significantly higher anaemia rates.
    - Anaemia is **60% among women in rural areas** vs. **51% in urban areas** (NFHS-5), reflecting both gender and rural inequality.
- **Poor Absorption Due to Gut Inflammation and Infection:** Even when dietary iron is present, **gut inflammation** (from infection or poor gut health) reduces iron absorption.
    - **Environmental Enteropathy** caused by chronic poor hygiene is a silent barrier to nutrient uptake.
- **Low Compliance with Supplementation Programs:** Despite schemes like **Anaemia Mukt Bharat**, **compliance with iron-folic acid tablets is poor** due to side effects (e.g., nausea), lack of awareness, or irregular supply.
    - NFHS-5 data reveals only **26% of pregnant women** consumed **iron-folic acid tablets for 180+ days**, as recommended.
- **Cultural Beliefs and Food Taboos:** Some communities **avoid nutrient-rich foods** (e.g., eggs, meat) during pregnancy or menstruation due to cultural or religious beliefs. **Iron-rich foods like jaggery, organ meats, or leafy greens** may be underutilised.

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CHALLENGES OF HIGH PREVALENCE OF ANAEMIA:

Health Dimension

- **Maternal and Child Health Risks:** Anaemia during pregnancy leads to **increased maternal mortality, premature births, low birth weight and stunted children.**
- Anaemic mothers are more likely to give birth to **underweight babies**, increasing the **risk of infant mortality**.
- **Increased Disease Burden:** Anaemia weakens immunity, increasing susceptibility to infections like **tuberculosis**, **malaria**, and **respiratory diseases**. In states like **Chhattisgarh and Odisha**, anaemia and malaria co-exist, making recovery slower and health systems overstretched.

Education and Cognitive Development

- **Reduced Learning Capacity in Children:** Anaemia impairs brain development, causing poor memory, reduced attention span, lower IQ and academic performance.
    - A study by the Indian Council of Medical Research (ICMR) shows that **anaemic school children scored significantly lower** in cognitive and language tests.
- **Higher Dropout Rates Among Girls:** Anaemic adolescent girls experience **fatigue and menstrual health issues**, leading to **absenteeism and early dropout**.
    - In rural India, lack of awareness and support during menstruation contributes to **higher dropout rates among girls post-puberty**.

Economic and Labour Productivity

- **Reduced Work Capacity:** Anaemia leads to low stamina and physical performance, decreased labour productivity in agriculture, construction, and informal sectors
    - The World Bank estimates that **anaemia can reduce adult work productivity by up to 20%**. This results in **substantial economic losses** for the country.
- **Higher Healthcare Expenditure:** Chronic anaemia results in **increased out-of-pocket expenses** for families and **pressure on public health systems**.
    - Households with anaemic children or pregnant women often incur repeated costs on diagnostics and iron supplements, especially in underserved regions.

Gender and Social Equity

- **Gender Disparity in Nutrition:** Women often **eat last and least** in Indian households, worsening nutritional inequality.
    - NFHS-5 shows **higher anaemia prevalence among rural, tribal, and SC/ST women**, reflecting **intersections of gender, caste, and poverty**.

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- **Intergenerational Malnutrition:** Anaemia in adolescent girls and pregnant women leads to **low birth weight and anaemic infants**, creating a **vicious cycle of malnutrition**.
    - The cycle of **malnourished adolescent → anaemic mother → undernourished child** is persistent in states like **Bihar, Jharkhand, and Madhya Pradesh**.

National Development and Human Capital

- A society burdened with anaemia has: **Lower educational attainment, Weaker workforce participation, Greater public health expenditure.** This hampers **India's demographic dividend** and goals of **inclusive growth**.
    - India loses an estimated **$22 billion annually** in GDP due to anaemia-related productivity losses (World Bank estimate).

Current Measures Taken by the Government

- **Anaemia Mukt Bharat (AMB) Programme (2018):** Launched under the **POSHAN Abhiyaan**, targets: Children (6–59 months)/Adolescents (10–19 years)/Women of reproductive age (15–49 years)
- **Weekly Iron and Folic Acid Supplementation (WIFS)**: Targeted at **school-going adolescents**, especially girls, through teachers and ASHAs.
- MoHFW is implementing the **National Deworming Day (NDD)** program, under which biannual mass deworming for children and adolescents aged 1-19 is carried out on designated dates – 10th February and 10th August every year. Pregnant women are provided services under the strategy through antenatal care contacts (ANC clinics/ VHND) for deworming (in the second trimester).
- **Food Fortification Initiatives: Iron-fortified rice** in PDS, ICDS, and Mid-Day Meal (PM POSHAN) schemes. **Double fortified salt (DFS)** and fortified wheat flour being promoted.
- **Rashtriya Kishor Swasthya Karyakram (RKSK):** Focuses on **adolescent health**, menstrual hygiene, and nutritional awareness.
- **POSHAN Tracker and Anaemia Testing Devices: Digitised monitoring tools** to track IFA compliance and anaemia testing in Anganwadi centres.

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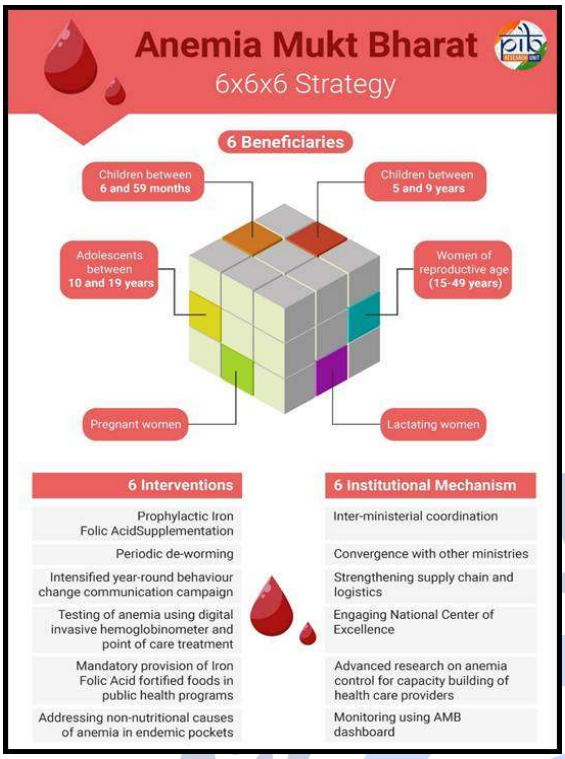
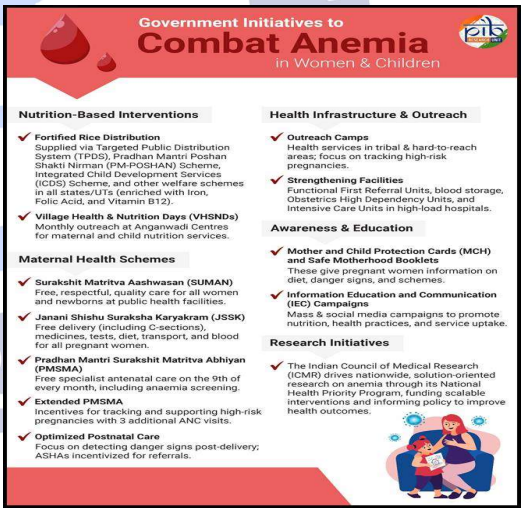


WAY FORWARD:

- **School-Based Screening & Supplementation – Bangladesh:** Regular iron tablet distribution with deworming led to a **50% reduction** in adolescent anaemia.
- **Community Kitchens – Tamil Nadu:** Supply **nutrient-rich meals** using iron-rich local ingredients (e.g., drumstick leaves, millets) to pregnant women and children.
- **Fortified Mid-Day Meals – Gujarat:** Addition of **iron-fortified wheat** and awareness through schools has improved haemoglobin levels.



- **Expand Fortification and Biofortification:** Scale up **fortified staples (rice, wheat, salt)** through PDS, Anganwadis, and schools. Promote **biofortified crops** like **iron-rich millets, zinc-rich rice**, and **orange-fleshed sweet potatoes**.
- **Strengthen Community Awareness & Behaviour Change:** Use frontline workers (ASHA, Anganwadi) for: **Cultural sensitisation/Counselling on dietary diversity/Overcoming food taboos and myths**

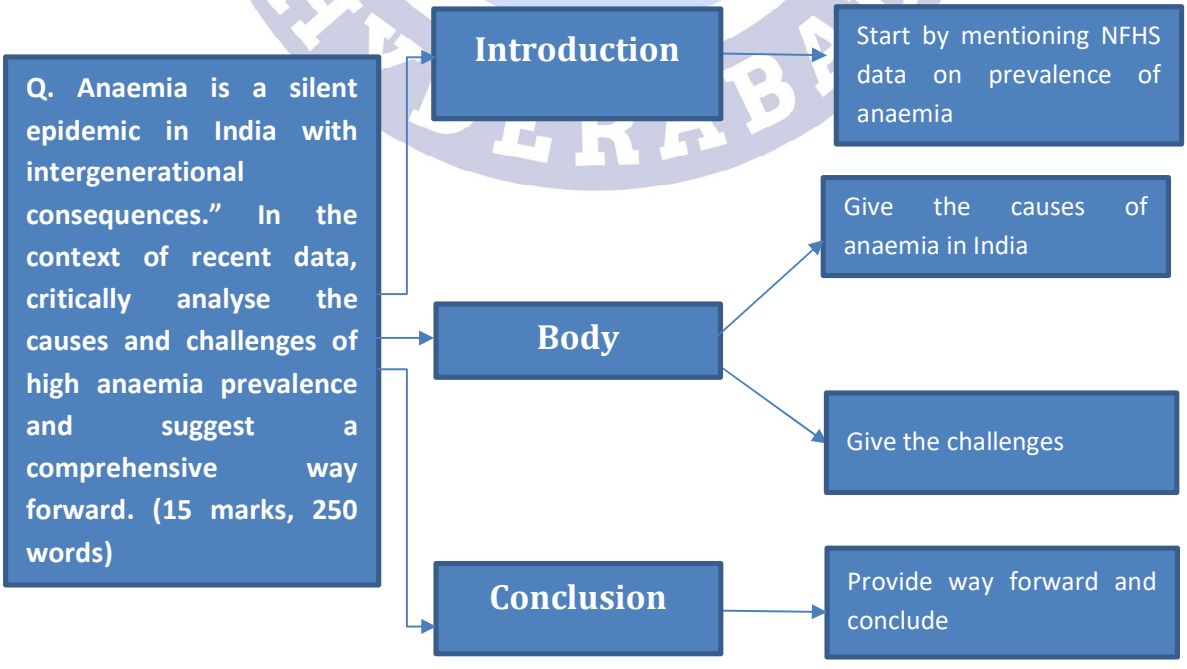
- **Improve Compliance and Coverage of IFA Supplements:** Ensure **supply chain integrity** and make **chewable, palatable forms** for children and adolescents. Use **incentives or nudges** (e.g., digital reminders, school awards) to improve regular intake.
- **Integrate Anaemia Control with WASH and Deworming:** Ensure **clean water, sanitation**, and **deworming** to reduce parasitic blood loss. Link with **Swachh Bharat Abhiyan** and **Jal Jeevan Mission**.
- **Focus on Menstrual Health & Women's Empowerment:** Ensure access to **sanitary products**, menstrual hygiene education, and **menstrual leave policies**. Promote **gender-equal food distribution** in households.
- **Real-Time Monitoring and District-Level Dashboards:** Track progress at **district level** using digital tools like **POSHAN Tracker**. Use **Haemoglobin Testing Camps** in schools, PHCs, and anganwadis.

Anaemia is a **silent epidemic** with profound implications for India's **health, economy, and human development**. Addressing it requires a **holistic, inter-sectoral response**: strengthening health systems, improving dietary diversity, empowering women, and ensuring universal access to **iron-folic acid supplementation**, sanitation, and education. Only then can India realise its vision of a **healthy and productive population**.

PRACTICE QUESTION

Q. Anaemia is a silent epidemic in India with intergenerational consequences." In the context of recent data, critically analyse the causes and challenges of high anaemia prevalence and suggest a comprehensive way forward. (15 marks, 250 words)

APPROACH



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MODEL ANSWER

Anaemia, a condition marked by low haemoglobin or red blood cell count, continues to afflict a large section of India's population. According to **NFHS-5 (2019–21)**: **67% of children (6–59 months)**, **59.1% of adolescent girls**, and **57% of women (15–49 years)** are anaemic.

Causes of High Prevalence of Anaemia:

- **Nutritional Deficiency**: Poor dietary intake of iron, B12, and folate, especially in rural and tribal diets rich in cereals but deficient in animal proteins and vegetables.
- **Parasitic Infections**: High incidence of malaria and hookworm in states like Odisha and Chhattisgarh leads to chronic blood loss.
- **Maternal Health Neglect**: High fertility rates, short birth intervals, and low IFA compliance among pregnant women.
- **Adolescent and Menstrual Health Issues**: Heavy menstrual bleeding, undernutrition, and social taboos lead to poor adolescent health.
- **Gender Inequity**: Women often eat last and least; SC/ST communities face higher anaemia rates.
- **Low Compliance**: Only 26% of pregnant women consumed IFA tablets for the recommended 180 days (NFHS-5).

Challenges of an Anaemic Society:

- **Health Risks**: Maternal deaths, low birth weight, and stunting in children.
- **Cognitive Impairment**: Poor learning outcomes and higher dropout rates among girls.
- **Economic Losses**: Up to **20% reduction in adult productivity**; **$22 billion annual GDP loss** (World Bank).
- **Intergenerational Malnutrition**: Cycle of anaemic mothers → undernourished children → weakened human capital.

Way Forward:

- **Policy Interventions:** Strengthen **Anaemia Mukt Bharat** and expand IFA coverage. Promote **food fortification and biofortified crops** like iron-rich millets.
- **Community-Based Approaches: School-based IFA and deworming** (Bangladesh model). **Community kitchens** (Tamil Nadu) and **fortified mid-day meals** (Gujarat)

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- **Awareness and Behaviour Change:** Counselling via ASHAs/Anganwadi workers to break food taboos. Promote **menstrual hygiene education** and women's empowerment
- **Digital and Monitoring Tools:** Real-time tracking via **POSHAN Tracker**, district-level dashboards, and regular haemoglobin testing camps
- **Integrated Approach:** Link anaemia control with **WASH**, **Swachh Bharat Abhiyan**, and **Jal Jeevan Mission**.

Anaemia remains a **silent yet debilitating epidemic**. Addressing it demands a **whole-of-society approach**, blending **nutrition, gender equity, public health, and social behaviour change**. Only a coordinated, evidence-driven strategy can help India realise its demographic dividend and health equity goals.

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9. ANTI-DEFECTION LAW

iMPACT ANALYSIS

SYLLABUS:

GS 2 > Constitution

REFERENCE NEWS:

Justice Gavai tells CM's counsel that promising no by-polls will be held even after MLAs switch sides undermines anti-defection law. SC was hearing BRS plea against Speaker's delay in deciding disqualification petitions.

ANTI DEFECTION LAW IN INDIA:

The **Anti-Defection Law** was introduced in India to curb **political instability** caused by the **frequent switching of parties by legislators**. This practice, known as **"Aaya Ram, Gaya Ram" politics**, had become a major issue in Indian democracy, leading to **horse-trading, corruption, and government instability**.

- Before the enactment of the law, **legislators frequently changed parties for personal or political benefits**, leading to instability in governments.
    - In 1967, Haryana MLA **Gaya Lal** changed his party **three times in a single day**, which led to the phrase **"Aaya Ram, Gaya Ram"**, symbolizing **political defection**
- **Frequent collapse of governments** (Between 1967 and 1983, 16 states saw over **150 defections**).
- **Increased corruption and horse-trading** (1979 downfall of **Morarji Desai's government** due to defections).

To address this issue, the **Rajiv Gandhi government introduced the 52nd Constitutional Amendment** in 1985, which led to the **Anti-Defection Law** under the **Tenth Schedule**.

Constitutional Provisions

- Introduced through the **52nd Amendment Act, 1985**, added the **Tenth Schedule** to the Constitution.
- **91st Amendment Act, 2003** modified certain provisions.
- **52nd Amendment Act, 1985:** Disqualifies MPs/MLAs for **defection** from their political party.
- Amended **four articles**: **Article 101 & 190** – Vacation of seats in Parliament and State Legislatures. **Article 102 & 191** – Disqualification from membership.

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Tenth Schedule: Grounds for Disqualification:

- **Voluntary resignation from a political party**.
- **Voting/Abstaining against party directives** without prior approval (unless condoned within **15 days**).
- **Independent members**: Disqualified if they join a political party after elections.
- **Nominated members** – Disqualified if they join a party after **six months**.
- **Exceptions to Disqualification**:
    - **Merger Rule** – If **two-thirds of party members** agree to merge with another party.
    - **Presiding Officers** (Speakers, Chairpersons) – Allowed to resign from the party without disqualification.

91st Amendment Act, 2003

- The provision of the Tenth Schedule pertaining to exemption from disqualification in case of split by one-third of members of the legislature party has been deleted by the **91st Amendment Act of 2003.** It means that the defectors have **no more protection on the grounds of splits.**
- **Cabinet Size Limit** – Total ministers (PM + Council) cannot exceed **15% of Lok Sabha strength**.
- **State Government Ministers** – Limited to **15% of Assembly strength** (minimum **12 ministers**).
- **Defectors Disqualified from Holding Public Office**:
    - Cannot be **appointed as a minister**.
    - Cannot hold **remunerative political posts** under government control.

Authority & Decision-Making

- **Presiding Officer (Speaker/Chairman) decides disqualification**.
- **No time limit** for decision-making.
- **Subject to Judicial Review** (Kihoto Hollohan vs. Zachillhu, 1992).
    - Speaker's decision **not final**; can be challenged in court.
    - Courts can review on grounds of **malafide intent, bias, or perversity**.

Rule-Making Powers

- **Presiding Officer** makes rules for Anti-Defection Law implementation.
- Rules must be **placed before the House for 30 days** (can be approved, modified, or rejected).
- **Defection case process**:
    - **Complaint required** from a House member.
    - **Opportunity for the accused member to explain**.
    - **May refer to the Committee of Privileges for inquiry**.

- **No automatic disqualification** – Requires adjudication.

SIGNIFICANCE OF THE ANTI-DEFECTION LAW IN INDIA:

- **Ensures Political Stability:** Prevents **frequent government collapses** due to mass defections. Provides **certainty in governance**, as seen in **Goa (2019)** where multiple MLAs defected, leading to instability.
- **Promotes Party Discipline:** Legislators are bound by **party ideologies and manifestos**, ensuring **accountability to voters**.
  - **Kihoto Hollohan v. Zachillhu (1992)**: Supreme Court upheld the constitutional validity of ADL, emphasizing the importance of party discipline.
- **Prevents Horse-Trading & Corruption:** Curbs **political bribery** where legislators switch sides for **monetary gains or ministerial positions**.
  - **Jharkhand (2022)**: Allegations of money being offered to MLAs to switch parties highlight the relevance of ADL in countering such practices.
- **Strengthens Democracy by Maintaining the Mandate:** Ensures that elected representatives **do not betray voter trust** by switching parties for personal gains.
  - **Rajendra Singh Rana v. Swami Prasad Maurya (2007)**: Supreme Court disqualified MLAs who defected, upholding democratic integrity.
- **Reduces Political Instability in Coalitions: Vital for coalition governments**, ensuring **partners remain loyal** and do not destabilize the alliance.
  - **Karnataka (2019)**: A coalition government collapsed due to mass defections, emphasizing the need for stronger implementation of ADL.
- **Judicial Safeguards Against Arbitrary Disqualifications**
  - **Kihoto Hollohan v. Zachillhu (1992)**: Supreme Court ruled that **Presiding Officer's decisions are subject to judicial review**, ensuring **fair adjudication of defection cases**.
  - **Manipur Speaker Case (2020)**: SC directed the Speaker to decide on defection petitions in a **reasonable timeframe**, preventing indefinite delays.
- **Reinforces the Role of Political Parties:** Strengthens **multi-party democracy** by ensuring that parties function cohesively.
  - **Mayawati v. Markandeya Chand (1998)**: Supreme Court held that **defections weaken party structures**, making ADL necessary.

CHALLENGES OF ANTI-DEFECTION LAW IN INDIA:

- **Ambiguity in 'Voluntarily Giving Up Membership'**: The term lacks a clear definition, leading to varied interpretations.
  - In Ravi S. Naik v. Union of India (1994), the Supreme Court ruled that a member's conduct could indicate voluntary resignation, even without an explicit declaration.

- **Role of the Presiding Officer**: The authority to decide on disqualification rests with the Speaker or Chairman, who may have political affiliations, raising concerns about impartiality.
    - The Kihoto Hollohan v. Zachillhu (1992) judgment acknowledged potential biases but upheld the Speaker's authority, subject to judicial review.
- **Judicial Delays**: While judicial review is permitted, court interventions can be protracted, delaying resolutions.
    - In Shrimanth Balasaheb Patil v. Hon'ble Speaker, Karnataka Legislative Assembly (2019), the Supreme Court upheld the Speaker's disqualification of 17 MLAs but allowed them to contest by-elections, highlighting procedural delays.
- **Exemption for Mergers**: The law allows party mergers if two-thirds of members agree, which can be misused to bypass disqualification.
    - In Rajendra Singh Rana v. Swami Prasad Maurya (2007), legislators claimed a merger to avoid disqualification, leading the Supreme Court to scrutinize the legitimacy of such mergers.
- **Lack of Time Frame for Decision-Making**: The law doesn't specify a deadline for the Presiding Officer to decide on disqualification petitions, leading to potential delays.
    - In Keisham Meghachandra Singh v. The Hon'ble Speaker Manipur Legislative Assembly (2020), the Supreme Court recommended that Speakers decide on disqualification pleas within a reasonable period, ideally three months.
- **Defectors' Electoral Success and Ministerial Appointments**: Despite defection, many politicians are re-elected and even appointed as ministers, indicating a possible erosion of the law's deterrent effect.
    - According to an analysis by *The Hindu*, out of 443 legislators who switched parties and re-contested elections, 70% were re-elected, and many secured ministerial positions.
- **Mass Defections Leading to Government Instability**: Large-scale defections have resulted in the toppling of governments, questioning the effectiveness of the law.
    - In Karnataka (2019), the resignation of several MLAs led to the collapse of the coalition government, showcasing the law's limitations in preventing such crises.
- **Inadequate Deterrence Against Political Opportunism**: The current provisions may not sufficiently deter legislators from switching parties for personal gain, especially when re-election chances remain high.

WAY FORWARD:

- **Setting a Time Limit for Decision-Making**
    - The Supreme Court in **Keisham Meghachandra Singh v. Speaker, Manipur Legislative Assembly (2020)** recommended that Speakers decide

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disqualification petitions within **three months**, unless exceptional circumstances exist.

- Parliament should amend the **Tenth Schedule** to enforce a strict time frame for decision-making.

- **Shifting Disqualification Power from Speaker to Independent Authority**
  - The **Law Commission (170th Report, 1999)** and the **National Commission to Review the Working of the Constitution (NCRWC, 2002)** recommended shifting the power to an independent tribunal or the **Election Commission of India (ECI)**.
  - The Supreme Court in **Kihoto Hollohan v. Zachillhu (1992)** upheld the Speaker's authority but subjected it to judicial review.
  - India can adopt the **UK's Recall Petition System**, where voters can trigger a by-election if an MP violates party norms.
- **Re-examining the 'Merger' Clause**
  - The **91st Constitutional Amendment Act (2003)** removed protection for defectors based on "splits," but the merger clause remains a loophole.
  - The law should be amended to require that **mergers be approved by the Election Commission and ratified by a public referendum or two-thirds of the parent party outside the legislature**.
- **Stricter Punishments for Defectors**
  - The Supreme Court in **Shrimanth Balasaheb Patil v. Karnataka Legislative Assembly (2019***)* upheld that defectors cannot be appointed as ministers during the tenure of the existing House.
  - The law should **extend the ban on defectors holding ministerial positions for at least six years**.
- **Independent Mechanism for Floor Testing**
  - The Supreme Court in **Shivraj Singh Chouhan v. Speaker, Madhya Pradesh Legislative Assembly (2020)** emphasized that **Governor's discretion in calling a floor test must be exercised cautiously**.
  - India can adopt **Germany's "Constructive Vote of No Confidence"** model, where a government can be removed only if there is a clear alternative government in place.
- **Defining 'Voluntarily Giving Up Membership' More Clearly**
  - The **Tenth Schedule should explicitly define 'voluntarily giving up membership'** to prevent vague interpretations.
  - The **Election Commission** could be given the power to decide on such cases instead of the Speaker.
- **Strengthening Public Awareness and Political Accountability**
  - The Election Commission should **publicly name and shame defectors** and mandate special disclosure norms in election campaigns.

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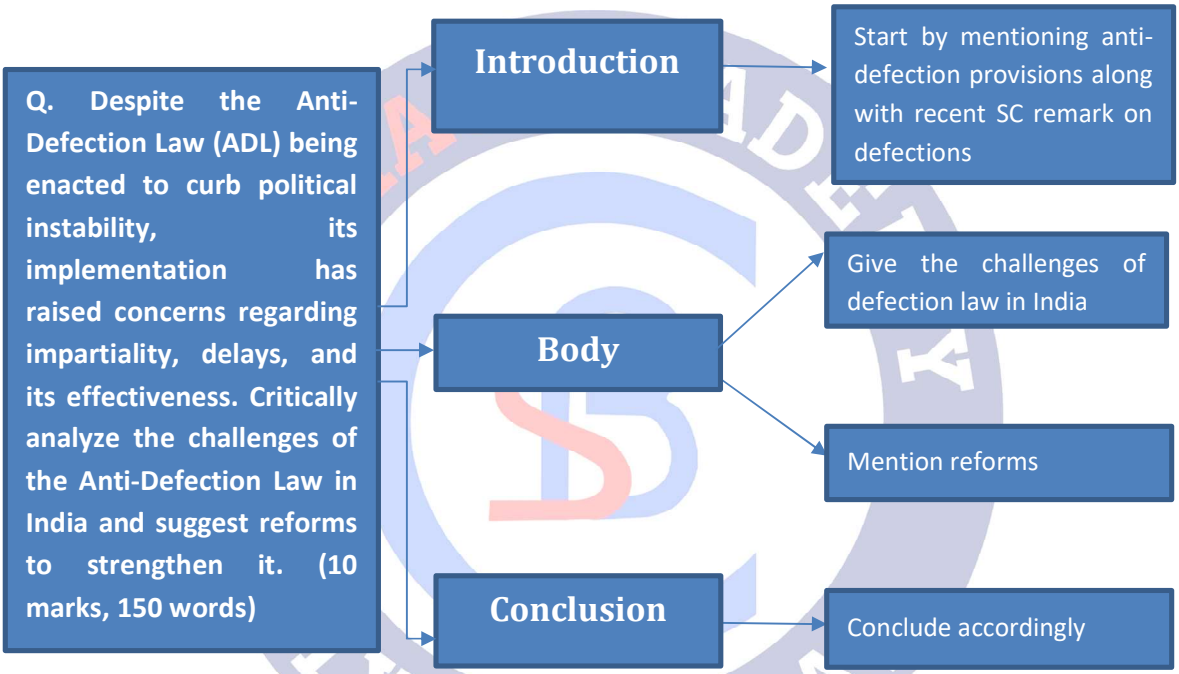
- Introducing **recall mechanisms** for defectors, as seen in **Canada and the US**, could enhance accountability.

PRACTICE QUESTION

Q. Despite the Anti-Defection Law (ADL) being enacted to curb political instability, its implementation has raised concerns regarding impartiality, delays, and its effectiveness. Critically analyze the challenges of the Anti-Defection Law in India and suggest reforms to strengthen it. (10 marks, 150 words)

APPROACH



MODEL ANSWER

The Anti-Defection Law (ADL) was introduced through the **52nd Constitutional Amendment Act, 1985**, and later modified by the **91st Amendment Act, 2003**. It aims to prevent political defections that undermine democratic governance. SC while hearing a plea on delay in defection decision making, Justice Gavai tells CM's counsel that promising no by-polls will be held even after MLAs switch sides undermines anti-defection law.

Challenges in Implementation:

1. **Ambiguity in 'Voluntarily Giving Up Membership'**: The term is vaguely defined, leading to subjective interpretations. *Ravi S. Naik v. Union of India (1994)* ruled that even conduct could imply resignation.

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2. **Bias in Decision-Making by Presiding Officer**: The Speaker, often a member of the ruling party, decides disqualification petitions, leading to conflicts of interest. *Kihoto Hollohan v. Zachillhu (1992)* upheld the Speaker's role but allowed judicial review.

3. **Delay in Decision-Making**: No time frame for disqualification rulings leads to indefinite delays. *Keisham Meghachandra Singh v. Manipur Speaker (2020)* recommended a three-month deadline.

4. **Exemption for Mergers**: The two-thirds merger rule is exploited to bypass disqualification. *Rajendra Singh Rana v. Swami Prasad Maurya (2007)* questioned the misuse of this provision.

5. **Electoral Success of Defectors**: Despite disqualification, defectors often win re-elections and even become ministers. A study by *The Hindu* found **70% of defectors were re-elected**.

Reforms & Way Forward:

1. **Independent Authority for Adjudication**: Transfer disqualification power to an independent tribunal or the Election Commission. *(Law Commission 170th Report, 1999)*

2. **Time-Bound Decision-Making**: Amend the Tenth Schedule to enforce a strict **three-month** deadline. *(SC in Keisham Meghachandra Singh case, 2020)*

3. **Stricter Punishments for Defectors**: Ban defectors from holding ministerial positions for six years. *(SC in Shrimanth Balasaheb Patil case, 2019)*

4. **Reform the Merger Clause**: Require ECI approval and public ratification for mergers. *(Similar to Germany's constructive vote of no confidence model)*

5. **Enhancing Voter Accountability**: Introduce recall mechanisms similar to **UK's Recall Petition System** to empower voters.

While ADL has been a crucial tool in preventing political instability, its loopholes have allowed mass defections to persist. By implementing structural reforms and ensuring impartial adjudication, India can strengthen the democratic mandate and curb unethical political practices.

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10. INDUS WATER TREATY

iMPACT ANALYSIS

SYLLABUS:

GS 2 > International relations > India and Neighbours > Water Management

REFERENCE NEWS:

- The Indus Waters Treaty (IWT), which has survived four wars, decades of cross-border terrorism against India by Pakistan, and a long history of antagonism between the two countries, was **suspended recently for the first time by India**, a day after the **attack on tourists in Pahalgam**, in which Pakistani terrorists took the lives of 26 people.
- Among the slew of diplomatic actions against Pakistan announced by India — including the closure of the Attari border post, cancellation of visas, and the expulsion of several Pakistani personnel from India — the suspension of the IWT may have the most far-reaching ramifications.

INDUS RIVER SYSTEM:

- The Indus, also known as the Sindhu, is the **westernmost of the Himalayan rivers** in India.
- It **originates from a glacier near Bokhar Chu** in the Tibetan region in the Kailash Mountain range. In Tibet, it is known as 'Singi Khamban' or Lion's mouth.
- **Tributaries**:
  - **Left bank** : Shyok, Zanskar, Jhelum, Chenab, Ravi, Beas and Sutlej
  - **Right bank** : Khurram, Tochi, Gomal, Viboa, Sangar, Kabul, Suru

- The **Panjnad** is the name given to the five rivers of Punjab, namely the Satluj, the Beas, the Ravi, the Chenab and the Jhelum.

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INDUS WATER TREATY:

- The Indus Waters Treaty (IWT) between India and Pakistan, **brokered by the World Bank,** dictates the terms of using the water available in the Indus River and its tributaries.

History:

- Partitioning the Indus rivers system was inevitable after the Partition of India in 1947.
- During the first years of partition, the waters were apportioned by the Inter-Dominion Accord of May 4, 1948. This accord required India to release sufficient waters to the Pakistan in return for annual payments from Pakistan.
- In 1951, **David Lilienthal**, former chairman of the Tennessee Valley Authority and of the U.S. Atomic Energy Commission, visited the region and suggested that the World Bank might use its good offices to bring the parties to agreement. This suggestion was accepted by all parties.
- After **9 years of negotiation mediated by the World Bank**, the final treaty was signed in Karachi on 19 September 1960 **by Pandit Jawaharlal Nehru and Ayub Khan.**

Agreement:

- The Treaty gives control over the waters of the three **"eastern rivers"** — the Beas, Ravi and Sutlej **to India** and the three **"western rivers"** — the Indus, Chenab and Jhelum **to Pakistan.**
    - Thereby, **India conceded 80.52 per cent of the aggregate water flows** in the Indus system to Pakistan.
    - But India can **use 20% of the water in western rivers in "non-consumptive" needs**, such as for irrigation and electricity production.
- The **Permanent Indus Commission** is a bilateral commission of officials from India and Pakistan, created **to implement and manage goals of the Indus Waters Treaty.**
- An **Indus Basin Development Fund Agreement**, a treaty between Australia, Canada, West Germany, New Zealand, the United Kingdom, the United States with the World Bank and Pakistan was also signed, which agreed to provide Pakistan a combination of funds and loans for the construction of canals and storage facilities.
- India also gave Rs 83 crore in pounds sterling to Pakistan to help build replacement canals from the western rivers.

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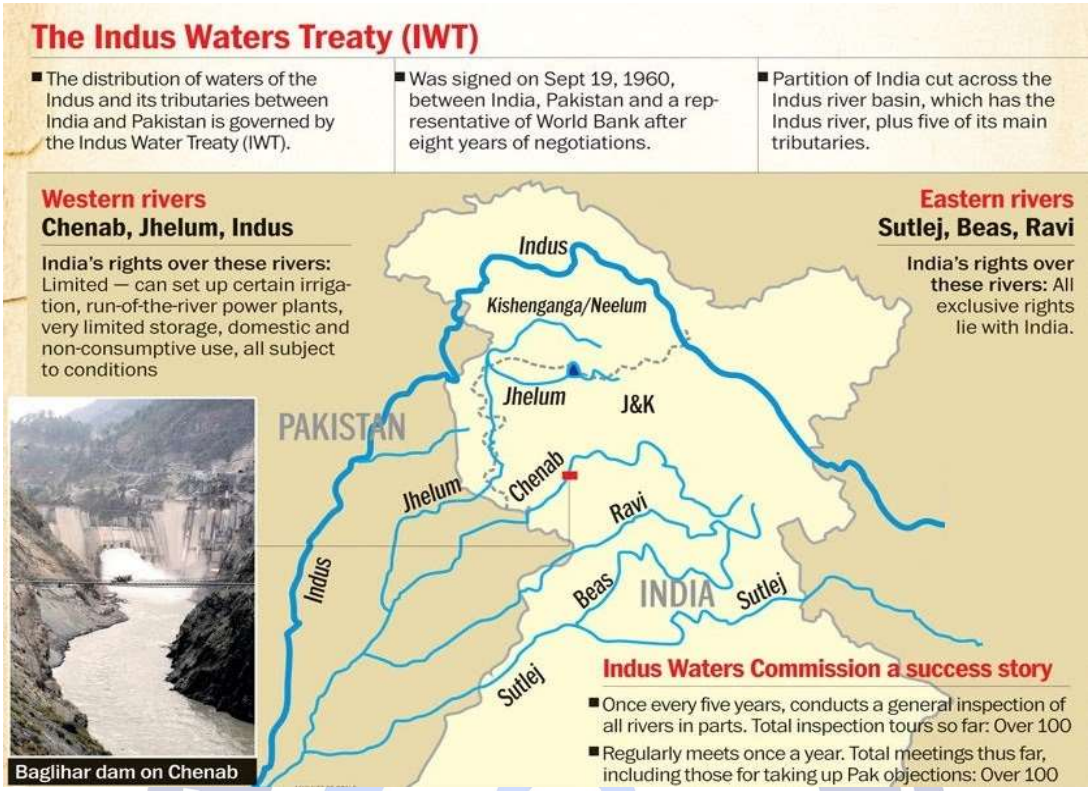

SIGNIFICANCE OF THE TREATY FOR INDIA:

- **Peaceful coexistence:**
  - **Though recently suspended**, the Indus Waters Treaty managed to **survive three wars (1965, 1971, and 1999),** several military standoffs (1987, 2001-02, 2008, 2016, and 2019), and persistent political friction between the nuclear-armed neighbours, highlighting the potential for peaceful coexistence despite deep-rooted hostility.
- **Major projects:**
  - India has constructed major projects like the **Bhakra Dam on Satluj, Pong and Pandoh Dam on Beas and Thein (Ranjit sagar) on Ravi**. All of them are vital for the prosperity of North west India.
- **Responsible upper riparian**:
  - The role of India as a responsible upper riparian abiding by the provisions of the treaty has been remarkable. This has **indirectly benefited India in concluding other water sharing agreements**, like **1996 Ganges Treaty with Bangladesh.**
- **Strategic advantage**:
  - Being the upper riparian, India derives significant military advantage out of IWT. It can act as a **strategic pressure point in the events of bilateral disputes**.

- **Dispute Resolution Framework:**
  - The treaty provides a structured mechanism for resolving disputes, including the **Permanent Indus Commission, Neutral Experts, and the Court of Arbitration.** This framework has been instrumental in addressing disagreements amicably.

CHALLENGES TO THE TREATY:

- **Under-utilisation**:
  - Out of the total estimated capacity of 11406 MW electricity that can be harnessed by India in Kashmir, only 3034 MW has been tapped so far. Further, available data suggests that **around 10% of India's share lies unused and is allowed to flow into Pakistan**.
- **Recurring disputes**:
  - To utilise the full potential of Ravi water, the Centre is currently taking three steps - **resumption of construction of Shahpurkandi project; construction of Ujh multipurpose project; and a second Ravi-Beas link below Ujh**. However, the construction has been frequently interrupted by Pakistan's objections.
- **New realities**:
  - The **variations in hydrology of rivers, rainfall patterns glacial melting due to climate change** has altered the flow of the rivers. The basins are largely becoming deficit in water and hence conflicts are frequently arising.
- **Water nationalism:**
  - In recent years, due to widening supply-demand gap and increasing tensions between the two countries, there has been **calls to utilize all the waters** and the abrogation of the treaty.
- **Pak sponsored terror:**
  - India is under pressure to rethink the IWT, as its overall political relations with Pakistan becomes intractable following Pakistan's cross-border terrorism and intransigence.
- **Affects other neighbourhood relations:**
  - Any unilateral changes to IWT will send alarm bells ringing in India's other lower riparian country, Bangladesh which receives about 91% of its waters from the rivers flowing from India.
- **China-Pak nexus:**
  - The growing collaboration between Pakistan and China on security, economy and water projects, primarily on the western flowing rivers of IRS, may lead the Chinese to become much more assertive towards India.

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- **No exit clause:**
  - The treaty has no provision for either country unilaterally walking out of the pact. Even the severance of diplomatic and consular relationships between India and Pakistan cannot terminate the IWT.

SIGNIFICANCE OF THE IWT SUSPENSION FOR INDIA:

- **Strategic and Diplomatic Leverage:**
  - Demonstrates India's resolve to **respond decisively to cross-border terrorism.**
  - Reinforces a shift in India's posture, linking national security with water diplomacy.
  - Serves as a **diplomatic instrument to apply pressure on Pakistan** in response to its support for terrorism and ceasefire violations, showing that India's patience in bilateral matters has definitive boundaries.
- **Greater Control Over Water Resources:**
  - With the suspension, India is no longer bound to share river flow data and gains freedom to **construct storage reservoirs and alter hydroelectric project designs without Pakistani interference.**
  - Activities like reservoir flushing **(e.g., at Kishenganga**) can be undertaken to improve infrastructure efficiency.
  - India may also **restrict Pakistani officials from inspecting ongoing hydro projects** such as Kishenganga and Ratle in Jammu & Kashmir.
- **Domestic Water Management Opportunities:**
  - Facilitates long-term **planning for irrigation, hydropower, and drinking water** in Jammu & Kashmir and Punjab.
  - Can support India's agricultural and energy needs through better water regulation.
- **Assertion of National Sovereignty:**
  - Represents a strong affirmation **of India's sovereign rights over its water resources**, particularly in the wake of rising public sentiment following terror attacks like Uri (2016), Pulwama (2019), and most recently, Pahalgam (2025).
- **Push Toward Treaty Modernization:**
  - Creates an opening to **renegotiate a treaty crafted in 1960**, which **doesn't account for climate change, glacial melt, or rising water demands.**
  - May lead to a more balanced and contemporary agreement.

CONCERNS RELATED TO THE IWT SUSPENSION FOR INDIA:

- **Escalation of Bilateral Tensions:**
  - Pakistan may view the move as provocative, increasing the risk of military or terrorist responses.

    - The suspension could further **destabilize already fragile diplomatic relations.**
    - Ending or undermining the treaty may fuel geopolitical frictions, raising the possibility of **water-related disputes between the nuclear-armed neighbors.**
- **Regional Stability:**
    - Disrupting the IWT could affect regional water cooperation, as the Indus basin also includes China and Afghanistan.
- **Possible International Criticism:**
    - The IWT has been a symbol of peaceful conflict resolution; suspending it may attract criticism from global institutions and nations.
    - May complicate India's efforts to position itself as a responsible global actor.
    - **India's global credibility in future water-sharing talks — such as with Bangladesh over the Teesta River — may suffer if it is seen as violating long-standing treaties.**
- **Legal and Structural Limitations:**
    - India currently lacks sufficient infrastructure to divert or store significant volumes of the Indus waters.
    - Real gains from the suspension may take years to be realized.
    - **The IWT contains no provision for unilateral termination, and changes require the mutual consent of both countries, limiting India's ability to fully enforce the suspension in legal terms.**

WAY FORWARD:

- **Maximise India's Allocated Share**: India should prioritize the full utilization of its share under the IWT by fast-tracking pending projects like Shahpurkandi, Ujh multipurpose project, and the second Ravi-Beas link.
- **Leverage Article VII for Cooperation**: India and Pakistan should explore the cooperative provisions of the treaty to conduct joint studies and manage river systems efficiently amidst climate and hydrological changes.
- **Invest in Water Infrastructure**: Accelerate investment in storage, diversion, and hydropower infrastructure to strengthen India's strategic and developmental capacity within treaty limits.
- **Diplomatic Engagement, Not Exit**: While using suspension as strategic leverage, India should avoid permanent abrogation. Instead, sustained diplomatic pressure and calls for treaty modernization can yield more balanced outcomes.
- **Regional Water Diplomacy**: Ensure transparency and goodwill with other neighbors like Bangladesh to avoid spillover effects on other treaties and preserve India's image as a responsible upper riparian.

CONCLUSION:

- While the suspension of the Indus Waters Treaty marks a decisive geopolitical shift, India's long-term interests are best served not by abrogation, but by optimally

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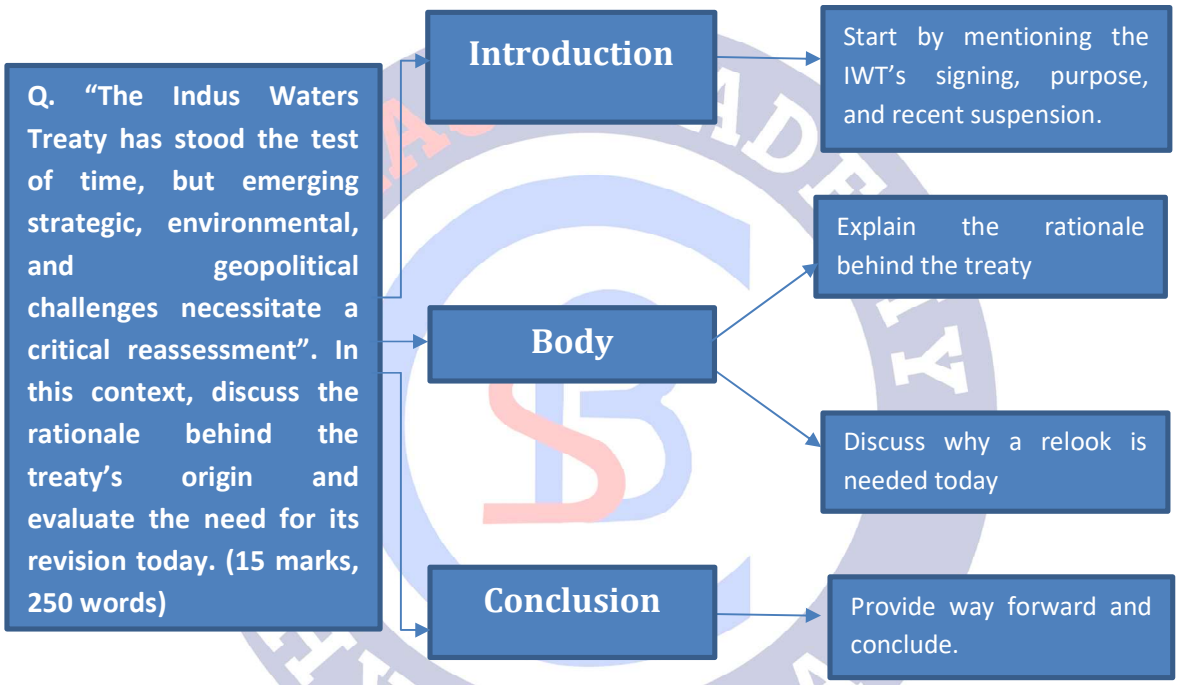
utilizing its water rights, pursuing infrastructure development, and engaging diplomatically for a more modern, equitable, and climate-resilient treaty framework.

PRACTICE QUESTION

Q. "The Indus Waters Treaty has stood the test of time, but emerging strategic, environmental, and geopolitical challenges necessitate a critical reassessment". In this context, discuss the rationale behind the treaty's origin and evaluate the need for its revision today. (15 marks, 250 words)

APPROACH



MODEL ANSWER

The **Indus Waters Treaty (IWT)**, signed in **1960** between India and Pakistan under **World Bank mediation**, divided control of the Indus River System — with India managing the eastern rivers (Ravi, Beas, Sutlej) and Pakistan the western rivers (Indus, Jhelum, Chenab). Despite wars and hostilities, the treaty endured for over six decades until India suspended it recently following the **Pahalgam terror attack**, reviving debates over its relevance in today's changing geopolitical and environmental landscape.

Rationale Behind the Treaty:

1. Facilitating Peaceful Coexistence: The Partition of India in 1947 divided not only people and land but also shared water resources. Several key canals and rivers flowed from Indian

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territory into Pakistan, creating immediate friction. The treaty provided a **stable framework for water allocation**, preventing water from becoming a continuous source of conflict.

2. Avoiding Future Water Wars: In the immediate aftermath of Partition, water became a flashpoint, as seen in the **Inter-Dominion Accord of 1948**, which allowed India to control headworks but required it to release water to Pakistan. The IWT was a long-term solution intended to prevent **repeated disputes over river access**, especially in a region vulnerable to wars and hostility.

3. Displaying India's Goodwill as Upper Riparian: India agreed to **concede over 80% of the total water flow** in the Indus basin to Pakistan — a gesture of goodwill aimed at maintaining peace. This decision reflected India's willingness to uphold **international norms** and emerge as a **responsible upper riparian state**, enhancing its diplomatic stature.

4. Enabling International Support and Infrastructure Development: The treaty led to the formation of the **Indus Basin Development Fund**, backed by countries like the US, UK, and Germany. It facilitated the development of dams, barrages, and canals in both nations, especially in Pakistan. India even contributed financially to help Pakistan build alternative canals — an unprecedented step in international treaty-making.

Why the Treaty Needs a Re-look Today:

1. Changing Climate and River Dynamics: The treaty doesn't account for **climate change impacts**, glacial melt, or unpredictable monsoons that have **altered river flows**. With increasing water stress across the region, a treaty rooted in 1960 hydrology is inadequate for 2025 realities.

2. Persistent Cross-Border Terrorism: India's suspension of the treaty in 2025 came after the **Pahalgam terror attack**, which killed 26 tourists. The IWT has become a symbol of restraint in bilateral relations — but continued aggression from Pakistan questions whether such one-sided goodwill is still viable.

3. Underutilisation of India's Share: India has harnessed **only around 3000 MW out of 11,400 MW** hydroelectric potential on the western rivers. A significant portion of its allocated water goes unused and flows into Pakistan. Political, legal, and logistical hurdles have prevented India from **maximising treaty benefits**.

4. Absence of an Exit Clause: The IWT has **no unilateral exit provision**, binding both nations in perpetuity unless both agree to alter or end it. This limits India's ability to respond flexibly to Pakistan's provocations, making **treaty renegotiation or suspension** the only available pressure tactics.

5. Rise of Strategic Water Nationalism: Water security has become a core part of India's national interests. There's growing domestic pressure to **reclaim full control over Indian**

rivers, especially when Pakistan continues sponsoring **cross-border terrorism** and aligning with China in sensitive regions.

6. Broader Regional and Geopolitical Implications: The **Indus basin also spans Afghanistan and China**, whose growing cooperation with Pakistan (e.g., under CPEC) complicates the regional hydropolitical landscape. A treaty ignoring these new realities may soon be obsolete.

Way Forward:

- **Maximise India's Treaty Allocation**: Complete pending projects like **Shahpurkandi**, **Ujh**, and the **Ravi-Beas link** to fully utilise India's legal share.
- **Push for Treaty Modernisation**: Initiate discussions under **Article VII** of the IWT for **joint cooperation**, technical upgrades, and adaptation to **climate-induced river changes**.
- **Strengthen Infrastructure**: Develop **storage and diversion** facilities to reduce dependence on diplomatic goodwill and enhance India's control over water release.
- **Maintain Strategic Leverage Without Abrogation**: Suspension — not abrogation — can be used as a **temporary diplomatic tool**, avoiding legal and reputational costs of treaty withdrawal.
- **Ensure Regional Water Diplomacy**: Keep communication open with **Bangladesh** and other lower riparians to avoid backlash and maintain India's image as a responsible upstream state.

The Indus Waters Treaty was a bold and stabilizing agreement for its time, enabling peaceful water sharing in a volatile region. However, **geopolitical tensions, environmental shifts, and underutilisation of resources** necessitate a timely review. Rather than abandoning the treaty, India must **adapt it to modern realities** — through assertive diplomacy, infrastructure upgrades, and strategic engagement — to safeguard its interests and maintain regional balance.

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11. 75 YEARS OF INDIA-CHINA DIPLOMATIC RELATIONS

iMPACT ANALYSIS

SYLLABUS:

GS 2 > International relations > India and Neighbours > Indo China Relations

REFERENCE NEWS:

- India and China marked 75 years of diplomatic ties on April 1, 2025.

MORE ON NEWS:

- On April 1, 1950, **India became the first non-socialist bloc nation** to establish diplomatic ties with the People's Republic of China (PRC).
- Commemorating the 75th anniversary of the establishment of India-China bilateral relations, Chinese President Xi Jinping, in a congratulatory message to President Droupadi Murmu, said the two countries should **"realise a cooperative pas de deux of the dragon and the elephant"**, which completely serves the fundamental interests of the two countries and peoples, while Ms Murmu, in her message, said that **"stable, predictable and amicable" bilateral relations** will bring major benefits to both nations and the world.

TIMELINE OF 75 YEARS OF INDIA-CHINA DIPLOMATIC RELATIONS:

1949–1950: Beginnings of Diplomatic Ties

- **Oct 1, 1949**: The People's Republic of China (PRC) is established under Mao Zedong.
- **Apr 1, 1950**: India becomes the first non-socialist country to establish diplomatic ties with the PRC, driven by Nehru's vision of Asian solidarity. He calls China "India's old-time friend."

1950s: Early Optimism, Quick Deterioration

- **1950**: China invades Tibet, raising alarm in India.
- **1954**: The **Panchsheel Agreement** is signed, based on principles like mutual respect, non-aggression, and peaceful coexistence.
- **1959**: Anti-China protests in Tibet; the **Dalai Lama flees to India**, straining relations.
- **1962**: **India-China war** over border disputes **(Aksai Chin);** India suffers major losses, and ties collapse.

1960s–1980s: Prolonged Estrangement and Strategic Shifts

- **1962–70s**: Ties remain cold. China strengthens its alliance with Pakistan.
- **1974**: India's **first nuclear test** increases strategic mistrust.
- **1988**: **PM Rajiv Gandhi visits China**, marking a thaw. Deng Xiaoping calls for India-China cooperation for an **"Asian Century."**

1990s: Post-Cold War Realignment and Peace Initiatives

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- **1991**: **Collapse of USSR** leads India to liberalize its economy. India-China explore new engagement paths.
- **1993**: **Border Peace and Tranquility Agreement** signed to avoid further conflict at the Line of Actual Control (LAC).
- **1996**: Military-level talks mechanism established to manage border tensions.

2000s: Economic Engagement Deepens

- **2000**: New momentum in bilateral ties, especially economic cooperation.
- **2003**: China officially recognizes **Sikkim** as part of India; Special Representatives' mechanism launched to address border issues.
- **2008**: China emerges as **India's largest trading partner**, highlighting growing interdependence.

2010s: Mixed Signals – Competition and Cooperation

- **2014**: Modi and Xi hold talks in New Delhi to reset relations.
- **2017**: **Doklam standoff**: troops from both sides face off near the Bhutan-China-India tri-junction. Resolved through dialogue.
- **2018**: **Wuhan Summit**: informal Modi-Xi meeting aims to restore trust and focus on stability.

2020s: Tensions and Diplomatic Reset

- **2020**: **Ladakh clash at Galwan Valley** causes fatalities on both sides – the worst escalation since 1962.
- **2021**: High-level diplomatic and military talks continue; emphasis on preventing future standoffs.
- **2023**: Trade continues to grow despite tensions. China remains India's top trading partner, with bilateral trade exceeding **$118 billion**.

2024–2025: Renewed Engagement

- **Oct 2024**: Modi and Xi meet at **BRICS Summit in Kazan, Russia**, signaling intent to normalize relations.
- **Apr 2025**: Diplomatic talks continue on LAC disengagement, trade, climate change, and regional cooperation.

AREAS OF COOPERATION BETWEEN INDIA AND CHINA:

- **Economic and Trade Cooperation:**
  - **Trade Interdependence**: Despite tensions, China remains India's **largest trading partner**, with bilateral trade reaching **$118.4 billion in FY24**.
    - India imports critical items like **electronics, APIs (pharma ingredients), machinery, and telecom equipment**.
    - Exports to China include **iron ore, organic chemicals, cotton, seafood, and engineering goods**.
  - **Supply Chain Linkages**: China is deeply integrated into **India's manufacturing supply chains**, especially in **electronics, automotive, and pharma** sectors. For example, **90% of some mobile phone parts** are sourced from China.

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- **Investment Flows**: Chinese capital has played a role in **India's startup ecosystem**, with 18 unicorns receiving **over $3.5 billion** in investments (as of 2020).
- **Trade Forums**: Both countries engage in forums such as **RCEP**, **SCO**, **BRICS**, and **G20**, which provide avenues to align economic strategies.

- **Cultural and Civilizational Links**
  - **Historical Legacy**: Shared cultural heritage, including the travels of **Xuanzang**, **Monk Bodhidharma**, and **Tagore's 1924 visit to China**, reflects deep-rooted ties.
  - **Soft Power Exchange**: Ongoing **language programs**, **academic exchanges**, and **interest in Ayurveda, Yoga**, and Indian classical arts in China promote mutual understanding.
  - **Recent Initiatives**:
    - In April 2025, **Visva-Bharati University** hosted a seminar on the 100-year anniversary of Tagore's visit to China.
    - Resumption of **direct flights** and **visa facilitation** boosts tourism and education exchange.
- **Climate and Environmental Cooperation**
  - **Global Climate Platforms**: Both collaborate on **climate change mitigation**, **energy transition**, and sustainable development through **BRICS**, **G-20**, and the **UNFCCC**.
  - **International Solar Alliance (ISA)**: China has shown support for India's ISA initiatives, offering a platform for **joint renewable energy development**.
  - **Water Resource Dialogue**: China resumed **hydrological data sharing** (Brahmaputra, Sutlej) post-2024 talks, helping India with flood forecasting.
- **Strategic and Multilateral Engagement**
  - **Multilateral Forums**: India and China are active participants in:
    - **BRICS** – advocating for **Global South solidarity**.
    - **Shanghai Cooperation Organisation (SCO)** – focusing on **regional security and economic cooperation**.
    - **G20** – supporting **multilateral trade and financial systems**.
    - **AIIB** and **New Development Bank (NDB)** – promoting **infrastructure financing**.
    - **UN Peacekeeping and Global Governance**: Joint efforts in **peacekeeping**, **pandemic response**, and **global health governance** are ongoing.
- **Border Stability Mechanisms**
  - While border disputes exist, both nations continue to work on **confidence-building and de-escalation**:
    - **Working Mechanism for Consultation and Coordination (WMCC)**

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        - The **33rd WMCC meeting in March 2025** discussed furthering disengagement and preparing for the Special Representatives' dialogue.
    - **Military-Level Talks:** Regular **Corps Commander-level meetings** help prevent clashes and maintain ceasefires along the **Line of Actual Control (LAC)**.
    - **LAC Management Agreements:** Agreements on **patrolling protocols**, **no-patrol zones** (e.g., in Gogra, Galwan, Pangong Tso), and **phased disengagement** enhance border stability.
- **Infrastructure and Connectivity Dialogue**
    - **India's Independent Connectivity Strategy**: While India has **opted out of China's Belt and Road Initiative (BRI)** due to sovereignty concerns, it promotes:
        - The **India-Middle East-Europe Corridor (IMEC)**
        - The **SAGAR (Security and Growth for All in the Region)** strategy.
    - **Joint Regional Projects**: Cooperation is possible in **digital infrastructure, logistics, and regional transport** under neutral platforms like **SCO and BRICS**.
- **Health and Pandemic Cooperation**
    - India and China can collaborate in:
        - **Public health infrastructure** and **best practices** exchange.
        - **Medical research**, especially in **traditional medicine** like Ayurveda and Chinese traditional medicine.
        - **Vaccine development and response to global health crises** under WHO and BRICS frameworks.
- **Educational and Technological Exchange**
    - **Student Mobility**: Chinese students studying in India (and vice versa) help promote mutual learning.
    - **Tech Dialogue**: Despite concerns over cybersecurity, India and China may collaborate on **green tech**, **AI ethics**, and **space diplomacy** under broader multilateral frameworks.

CHALLENGES IN INDIA-CHINA RELATIONS:

- **Border Disputes and Military Tensions:**
    - **Unresolved LAC Issues**: The two countries share a 3,488 km disputed border, divided into the **Western (Ladakh), Central (Himachal & Uttarakhand), and Eastern (Sikkim & Arunachal)** sectors. The **Line of Actual Control (LAC)**, a temporary arrangement post-1962 war, remains **undemarcated** and is interpreted differently by both sides.
    - **Recurring Standoffs**:
        - **1962 War**, **2017 Doklam Standoff**, and **2020 Galwan Clash** (in which 20 Indian soldiers were killed) reflect the recurring volatility.

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- Even after disengagement talks, **patrolling rights, buffer zones**, and continued **Chinese infrastructure buildup** near the LAC remain contentious.

- **Chinese Pressure Tactics**: China often escalates border tensions following India's stance on issues like **Tibet, Taiwan**, or **BRI** participation.

- **Trust Deficit and Strategic Rivalry:**
  - **Geopolitical Contradictions**:
    - China aims for a **"Unipolar Asia"**, asserting itself as a hegemon, while India advocates for a **"Multipolar Asia"**.
    - India's growing strategic partnerships with the **US, Japan, Australia (QUAD)** are seen with suspicion by Beijing.
  - **Commitment Issues**: India's strategic community remains skeptical of China's long-term intent, citing **past violations of agreements** (e.g., Galwan despite 1993/1996 border peace accords).
  - **China–Pakistan Nexus**: China's support for Pakistan through **CPEC (via PoK)**, arms supplies, and diplomatic backing at the **UN** fuels Indian concerns, particularly regarding **Kashmir**.
- **Trade Imbalance and Economic Dependence:**
  - **Widening Trade Deficit**: In **FY24**, India's imports from China stood at **$101.7 billion**, while exports were only **$16.67 billion**, creating a trade deficit of over **$85 billion**.
  - **Sectoral Dependency**: India is heavily reliant on China for **APIs (65-70%)**, **electronics (45%)**, **solar panels (84%)**, and **lithium-ion batteries (75%)**.
  - **Unfair Trade Practices**: Allegations of **dumping**, **misuse of FTAs**, **poor quality goods**, and **WTO non-compliance** persist.

- **Impact on Indian MSMEs**: Cheap Chinese imports undercut Indian industries, especially **textiles, electronics, and consumer goods**, leading to **job losses** and **business closures**.

- **Water Security Risks:**
  - **"Water Bomb" Threat**: China's control over the upper reaches of transboundary rivers (e.g., **Brahmaputra, Sutlej**) gives it strategic leverage.
  - **Lack of a Water Treaty**: Although China resumed **hydrological data sharing**, there is no **binding treaty**, making India vulnerable to **floods** or **artificial water shortages**.
- **Ideological and Political Differences:**
  - **Governance Models**: India's **democratic, pluralistic setup** stands in contrast to China's **authoritarian, centralized governance**, creating divergence in worldview.
  - **Rise of Nationalism**: Public opinion in both countries is influenced by **hyper-nationalism**, fueled by **social media**, reducing political space for compromise on sensitive issues like borders.
- **Cybersecurity and Espionage Concerns:**
  - China has been accused of **cyber intrusions**, **data theft**, and **surveillance infrastructure** in India.
  - India has responded with **app bans (e.g., TikTok)** and restrictions on **Chinese telecom giants** like **Huawei** and **ZTE** in critical infrastructure.
- **Multilateral Competition and Diplomatic Friction:**
  - **NSG Membership & UNSC Reforms**: China blocks India's entry into the **Nuclear Suppliers Group** and shows reluctance towards **UNSC reform**.
  - **Global South Leadership Rivalry**: Both nations compete for influence in **Africa**, **South Asia**, and **multilateral groupings** like **BRICS, SCO**, and **AIIB**.
- **Connectivity and Infrastructure Rivalry:**
  - **BRI vs. SAGAR/IMEC**: India refuses to join China's **Belt and Road Initiative** due to **sovereignty issues** (CPEC in PoK) and instead promotes **India-Middle East-Europe Corridor** and **Act East/SAGAR policy**.
  - **Border Infrastructure Race**: India is catching up through programs like the **Vibrant Villages Programme** and BRO-led road development, but China remains ahead in military logistics and road access near the LAC.

WAY FORWARD:

The resolution of India-China border disputes and the broader enhancement of bilateral ties demand a **balanced approach**, blending **diplomatic** and **strategic measures**, while building on the positive momentum of the **"Wuhan Spirit."**

- **Deepening Dialogue and Trust:** India and China should continue high-level talks based on the "Wuhan Spirit" to ensure long-term stability, shifting from military posturing to peaceful engagement and fostering mutual trust.

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- **Military-to-Military Communication:** Regular military-to-military channels and border meetings at command levels can prevent misunderstandings and smooth disengagement, particularly in sensitive areas like Doklam and Galwan Valley.
- **Strengthening Economic Ties:** Economic cooperation, including revitalizing trade and investment dialogues, should be prioritized. India's Vibrant Villages Programme could benefit from China's investments to promote balanced regional development.
- **Promoting Regional Stability:** Collaborative efforts in forums like BRICS, SCO, and G20 on global issues will strengthen India-China relations and contribute to broader regional stability, with both countries playing a leadership role in the Global South.
- **Balanced Infrastructure Development:** Infrastructure in border areas should focus on safety and logistics rather than military escalation, with collaborative efforts like India-Japan partnerships counterbalancing China's regional development.
- **Addressing Trade Imbalances and Unfair Practices:** India should address the trade deficit with anti-dumping measures, improve manufacturing through PLI schemes, and optimize trade policies to reduce reliance on Chinese imports.
- **Enhanced Data Localization and Cybersecurity:** India should implement data localization policies and explore joint research on green tech, space diplomacy, and AI ethics, strengthening technological cooperation despite cybersecurity concerns.

CONCLUSION:

- India and China stand at a crossroads where mutual cooperation, based on **dialogue, trade, regional stability, and infrastructure development**, can transform the trajectory of their bilateral ties. The focus should remain on **balancing strategic interests** while fostering **trust** through **sustained diplomatic efforts**. With continued dialogue and practical solutions, both nations can help pave the way for a **peaceful, prosperous future** for Asia and beyond.

PRACTICE QUESTION

Q. "The bilateral relationship between India and China has been marked by both cooperation and conflict ". Discuss the key areas of bilateral engagement and major challenges in the diplomatic relations between India and China. (15 marks, 250 words)

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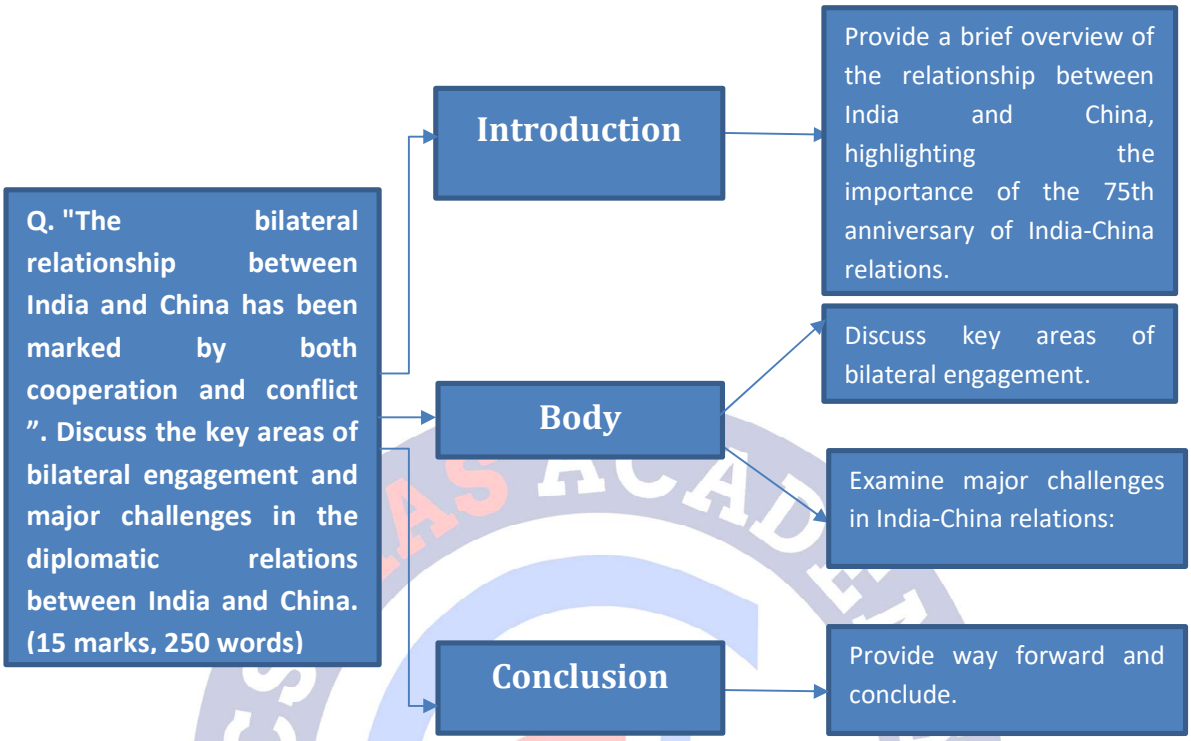
APPROACH



MODEL ANSWER

India and China marked **75 years of diplomatic ties on April 1, 2025.** Over the decades, India-China relations have been marked by both cooperation and conflict, with the relationship evolving through phases of optimism, tensions, and strategic shifts. Their ties continue to influence the broader Asia-Pacific region and the global geopolitical landscape.

Key Areas of Bilateral Engagement:

1. Economic and Trade Cooperation: China remains **India's largest trading partner**, with bilateral trade reaching $118.4 billion in FY24. India imports critical items like electronics, APIs, machinery, and telecom equipment, while exporting iron ore, chemicals, cotton, seafood, and engineering goods to China. Chinese investments have also contributed to India's startup ecosystem, with 18 unicorns receiving over $3.5 billion in investments by 2020.

2. Strategic and Multilateral Engagement: Both countries are active in forums such as **BRICS, SCO, and G20,** promoting regional stability and addressing global issues. China's support for India's International Solar Alliance (ISA) initiatives has fostered cooperation in renewable energy, while both countries collaborate on infrastructure financing through the AIIB and New Development Bank.

3. Cultural and Civilizational Ties: Shared cultural history, such as the visits of Xuanzang and Tagore, continues to shape bilateral ties. Soft power exchanges, including language

programs and academic exchanges, promote mutual understanding. Recent initiatives, such as the seminar hosted by Visva-Bharati University in April 2025, mark continued cultural cooperation.

4. Climate and Environmental Cooperation: India and China **collaborate on climate change mitigation and renewable energy development** through platforms like the UNFCCC and BRICS. China resumed hydrological data sharing with India, supporting flood forecasting for shared water resources such as the **Brahmaputra and Sutlej rivers.**

5. Border Stability and Security Cooperation: Despite the unresolved border dispute, both nations continue efforts toward de-escalation and confidence-building through mechanisms like the **Working Mechanism for Consultation and Coordination (WMCC) and military-level talks.** Agreements on patrolling rights and no-patrol zones in sensitive areas like Pangong Tso and Galwan have contributed to border stability.

Major Challenges in India-China Relations:

1. **Border Disputes and Military Tensions:** The unresolved 3,488 km-long border remains the main flashpoint. **The 1962 war, 2017 Doklam standoff, and 2020 Galwan clash** demonstrate the recurring volatility. Despite disengagement talks, issues like patrolling rights and Chinese infrastructure development along the LAC remain contentious.
2. **Trust Deficit and Strategic Rivalry:** China's hegemonic ambitions and its support for Pakistan through the **China-Pakistan Economic Corridor (CPEC)** complicate bilateral ties. India's growing strategic alignment with the US, Japan, and Australia (through the Quad) is viewed with suspicion by China.
3. **Trade Imbalance and Economic Dependence:** India's trade deficit with China has grown significantly, **reaching over $85 billion in FY24.** India's dependence on Chinese imports, particularly in sectors like electronics, APIs, solar panels, and lithium-ion batteries, raises concerns over economic vulnerabilities.
4. **Water Security Risks:** China's control over transboundary rivers like the Brahmaputra and Sutlej poses a strategic risk to India. While **China resumed hydrological data sharing**, the lack of a binding water treaty leaves India vulnerable to flooding or artificial water shortages.
5. **Ideological and Political Differences:** The ideological **divide between India's democratic system and China's authoritarian model** leads to divergent worldviews. Nationalism in both countries further reduces the political space for compromise, especially on sensitive issues like territorial disputes.
6. **Cybersecurity and Espionage Concerns:** India has expressed concerns over **Chinese cyber intrusions and data theft.** In response, India has imposed bans on Chinese apps and restricted Chinese telecom companies from participating in critical infrastructure projects due to security risks.

Way Forward:

- **Deepening Dialogue and Trust**: Continue high-level talks to focus on peaceful engagement and regional cooperation.
- **Military-to-Military Communication**: Establish reliable communication channels to resolve LAC issues and ease disengagement.
- **Strengthening Economic Ties**: Restore trade and investment dialogues to align interests and support regional initiatives like Vibrant Villages.
- **Promoting Regional Stability**: Engage in multilateral forums such as BRICS, SCO, and G20 to address global challenges.
- **Balanced Infrastructure Development**: Prioritize safe and logistical infrastructure over military escalation, leveraging India-Japan collaboration.
- **Addressing Trade Imbalances**: Implement anti-dumping measures, improve manufacturing, and promote trade policy transparency.
- **Cybersecurity and Data Localization**: Adopt data localization policies and collaborate on green tech and AI ethics to strengthen cooperation.

India and China's 75-year relationship reflects a complex blend of cooperation and competition. While both countries share **common interests in trade, regional stability, and global governance,** they continue to face significant challenges, particularly regarding **border security and strategic rivalry.** Moving forward, sustained diplomatic efforts, stronger economic cooperation, and engagement in multilateral forums can help both nations overcome these challenges and pave the way for a **peaceful and prosperous future in Asia.**

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12. BIMSTEC

iMPACT ANALYSIS

SYLLABUS:

GS 2 > International Relations >> Multilateral Relations

REFERENCE NEWS:

Speaking at the **6th BIMSTEC Summit** in Bangkok, PM said, "**BIMSTEC serves as a vital bridge between South and Southeast Asia,** and is emerging as a powerful platform for advancing regional connectivity, cooperation and shared prosperity."

BIMSTEC:

Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation was formed on 6th June 1997 with the signing of **Bangkok Declaration**. Dhaka, Bangladesh hosts the secretariat of BIMSTEC. It unites South and **Southeast Asian nations bordering the Bay of Bengal.**

- **Founding Members (1997):** Bangladesh, India, Sri Lanka, Thailand.
- **Current Members:** Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.
- **Objective:** To help countries in their economic growth, to support social development, and to encourage development in other areas, like science, technology and economic development.
- With 7 member countries, BIMSTEC hosts **22% of world population** and accounts for **3.8 trillion of GDP.**

OUTCOMES OF 6TH BIMSTEC SUMMIT:

- **BIMSTEC Bangkok Vision 2030:** A strategic plan to build Prosperous, Resilient and Open- **PRO BIMSTEC by 2030**, focussing on economic integration, connectivity and human security.
- Agreement on **Maritime Transport Cooperation** between South and Southeast Asia to improve logistical efficiency, reduce trade costs etc.
- **BIMSTEC Centres of Excellence**: To be set up in India on Disaster Management, Sustainable Maritime Transport, Traditional Medicine and Research and Training in Agriculture.
- **BODHI (BIMSTEC for Organised Development of Human Resource Infrastructure):** For skilling the youth through training and scholarships to professionals, students, researchers etc.

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- **Digital Public Infrastructure:** India to conduct a pilot study assessing its need in the region.
- India to strengthen people to people linkages through hosting first BIMSTEC Games in 2027. **BIMSTEC Athletics Meet (2025), BIMSTEC Traditional Music Festival, Young Leaders' Summit and Hackathon for youth engagement, Young Professional Visitors Program to deepen cultural cooperation.**
- Organising BIMSTEC Business Summit annually by establishing **BIMSTEC Chamber of Commerce.**
- Signing of Memorandum of Understanding (MoU) between BIMSTEC and **Indian Ocean Rim Association (IORA), UN Office on Drugs and Crime.**
- **Cancer Care Capacity Building:** India proposed a capacity-building program for cancer care in the BIMSTEC region.
- Proposed establishing connectivity between **India's Unified Payments Interface (UPI)** and the payment systems of BIMSTEC member states.
- India to build **nano-satellites for the BIMSTEC member nations** and also explore the setting up of ground stations and promote the use of remote sensing data.

RELEVANCE OF BIMSTEC:

Geopolitical Relevance

- **SAARC's Stagnation vs BIMSTEC's Functionality:** SAARC has been largely inactive since 2016 due to India-Pakistan tensions. BIMSTEC excludes Pakistan and thus avoids the geopolitical deadlock that paralyzes SAARC.
    - The last SAARC Summit was held in 2014, while BIMSTEC held its **6th Summit in March 2024** with substantial outcomes like UPI and energy linkages.
- **India's 'Act East' and 'Neighbourhood First' Policies:** BIMSTEC connects South Asia with Southeast Asia, aligning with India's regional foreign policy objectives.
    - BIMSTEC includes five South Asian nations (India, Bangladesh, Bhutan, Nepal, Sri Lanka) and two Southeast Asian nations (Thailand and Myanmar).

Economic and Trade Cooperation

- **Trade Potential:** BIMSTEC countries together account for **over 22% of the world population**, and have a combined GDP of **over $3.6 trillion**. India-Chile style local currency trade, UPI integration, and coastal shipping agreements under BIMSTEC highlight growing trade facilitation.

Strategic and Security Cooperation

- **Counter-terrorism and Maritime Security:** BIMSTEC has working groups on counter-terrorism, transnational crime, and maritime security.
    - BIMSTEC Disaster Management Exercise (DMEx) hosted by India strengthens regional response capacity.

- **China's Influence Containment:** BIMSTEC provides India a platform to counterbalance China's growing presence in the Indo-Pacific, especially in Myanmar and Sri Lanka.

Connectivity and Infrastructure

- **Regional Connectivity:** BIMSTEC aims to operationalize the **BIMSTEC Master Plan for Transport Connectivity** (2022–2030).
  - India's Kaladan Multi-Modal Project and the India-Myanmar-Thailand Trilateral Highway serve as flagship projects for East-West connectivity.
- **Digital and Energy Linkages (2024):** PM Modi's announcement of UPI integration and BIMSTEC Energy Centre indicates digital and energy connectivity priorities.

Cultural and Environmental Cooperation

- **Buddhist Cultural Circuit:** Many BIMSTEC countries share a rich Buddhist heritage—ideal for cultural diplomacy and tourism.
  - India has promoted the Nalanda University initiative as a BIMSTEC regional knowledge hub.
- **Climate and Disaster Cooperation:** Coastal countries face common climate threats. BIMSTEC has potential in joint disaster management, early warning systems, and blue economy initiatives.
  - **Myanmar and Thailand earthquake rehabilitation has been a point of discussion in the summit.**

CHALLENGES OF BIMSTEC:

Institutional and Structural Challenges

- **Slow institutionalisation:** BIMSTEC was formed in **1997**, but its Secretariat in Dhaka was only established in **2014**—a delay of 17 years. Until recently, there was **no dedicated charter**; the **BIMSTEC Charter was adopted only in 2022**.
- **Weak implementation mechanisms:** Projects often lack timelines and monitoring. The **BIMSTEC Free Trade Agreement (FTA)** has been under negotiation since **2004**, with no final agreement yet.

Economic and Trade Challenges

- **Low intra-regional trade:** Intra-BIMSTEC trade stands at **just around 7%** of the bloc's total trade, far below its potential.
- **Asymmetry in economies:** India's dominance (accounts for ~70% of GDP in the region) leads to concerns among smaller nations about unequal benefits. Bangladesh and Sri Lanka often seek more favourable terms in trade talks fearing Indian overreach.

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Connectivity and Infrastructure Bottlenecks

- **Poor transport and digital connectivity:** Several key infrastructure projects like the **Kaladan Multi-Modal Transit Project** and **India-Myanmar-Thailand Trilateral Highway** face delays due to security issues, funding, and lack of cooperation.
- **Lack of integrated regional infrastructure:** BIMSTEC still lacks a functional **regional electricity grid** or a **single window clearance system** for trade and logistics.

Geopolitical and Strategic Challenges

- **China's rising influence:** China's Belt and Road Initiative (BRI) has a strong presence in BIMSTEC countries like Myanmar, Sri Lanka, and Thailand.
  - China's investments in Hambantota Port (Sri Lanka) and Kyaukpyu Port (Myanmar) create strategic concerns for India.
- **Divergent foreign policy alignments:** BIMSTEC members have differing strategic alignments—Thailand and Myanmar are ASEAN-focused; Bhutan and Nepal are India-dependent. This leads to **lack of consensus** on key issues like defence cooperation.

Security and Political Instability

- **Internal political instability:** Frequent political changes in countries like **Myanmar (military coup in 2021)** and **Sri Lanka (economic crisis 2022)** disrupt regional coordination.
- **Cross-border challenges:** Rising security concerns including terrorism, illegal trafficking, and maritime piracy strain coordination efforts. BIMSTEC has conducted **disaster management and counter-terror exercises**, but cooperation remains episodic and state-driven.

Lack of People-to-People Engagement

- **Limited civil society or academic engagement:** Unlike SAARC or ASEAN, BIMSTEC lacks strong cultural and educational exchange programmes.
- **Poor visibility and awareness:** There is minimal public awareness of BIMSTEC initiatives in member states. Even elite circles often prioritize bilateral or global forums over regional ones.

WAY FORWARD:

Strengthening Institutional Framework

- **Operationalise the BIMSTEC Charter** adopted in 2022 by institutionalising regular **Summits, Ministerial Meetings**, and **track-II dialogues**.
- **Create sectoral working groups** with clear mandates and timelines to avoid delays in project execution.

- **Upgrade the Secretariat in Dhaka** with more funding, technical manpower, and policy autonomy.

Fast-track Economic Integration

1. **Finalise the BIMSTEC Free Trade Agreement (FTA)** by resolving tariff disputes and integrating trade facilitation measures.
2. **Develop a Regional Trade Facilitation Framework**—single window clearances, harmonised standards, and digital customs platforms.
3. **Create a BIMSTEC Development Fund** for joint projects in connectivity, digital economy, and SMEs, especially benefiting smaller nations.

Enhancing Connectivity (Physical + Digital)

- **Accelerate delayed connectivity projects**: Kaladan Multi-Modal Transit Project India–Myanmar and India–Myanmar–Thailand Trilateral Highway
- **Develop a BIMSTEC Master Plan for Transport Connectivity**, like ASEAN Connectivity Master Plan.
- **Improve digital infrastructure and data-sharing platforms** to support trade, fintech (like UPI integration), and cybersecurity cooperation.

Maritime and Energy Cooperation

- Develop a **Blue Economy roadmap** for sustainable fisheries, ports, and shipping.
- Establish a **BIMSTEC Coastal Shipping Agreement** to ease trade along the Bay of Bengal.
- Promote **regional energy cooperation**: Strengthen the **BIMSTEC Grid Interconnection** project. Collaborate on renewable energy—solar, wind, hydro.

Security Cooperation

- Institutionalise **Joint Working Groups on Counterterrorism and Transnational Crimes**.
- Conduct regular **BIMSTEC military, disaster relief, and cyber defence exercises**.

People-to-People and Cultural Engagement

- Launch **BIMSTEC Scholarships**, university exchanges, cultural festivals, and student visas to foster regional consciousness.
- Promote **tourism circuits** connecting Buddhist and heritage sites across member states.
- Develop a **Bay of Bengal Heritage Trail** linking India, Sri Lanka, Myanmar, and Thailand.

Leverage India's Leadership

- India should take the lead in **capacity building**, **climate resilience**, **digital public infrastructure** (like UPI, Co-WIN), and disaster preparedness.
- Encourage collaboration between BIMSTEC and other groupings like **IORA**, **ASEAN**, and **QUAD**, ensuring BIMSTEC isn't overshadowed.

Monitoring and Review Mechanism

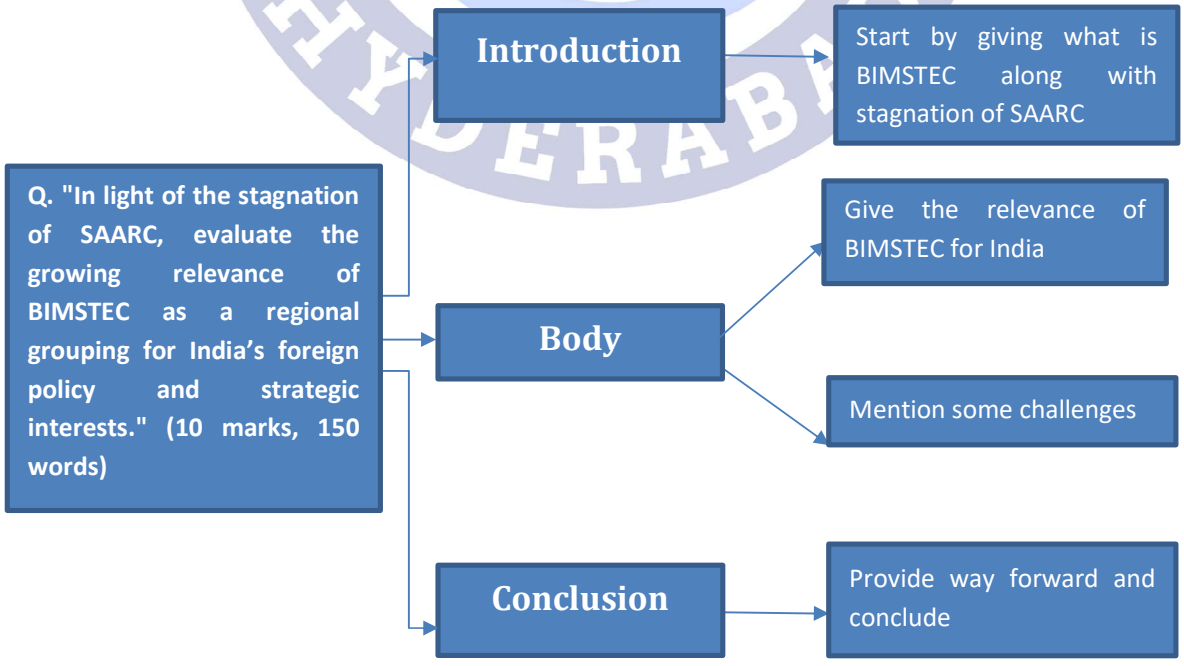
- Establish a **BIMSTEC Dashboard** to track progress on deliverables across priority sectors.
- Conduct **Annual Progress Reports** and third-party evaluations to improve transparency and accountability.

BIMSTEC's **functional dynamism**, **geographic spread across South and Southeast Asia**, and **focus on economic and strategic cooperation** make it a more relevant and effective regional grouping than SAARC in the current geopolitical context. With initiatives like UPI integration, energy corridors, and local currency trade, BIMSTEC is becoming a critical pillar of India's regional engagement.

PRACTICE QUESTION

Q. "In light of the stagnation of SAARC, evaluate the growing relevance of BIMSTEC as a regional grouping for India's foreign policy and strategic interests." (10 marks, 150 words)

APPROACH



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MODEL ANSWER

The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), established in 1997, has emerged as a significant regional organization connecting South and Southeast Asia. With SAARC rendered largely dysfunctional post-2014, BIMSTEC offers a pragmatic alternative for regional cooperation and strategic alignment, particularly for India.

GROWING RELEVANCE OF BIMSTEC:

1. Geopolitical Relevance:

- **SAARC's Paralysis:** SAARC has not held a summit since 2014 due to India-Pakistan tensions. BIMSTEC, which excludes Pakistan, has become a functional alternative.
- **Strategic Linkage:** It bridges India's "Neighbourhood First" and "Act East" policies, linking five South Asian and two ASEAN countries.

2. Economic and Trade Cooperation: BIMSTEC accounts for 22% of global population and $3.6 trillion GDP. India's proposals like **UPI integration**, **local currency trade**, and **BIMSTEC Energy Centre** signal deeper economic integration.

3. Connectivity and Infrastructure: Projects like **Kaladan Multi-Modal Transit** and **India-Myanmar-Thailand Trilateral Highway** serve India's goal of enhanced regional connectivity.

4. Security and Strategic Cooperation: BIMSTEC facilitates cooperation in **counter-terrorism**, **maritime security**, and **cyber defence**, supporting India's Indo-Pacific vision.

5. Cultural and Environmental Engagement: India promotes initiatives like **Buddhist heritage circuits** and **climate resilience projects**, aligning soft power with regional collaboration.

CHALLENGES OF BIMSTEC IN REALISING INDIA'S INTERESTS:

1. **Asymmetry in economies:** India's dominance (accounts for ~70% of GDP in the region) leads to concerns among smaller nations about unequal benefits. Bangladesh and Sri Lanka often seek more favourable terms in trade talks fearing Indian overreach.
2. **Poor transport and digital connectivity:** Several key infrastructure projects like the **Kaladan Multi-Modal Transit Project** and **India-Myanmar-Thailand Trilateral Highway** face delays due to security issues, funding, and lack of cooperation.
3. **Lack of integrated regional infrastructure:** BIMSTEC still lacks a functional **regional electricity grid** or a **single window clearance system** for trade and logistics.
4. **China's rising influence:** China's Belt and Road Initiative (BRI) has a strong presence in BIMSTEC countries like Myanmar, Sri Lanka, and Thailand.

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- China's investments in Hambantota Port (Sri Lanka) and Kyaukpyu Port (Myanmar) create strategic concerns for India.

5. **Cross-border challenges:** Rising security concerns including terrorism, illegal trafficking, and maritime piracy strain coordination efforts. BIMSTEC has conducted **disaster management and counter-terror exercises**, but cooperation remains episodic and state-driven.

WAY FORWARD:

1. **Improve digital infrastructure and data-sharing platforms** to support trade, fintech (like UPI integration), and cybersecurity cooperation
2. Institutionalise **Joint Working Groups on Counterterrorism and Transnational Crimes**.
3. Conduct regular **BIMSTEC military, disaster relief, and cyber defence exercises**.
4. Promote **tourism circuits** connecting Buddhist and heritage sites across member states.
5. Develop a **Bay of Bengal Heritage Trail** linking India, Sri Lanka, Myanmar, and Thailand.
6. India should take the lead in **capacity building**, **climate resilience**, **digital public infrastructure** (like UPI, Co-WIN), and disaster preparedness.

BIMSTEC's growing relevance is underlined by India's proactive leadership and the platform's ability to circumvent SAARC's limitations. Its institutional strengthening, finalization of FTA, and focus on connectivity and energy cooperation can make BIMSTEC a cornerstone of India's regional diplomacy.

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13. INDIA-SRI LANKA RELATIONS

iMPACT ANALYSIS

SYLLABUS:

GS 2 > International relations > India and Neighbours > India-Srilanka

REFERENCE NEWS:

- Prime Minister Narendra Modi's recent visit to Sri Lanka marked a pivotal moment in the bilateral relations between the two countries. Modi is the **first foreign leader to visit Sri Lanka after the economic crisis** and ever since the new President, Anura Kumara Dissanayake, assumed office in September 2024.
- PM Modi reiterated Sri Lanka's special place in India's **"Neighbourhood First" policy and "Vision MAHASAGAR".** Dissanayake, who made his first overseas visit to India in December 2024, also underlined the importance of the growing relationship between the two neighbours.

Vision MAHASAGAR: "Mutual and Holistic Advancement for Security and Growth Across Regions"

- Prime Minister Narendra Modi introduced Vision MAHASAGAR during his **visit to Mauritius in March 2025**, with a specific focus on promoting the **interests of the Global South**.
- This vision, outlined as "Mutual and Holistic Advancement for Security and Growth Across Regions", aims to enhance India's engagement with countries **in the Indian Ocean region and the broader Global South.**
- The goal of the initiative is to **foster regional stability, economic cooperation, and sustainable growth** while addressing **shared security concerns.**
- The Mahasagar vision builds on the **SAGAR (Security and Growth for All in the Region) policy** that Modi first announced during his visit to **Mauritius in 2015.**

MORE ON NEWS:

Prime Minister Narendra Modi's recent visit to Sri Lanka (April 4–6, 2025) focused on strengthening bilateral ties, with key highlights including:

- **Defense Cooperation**: India and Sri Lanka signed a **defense pact**, enhancing joint exercises, naval cooperation, and maritime security.
- **Energy Projects**: Modi inaugurated a **120-megawatt solar power plant in Trincomalee**, and India, along with the UAE, agreed to develop an energy hub in the region.
- **Economic Assistance**: India restructured Sri Lanka's $1.36 billion loans, converting a portion into grants and offering debt relief.
- **Cultural Engagement**: Modi visited the **Jaya Sri Maha Bodhi Temple** and paid respects at the Indian Peace Keeping Force Memorial in Colombo.

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- **Fishermen's Issues**: Both countries agreed to a **humanitarian approach to resolve concerns related to fishermen.**
- **Digital Cooperation**: India supported **Sri Lanka's digital initiatives**, offering financial assistance for regional development.

This visit emphasized India's commitment to Sri Lanka's recovery, regional stability, and cultural ties.

INDIA'S RESPONSE TO THE CRISIS IN SRI LANKA:

- **India's Strategic Response:** India utilized the 2021 crisis in Sri Lanka to reassert itself as the **net security provider** in the region, aiming to counterbalance China's influence.
- **Comprehensive Economic Support:** India provided more than **$4 billion** in assistance to Sri Lanka through currency swaps, loan deferrals, loan facilities, investments, and emergency credit lines.
- **Leveraging International Influence:** India used its global influence to support Sri Lanka, **persuading Quad partners** to engage and **using its G20 presidency** to address the debt issues of middle-income countries. It also advocated for Sri Lanka in international forums like the **IMF and the Paris Club.**
- **Extension of Financial Support:** India recently extended the loan repayment period by 12 years and continued its **$1 billion line of credit** for an additional year.
- **China's Comparative Passivity:** In contrast, China's response has been perceived as limited, focusing on unsustainable lending practices that have contributed to Sri Lanka's economic challenges.

(Sri Lanka's 2021 crisis was a severe economic collapse marked by high debt, foreign currency shortages, inflation, and critical shortages of essential goods like fuel, food, and medicine.)

WHY SRI LANKA IS IMPORTANT TO INDIA?

- **Maritime security:**

  Sri Lanka is geographically positioned near the major **chokepoints like the Strait of Malacca. It also has a list of highly strategic ports** located among busiest sea lanes of communication, like **Port of Colombo.** Thus, a strong presence in the island nation has broad strategic significance for countering piracy and ensuring smooth global maritime trade.
- **Countering Chinese presence:**
  - China's strategic interests through strategies such as **the 'String of Pearl'** is a concern for India. One of its key strongholds is the **Hambantota port** in Sri Lanka. Also, Sri Lankan parliament approved the **Colombo Port City Economic Commission Bill,** which governs the **China-backed Colombo Port City project**.
  - However, a strong relationship with Sri Lanka can help India counter such strategies.

- **Counter terrorism**:
  - In April 2019, the island nation was rocked by a series of coordinated terrorist suicide bombings. The presence of such radical elements in the country could serve as a potential launch pad for terrorists targeting India.
- **Economic:**
  - India has traditionally **been among Sri Lanka's largest trade partners** and Sri Lanka remains among the largest trade partners of India in the SAARC.
  - The **deep-water trans-shipment hubs in Sri lanka** are vital for India's sea trade. **Sri Lanka also has an intrinsic role in advancing blue economy** through sustainable management and utilization of marine resources.
- **Cooperate in international forum:**
  - Since Sri Lanka is an **important member of SAARC and BIMSTEC**, it is important for India to have Sri Lanka on board to maintain its leadership in the region.
  - Sri Lanka's favourable stand in developments relating to Jammu and Kashmir and abolition of Article 370 are advantageous for India.
- **Diaspora:**
  - Both regions share a strong **ethnic and cultural relation since the ancient times.** This continues today, in the form of **tourism circuits, Buddhist pilgrimage and other cultural exchanges**
  - There are two groups of Tamils in Sri Lanka. The first are the **Sri Lankan Tamils**, who descended from the Tamils of the old Jaffna kingdom. **The second are the Indian Tamils**, who are **descendants of bonded labourers sent from Tamil Nadu to Sri Lanka** in the 19th century to work in tea plantations.
- **Commonality:**
  - Being multi-ethnic, multi-religious, multi-lingual and multi-cultural countries, Sri Lanka and India have much in common. **The sharing of their similar experiences will be much valuable.**

AREAS OF COOPERATION:

- **Historic Relations:**
  - The relationship spans over 2,500 years with deep intellectual, cultural, religious, and linguistic interactions.
  - The three-decade conflict with the LTTE ended in May 2009, with India supporting Sri Lanka's right to counter terrorism and expressing concern for the civilian population's welfare.
- **Economic Relations:**
  - **Bilateral Trade:** India has traditionally been among Sri Lanka's largest trade partners and Sri Lanka remains among the **largest trade partners of India in**

the SAARC, with trade significantly boosted by the **India-Sri Lanka Free Trade Agreement signed in 2000.** According to the Department of Commerce (DoC), the Merchandise trade between India and Sri Lanka reached **USD 5.5 billion in FY 2023-24** with **India's exports amounted to USD 4.1 billion** while Sri Lanka's exports reached USD 1.4 billion.

- **Investment:** India ranks as one of the largest sources of FDI in Sri Lanka, with major Indian companies establishing operations there. Sri Lankan companies, like Brandix, also invest heavily in India, including setting up a garment city in Visakhapatnam.

- **Tourism and Aviation:**
  - ITourism is another important component with India being **the leading tourist source market in 2023** with around 3 lakh arrivals **(~20 % of ~1.48 million total arrivals)** and in 2024 (till October 2024) with around **3.2 lakh arrivals (~19.3 % of 1.65 million total arrivals).**
  - The Open Sky Agreement allows Sri Lankan Airlines to operate unlimited flights to six Indian airports, making it the largest foreign carrier in India.
- **Financial Cooperation:**
  - A $400 million currency swap agreement under the SAARC Currency Swap Framework 2019-22 was agreed upon to facilitate trade directly in their respective currencies.
- **Ongoing Investments and Development Initiatives:**
  - **Energy Projects:** Development of the Trincomalee energy hub and investments in Jaffna energy projects. In 2022, Sri Lanka approved Adani Green Energy for two wind projects in Mannar and Pooneryn.
  - **Dairy and Airport Management:** In October 2023, Sri Lanka's state-owned dairy companies entered a joint venture with India's Amul Dairy. Discussions are underway for the Adani Group to manage key international airports in Sri Lanka.
  - **Housing and Financial Integration Projects:** In February 2024, the Bharat-Lanka housing project was launched, aimed at constructing 10,000 houses for plantation workers. Additionally, India introduced its Unified Payment Interface in Sri Lanka, enhancing financial connectivity.
- **Bilateral Agreements:**
  - Several agreements strengthen economic relations, including the Free Trade Agreement, Double Taxation Avoidance Agreement, Bilateral Investment Protection and Promotion Agreement, and MoUs on Air Services and Agriculture.
- **Space Cooperation:**
  - The South Asia Satellite was launched in 2017, with Sri Lanka being the first to join. It offers free services for communications and broadcasting

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applications like Direct-to-Home television, tele-education, and disaster management.

- **Political Relations:**
  - Diplomatic engagements have evolved significantly, with relations becoming especially cordial post-2015, aligning with India's 'Neighbourhood First' policy and Sri Lanka's 'India First' security policy.
- **Civil Nuclear Cooperation:**
  - A bilateral agreement on Civil Nuclear Cooperation was signed in 2015, establishing a Joint Committee to identify areas of cooperation, including nuclear research and applications in industry, healthcare, agriculture, and water management.
- **Defence and Security Cooperation:**
  - Military cooperation includes joint exercises like 'Mitra Shakti' and 'SLINEX'. India also provides defense equipment and training to Sri Lankan forces.
- **Development Assistance:**
  - India's development assistance to Sri Lanka totals around US$ 3 billion, with grants like the Indian Housing Project and Emergency Ambulance Service. Additionally, India supports the rehabilitation of infrastructure such as the Palaly Airfield.
- **Cultural and People-to-People Relations:**
  - The Cultural Cooperation Agreement of 1977 facilitates cultural exchanges, supported by activities at the Indian Cultural Centre in Colombo. In 2020, India announced a USD 15 million grant to promote Buddhist ties.
- **Human Resource Development:**
  - India offers 400 scholarships annually under ITEC and the Colombo Plan for Sri Lankan nationals, focusing on skill development and capacity building.
- **Fishermen Issues:**
  - Both nations have agreed on practical arrangements to address the issue of fishermen crossing the International Maritime Boundary Line, focusing on protecting the rights of bona fide fishermen.

ISSUES IN RELATION:

- **Disagreement over the 13th Amendment:** Introduced as part of the 1987 Indo-Lanka Accord, the 13th Amendment aimed to provide regional autonomy and Tamil as an official language. Successive Sri Lankan governments have not fully implemented it, resisting power-sharing with Tamil minorities. India consistently supports meaningful devolution under the amendment.
- **Tamil Issue:** The UN estimates 40,000 Tamil civilians were killed in the final months of the LTTE conflict (2009). India maintains strong ties with the Tamil National Alliance and advocates for Tamil equality and reconciliation within a united Sri Lanka under the 13th Amendment.

- **India's Abstention in UNHRC:** In March 2021, India abstained from a vote on Sri Lanka's human rights record at the UNHRC. Although the resolution passed, Sri Lanka rejected UN efforts to investigate war crimes committed by both the military and LTTE.
- **China's Growing Influence:** Sri Lanka has increasingly turned to China for economic support, with major Chinese investments in projects like the Colombo International Financial Center and Hambantota Port. In 2017, unable to service its debt, Sri Lanka handed over Hambantota Port to China on a 99-year lease. China's investments, like the $500 million loan in April 2021, continue to raise concerns about a debt trap.
- **Economic Setbacks with India:** In 2019, Sri Lanka scrapped a joint agreement with India and Japan to operate the East Coast Terminal (ECT), despite its strategic importance to Indian trade. The West Coast Terminal was instead offered to Adani Ports under a public-private partnership. In 2017, India unilaterally terminated the Bilateral Investment Treaty (BIT) with Sri Lanka.
- **SAARC vs BIMSTEC:** While Sri Lanka favors SAARC, India promotes BIMSTEC as a more effective regional cooperation mechanism.
- **Environmental and Maritime Disputes:** Rising sea levels and unsustainable fishing pose environmental challenges. The unresolved maritime boundary dispute between Indian and Sri Lankan fishermen in the Palk Strait often leads to arrests and confrontations, despite the 1974 Indo-Lanka Maritime Boundary Agreement.

WAY FORWARD:

- **Strategic Patience and Support:** India should adopt a patient stance as Sri Lanka navigates its political changes under President Anura Kumara Dissanayake. India should assist in areas like economic recovery and political stability when needed.
- **Economic Engagement:** India must continue providing financial support through lines of credit and RBI swaps. Accelerating negotiations on CEPA and ETCA can strengthen trade ties, ensuring deeper economic integration.
- **Strengthening Bilateral and Regional Ties:** Completing key projects like the Trincomalee energy hub and Bharat-Lanka housing initiative will solidify India's role. Regional platforms like BIMSTEC and Indian Ocean Rim Association (IORA) can aid Sri Lanka's recovery and integration.
- **Security and Counter-terrorism Cooperation:** Enhanced security cooperation, intelligence sharing, and joint exercises are vital for countering terrorism, radicalisation, and drug trafficking.
- **Cultural and People-to-People Exchange:** Leveraging India's soft power through cultural exchanges, tourism, and collaborations like IPL-LPL will deepen people-to-people ties.

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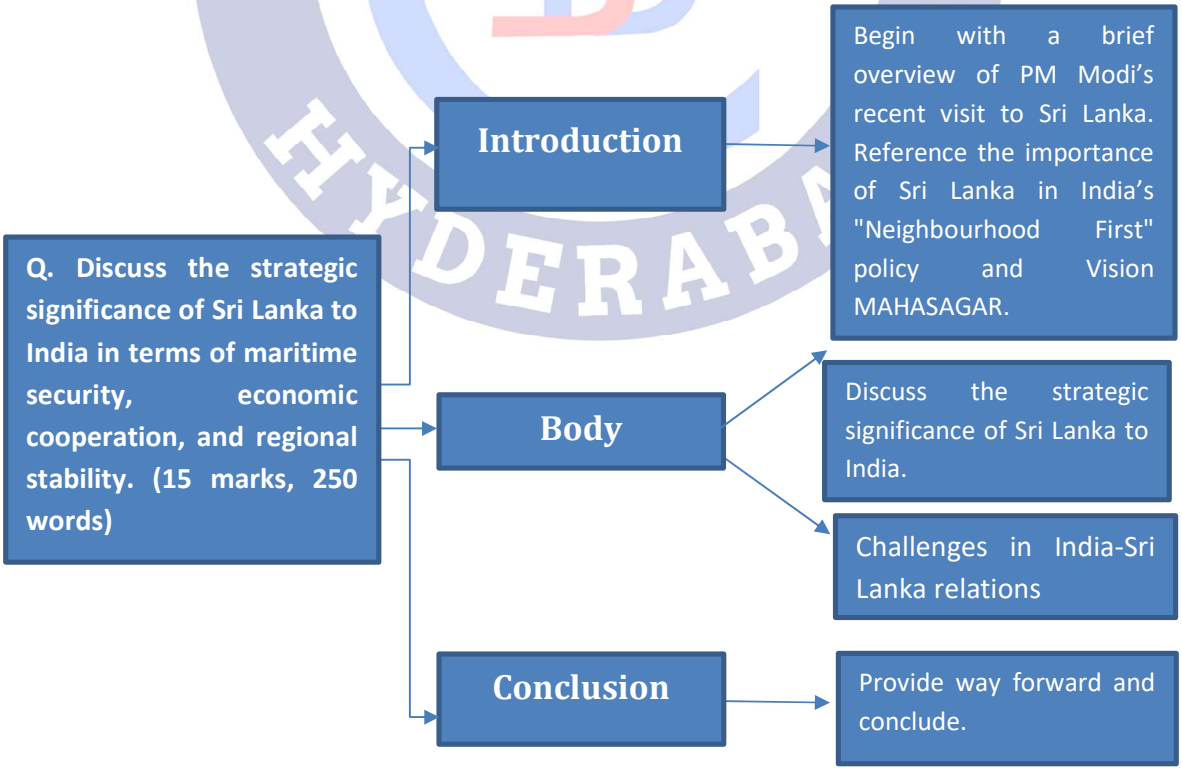
- **Environmental and Sustainable Development:** Collaborative efforts on climate adaptation, renewable energy, and sustainable fishing will help Sri Lanka address long-term environmental challenges.
- **Fishermen Issues:** India should proactively resolve fishing disputes through the Joint Working Group, ensuring sustainable and humane solutions to detentions.
- **Constitutional and Reconciliation Efforts:** India can assist Sri Lanka in addressing minority rights and reconciliation with the Tamil community by offering expertise in constitutional governance.
- **Countering China's Influence:** India should collaborate with countries like Japan and Australia to counter China's growing influence, focusing on joint projects in infrastructure and maritime security.

CONCLUSION: India's relationship with Sri Lanka, guided by the **Neighbourhood First policy and Vision MAHASAGAR**, offers opportunities for enhanced cooperation in defense, economic development, and regional security. By continuing to support Sri Lanka's recovery and addressing shared challenges, India can strengthen this partnership, ensuring regional stability and countering external influences like China.

PRACTICE QUESTION

Q. Discuss the strategic significance of Sri Lanka to India in terms of maritime security, economic cooperation, and regional stability. (15 marks, 250 words)

APPROACH



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MODEL ANSWER

Prime Minister Narendra Modi's visit to Sri Lanka (April 4–6, 2025) marked a key moment in strengthening bilateral ties. As the first foreign leader after Sri Lanka's economic crisis and the election of President Anura Kumara Dissanayake, Modi's visit highlighted Sri Lanka's importance in India's **"Neighbourhood First"** policy and **Vision MAHASAGAR**. Sri Lanka's strategic position in the Indian Ocean makes it crucial for India's maritime security, economic cooperation, and regional influence.

Strategic Significance of Sri Lanka to India:

1. Maritime Security:

Sri Lanka's strategic location near chokepoints like the **Strait of Malacca** and the **Port of Colombo** makes it vital for India's maritime security. Key points include:

- **Control Over Key Sea Lanes:** The **Port of Colombo** handles essential global trade, including energy shipments, making it critical to India's energy security and economic growth.
- **Strategic Presence:** A strong bilateral relationship with Sri Lanka allows India to safeguard these vital sea lanes, counter piracy, and maintain smooth trade flows.
- **Regional Cooperation:** Joint exercises like **Mitra Shakti** and **SLINEX** enhance maritime security, benefiting both nations' interests.
- **Countering External Influence:** A robust partnership with Sri Lanka helps India counter any potential threats to maritime security, including growing external influence in the region.

2. Economic Cooperation:

Sri Lanka remains a key economic partner for India, with cooperation spanning several sectors. Key aspects include:

- **Bilateral Trade:** The **India-Sri Lanka Free Trade Agreement** has boosted trade, reaching **USD 5.5 billion** in FY 2023-24. Sri Lanka is one of India's largest trade partners in South Asia.
- **Investment and Strategic Projects:** India is a leading investor in Sri Lanka, with initiatives like the **Trincomalee energy hub** and **wind energy projects** enhancing economic ties.
- **Port Significance: Sri Lanka's deep-water ports**, especially Colombo, are crucial for India's maritime trade, supporting regional economic integration.
- **Countering External Economic Influence:** Sri Lanka's growing reliance on Chinese investments, such as in **Hambantota Port**, raises concerns. A strong India-Sri Lanka economic relationship helps mitigate the risk of Sri Lanka becoming overly dependent on external powers like China.

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3. Regional Stability:

Sri Lanka plays a key role in ensuring regional stability, directly benefiting India. Key points include:

- **Regional Cooperation:** As a member of **SAARC** and **BIMSTEC**, Sri Lanka supports India's leadership in fostering peace and addressing regional security challenges.
- **Counter-Terrorism Efforts:** Sri Lanka's collaboration in intelligence sharing and joint military exercises, especially after the **2019 Easter bombings**, strengthens counter-terrorism efforts in the region.
- **Ensuring Peace and Stability:** Sri Lanka's stability directly impacts India's security. India's support for Sri Lanka in areas like **ethnic reconciliation** and **minority rights** helps preserve regional peace.
- **Regional Influence:** Strong cooperation with Sri Lanka allows India to balance external influences in the region, including China's growing footprint.

Challenges in India-Sri Lanka Relations:

- **Disagreement Over the 13th Amendment:** The 13th Amendment, aimed at granting regional autonomy to Sri Lanka's Tamil minority, has not been fully implemented, creating tension over India's support for Tamil rights and reconciliation.
- **Fishermen's Issues:** The maritime boundary dispute over fishing rights in the **Palk Strait** remains unresolved, with frequent arrests of Indian fishermen despite a humanitarian approach.
- **China's Growing Influence:** Sri Lanka's increasing reliance on Chinese investments, particularly in projects like **Hambantota Port**, raises concerns for India over debt dependency and strategic implications.
- **Economic Setbacks:** Sri Lanka's cancellation of agreements like the **East Coast Terminal** joint project with India and the termination of the **Bilateral Investment Treaty (BIT)** have strained economic relations.

Way Forward:

To strengthen bilateral ties, India should focus on the following:

- **Strategic Patience and Support:** India should continue supporting Sri Lanka's political and economic recovery, aiding stability and development.
- **Strengthening Economic Engagement:** India should maintain financial support, negotiate agreements like **CEPA** and **ETCA**, and enhance economic integration.
- **Enhancing Security Cooperation:** Joint defense initiatives, intelligence sharing, and maritime security collaboration will address regional security challenges.
- **Resolving Fishermen Issues:** Continued cooperation through the **Joint Working Group** is necessary for sustainable and humane solutions to the fishermen dispute.
- **Cultural and People-to-People Exchange:** Promoting tourism and cultural exchanges, including celebrating **Buddhist heritage**, will foster goodwill between the two nations.

Sri Lanka's strategic importance and economic significance make it a crucial partner for India. By deepening cooperation in defense, economic development, and regional stability, guided by **Vision MAHASAGAR** and **Neighbourhood First**, India can ensure a stable and prosperous future for both nations, reinforcing its leadership in the Indian Ocean region.

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14. INDIA - SAUDI ARABIA RELATIONS

iMPACT ANALYSIS

SYLLABUS:

GS 2 > International relations > India & West Asia > India - Saudi Arabia Relations

IN NEWS:

- Prime Minister Narendra Modi's recent visit to Saudi Arabia is his **third to the Kingdom, the most by any Indian premier.** It follows the 2023 visit of Crown Prince Mohammed bin Salman to India during the G20 presidency.
- This visit aims to reinforce strategic, economic, and cultural ties and comes at a crucial geopolitical moment, **amid conflicts in Gaza and Yemen and rising extremism in West Asia.**

MORE ON NEWS:

- The visit underscores the deepening relationship between India and Saudi Arabia, driven by the **personal rapport between PM Modi and Crown Prince Mohammed bin Salman.**
- Since the establishment of the **Strategic Partnership Council in 2019**, bilateral relations between India and Saudi Arabia have **matured into a comprehensive strategic partnership.**
- This multifaceted collaboration now spans several critical areas, including trade and investment, security and defence, energy cooperation, and people-to-people ties, reflecting the deepening trust and shared strategic vision between the two nations.
- Amid **tensions involving Iran, Israel, and other Gulf states**, India's engagement with Saudi Arabia reflects its aspirations to:
  - Be a **reliable regional power**
  - Secure maritime trade routes (**Strait of Hormuz, Bab el-Mandeb**)
  - Promote **regional stability and a multipolar order in West Asia**

What is the India-Saudi Arabia Strategic Partnership Council?

- According to a Ministry of External Affairs (MEA) statement, the Strategic Partnership Council (SPC) essentially aimed to **"establish a high-level council to steer the Indo-Saudi relationship."**
- The pact to establish the SPC was signed during **PM Modi's visit to Saudi Arabia in October 2019.**
- According to the MEA, the **SPC has two main pillars**:
  - the Committee on Political, Security, Social, and Cultural Cooperation; and
  - the Committee on Economy and Investments.

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BACKGROUND:

- India and Saudi Arabia enjoy multifaceted relations reflecting the **centuries old economic and socio-cultural ties.**
- **India and Saudi Arabia are old business partners**; their trade relations go back several centuries in time.
- Besides being a major trade partner, **India sees the Kingdom as a major pillar for its energy security** and an important **economic partner for investments, joint ventures, transfer of technology projects.**
- The two countries established **diplomatic relations in 1947.**
- The **visit of King Abdullah to India in January 2006** was a watershed moment in the relationship. The royal visit resulted in the signing of the **Delhi Declaration**, which was followed in 2010 by the **Riyadh Declaration**, which **elevated bilateral ties to a strategic partnership.**
- Prime Minister **Modi's visit to Riyadh in April 2016** captured the spirit of enhanced cooperation in the political, economic, security, and defense realms.
- The visit of **Crown Prince Mohammed to India in February 2019** continued this momentum. It was announced that the kingdom would **invest approximately $100 billion in India**, and six MoUs and agreements were signed in a range of fields. An agreement was also signed to pave the way for **Saudi Arabia to join the International Solar Alliance (ISA), launched by India.**
- The Hon'ble Prime Minister of India **visited Riyadh on October 28–29, 2019**, during which the **Strategic Partnership Council (SPC) Agreement was signed**, which established a high-level council to steer the Indo-Saudi relationship.

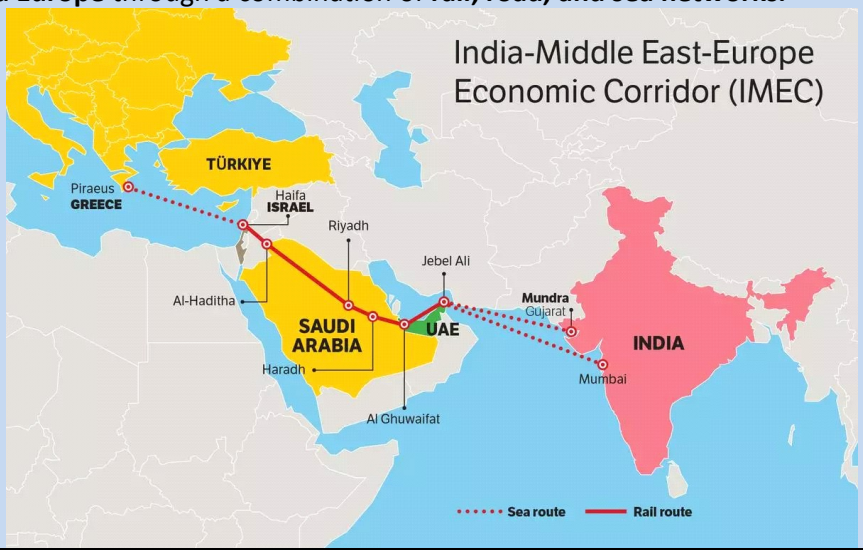
AREAS OF COOPERATION:

- **Economic:**
  - **Trade**
    - Saudi Arabia is **India's fourth-largest trading partner**.
    - India-Saudi bilateral trade reached **$43 billion in 2023–24.**
    - For FY 2022-23, Saudi Arabia remained **the 3rd largest Petroleum Products (which includes LPG) sourcing destination** for India accounting for 11.2% of the total imports.
  - **Investment:**
    - There are around **2,783 Indian companies** registered as joint ventures/100% owned entities **with investments worth approximately USD2 billion** in the Kingdom (January, 2022). Major Indian companies and corporate groups such as **L&T, TATA, Wipro, TCS, TCIL, Shapoorji & Pallonji, etc. have established a strong presence in Saudi Arabia.**

- Saudi Investments in India amounted to **USD3 billion (2023-2024).** Major Saudi investment groups include **ARAMCO, SABIC, ZAMIL, E-holidays, and Al Batterjee Group**. Additionally, Soft Bank's 'Vision Fund' has invested in Indian Start-ups such as Delhivery, FirstCry, Grofers, Ola, OYO, Paytm and PolicyBazaar.

- **Renewable Energy and Green Collaboration:**
  - Both nations aim to accelerate cooperation in **green energy**, aligning **with their 2030 targets** (India: 500 GW renewable; Saudi Arabia: 50% renewables). Focus areas include:
    - Solar energy
    - Green hydrogen and green ammonia production
    - Joint R&D, pilot projects, and technology sharing
  - This could position both countries as global leaders in **green hydrogen market**
- **Connectivity: India-Middle East-Europe Economic Corridor (IMEC):**
  - The IMEC project, placing Saudi Arabia as a central hub, aims to connect **India to Europe via the Middle East.**

The India–Middle East–Europe Economic Corridor (IMEC) is a multinational, multimodal connectivity project aimed at fostering **economic integration between India, the Middle East, and Europe** through a combination of **rail, road, and sea networks.**



- **Cultural:**
  - Yoga has also become a very popular activity in Saudi Arabia, particularly after it was **recognized as a 'sports activity' in November 2017.**
  - The **annual Hajj pilgrimage** is another important component of Indo-Saudi bilateral relations. India's Hajj quota for 2022 was 79,237 pilgrims.
  - The year 2021-22 commemorates 75 years of India's independence as **'Azadi ka Amrit Mahotsav'. This celebrations also coincides with 75 years of establishment of diplomatic relations between India and Saudi Arabia.**

- As part of this celebration the Embassy is **conducting a host of events from May 2021 till August 2023,** which include cultural events, exhibitions, academic activities like quizzes, international film festivals, and sports activities like golf tournament and cycle rallies.
- The 150th birth anniversary of Mahatma Gandhi was marked by a series of events that culminated on Oct. 02, 2019 with the **unveiling of the Gandhi bust at the Embassy.** Further, a large event was organized by the Embassy **to commemorate the 550th birth anniversary of Shri. Guru Nanak Dev Ji** on Nov. 14, 2019.

- **Diaspora:**
  - There are **over 2.8 million Indian expatriates** gainfully employed in the Kingdom who send valuable foreign exchange remittances.
  - The Diaspora also **plays a significant role in strengthening the bilateral ties** between the two countries. **Saudi leadership too has acknowledged the contribution made by Indian community** to the development of Saudi Arabia.
- **Defense:**
  - The defence partnership has witnessed tremendous growth in recent years. Then **Army Chief General Manoj Mukund Naravane** made a **landmark visit to Saudi Arabia in December 2020.**
  - There is extensive **naval cooperation** between India and Saudi Arabia, and **two editions** of the **bilateral naval exercise, Al Mohed al Hindi,** have been concluded so far.
  - Both sides also cooperate closely in the domain of defence industries and capacity-building.
  - India and Saudi Arabia signed a **defense cooperation pact in 2014** under which the two countries will share defense-related information, undertake military training and education, and also cooperate in the field of security.
- **Collaboration during COVID-19:**
  - Throughout the pandemic, **both nations shared national experiences and supported each other** to ensure continued flow of food, medicines and other essential items.
  - In February and March, 2021, in two separate consignments, **India provided 4.5 million COVISHIELD vaccines to the Kingdom**, whereas, during the second wave, **the latter provided India with COVID-relief material, particularly liquid oxygen.** Further, during the pandemic, the Saudi authorities opened up the healthcare system for the Indian community and provided free healthcare services.
- **Denunciation of terrorism:**
  - One of the reasons for the two countries coming closer has been the **concern about growing extremism and terrorism.** This effort to collectively fight

terrorism has extended at the bilateral level as the **two countries have signed a memorandum of understanding to combat terrorism.**

- The Saudi government has r**egularly helped India to apprehend key terror suspects.** For instance,in 2012 **Saudi Arabia helped India arrest terror suspect Zabiuddin Ansari** alias Abu Jundal accused of being involved in **2008 Mumbai attacks.** In December 2016, Saudi Arabia deported a ring leader of a fake Indian currency note racket, Abdul Salam.

- **Strategic cooperation:**
  - The **stability and security of the Gulf region and the Indian subcontinent are closely interlinked.**
  - From an Indian perspective, the main challenges to regional stability include the **US-Iran hostility ,the Palestine issue etc**. South Asia is also facing serious challenges, including terrorism and radicalisation.
  - **Cyber security and maritime security are other major issues in the region.** Such developments have given space for the formation of positive relations between India and Saudi Arabia given the **Kingdom's role and influence in West Asia and India's relevance in South Asian geopolitics.**
  - To enhance strategic cooperation between the two countries, **Saudi military cadets have also engaged with the India's NDA for military training.**

CHALLENGES:

- **Security concerns emanating from gulf nations:**
  - Security concerns emanating from gulf nations like the **transnational terrorist linkages** that exist between India and Gulf Arab countries.
  - These include risks associated with **terror financing, radicalisation networks, and cyber threats.** Enhanced cooperation is in place, but vulnerabilities remain, especially as extremist groups adapt digitally and regionally.
- **Nationalization drives:**
  - The workforce nationalization in Gulf countries would adversely **impact Indian expatriates in the Gulf countries, including Saudi Arabia.**
  - **For instance,** the **Nitaqat program**, which was introduced by Saudi Arabia in 2011 in order to **increase the employment of Saudi nationals**, has upset the large expatriate community of Indians working in the kingdom.
  - Recent expansions under **Saudi Vision 2030 have accelerated localisation** targets, with sectors like retail, healthcare, and finance witnessing reduced reliance on foreign workers, increasing uncertainty for the 2.8 million-strong Indian community.
- **Chinese presence:**
  - An **agreement between Iran and Saudi Arabia** in March 2023, **brokered by Beijing**, **could put China in a leading role in West Asia, including Saudi Arabia**, a position once held by the United States of America.

- **Arab- Iran Conflict:**
  - The **differences between Iran and the Arab world** hinder India's engagement in the Middle-east region.
  - **Balancing the relationship** sometimes results **in reluctance of some strategic agreements.**
- **Lack of a comprehensive policy:**
  - **Unlike the Act East policy,** India has **not established a comprehensive West Asia policy** despite the regions having similar geopolitical significance.
  - This gap limits India's ability to proactively shape regional developments and reduces consistency in engaging with partners on long-term agendas such as technology transfer, regional energy grids, and strategic connectivity like IMEC.
- **Diversification of Saudi foreign policy:**
  - Under **Vision 2030**, Saudi Arabia is aggressively **diversifying its foreign relations beyond traditional allies. Its growing ties with China, Russia, and the EU**—coupled with a more independent foreign policy—means India must now compete with multiple powers for strategic influence and economic opportunities.
- **Economic volatility and oil dependency risks:**
  - While energy remains a pillar of bilateral ties, India's dependency on Saudi oil also exposes it to price fluctuations and geopolitical risks. The shift towards renewables is strategic, but the transition period poses energy security risks, especially during global supply disruptions.

WAY FORWARD:

India and Saudi Arabia, rooted in a history of cultural affinity and robust trade relations, must now pivot towards **strategic depth and future-ready collaboration**. While the relationship has grown significantly, sustained efforts are needed in several key areas:

- **Institutionalizing Strategic Dialogue:** The Strategic Partnership Council should be leveraged more proactively to review progress, resolve bottlenecks, and institutionalize mechanisms for regular high-level exchanges across all areas of cooperation.
- **Strengthening Diaspora Engagement:** Given the size and importance of the Indian diaspora in Saudi Arabia, India should work closely with Saudi authorities to ensure protections and welfare for Indian workers, especially in light of nationalisation programs and evolving labour policies.
- **Enhancing Energy Transition Cooperation:** India and Saudi Arabia should establish joint platforms and research initiatives to advance innovation in **green hydrogen, solar power, and clean technologies**, thereby mitigating overdependence on fossil fuels and aligning with both countries' sustainability goals.

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- **Expanding Defence and Maritime Security Collaboration:** Continued focus on joint exercises, naval cooperation, and defence production partnerships will reinforce shared interests in the Indian Ocean and Gulf regions.
- **Mitigating Strategic Competition:** As Saudi Arabia diversifies its foreign relations, India must adopt a **more agile and consistent West Asia policy** that blends strategic autonomy with pragmatic diplomacy. Coordinating with like-minded partners to balance China's influence in the region will also be crucial.
- **Operationalising Economic Corridors:** Swift implementation of the **India–Middle East–Europe Economic Corridor (IMEC)** can elevate Saudi Arabia's role as a transit hub while boosting India's connectivity with Europe and the Middle East.

CONCLUSION:

- India-Saudi Arabia relations stand at a pivotal juncture. With evolving geopolitical realities and mutual aspirations for regional leadership, both nations have an opportunity to redefine their partnership for the 21st century. Through sustained dialogue, pragmatic collaboration, and future-ready policies, India and Saudi Arabia can emerge as pivotal anchors of stability, prosperity, and innovation in the wider West Asia and Indo-Pacific regions.

PRACTICE QUESTION

Q. "Saudi Arabia is no longer just a vital energy partner for India but a key strategic collaborator in the evolving geopolitics of West Asia." Discuss the significance of Saudi Arabia in India's foreign policy and elaborate on the areas of cooperation and challenges in the bilateral relationship. (15 marks, 250 words)

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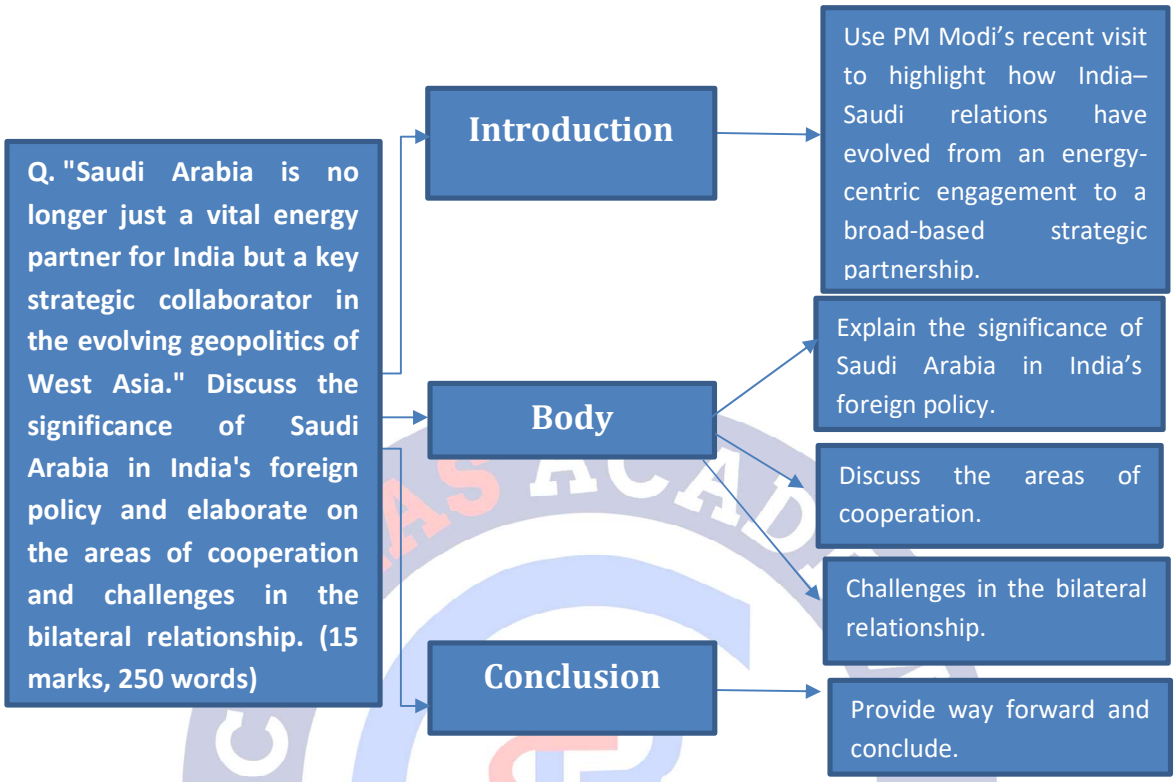
APPROACH



MODEL ANSWER

Prime Minister Narendra Modi's recent visit to Saudi Arabia, **his third and the most by any Indian Prime Minister**, highlights the transformation of bilateral ties from a transactional energy-based relationship to a deep, strategic partnership. This shift, driven by evolving regional dynamics and India's growing global role, positions Saudi Arabia as a vital collaborator in New Delhi's West Asia outreach.

Significance of Saudi Arabia in India's Foreign Policy:

1. **Energy Security Backbone**: As India's third-largest supplier of crude oil and second-largest supplier of LPG, Saudi Arabia plays a critical role in ensuring India's energy needs are met reliably and affordably. The longstanding partnership continues to evolve, with new conversations around green energy and favourable oil pricing.

2. **Regional Stability and Strategic Influence**: Amid conflicts in Gaza, Yemen, and tensions involving Iran and Israel, India's engagement with Saudi Arabia reflects its aim to act as a stabilising regional power. Cooperation on maritime security in chokepoints like the Strait of Hormuz and Bab el-Mandeb reinforces this objective.

3. **Geopolitical Realignment**: Saudi Arabia's growing engagement with China, post the 2023 Iran-Saudi détente brokered by Beijing, calls for India to recalibrate its

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presence in the region. A proactive engagement helps India maintain strategic balance in an increasingly multipolar West Asia.

4. **Diaspora and Economic Interdependence**: With over 2.8 million Indians in the Kingdom, Saudi Arabia hosts the largest Indian expatriate population in the region. This community contributes significantly to remittances and bilateral goodwill.

Major Areas of Cooperation:

1. **Economic and Trade Ties**: Saudi Arabia is India's fourth-largest trading partner, with bilateral trade reaching $43 billion in 2023–24. Both nations are investing in joint ventures, technology, and digital transformation. Saudi investments in India have crossed $3 billion, with potential for more via GIFT City and sovereign funds.

2. **Renewable Energy and Green Hydrogen**: In alignment with Vision 2030 and India's 500 GW renewable goal, both countries are expanding cooperation in solar energy, green hydrogen, and green ammonia. Joint R&D and pilot projects could position them as leaders in the global green energy market.

3. **Strategic Infrastructure – IMEC**: The India-Middle East-Europe Economic Corridor, with Saudi Arabia as a central hub, aims to enhance regional integration through multimodal transport networks. It could significantly boost India's connectivity with Europe and deepen India-Saudi trade ties.

4. **Defence and Security Cooperation**: Defence ties have expanded through joint military exercises such as *Al Mohed al Hindi*, defence training, and increasing naval coordination. The Strategic Partnership Council has institutionalised security dialogues and defence industry collaboration.

5. **Cultural and People-to-People Ties**: Soft diplomacy has grown through shared cultural celebrations, yoga recognition, and cooperation on the Hajj pilgrimage. These efforts enhance mutual understanding and goodwill.

Challenges in the Bilateral Relationship:

1. **Security Threats and Terror Networks**: Despite enhanced cooperation, transnational terrorist linkages, radicalisation, and cyber threats continue to pose risks to regional and bilateral security.

2. **Nationalisation Drives**: Saudi Arabia's push under Vision 2030 to employ more nationals—through initiatives like Nitaqat—poses uncertainties for Indian expatriates, particularly in sectors like retail and healthcare.

3. **China's Strategic Inroads**: China's growing influence, especially after brokering Saudi-Iran ties, challenges India's ability to retain strategic space in the region.

4. **Arab-Iran Rivalry**: India's careful balancing act between Arab nations and Iran often limits its ability to enter deeper, long-term strategic commitments in the region.
5. **Lack of a Comprehensive West Asia Policy**: Unlike the "Act East" framework, India lacks a structured West Asia policy, which restricts consistency in its regional engagement, particularly in sectors like defence, tech, and logistics.
6. **Energy Transition Risks**: While both countries aim for renewable collaboration, India's dependency on Saudi oil during the transition phase remains a vulnerability amidst global price volatility.

Way Forward:

- **Formulating a West Asia Policy:** India should articulate a comprehensive regional strategy that ensures coherence across diplomatic, defence, and economic engagements.
- **Deepening Green Energy Cooperation:** Scaling joint R&D and capacity-building in green hydrogen and solar technologies can future-proof energy ties.
- **Leveraging Diaspora Diplomacy:** Institutional mechanisms to safeguard the rights and welfare of Indian workers are essential, especially amid nationalisation reforms.
- **Countering Strategic Competition:** India must enhance multilateral engagement with partners like the UAE and Israel to retain influence in the Gulf amid growing Chinese and Russian presence.
- **Operationalising IMEC Rapidly:** Timely development of the corridor will not only boost trade but also entrench Saudi Arabia's economic integration with India.

India–Saudi Arabia relations have entered a new era of strategic convergence, driven by mutual interests in stability, energy transition, and economic growth. As both nations redefine their global roles amidst shifting geopolitical tides, their partnership stands as a pillar for regional order, sustainable development, and strategic autonomy in West Asia.

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15. INDIA-CHILE RELATIONS

iMPACT ANALYSIS

SYLLABUS:

GS 2 > International Relations

REFERENCE NEWS:

India and Chile are set to begin talks on a Comprehensive Economic Partnership Agreement (CEPA) with a focus on critical minerals, Prime Minister Narendra Modi announced during a press briefing with Chilean President Gabriel Boric Font in New Delhi.

Home to the **world's largest reserves of lithium and copper** — key inputs for electric vehicle (EV) batteries — **Chile plays a pivotal role in the global critical minerals supply chain.** Following the announcement, Union Minister of Coal and Mines G Kishan Reddy and Chile's Minister of Mining Aurora Williams met to explore bilateral partnerships in the mining sector.

INDIA-CHILE RELATIONS:

India and Chile formally established **diplomatic relations** in 1956. Chile was among the **first Latin American countries** to recognize **India's independence** and engage in diplomatic exchanges. During this period, **bilateral interactions remained limited**, focusing primarily on **political goodwill and cultural exchanges**.

- **1991:** India's **economic liberalization** opened new opportunities for Latin American trade, including with Chile.
- **1996:** The two nations signed a **Trade Agreement**, laying the foundation for deeper economic cooperation.
- **2003:** India's **"Focus: LAC" (Latin America and Caribbean) Policy** helped strengthen commercial ties with Chile and other Latin American countries.

SIGNIFICANCE OF INDIA-CHILE RELATIONS:

Economic and Trade Relations

- **Growing Bilateral Trade:** Trade between India and Chile surged from **$1.5 billion in 2020 to $3.8 billion in 2024**.
- **India's 5th Largest Trading Partner in Latin America.** .
- **India's exports to Chile:** Automobiles and pharmaceuticals.
- **Chile's exports to India:** Copper ores, unrefined copper, and molybdenum ores.
- **Preferential Trade Agreement (PTA):** The India-Chile PTA expanded from **474 to 2,829 tariff lines in 2016**, enhancing trade opportunities.

Strategic Importance in Critical Minerals

- **Copper Trade:** More than half of Chile's exports to India consist of **copper and its derivatives**, which are vital for India's infrastructure, electrical, and electronics industries.
- **Lithium Potential:** Although India does not yet import lithium from Chile, Chile is one of the world's top lithium producers. As India expands **EV battery manufacturing**, collaboration in lithium procurement could be crucial in the future.

Investment and Industrial Cooperation

- **Indian companies like Tata Motors and Mahindra** have been expanding their market presence in Chile, particularly in the automobile sector.
- **Pharmaceutical exports** from India have gained a strong foothold in Chile's healthcare industry.

Diplomatic and Political Cooperation

- **Shared Global Interests:** Both nations support each other on multilateral platforms like the UN, WTO, and G20. Chile has consistently supported India's bid for a **permanent seat in the UNSC** since 2003.
- **South-South Cooperation:** As both nations are emerging economies, they engage in mutual support for global economic reforms.
- **Anti-Terrorism Cooperation:** Chile shares India's concerns about **global terrorism** and has condemned it in all forms.
- **Diplomatic Engagements:** High-level visits, including three Presidential visits from India (1995, 2008, and 2019) and two from Chile (2005, 2009), have strengthened bilateral ties.
- **Joint Commission for Strengthening Ties:** The first **India-Chile Joint Commission Meeting** was held in 2020, and the second in 2024 in New Delhi.

Science, Technology, and Renewable Energy Cooperation

- **Chile's expertise in solar and wind energy** aligns with India's renewable energy goals.
- **Potential lithium collaboration** could support India's ambitious EV and battery storage initiatives under the National Electric Mobility Mission Plan (NEMMP).

Cultural and People-to-People Ties

- **Indian Diaspora in Chile:** Approximately **4,000 Overseas Indians**, mainly engaged in **business, IT, and financial services**, contribute to the local economy
- **Interest in Indian yoga, Ayurveda, and Bollywood** has been rising in Chile.

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CHALLENGES OF INDIA-CHILE RELATIONS:

Trade and Economic Barriers

- **Limited Trade Volume:** Despite the growth in bilateral trade, the total trade volume of **$3.8 billion (2024)** remains **small compared to India's trade with other major partners**.
- **Tariff and Non-Tariff Barriers:** India and Chile have a **Preferential Trade Agreement (PTA)** but not a **Comprehensive Economic Partnership Agreement (CEPA)**, which limits trade liberalization. **Tariff complexities** and **non-tariff barriers** (such as stringent quality standards and bureaucratic red tape) slow trade expansion.
- **Lack of Diversified Trade:** Chile mainly exports **copper, molybdenum, and minerals**, while India exports **automobiles, pharmaceuticals, and textiles**. The trade **lacks diversity** in products, making it **vulnerable to global commodity price fluctuations**.

Resource Security and Supply Chain Risks

- **Uncertain Lithium Trade:** India does not yet import **lithium** from Chile, despite Chile being a **top global producer**. Uncertainty over future lithium supply chains affects India's **EV battery manufacturing and clean energy goals**.
- **Copper Supply Volatility:** India's reliance on Chilean **copper ore and scrap** makes it susceptible to **price fluctuations and supply disruptions**, particularly due to **labor unrest and economic instability in Chile**.

Political and Diplomatic Hurdles

- **Geographical Distance and Limited Engagement:** India and Chile are geographically **far apart**, making trade and **diplomatic coordination complex**. **Fewer high-level visits** compared to India's engagement with other Latin American nations like **Brazil and Mexico**.
- **Domestic Unrest in Chile:** Chile has faced **social unrest, labour strikes, and political instability** in recent years, which has negatively affected bilateral trade and investment.
- **Lack of Strong Defence and Strategic Cooperation:** Unlike India's defence collaborations with other countries, **defence ties with Chile remain minimal**. Absence of a **defence cooperation agreement or joint military exercises** limits strategic engagement.

Investment and Business Challenges

- **Limited Chilean Investments in India:** Chilean investments in India remain **low ($118 million)** compared to **Indian investments in Chile ($620 million)**. Lack of **awareness and business-friendly policies** discourages Chilean firms from entering the Indian market.

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- **Bureaucratic Hurdles and Slow Decision-Making:** Complex business regulations and slow decision-making **impede smooth investment flows and trade expansion**. Delays in approving key projects, such as **critical mineral exploration agreements**, affect bilateral cooperation.

Cultural and People-to-People Gaps

- **Limited Awareness and Exchange Programs:** Despite growing **cultural exchanges in Yoga and Ayurveda**, overall awareness of **India in Chile and vice versa remains low**. There are **limited educational and student exchange programs** between the two nations.

WAY FORWARD:

Strengthening Economic and Trade Cooperation

- **Comprehensive Economic Partnership Agreement (CEPA):** Upgrading the current **Preferential Trade Agreement (PTA)** into a **CEPA** will facilitate **freer trade**, reduce tariffs, and improve market access.
- Expanding trade beyond **copper and minerals** to include **IT, pharmaceuticals, and renewable energy technology**.
- **Diversifying Trade and Investment:** Encouraging **Chilean investments in Indian industries** such as **mining technology, food processing, and clean energy**. Increasing **Indian investments in Chile** in **automobiles, software, and infrastructure**.

Enhancing Critical Minerals Partnership

- **Securing Lithium Supply for India's EV Industry:** Chile is a leading global **lithium producer**, critical for India's **battery and renewable energy** sectors. India should **negotiate a long-term lithium supply agreement** and explore joint **lithium mining and processing** projects in Chile.
- **Cooperation in Green Energy and Sustainability:** Joint projects in **solar and wind energy**, where both countries have expertise. Collaboration in **carbon capture and storage (CCS)** and sustainable mining practices.

Expanding Diplomatic and Multilateral Engagement

- **Stronger Engagement in Global Forums:** Coordinating positions on global trade policies in **WTO, G20, and BRICS+**. Enhancing cooperation on **climate change, biodiversity, and sustainable development** in **UNFCCC** and **Paris Agreement discussions**.
- **Defence and Security Cooperation:** Exploring **maritime security collaboration**, given Chile's **Pacific coastline** and India's **Indo-Pacific strategy**. Joint efforts in **disaster management**, especially in earthquake and tsunami response.

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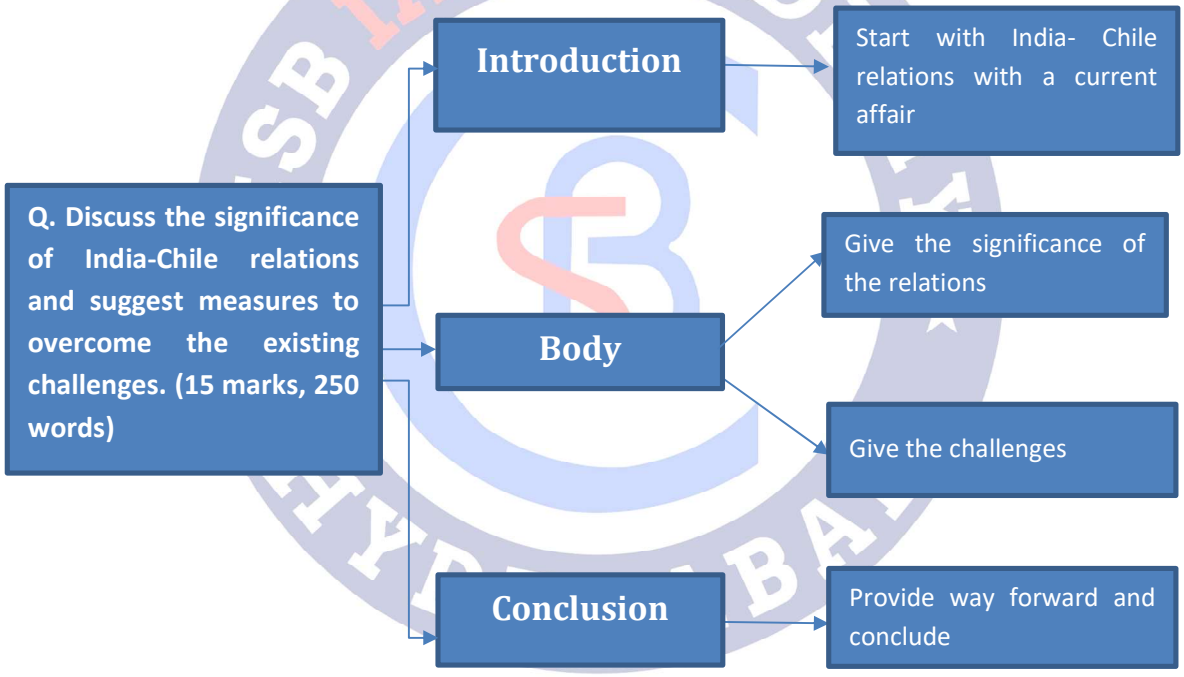
Strengthening Cultural and People-to-People Ties

- **Promoting Cultural and Educational Exchange:** Increasing **scholarships and research collaborations** between Indian and Chilean universities. Encouraging **yoga, Ayurveda, and Indian cuisine diplomacy** in Chile.
- **Boosting Tourism and Connectivity:** Establishing **direct flight routes** between major Indian and Chilean cities. Simplifying **visa policies** to promote tourism and business travel.

PRACTICE QUESTION

Q. Discuss the significance of India-Chile relations and suggest measures to overcome the existing challenges. (15 marks, 250 words)

APPROACH



MODEL ANSWER

India and Chile established diplomatic relations in 1956. Over the years, their engagement has expanded in trade, investment, and strategic cooperation. The two nations are now working towards a **Comprehensive Economic Partnership Agreement (CEPA)** to enhance bilateral trade and collaboration in **critical minerals, renewable energy, and technology.**

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Significance of India-Chile Relations:

1. **Economic and Trade Growth:** Bilateral trade surged from **$1.5 billion in 2020 to $3.8 billion in 2024**. Chile is India's **5th largest trading partner** in Latin America.
    - **Preferential Trade Agreement (PTA)** was expanded from 474 to **2,829 tariff lines in 2016**.
2. **Strategic Importance in Critical Minerals:** Over **50% of Chile's exports to India** consist of copper ore and scrap, essential for India's infrastructure and electronics sectors. Chile holds some of the world's largest lithium reserves, crucial for **India's EV battery manufacturing and clean energy goals**.
3. **Investment & Industrial Cooperation:** Tata Motors, Mahindra, and pharmaceutical firms have established strong market presence. Currently low at **$118 million**, but has growth potential in **mining, clean energy, and food processing**.
4. **Diplomatic and Global Cooperation:** India and Chile collaborate in the **UN, WTO, and G20**. Chile has backed India's bid for a **permanent seat in the UN Security Council** since 2003.

Challenges in India-Chile Relations:

1. **Trade & Economic Barriers:** Trade remains **low compared to India's partnerships with Brazil or Mexico**. **No CEPA yet**, limiting tariff reductions and trade liberalization.
2. **Resource Security & Supply Chain Risks: Lithium trade remains uncertain**, delaying India's EV growth. **Fluctuating copper prices** and labor strikes in Chile create supply instability.
3. **Geopolitical & Diplomatic Challenges: Geographical distance** limits people-to-people and trade ties. **Chile's domestic social unrest** has negatively impacted trade relations.
4. **Investment & Business Barriers: Limited Chilean investments in India ($118 million)** compared to **Indian investments in Chile ($620 million)**. **Complex regulations** slow business expansion.
5. **Lack of Defence & Strategic Ties:** No **defence agreements** or joint military exercises exist between the two nations.

Way Forward:

1. **Upgrade to Comprehensive Economic Partnership Agreement (CEPA):** Reducing **tariff and non-tariff barriers**. Expanding trade beyond copper to **IT, pharmaceuticals, and green energy technologies**.

2. **Strengthening Critical Minerals Partnership: Long-term lithium supply agreement** to secure raw materials for India's **EV and battery sector**. Joint **sustainable mining projects** in Chile.

3. **Enhancing Investment & Business Cooperation:** Encouraging Chilean firms to **invest in Indian industries like food processing and IT**. Simplifying **business regulations** to ease trade.

4. **Expanding Diplomatic & Multilateral Cooperation:** Strengthening ties in **climate change policy, trade reforms, and renewable energy initiatives**. Enhancing **defence cooperation** in maritime security and disaster management.

5. **Boosting Cultural & People-to-People Exchanges: More student and research collaborations** between Indian and Chilean universities. Promoting **direct flights and tourism initiatives**.

India-Chile relations have immense potential in **trade, critical minerals, and multilateral cooperation**. By addressing economic, diplomatic, and investment challenges, both nations can establish a stronger and more sustainable partnership. The proposed **CEPA and lithium cooperation** could be game changers, ensuring deeper engagement in the future.

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16. INDIA-MIDDLE EAST-EUROPE ECONOMIC CORRIDOR

iMPACT ANALYSIS

SYLLABUS:

GS 2 > International Relations >> Multilateral groupings

REFERENCE NEWS:

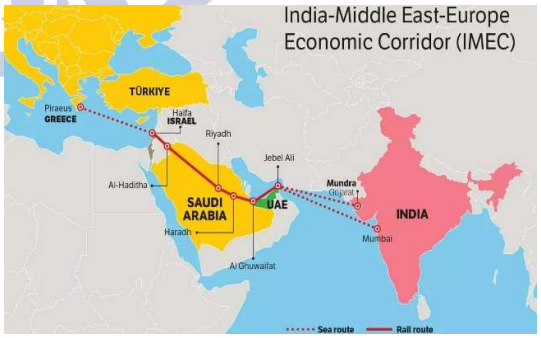
At the IMEC Conclave 2025, Piyush Goyal said, "IMEC is not trying to dominate, which the Belt and Road Initiative is now being recognized as becoming a political tool to try and dominate certain regions and their economic future**". IMEC is "not adversarial**" or where "money is not the only driver" but is focussed largely on **promoting friendship and inclusive and sustainable growth among the members.**

Financial viability to be an important element and IMEC aims not to create a huge debt burden on all the countries along the region, but the larger objective is to promote amity among nations. The IMEC envisages a **vast road, railroad and shipping networks among Saudi Arabia, India, the US, and Europe** to ensure integration among Asia, Middle East, and West.

Besides **infrastructure, interoperable norms, alignment on process, procedures and regulations can be looked at in the corridor project**. India is in a dialogue for a **Virtual Trade Corridor** and suggested if that can be extended through the IMEC.

IMEC:

The **India–Middle East–Europe Economic Corridor (IMEC)** is a **multinational, multimodal connectivity project** aimed at fostering **economic integration between India, the Middle East, and Europe** through a combination of **rail, road, and sea networks**.



- It was formally announced during the **G20 Summit 2023** in New Delhi and is considered a **geostrategic alternative** to China's **Belt and Road Initiative (BRI)**.
- It was officially launched through a **Memorandum of Understanding (MoU)** signed by **India, the European Union, France, Germany, Italy, Saudi Arabia, UAE, and the US.**
- Envisioned as part of the broader **Partnership for Global Infrastructure and Investment (PGII)** led by the **G7** to counterbalance China's BRI.
- **Multimodal Transport Corridor**

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- **East Corridor:** Connects India to the Arabian Peninsula (e.g., UAE and Saudi Arabia)
- **Northern Corridor:** Connects the Arabian Peninsula to Europe (via Jordan and Israel to European ports like Piraeus in Greece or ports in Italy and France)

- Infrastructure includes:
  - **Railways**, **road networks**, **shipping lanes**, and potentially **digital cables and pipelines**.
- **Promotes Seamless Trade and Digital Integration:** Envisions a "**Virtual Trade Corridor**", where digital customs, logistics tracking, and paperless trade reduce transaction time and cost. Focus on harmonization of regulations, interoperability, and standards alignment across participating countries.

SIGNIFICANCE OF IMEC IN THE PRESENT GLOBAL ORDER:

- **Strategic Counter to China's BRI: IMEC** serves as a **democratic, transparent alternative** to China's BRI, which has often been criticised for **debt diplomacy** and strategic coercion.
  - BRI is becoming a "political tool to dominate regions", while IMEC is aimed at **friendship, sustainability**, and **financial viability**.
  - Over **60% of BRI-participating countries** face **debt distress** as per World Bank estimates.
- **Enhancing India's Strategic and Economic Clout:** Establishes India as a **key transit hub** connecting Asia with Europe and the Middle East.
  - **Boosts India's Act West policy**, complementing its **Chabahar Port project** and **International North-South Transport Corridor (INSTC)**.
  - Reinforces India's ambition to be part of **trusted global supply chains**.
- **Realignment of Global Trade Routes: Reduces dependence on traditional chokepoints** like the Suez Canal. Offers **shorter and diversified routes** for trade between Asia and Europe.
  - Facilitates seamless cargo movement from **Mumbai → UAE/Saudi Arabia → Europe**, cutting **transit time and costs**.
- **Strengthening India–Gulf–Europe Relations:** Deepens India's economic and energy partnership with **Gulf Cooperation Council (GCC)** nations. Enhances ties with **EU member states** through shared logistics and digital standards.
  - Enables **cross-border harmonisation** of customs, regulations, and digital infrastructure (Virtual Trade Corridor).
- **Geopolitical Stabilisation in the Middle East:** Encourages **economic interdependence** among countries like **Israel, Saudi Arabia, UAE, and Jordan**, potentially reducing friction. Complements **Abraham Accords** by facilitating regional integration.
- **Resilient and Green Supply Chains:** Focus on **sustainable infrastructure** with minimal debt burden aligns with global push for **resilient and climate-conscious**

trade. Can serve as a platform for **green energy corridors**, including potential **hydrogen pipelines**.

- **Aligns with Western Strategic Interests:** Supported by the **US and EU** as part of the **G7's Partnership for Global Infrastructure and Investment (PGII)**. Helps **Western allies reduce reliance on China-led trade architecture**.
- **Integration with Other Initiatives:** Complements India's Sagarmala, PM Gati Shakti, and Chabahar Port development. Can potentially link with International North South Transport Corridor (INSTC) in the future.
- **Boosts India's Global Connectivity:** Transforms India into a **regional and global logistics hub**. Enhances connectivity from **Mumbai to European ports** through West Asia. Facilitates **exports, energy trade**, and **industrial value chains**.

CHALLENGES BEFORE IMEC:

- **Geopolitical Instability in the Middle East:** The corridor traverse **conflict-prone regions** such as **Israel, Gaza, and parts of the Gulf**. **Recent escalation in the Israel-Palestine conflict** and regional tensions involving Iran could delay implementation and disrupt continuity.
- **Lack of Physical Infrastructure and Connectivity:** Many corridor countries **lack integrated road, rail, and port networks** aligned for multimodal freight movement. Requires **significant investment in hard infrastructure**, especially in regions like Jordan and parts of the Arabian Peninsula.
    - India's port capacity is being augmented under **Sagarmala**, but **connectivity from Gulf ports to European rail terminals** remains underdeveloped.
- **Divergence in Regulations and Trade Norms:** Differing **customs procedures, safety standards, data regulations**, and **logistics protocols** can slow the corridor's implementation.
    - Absence of **interoperable digital and trade frameworks** could delay the **Virtual Trade Corridor** proposed by India.
- **Financial and Investment Challenges:** Building and upgrading infrastructure across multiple countries will require **billions in investments**. Uncertainty about **who will finance which segments**, especially in politically sensitive or lower-income regions.
- **Multilateral Coordination and Governance:** Successful execution demands **robust multilateral cooperation**, but current frameworks for IMEC **lack institutional mechanisms**. Differences in **strategic priorities** between countries (e.g., India–EU vs. US–Gulf) could create friction.
- **Competition from China's BRI:** China may **counterbalance IMEC** by increasing influence in overlapping regions through BRI investments. Countries like **Saudi Arabia and UAE**, while part of IMEC, also **engage with BRI**, leading to **strategic hedging**.
- **Maritime and Supply Chain Risks:** IMEC depends heavily on **secure maritime routes** in the Arabian Sea, Red Sea, and Mediterranean. **Piracy, naval tensions**, or **supply**

chain disruptions (as seen during COVID-19 and the Suez Canal blockage) remain threats.

- **Lack of Awareness and Bureaucratic Delays:** Logistics companies and local authorities may be **unfamiliar with IMEC's vision**. **Regulatory red tape**, slow approvals, and fragmented policymaking could delay infrastructure development and corridor integration.

WAY FORWARD:

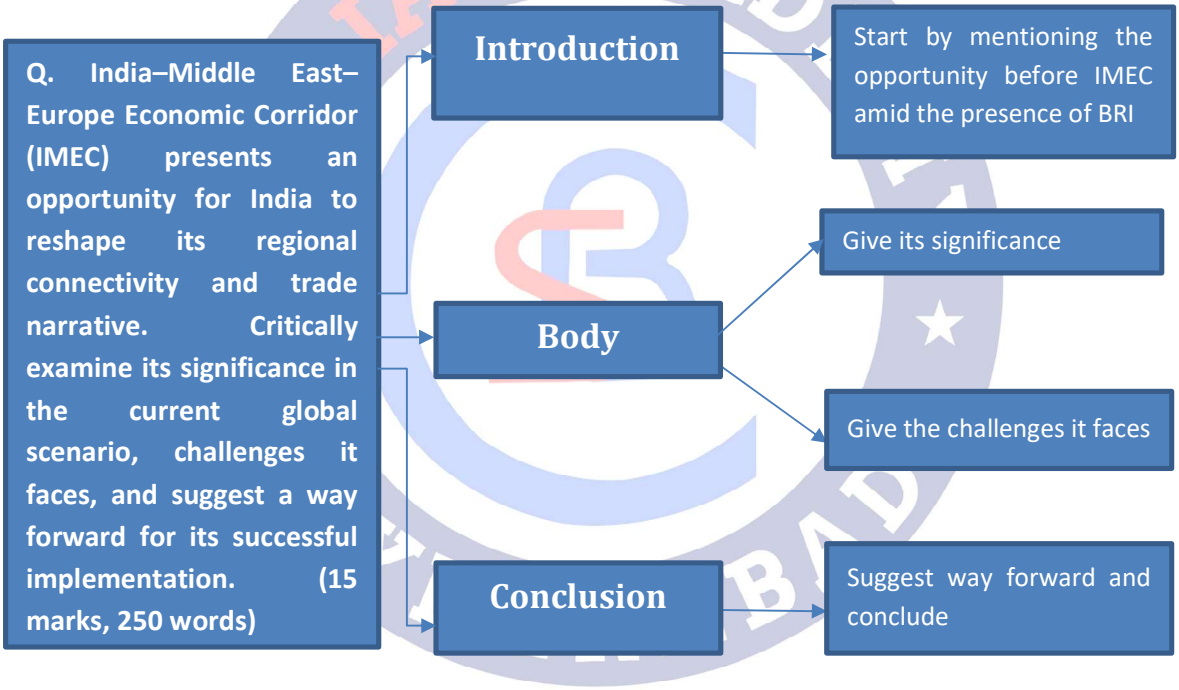
- **Establish a Multilateral Institutional Mechanism:** Set up a **joint IMEC secretariat** or governance council involving all stakeholders. Define clear **roles, responsibilities, timelines, and dispute resolution mechanisms**.
    - The **European TEN-T (Trans-European Transport Network)** model can be adapted for coordination and funding.
- **Prioritise Infrastructure Investment and Execution:** Identify and invest in **critical infrastructure gaps**: ports, rail lines, roadways, and multimodal terminals. Adopt **phased development**, starting with the **most operationally feasible segments** (e.g., India–UAE–Saudi Arabia route).
    - Encourage **Public-Private Partnerships (PPP)** and multilateral funding from institutions like **World Bank, AIIB, and ADB**.
- **Harmonise Trade, Customs, and Digital Standards:** Create a **common regulatory framework** for customs clearance, digital logistics tracking, data privacy and cybersecurity.
- **Strengthen Diplomatic Engagement and Stability:** Promote IMEC as a **platform for regional peace and cooperation**, especially in the Middle East. Leverage India's balanced ties with **Israel, Palestine, UAE, and Saudi Arabia** to mediate and de-risk political tensions. Institutionalise **confidence-building measures** between corridor countries.
- **Promote Sustainability and Green Logistics:** Build the corridor around **low-emission transport**, including electrified railways, LNG/hydrogen shipping and green port infrastructure. Align with **UN SDGs** and global climate goals for long-term viability.
    - IMEC can become a model "Green Economic Corridor" for South-South and South-North cooperation.
- **Integrate with Existing Connectivity Projects:** Create **synergies with India's Sagarmala, Bharatmala, Gati Shakti**, and the **Chabahar Port–INSTC**. Link IMEC with **EU's Global Gateway**, **Africa-EU corridor**, and **ASEAN trade networks** to expand reach.
- **Build Strategic Communication and Awareness:** Launch a **global IMEC awareness campaign** to engage logistics operators, investors, policymakers and academia. Highlight IMEC's **value proposition**: non-coercive, debt-free, inclusive connectivity.

IMEC reflects the **evolving world order**, where **connectivity and logistics corridors** are increasingly instruments of **geopolitical influence and economic security**. For India, it provides a **historic opportunity** to anchor its role in **Eurasian connectivity**, offer **a credible alternative to BRI**, and promote a model of growth rooted in **transparency, sustainability, and shared prosperity**.

PRACTICE QUESTION

Q. India–Middle East–Europe Economic Corridor (IMEC) presents an opportunity for India to reshape its regional connectivity and trade narrative. Critically examine its significance in the current global scenario, challenges it faces, and suggest a way forward for its successful implementation. (15 marks, 250 words)

APPROACH



MODEL ANSWER

The **India–Middle East–Europe Economic Corridor (IMEC)**, announced at the **G20 Summit 2023**, is a visionary multimodal connectivity initiative involving **India, the Middle East, Europe, and the US**. It aims to enhance regional integration through **road, rail, and sea** infrastructure, while promoting **financial viability, inclusivity, and sustainability**, in contrast to China's **Belt and Road Initiative (BRI)**.

Significance in the Present Global Scenario:

1. **Strategic Counterbalance to BRI**: Promotes a **transparent, rules-based alternative** to BRI. Avoids debt-trap diplomacy; World Bank data shows **over 60% of BRI countries face debt distress**.
2. **Strengthens India's Geostrategic Position**: Makes India a **transit hub** connecting Asia, Gulf, and Europe. Complements projects like **Chabahar Port** and **INSTC** under India's "**Act West**" policy.
3. **Reconfigures Global Trade Routes**: Reduces dependence on chokepoints like the **Suez Canal**. Enhances supply chain resilience and logistics efficiency.
4. **Facilitates Digital and Regulatory Integration**: Supports a proposed **Virtual Trade Corridor** for paperless customs, aligned procedures, and data-sharing.

Key Challenges:

1. **Geopolitical instability** in the Middle East (e.g., Israel–Palestine tensions, Iran–Saudi dynamics).
2. **Infrastructure and investment deficits**, particularly in Jordan and Gulf-Europe links.
3. **Divergent regulatory norms** and lack of interoperable digital systems.
4. **Competition from BRI**; IMEC partners like UAE and Saudi Arabia are also engaged with China.
5. **Maritime and logistics risks** including piracy, naval conflicts, and chokepoint vulnerabilities.

Way Forward:

1. **Institutional Mechanism**: Establish an **IMEC Secretariat** with clearly defined governance and accountability structures.
2. **Harmonised Frameworks**: Align **customs, digital, and trade protocols**; implement **paperless cargo movement**.
3. **Public–Private Partnerships**: Mobilise investments through **multilateral banks (e.g., World Bank, AIIB)** and incentivise private sector participation.
4. **Diplomatic Stability**: India should use its **balanced ties in West Asia** to mediate tensions and promote corridor stability.
5. **Green Infrastructure Focus**: Integrate **sustainable technologies** (e.g., hydrogen railways, electric ports) aligned with **UN SDGs**.
6. **Integration with Existing Projects**: Link IMEC with **Sagarmala, Bharatmala, Gati Shakti**, and **Global Gateway (EU)** to expand reach.

IMEC reflects the **emerging multipolar world order**, where infrastructure corridors are tools of **geo-economic influence**. For India, it is an opportunity to offer a **credible, inclusive, and sustainable alternative to China's BRI**, while reasserting its leadership in shaping **Eurasian connectivity and global supply chains**.

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17. WORLD TRADE ORGANISATION (WTO)

iMPACT ANALYSIS

SYLLABUS:

GS 2 > International relations > International Institutions > WTO

REFERENCE NEWS:

- United States President Donald Trump's recent imposition of **'reciprocal tariffs'** has drawn comparisons to the **Smoot-Hawley tariffs of the 1930s**, which are widely believed to have **deepened the Great Depression** by triggering retaliatory trade wars. Unlike the 1930s, today's global trade is overseen by the World Trade Organisation (WTO), designed to enforce a rules-based trading system.
- However, many experts argue that the **WTO has gradually weakened, struggling to perform its core functions** and in urgent need of substantial reforms to remain relevant in managing modern global trade tensions.

RECIPROCAL TARIFFS:

- A reciprocal tariff is a **tax or trade restriction** that one country places on another in **response to similar actions taken by that country**. The idea behind reciprocal tariffs is to create **balance in trade** between nations. In April 2025, U.S. President Donald Trump introduced a new **set of reciprocal tariffs under the "Liberation Day" initiative.** This plan applies a general 10% tariff on all imports, **with higher rates for specific countries such as a 26% tariff on imports from India** and a 54% combined tariff on Chinese goods—to address perceived **unfair trade practices.**

SMOOT-HAWLEY TARIFF ACT

- The **Smoot-Hawley Tariff Act**, passed in 1930, **raised import duties on 20,000 goods** to protect American farmers and businesses **during the Great Depression**. Sponsored by **Senator Reed Smoot and Rep. Willis Hawley**, the act led to a **global trade war**, as major trading partners retaliated with their own tariffs, boycotts, and quotas. U.S. exports to retaliating countries dropped sharply, and overall world trade fell by **66%** between 1929 and 1934, worsening the economic crisis. Despite warnings from economists, President Hoover signed the law, which contributed to the **deepening of the Great Depression**.

THE WTO:

- The World Trade Organization (WTO) is the **only global international organization dealing with the rules of trade between nations.** The WTO provides a forum for **negotiating agreements** aimed at **reducing obstacles to international trade and ensuring a level playing field for all**, thus contributing to economic growth and development. The WTO also provides a legal and institutional framework for the implementation and monitoring of these agreements, as well as for **settling disputes** arising from their interpretation and application.

HISTORY:

- After World War II, plans to create the **International Trade Organization (ITO)** were made to complement the **World Bank** and **IMF**.
- The **ITO** was intended to be established at a UN conference in Havana, Cuba, in 1947.
- Meanwhile, 23 countries negotiated to reduce customs tariffs, resulting in the creation of the **General Agreement on Tariffs and Trade (GATT)**, which came into effect in 1948.
- Though GATT provided the rules for global trade from 1948 to 1994, it was a provisional agreement. Efforts to reinforce multilateral trade led to the **Uruguay Round (1986-1994)**, culminating in the creation of the **World Trade Organization (WTO)**.
- The **Marrakesh Agreement in 1994 officially replaced GATT with the WTO**, although GATT remains the WTO's umbrella treaty for trade in goods.

FOUNDATIONAL PRINCIPLES OF WTO:

1. **Non-discrimination**: A country should not discriminate between its trading partners and it should not discriminate between its own and foreign products, services or nationals. It has two major components:
    a. **Most Favoured Nation (MFN):** Under the WTO agreements, countries cannot normally discriminate between their trading partners. If they grant some country a special favor (such as a lower customs duty rate for one of their products), then they'll have to do the same for all other WTO members.
    b. **National Treatment policy:** Domestic and foreign goods, services and IP rights must be treated equally once they've entered the market.
2. **Openness**: Lowering trade barriers is one of the most obvious ways of encouraging trade. This barrier includes customs duties (or tariffs) and measures such as import bans or quotas that restrict quantities selectively.
3. **Predictability and transparency**: Foreign companies, investors and governments should be confident that trade barriers should not be raised arbitrarily. With stability and predictability, investment is encouraged, jobs are created and consumers can fully enjoy the benefits of competition — choice and lower prices.
4. **More competitive**: Discouraging 'unfair' practices, such as export subsidies and dumping products at below cost to gain market share; the issues are complex, and the rules try to establish what is fair or unfair, and how governments can respond, in particular by charging additional import duties calculated to compensate for damage caused by unfair trade.
5. **More beneficial for less developed countries**: Giving them more time to adjust, greater flexibility and special privileges; over three-quarters of WTO members are developing countries and countries in transition to market economies. The WTO agreements give them transition periods to adjust to the more unfamiliar and, perhaps, difficult WTO provisions.
6. **Protect the environment**: The WTO's agreements permit members to take measures to protect not only the environment but also public health, animal health and plant health. However, these measures must be applied in the same way to both national

and foreign businesses. In other words, members must not use environmental protection measures as a means of disguising protectionist policies.

SIGNIFICANCE OF THE WTO:

- **Enhancement of Global Commerce**:
  - By establishing binding regulations for the international trade of goods and services, the WTO has contributed to an exponential increase in global trade. Since the WTO's inception, the real volume of international trade has **increased by approximately 2.7 times** (Source: World Trade Organization (WTO)).
- **Reduction of Trade Barriers**:
  - The institution of the WTO has helped **decrease average global tariffs from 10.5% to 6.4%**, encouraging the expansion of international commerce and making it easier for nations to engage in global trade. (Source: World Trade Organization (WTO)).
- **To Ensure Rule-Based Global Trade:**
  - The world today is more interconnected than ever. Hence, there is a need for **proper legislation and dispute resolution** mechanisms at the global level to ensure smooth trade.
  - The WTO is a key platform for **reducing trade barriers and solving disputes peacefully and rationally.** Its existence has prevented trade wars thus far and has made international trade more predictable and efficient.
- **Economic Growth for Member States**:
  - **Membership in the WTO** has resulted in substantial increases in national incomes for many countries, particularly **developing nations**, by **opening up access to global markets and trade opportunities.**
- **Emergence of Global Value Chains**:
  - The **stable and predictable trading environment** fostered by the WTO, along with advancements in communication technology, has contributed to the rise of global value chains, which now represent nearly 70% of global merchandise trade.
- **Poverty Alleviation**:
  - The WTO's principles of free and equitable trade have played a role in reducing global poverty. For instance, the percentage of people living in extreme poverty has decreased from around **33.33% in 1995 to about 10% in recent years.**
- **Common Platform for All Nations**:
  - The WTO offers a common platform for all countries, including developed, developing, Small Island Developing States (SIDS), and least-developed countries. This platform allows nations to address their concerns, settle disputes amicably, and ensure peaceful trade relations. This is essential to avoid instances of neo-colonialism and exploitation in global trade.

- **To Ensure Equitable Development**:
  - The WTO provides **special treatment to developing countries and least-developed countries.** This includes longer time frameworks, softer tariff cuts, procedural advantages in disputes, and technical assistance. An example is the peace clause in the Doha Rounds, which helps these countries develop their internal markets and integrate smoothly into the global trade environment.
- **To Promote Sustainable Development:**
  - The WTO's agreements allow members to take measures that protect not only the environment but also **public health, animal health, and plant health.** In a future that is increasingly uncertain due to climate change, these provisions are critical in promoting sustainable global trade that balances economic development with environmental and public health protection.

CHALLENGES AND CONCERNS:

- **Does Not Reflect the Changing Global Order:**
  - The WTO is often perceived as more favorable to **developed countries**, particularly evident in the **domination of the U.S. and European Union** during the **Doha trade negotiations**. The increasing influence of **developing countries** like **China** and **India**, both major stakeholders in modern trade, has not been fully represented within the WTO, leaving the organization struggling to adapt to the changing global economic order
- **Delays in Reaching Agreements:**
  - Since its formation, the WTO has struggled to conclude many multilateral trade negotiations.
  - For instance, the **Doha Round** has been **ongoing for over 16 years** without resolution. The WTO's consensus-based decision-making process requires **unanimous agreement**, which has caused significant delays in addressing key issues. This inefficiency has shown how the WTO has struggled to resolve modern trade challenges in a timely manner.
- **Rise of BTAs and Trade Blocs:**
  - The proliferation of **Bilateral Trade Agreements (BTAs)** and the formation of trade blocs such as **BRICS**, **ASEAN**, and the **G8** have **reduced the WTO's influence** in global trade.
  - These agreements often operate outside the WTO's framework, bypassing its regulations and weakening its role in governing global trade. The increasing number of BTAs has led to what is known as the "**spaghetti bowl of trade agreements**," making the WTO less central in the global trade architecture.

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- **Weak Dispute Resolution Mechanism:**
  - The WTO's **dispute settlement system** is facing a **crisis**. The **U.S.** has blocked the appointment of new members to the **Appellate Body**, leaving it **dysfunctional** as of 2019.
  - With a severely reduced capacity to resolve disputes, the WTO's ability to enforce trade rules has been compromised. The U.S. claims that it is being **victimized** by the WTO and that the organization's rules violate its national sovereignty, further complicating the dispute resolution process
- **Skepticism Towards Multilateralism:**
  - Right-wing governments, particularly in the **U.S.** and **Brazil**, **have openly denounced the WTO**, pushing for **protectionist measures** and raising tariffs in violation of WTO rules.
  - These actions have contributed to **global trade wars** and further undermined the role of the WTO. If **major trading nations** continue to disregard WTO principles, the organization will face significant setbacks.
- **Several Unresolved Issues:**
  - Key issues remain unresolved within the WTO, such as **agricultural subsidies**, **food security**, **illegal fishing subsidies**, **intellectual property rights**, and **trade in services**. The inability to reach consensus on these critical matters has limited the WTO's ability to effectively address modern trade challenges and find global solutions.
- **WTO's Inability to Prevent a Global Economic Crisis**:
  - The WTO lacks the **capacity to prevent a global downturn** due to **ineffective consensus-building**. **Consensus decision-making** itself is problematic, as reforms are stymied by key players, like **India** and **the U.S.**, who oppose new voting mechanisms. **Trade monitoring reforms** are weak due to lack of enforceability, further limiting the WTO's ability to address global economic challenges effectively.
- **The Erosion of the MFN (Most-Favored-Nation) Principle:**
  - **MFN (Article 1 of WTO)** was the cornerstone of the WTO, but it has been increasingly undermined. **Free Trade Agreements (FTAs)** bypass MFN, and the WTO has failed to rigorously scrutinize these agreements. New **U.S. tariffs** indicate a **withdrawal from WTO principles**, creating **uncertainty** and **complexity** in global trade.
  - Over time, the **U.S.** reduced its tariffs more than other countries, leading to dissatisfaction with the MFN principle. Both the **Trump** and **Biden administrations** have moved away from MFN, contributing to the rise of **bilateral FTAs** rather than multilateral tariff negotiations under the WTO.
- **China's WTO Membership: A Challenge Unforeseen:**
  - **China's export surge** post-WTO accession exposed **gaps in WTO rules**, especially regarding **market transparency** and **state-led capitalism**. The WTO

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was **unprepared** for **China's excess production capacity**, particularly in sectors like **steel** and **cement**, which distorted global trade, even though China was technically compliant with WTO rules.

WAY FORWARD:

- **Reforming Decision-Making Processes**: The WTO's consensus-based decision-making system causes delays. Moving towards flexible or majority voting could speed up decision-making and reduce gridlock.
- **Strengthening the Dispute Resolution Mechanism**: The dispute settlement system has been weakened due to blockages in appointing Appellate Body members. Immediate reforms are needed to restore the system's function and transparency.
- **Adapting to the Changing Global Economic Landscape**: The WTO must update its decision-making structure to better represent emerging economies like China and India, reflecting current global power dynamics.
- **Tackling Bilateral Trade Agreements (BTAs)**: The rise of BTAs and regional trade blocs undermines multilateral trade. The WTO should incentivize countries to negotiate within its framework to ensure alignment with global trade principles.
- **Strengthening the MFN (Most-Favored-Nation) Principle**: The WTO must ensure that FTAs and regional deals align with the MFN principle, maintaining non-discrimination in international trade.
- **Promoting Sustainable Development**: The WTO must integrate environmental protection measures within global trade, supporting sustainable development goals while preventing protectionism under the guise of environmental concerns.
- **Increasing Transparency and Accountability**: The WTO should enhance transparency in its decision-making process and ensure developing countries have equal participation in negotiations, boosting its legitimacy.
- **Updating and Modernizing Trade Rules**: The WTO must update its rules to address challenges like digital trade, e-commerce, intellectual property, technology transfers, data flows, and cybersecurity.
- **Strengthening Support for Developing Countries**: The WTO should provide more technical assistance, extended transition periods, and facilitate capacity-building to help developing countries better integrate into the global trade system.

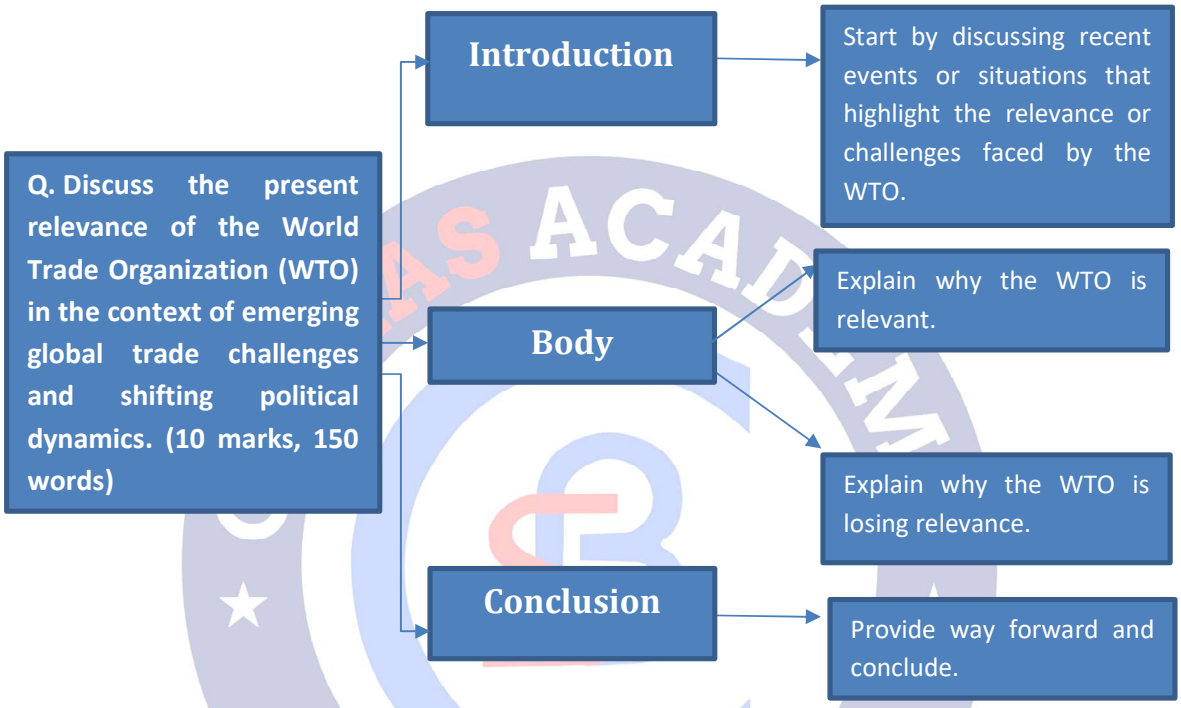
CONCLUSION:

- The WTO has been crucial in promoting global trade and economic growth. However, in response to emerging global challenges and political shifts, reforms are needed. Strengthening dispute resolution, adapting to the changing global order, and ensuring inclusivity, transparency, and sustainability will help the WTO navigate modern trade complexities. By addressing these issues, the WTO can regain its relevance and continue promoting global trade and international cooperation.

PRACTICE QUESTION

Q. Discuss the present relevance of the World Trade Organization (WTO) in the context of emerging global trade challenges and shifting political dynamics. (10 marks, 150 words)

APPROACH



MODEL ANSWER

The **imposition of reciprocal tariffs** by U.S. President Donald Trump has drawn comparisons to the **Smoot-Hawley Tariff Act** of 1930, which deepened the Great Depression. Unlike the 1930s, global trade today is governed by the **World Trade Organization (WTO)**, designed to enforce a rules-based system. However, many argue that the WTO is struggling to perform its core functions and needs substantial reforms to remain relevant in addressing modern trade tensions.

Why the WTO is Relevant?

1. **Promotion of Global Commerce:** Since its inception, the WTO has contributed to a **2.7 times increase** in global trade (Source: WTO). Its role in creating a **stable and predictable** trading environment has been crucial for global economic growth.

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2. **Reduction of Trade Barriers:** The WTO has helped decrease global tariffs from **10.5% to 6.4%**, facilitating smoother international trade and market access for countries (Source: WTO).

3. **Ensuring Rule-Based Trade:** The WTO provides a platform to resolve disputes and ensure compliance with international trade rules, helping prevent trade wars and ensuring **fair trade** practices globally.

4. **Support for Economic Growth and Development:** WTO membership has led to **increased national incomes**, especially for developing countries, by opening access to global markets and promoting trade opportunities.

5. **Sustainable Development:** The WTO supports **environmental protection** and sustainable practices in global trade, allowing members to take measures to safeguard public health, animals, and the environment.

Why the WTO is Losing Relevance?

1. **Failure to Adapt to Global Changes:** The WTO's **decision-making process** often favors developed nations, with the increasing influence of **emerging economies** like China and India not fully represented. This has created a disconnect with the global economic order.

2. **Delays in Reaching Agreements:** The WTO's **consensus-based system** has caused significant delays, as seen in the **Doha Round**, which has remained unresolved for over 16 years. This inefficiency undermines the WTO's ability to address emerging issues promptly.

3. **Proliferation of Bilateral Agreements:** The rise of **Bilateral Trade Agreements (BTAs)** and regional trade blocs like **ASEAN** and **BRICS** weakens the WTO's central role, as these agreements often bypass WTO rules, contributing to a **"spaghetti bowl"** of conflicting agreements.

4. **Weak Dispute Resolution Mechanism:** The WTO's **dispute settlement system** has been compromised due to the **blockage of Appellate Body appointments**, leaving it dysfunctional and unable to enforce rules effectively.

5. **Increasing Protectionism:** Governments, particularly in the **U.S.**, have moved toward **protectionist policies**, disregarding WTO rules. This undermines the organization's ability to maintain **global trade stability** and resolve disputes.

Way Forward:

- **Reforming Decision-Making**: The WTO needs to adopt **majority voting** or **flexible mechanisms** to expedite decision-making and overcome gridlocks.

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- **Strengthening Dispute Resolution**: Restoring the **Appellate Body** and improving transparency will ensure effective rule enforcement.
- **Adapting to Emerging Economies**: The WTO should revise its structure to better reflect the influence of **China** and **India**, ensuring inclusivity in decision-making.
- **Reinforcing the MFN Principle**: Ensuring that **bilateral agreements** align with WTO rules can maintain the **Most-Favored-Nation** (MFN) principle.
- **Modernizing Trade Rules**: Updating regulations to address **digital trade** and **e-commerce** is essential to remain relevant in a rapidly changing global economy.
- **Supporting Developing Nations**: The WTO should continue providing **technical assistance** and **transition periods** to help developing countries integrate into the global trade system.

While the WTO remains critical for **global trade stability**, it faces several challenges, including **inefficient decision-making**, **growing protectionism**, and **a weak dispute resolution system**. Reforms to enhance its inclusivity, **efficiency**, and **adaptability** to modern trade issues will ensure that the WTO can continue promoting **fair trade** and **economic growth** worldwide.

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18. WHO PANDEMIC TREATY

iMPACT ANALYSIS

SYLLABUS:

GS 2 > International relations > International Institutions

REFERENCE NEWS:

- After more than three years of extensive negotiation nations reached consensus on a global pandemic treaty — formally known as the **WHO Pandemic Treaty**, or **Pandemic Agreement**. The **final negotiations concluded in April 2025** at WHO headquarters in **Geneva, Switzerland**.

MORE ON NEWS:

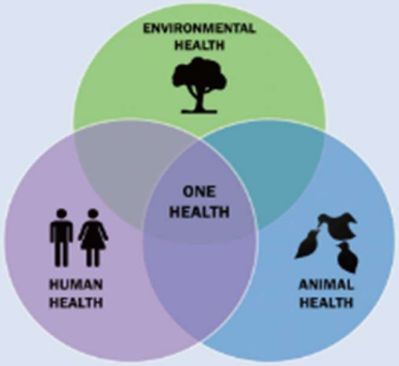
- In December 2021, amidst the **global crisis caused by COVID-19**, WHO Member States established the **Intergovernmental Negotiating Body (INB)** to develop a global instrument under the WHO Constitution. The objective was to strengthen global systems for pandemic prevention, preparedness, and response (PPPR).
- After over three years of intense negotiations, the INB finalized a **draft Pandemic Agreement in April 2025.**
- This proposal is now set to be considered at the **Seventy-eighth World Health Assembly (WHA) starting 19 May 2025.**

KEY COMPONENTS OF THE DRAFT PANDEMIC AGREEMENT:

- **Pathogen Access and Benefit Sharing:**
  - Establishment of a **global system for pathogen access and benefit sharing**, ensuring equitable distribution of samples and related benefits.
- **Pandemic Prevention through One Health:**
  - Emphasis on **One Health** approach to address health risks at the human-animal-environment interface.

WHAT IS 'ONE HEALTH'?

- 'One Health' is an approach to **designing and implementing programmes, policies, legislation and research in which *multiple sectors communicate and work together to achieve better public health outcomes***.
- One Health is a **collaborative, multisectoral, and trans-disciplinary approach** - working at local, regional, national, and global levels - to achieve optimal health and well-being



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outcomes recognizing the **interconnections between people, animals, plants and their shared environment**.

- **Strengthening Research and Development:**
  - Focus on **geographically diverse R&D** capacities.
  - Facilitation of **technology transfer**, and sharing of related **knowledge, skills, and expertise** for health product manufacturing.
- **Health Workforce Development:**
  - Mobilization of a **skilled, multidisciplinary health emergency workforce** both nationally and globally.
- **Coordinated Financial Mechanism:**
  - Establishment of a **coordinating financial structure** to ensure resources are effectively allocated for pandemic preparedness and response.
- **Resilient Health Systems:**
  - Commitment to **strengthening health system functions** and resilience, including emergency readiness and service continuity.
- **Global Supply Chain Network:**
  - Creation of a **global supply chain and logistics network** for timely distribution of critical pandemic-related products.

SIGNIFICANCE OF THE WHO PANDEMIC TREATY:

- **Addressing Inequities in Pandemic Response:**
  - The COVID-19 pandemic exposed significant **disparities in access to vaccines, diagnostics, and treatments**, particularly affecting low-income countries.
  - For instance, by mid-2021, over **80% of COVID-19 vaccines were administered in high- and upper-middle-income countries**, while low-income countries **received less than 1%** (source: nature.com). Also, by early 2022, less than **20% of Africa's population was vaccinated**, compared to over **70% in OECD countries.**
  - The treaty aims to rectify these inequities by establishing a **Pathogen Access and Benefit-Sharing (PABS) system**, ensuring that countries sharing pathogen samples receive equitable access to resulting medical countermeasures. Notably, the WHO will hold up to **20% of such products** for distribution in poorer countries**.**
  - Also, the **public-interest clause on intellectual property rights** in the WHO Pandemic Treaty allows countries to **override patents during health emergencies, ensuring equitable access to vaccines and technologies**, especially for low-income nations.
- **Enhancing Global Preparedness and Coordination:**
  - The treaty supports the creation of:
    - **A global supply chain and logistics network.**

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- **Decentralized research and development capacity.**
- **A skilled, multidisciplinary health emergency workforce.**

- These measures aim to shift from reactive to preventive pandemic strategies.
- National strategies such as **India's "One Health" approach align with these goals.**

- **Promoting Scientific Collaboration and Early Detection:**
  - The treaty mandates **timely and transparent data sharing.**
  - For instance, **China's release of the SARS-CoV-2 genome** on January 10, 2020, **accelerated global vaccine development.**
  - It addresses past injustices where countries like South Africa, despite early variant detection (e.g., Omicron), faced delays in accessing vaccines.
  - A **formal pathogen-sharing framework** is modeled after the Global Influenza Surveillance and Response System (GISRS).
- **Multilateral Cooperation and Legal Diplomacy**:
  - Amid growing geopolitical divisions, the WHO Pandemic Treaty stands out as a significant achievement in **legal diplomacy**.
  - More than **190 countries took part** in its negotiation process, reflecting a strong, shared commitment to **global cooperation** in health security. As WHO Director-General Dr. Tedros stated, the treaty proves that **"multilateralism is alive and well."**
- **Legal Framework for Collective Action:**
  - Developed under **Article 19 of the WHO Constitution**, the treaty provides a legal basis for collective action in pandemic prevention and response.
  - This article **empowers the World Health Assembly to adopt conventions or agreements** on matters within the organization's competence, requiring **a two-thirds majority vote for adoption.**
- **Strengthening Economic and Global Stability:**
  - COVID-19 caused a **3.4 percent contraction in global GDP in 2020**, according to the **International Monetary Fund**, and led to over **11 trillion dollars in economic losses globally**, as estimated by the **World Bank**.
  - Also, the World Bank estimates a future pandemic **could wipe out up to 5% of global GDP.**
  - The treaty **promotes economic resilience** by:
    - Formalizing preparedness systems.
    - Reducing health-related trade disruptions.
    - Supporting continuity of essential services during global crises.

CONCERNS AND CRITICISMS OF THE DRAFT WHO PANDEMIC TREATY:

- **Weak Enforcement Mechanisms:**
  - The treaty relies on **voluntary commitments** rather than enforceable obligations. Many experts argue that **without legal accountability**, countries

may ignore provisions—particularly during emergencies—just as some failed to comply with International Health Regulations during COVID-19.

- **Equity and Implementation Gaps:**
  - While the treaty emphasizes fairness, critics question whether it goes far enough in ensuring equitable access for low-income countries. The proposed **Pathogen Access and Benefit-Sharing (PABS) system lacks clarity on how benefits will be fairly allocated in practice.**
- **Limited Global Participation:**
  - Key players such as **the United States and Argentina have withdrawn or expressed skepticism about the treaty.**
  - **Without widespread ratification, its global impact may be weakened**, and coordinated response efforts could remain fragmented.
- **Intellectual Property Rights Conflicts:**
  - The inclusion of a public-interest clause on intellectual property has drawn pushback from pharmaceutical companies, who fear **weakened patent protections could disincentivize innovation.** Meanwhile, many developing nations say the treaty doesn't go far enough in allowing access to life-saving technologies, calling for stronger IP waivers and tech transfer commitments.
- **National Sovereignty Concerns:**
  - Several countries, including the U.S. and some EU members, have expressed concerns about protecting their **autonomy in public health decisions. Although the treaty asserts it won't override national laws**, the potential for **external influence over domestic policy** has sparked political resistance and misinformation campaigns.
- **Ambiguity and Overlap with Existing Rules:**
  - The treaty's language is often broad or vague, leaving terms like **"timely sharing" or "equitable access" open to interpretation.** There's also confusion about how this new agreement aligns with existing frameworks, such as the International Health Regulations, raising concerns about redundancy or legal conflict.
- **Risk of Inequitable Resource Allocation:**
  - Despite its emphasis on fairness, the treaty **does not guarantee that vaccines, treatments, or diagnostics will be distributed equitably in future pandemics.** There is concern that wealthier nations might again secure disproportionate supplies, especially if the treaty's benefit-sharing model depends on voluntary cooperation.
- **Weak Dispute Resolution Processes:**
  - The treaty offers **no strong enforcement tools to resolve disagreements**. It proposes diplomatic resolution and arbitration but lacks a binding legal system for holding states accountable or resolving non-compliance during crises.

- **Distrust in WHO's Capacity:**
  - Some governments and advocacy groups question whether the WHO has the transparency, neutrality, and operational strength to manage such an ambitious treaty. **Past criticisms of WHO's pandemic response have led to calls for internal reform before expanding its authority** through a new legal instrument.

WAY FORWARD:

- **Strengthen Enforcement and Compliance Mechanisms:**
  - Move beyond voluntary commitments by establishing **binding obligations** with clear accountability frameworks.
  - Develop robust **monitoring and evaluation systems** to assess member states' compliance and identify gaps in real time.
  - Introduce **penalty or incentive structures** to encourage adherence and disincentivize non-compliance.
- **Ensure Inclusive and Equitable Implementation:**
  - Develop **clear operational guidelines** for the Pathogen Access and Benefit-Sharing (PABS) system to ensure fairness and transparency. Expand **funding and capacity-building** for low- and middle-income countries to strengthen their health systems and research capabilities.
  - Facilitate **regional manufacturing hubs** to ensure timely and equitable access to vaccines and diagnostics.
- **Balance Intellectual Property with Public Health Needs:**
  - Promote **voluntary licensing** and **tech transfer** agreements to ensure rapid and widespread availability of medical technologies. Define a **clear framework** for the activation of the public-interest clause during health emergencies, balancing innovation incentives with equitable access.
- **Clarify Legal Provisions and Avoid Overlaps:**
  - Harmonize the treaty's obligations with existing frameworks like the **International Health Regulations (IHR)** to reduce redundancy and confusion.
  - Provide **precise definitions** for key terms such as "timely sharing," "equitable access," and "public health emergency."
- **Protect National Sovereignty While Encouraging Global Cooperation:**
  - Maintain transparency about the **non-binding nature of WHO recommendations** to reassure member states about their sovereignty.
  - Encourage **regional consultation mechanisms** to balance national interests with global solidarity.
- **Strengthen the WHO's Institutional Capacity:**
  - Ensure the WHO has adequate **financial, human, and technical resources** to coordinate treaty implementation effectively.Promote **reforms within the WHO** to enhance transparency, accountability, and public trust.

- **Encourage Universal Ratification and Political Will:**
  - Engage diplomatically with major non-signatory nations like the **United States and Argentina** to bring them into the treaty framework.
  - Launch a **global awareness campaign** to generate public and political support for the treaty's goals.
- **Establish a Strong Dispute Resolution Mechanism:**
  - Incorporate **binding arbitration options** or third-party mediation services to resolve disagreements quickly and fairly.
  - Create a **neutral oversight body** to handle complaints and monitor treaty compliance independently.

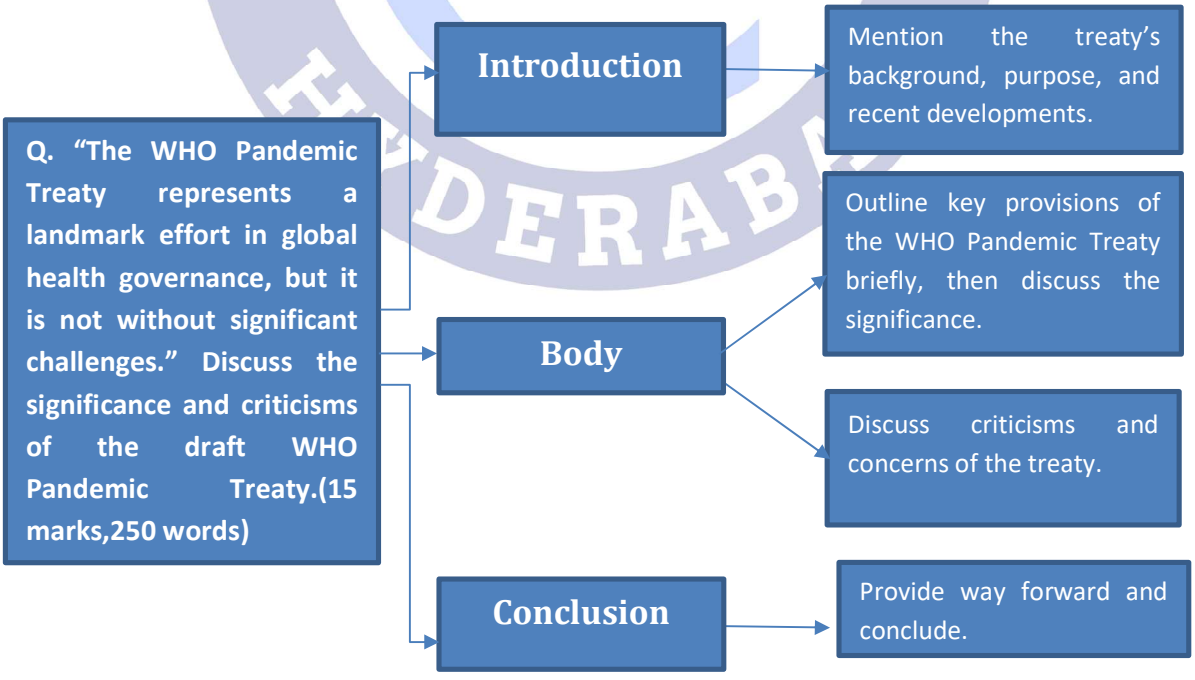
CONCLUSION:

- The WHO Pandemic Treaty has the potential to reshape global health governance, but its success hinges on meaningful implementation, fair participation, and sustained political will. By addressing its current shortcomings and fostering inclusive cooperation, the treaty can become a cornerstone of global resilience against future pandemics.

PRACTICE QUESTION

Q. "The WHO Pandemic Treaty represents a landmark effort in global health governance, but it is not without significant challenges." Discuss the significance and criticisms of the draft WHO Pandemic Treaty. (15 marks,250 words)

APPROACH



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MODEL ANSWER

After over three years of extensive negotiations, WHO Member States reached consensus in April 2025 on a **global pandemic treaty**, formally known as the **WHO Pandemic Treaty** or **Pandemic Agreement**, at WHO headquarters in Geneva. This agreement, developed by the **Intergovernmental Negotiating Body (INB)**, is scheduled for consideration at the **Seventy-eighth World Health Assembly (WHA)** beginning **19 May 2025**. The treaty seeks to enhance global systems for **pandemic prevention, preparedness, and response (PPPR)** under the WHO Constitution.

Key Provisions of the Draft WHO Pandemic Treaty:

- **Pathogen Access and Benefit Sharing (PABS)**: A global system to ensure equitable sharing of pathogen samples and resulting health products.
- **One Health Approach**: Recognizes the interconnection between human, animal, and environmental health.
- **Strengthening R&D**: Promotes decentralized and geographically diverse research capacity and tech transfer.
- **Health Workforce Development**: Establishes a global emergency workforce.
- **Coordinated Financial Mechanism**: Ensures efficient allocation of pandemic response resources.
- **Resilient Health Systems**: Strengthens core health system functions and emergency readiness.
- **Global Supply Chain Network**: Aims to secure timely distribution of essential pandemic supplies.

Significance of the WHO Pandemic Treaty:

1. **Addressing Global Health Inequities**: The treaty seeks to correct disparities seen during COVID-19. For example, by mid-2021, over 80% of vaccines were administered in wealthy countries, while low-income nations received less than 1%. The PABS system aims to ensure fair access to medical countermeasures.
2. **Promoting Scientific Collaboration and Early Detection**: The treaty mandates transparent data sharing. For instance, China's release of the SARS-CoV-2 genome in January 2020 accelerated vaccine development. It also introduces a formal framework for pathogen sharing, modeled on GISRS.
3. **Strengthening Global Preparedness**: It supports a shift from reactive to preventive strategies by building supply chains, regional R&D hubs, and a trained health emergency workforce—complementing national policies like India's "One Health" strategy.
4. **Legal Framework for Collective Action**: Under **Article 19 of the WHO Constitution**, the treaty creates a binding international legal structure, requiring a two-thirds vote at the WHA and ratification by member states through their domestic legal processes.

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5. **Enhancing Economic Resilience**: COVID-19 caused a 3.4% contraction in global GDP and $11 trillion in losses. The treaty aims to reduce such economic shocks by stabilizing health systems and ensuring uninterrupted global trade in health goods.

Criticisms and Concerns of the Treaty:

1. **Weak Enforcement Mechanisms**: The treaty lacks enforceable obligations, relying on voluntary compliance. This mirrors past failures, such as countries ignoring the International Health Regulations during COVID-19.
2. **Equity and Implementation Gaps**: While it emphasizes fairness, the PABS framework is vague on benefit allocation. There is no guarantee that poorer nations will receive timely access to vaccines or diagnostics in future crises.
3. **Limited Global Participation**: Key nations, including the United States and Argentina, have withdrawn or shown skepticism. This weakens the treaty's global legitimacy and may result in fragmented international responses.
4. **Intellectual Property Rights (IPR) Disputes**: The public-interest clause on IPR has drawn criticism from pharmaceutical companies fearing weakened patent protections. Simultaneously, developing nations argue it doesn't go far enough in enabling tech transfer.
5. **Sovereignty and Legal Ambiguity**: Despite assurances, some countries fear that WHO influence could compromise national decision-making. Ambiguous terms like "timely sharing" and unclear alignment with existing laws (e.g., IHR) further complicate implementation.

Way Forward:

- **Strengthen Compliance Mechanisms**: Introduce binding obligations with clear accountability tools and evaluation systems.
- **Clarify and Operationalize PABS**: Develop transparent guidelines for benefit distribution and scale up support to lower-income countries.
- **Balance IPR and Access**: Establish fair frameworks for patent waivers and compulsory licensing during emergencies.
- **Promote Global Participation**: Engage diplomatically with non-signatory nations and build political consensus.
- **Reform WHO Capabilities**: Improve funding, governance, and transparency in the WHO to boost global confidence in its leadership.

The WHO Pandemic Treaty has the potential to reshape global health governance and pandemic preparedness. However, its success hinges on addressing legitimate concerns related to enforceability, equity, national sovereignty, and institutional capacity. With inclusive cooperation and meaningful reforms, it can serve as a critical tool to safeguard humanity against future pandemics.

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19. DIRECT BENEFIT TRANSFER

iMPACT ANALYSIS

SYLLABUS:

GS 2 > Social Justice >> Welfare Schemes

REFERENCE NEWS:

Union Minister for Electronics and Information Technology Ashwini Vaishnaw has said that the Direct Benefit Transfer (DBT) initiative of Prime Minister Narendra Modi has **saved three lakh 48 thousand crore rupees by reducing leakage**. Quoting a policy paper titled A Quantitative Assessment of India's DBT System, Mr. Vaishnaw, in a social media post, said that under this **welfare delivery model**, the **coverage of beneficiaries has increased by 16 times**. According to the policy paper, the country's DBT system, implemented in 2013, has **redefined welfare delivery by enhancing transparency, curbing leakages, and ensuring precise fund distribution.**

DIRECT BENEFIT TRANSFER:

The Direct Benefit Transfer (DBT) scheme is a reform initiative launched by the Government of India in 2013 with the goal of replacing subsidy and welfare delivery systems that were riddled with leakages, duplication, and corruption.

Under DBT, subsidies and welfare funds are directly transferred into the bank accounts of eligible beneficiaries, eliminating middlemen and ensuring efficient, transparent, and targeted delivery.

Key Components of DBT:

- **Aadhaar Integration:** Ensures **unique identification** of beneficiaries. Prevents **ghost and duplicate accounts**.
- **Bank Account Linkage:** Every beneficiary must have a **bank account**, preferably **Aadhaar-seeded**. Promotes **Jan Dhan Yojana** as a financial inclusion enabler.
- **NPCI & PFMS Platforms:** Transactions are processed via the **Public Financial Management System (PFMS)**. Payments routed through **National Payments Corporation of India (NPCI)**.

Categories of DBT Transfers:

- **Cash Transfers:** Cash is transferred **directly to beneficiaries' accounts** for them to use as they choose. LPG subsidy (PAHAL), PM-KISAN (₹6,000/year to farmers), MGNREGA wage payments, PM Ujjwala Yojana cash for refills are some examples.

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- **In-Kind Transfers:** Goods/subsidies are **physically delivered**, but **beneficiaries are authenticated via Aadhaar/IT systems**. Food under PDS, Mid-Day Meals, Fertilizer Subsidies
- **Other Transfers (Benefit Calculations):** Benefits like **scholarships, pensions, maternity benefits** directly transferred to users.

BENEFITS OF DBT IN INDIA:

- **Reduces Leakages and Corruption:** Traditional systems were prone to **middlemen, ghost beneficiaries, and duplication**. DBT, by linking **Aadhaar, bank accounts, and mobile numbers**, ensures that **only genuine beneficiaries** receive benefits.
    - Under the **PAHAL (LPG subsidy) scheme**, DBT eliminated **4 crore fake connections** and saved over **₹24,000 crore** in subsidy (as per Ministry of Petroleum, 2020).
- **Ensures Timely and Transparent Payments:** DBT enables **real-time transfer** of funds, reducing **delays and administrative bottlenecks**. Payments can be **tracked digitally**, creating transparency in disbursement.
    - **MGNREGA wages** are now transferred directly to workers' bank accounts under DBT, reducing payment delays significantly and improving trust in the scheme.
- **Enhances Financial Inclusion:** DBT is closely integrated with **Jan Dhan Yojana**, encouraging every citizen to have a bank account. Promotes **formal banking**, savings, and financial empowerment—especially for **women and rural households**.
    - Over **50 crore Jan Dhan accounts** opened, with more than **80% Aadhaar seeded** (as of 2023), enabling direct benefit access.
- **Empowers Beneficiaries with Choice:** Beneficiaries receive **cash directly**, allowing them to **make informed spending decisions**. Reduces dependence on agents or local power brokers.
    - Under **PM-KISAN**, over **12 crore farmers** receive ₹6,000 annually in three installments directly into their accounts, allowing them flexibility to buy inputs like seeds or fertilizers.
- **Boosts Good Governance and Accountability:** DBT creates a **digital audit trail**, which helps in monitoring fund flow, detecting anomalies, holding officials accountable for delays or discrepancies
    - The **World Bank and IMF** have acknowledged India's DBT model as **one of the most efficient welfare delivery systems** in the developing world.
- **Reduces Government Expenditure:** By preventing leakage and duplication, DBT **saves public money**. Reduced costs of physical logistics (printing, couriering, middle layers).
    - Union Minister for Electronics and Information Technology has said that the Direct Benefit Transfer (DBT) initiative of Prime Minister Narendra Modi has **saved three lakh 48 thousand crore rupees by reducing leakage**.

- **Improves Service Delivery in Remote Areas:** Even in **tribal and rural regions**, beneficiaries can access funds through Bank Mitras, Aadhaar-enabled Payment Systems (AePS) and mobile banking
    - **Ujjwala Yojana** beneficiaries in remote villages get their LPG subsidy via DBT, increasing LPG usage and reducing indoor pollution.
- **Enables Targeted Subsidies and Rationalization:** DBT helps the government to **target subsidies better** by analyzing usage patterns and data. This leads to **rationalisation of subsidies** and elimination of wastage.

CHALLENGES SURROUNDING DBT:

- **Exclusion Errors Due to Aadhaar and Authentication Failures: Biometric mismatches**, **incorrect Aadhaar linking**, and **data entry errors** can prevent genuine beneficiaries from receiving benefits.
    - In **Jharkhand**, several cases of **pension and PDS denial** were reported due to Aadhaar-based authentication failures (e.g., fingerprint mismatch of elderly persons).
    - The **Right to Food Campaign** has documented deaths allegedly linked to DBT failures in food subsidy access.
- **Inadequate Banking Infrastructure in Rural and Remote Areas:** Many beneficiaries, especially in **tribal and remote regions**, have limited access to bank branches, functional ATMs, customer service points (CSPs)
    - According to the RBI (2022), about **30,000 rural areas** still lack formal banking services.
    - **Bank Mitras** or CSPs often do not function reliably, leading to failed transactions.
- **Delays in Fund Transfers and Payment Processing:** Poor internet connectivity, **server issues**, and **bureaucratic delays** in fund release can lead to **late or missed payments**.
    - Under **MGNREGA**, despite DBT adoption, **payment delays of 15–30 days** are common in states like **Bihar and UP**, affecting rural livelihoods.
- **Lack of Awareness and Digital Literacy:** Many beneficiaries **do not understand how DBT works**, how to check balances, or how to resolve issues. Especially affects **women, elderly, and illiterate populations**.
    - In several districts of **Rajasthan and Madhya Pradesh**, women under **PM Matru Vandana Yojana (maternity benefit)** did not know whether they had received funds.
- **Over-Centralisation and Technical Rigidity:** A one-size-fits-all model doesn't work well in **diverse socio-economic conditions**. Over-reliance on **biometric authentication** and **centralised databases** ignores local realities and flexibility.

- **Grievance Redressal Mechanism is Weak or Non-existent:** Beneficiaries often **don't know where to complain** or face **long delays** in resolving issues. There is no **single unified platform** for redressing DBT-related problems.
- **Disruption of Existing Systems Without Readiness:** In many places, **cash transfers replaced in-kind transfers** (like PDS) without ensuring that markets were functional or accessible.
    - In **Chandigarh and Puducherry**, cash transfer pilots for food subsidies were rolled back due to inflation and market shortages, as people couldn't buy food at fair prices.
- **Gender Gaps in Access:** Though DBT promotes financial inclusion, **many women lack control over their bank accounts** or need permission to access funds.
    - Studies by SEWA and World Bank show that **over 40% of rural women** depend on male relatives to access or operate their bank accounts.

WAY FORWARD:

- **Strengthen Last-Mile Delivery and Banking Infrastructure**
    - Deploy more **Bank Mitras/BCs** with biometric kits in underserved areas
    - Ensure **interoperability** of banking systems across banks and regions
    - Use **mobile ATMs and micro-branches** in hilly and tribal belts
    - **Airtel Money and M-Pesa (Kenya)** show how mobile-based financial services can improve last-mile inclusion.
- **Adopt a Flexible, Multi-Modal Authentication System**
    - Allow **OTP-based, IRIS-based, and offline Aadhaar options** in addition to biometrics
    - Enable **exception handling protocols** for the elderly, disabled, or those with failed authentication
    - **Justice Srikrishna Committee on Data Protection (2018)** urged for **multi-factor authentication** options in welfare delivery to avoid exclusion.
- **Increase Awareness and Financial Literacy**
    - Launch targeted **DBT literacy campaigns** through Panchayats, SHGs, ASHAs, and NGOs
    - Simplify communication in **local languages** using visuals and community radio
    - SEWA (Self-Employed Women's Association) has trained thousands of rural women to operate their bank accounts independently.
- **Strengthen Grievance Redressal Mechanisms**
    - Set up a **dedicated, toll-free DBT helpline** integrated with state systems
    - Develop a **single-window online DBT dashboard** for status tracking and complaints
    - Ensure **timely resolution protocols** with SMS alerts for case updates

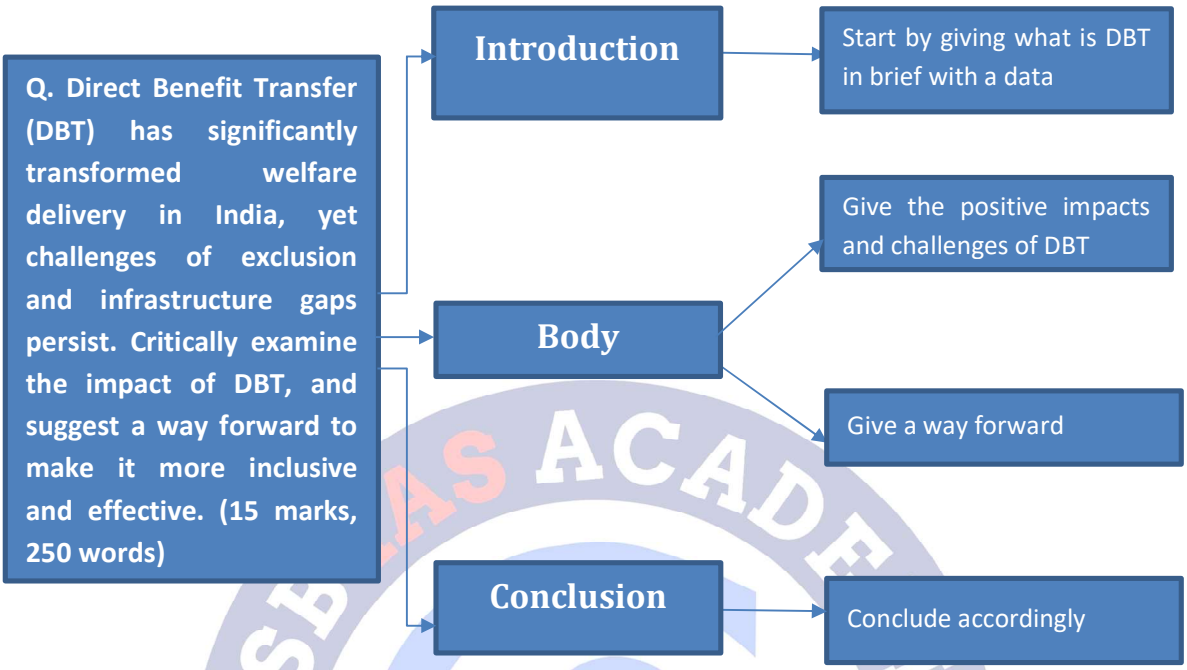
- **Build Robust Real-Time Monitoring Systems**
  - Use AI-powered dashboards to flag anomalies (e.g., mass payment failures)
  - Integrate **real-time feedback loops** from field officials and gram sabhas
  - Conduct **regular social audits** for schemes like MGNREGA, PM-KISAN, PDS
- **Reinforce Inclusion of Vulnerable Groups**
  - Prioritize **women-headed households**, **disabled**, **migrants**, and **elderly** in DBT mapping
  - Allow **joint or nominee access** for accounts where beneficiaries need assistance
  - Enable **doorstep banking** in remote tribal and conflict-affected areas
- **Ensure Legal and Data Protection Safeguards**
  - Enact **clear data protection protocols** for beneficiary information
  - Restrict data use only to purpose-specific government functions
  - Implement **consent architecture** as recommended by the **Data Empowerment and Protection Architecture (DEPA)** framework
- **Avoid Premature Conversion from In-Kind to Cash Transfers**
  - Conduct **impact assessments and local consultations** before replacing food grains or fertilizers with cash
  - Ensure that **market infrastructure and price regulation** are in place where such transitions happen

To make DBT a true tool of **empowerment and inclusion**, the focus must shift from just digital efficiency to **human dignity and accessibility**. A **resilient DBT ecosystem** must accommodate **local realities, technological diversity**, and **social vulnerabilities**. When supported by policy flexibility and institutional accountability, DBT can become a **global model of inclusive governance and financial justice**.

PRACTICE QUESTION

Q. Direct Benefit Transfer (DBT) has significantly transformed welfare delivery in India, yet challenges of exclusion and infrastructure gaps persist. Critically examine the impact of DBT, and suggest a way forward to make it more inclusive and effective. (15 marks, 250 words)

APPROACH



MODEL ANSWER

The **Direct Benefit Transfer (DBT)** scheme, launched in **2013**, is a transformative welfare reform aimed at transferring subsidies and benefits **directly into the bank accounts** of beneficiaries. It ensures **transparency, efficiency, and accountability**, while reducing corruption and leakage. As per the government, DBT has saved **₹3.48 lakh crore** by reducing fraud and duplication.

Impact of DBT:

Positive Outcomes:

- **Reduction in Leakages**: Under **PAHAL (LPG subsidy)**, over **4 crore fake connections** were removed, saving ₹24,000 crore.
- **Timely and Transparent Payments**: MGNREGA wages, PM-KISAN transfers, and scholarships are directly credited, enhancing trust and transparency.
- **Financial Inclusion Boost**: Over **50 crore Jan Dhan accounts** have been opened, enabling over 80% Aadhaar seeding.
- **Empowerment of Beneficiaries**: Schemes like **PM-KISAN** allow farmers to purchase inputs independently, reducing middlemen reliance.

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- **Governance Efficiency**: Recognised by the **World Bank and IMF** as a global best practice in welfare delivery.

Challenges:

- **Exclusion Errors**: Biometric mismatches, Aadhaar glitches (especially among elderly and disabled), lead to denial of entitlements.
- **Poor Infrastructure**: RBI notes that **30,000 villages** still lack formal banking access.
- **Delays in Payments**: MGNREGA payments face delays up to 30 days in states like Bihar and UP.
- **Low Awareness & Digital Literacy**: Many women and illiterate beneficiaries are unaware of DBT status or how to access it.
- **Weak Grievance Redressal**: No unified platform for resolving DBT-related issues effectively.

Way Forward:

- **Multi-modal authentication**: Use IRIS, OTP, and exception-handling alongside biometrics (as recommended by Justice Srikrishna Committee).
- **Improve last-mile banking access**: Deploy mobile ATMs, Bank Mitras, and micro-branches in underserved areas.
- **Strengthen grievance redressal**: Set up DBT helplines, SMS alerts, and a unified complaint portal.
- **Promote financial literacy**: Use SHGs, Panchayats, and NGOs like SEWA for training and awareness.
- **Ensure data protection**: Implement **DEPA framework** and restrict data use for welfare delivery only.
- **Avoid abrupt transitions**: Don't replace in-kind subsidies with cash without ensuring local market readiness.

While DBT has undeniably improved welfare delivery by making it more **transparent and efficient**, its true success lies in ensuring **universal accessibility, minimal exclusion**, and a **beneficiary-centric approach**. With **policy flexibility and strong accountability**, DBT can become a **global model for inclusive and just governance**.

GENERAL STUDIES-III

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20. MILITANCY IN KASHMIR

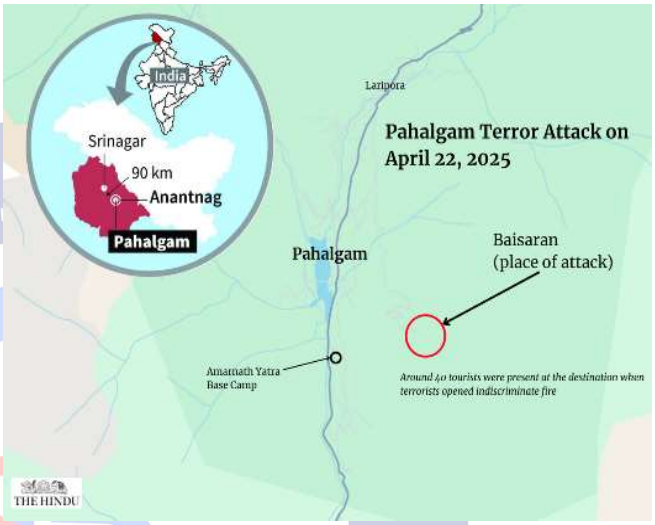
iMPACT ANALYSIS

SYLLABUS:

GS 3 > Internal Security >> Jammu and Kashmir

REFERENCE NEWS:

The Resistance Front, an offshoot of the Lashkar-e-Taiba, has claimed responsibility for the Pahalgam terror attack that has claimed the lives of 26 civilians, including two foreigners, so far. The attack was orchestrated by a group of terrorists who emerged from the dense forests around the trekking paradise of the Baisaran meadows in the upper reaches of Pahalgam in Anantnag district of Jammu and Kashmir.



KASHMIR ISSUE:

Terrorism under the Unlawful Activities (Prevention) Amendment Act, 2012, involves using violence or threats to create fear for political, ideological, or extremist aims, impacting national or global security.

Militancy refers to a **readiness to use violence or combativeness**, encompassing various groups or individuals including armed religious factions, often used interchangeably with terrorism but **suggesting a potentially less extreme level of violent expression** compared to terrorism.

- **Partition and Accession (1947):** At the time of India's partition, princely states could join India or Pakistan. Maharaja Hari Singh, the ruler of Jammu & Kashmir, initially chose to remain independent.
  - In October 1947, tribal militias from Pakistan invaded Kashmir. In response, the Maharaja signed the **Instrument of Accession** with India.
  - This led to the first Indo-Pak war (1947-48), ending in a **UN-mediated ceasefire** with the state divided into **Jammu & Kashmir (J&K)** under India, **Azad Kashmir and Gilgit-Baltistan** under Pakistan.

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- **UN Resolutions:** The UN called for a **plebiscite** after Pakistan withdrew troops – which never happened, leading to prolonged tension.

REASONS FOR RISE IN MILITANCY IN THE UT:

- **Political Disenfranchisement and Alienation:** This was a major turning point, leading to the rise of local militancy in 1989.
  - **Rigged 1987 State Assembly Elections:** The **Muslim United Front (MUF)** was expected to perform well.
  - Widespread rigging by the ruling National Conference-Congress alliance led to the **disillusionment of youth**.
  - Leaders like **Yasin Malik** (later founder of JKLF) turned to armed struggle after losing faith in democracy.
- **Cross-Border Support and Pakistan's Involvement:** Pakistan's **Inter-Services Intelligence (ISI)** has provided training, arms, and safe havens to militants. Post-1989, Pakistan diverted **Afghan war veterans and jihadi infrastructure** into Kashmir.
  - Groups like **Hizbul Mujahideen, Lashkar-e-Taiba (LeT), and Jaish-e-Mohammed (JeM)** are based in Pakistan and have carried out attacks in Kashmir.
  - Kashmir became a theatre of **proxy war**, not just a local insurgency.
- **Islamic Radicalization and Ideological Shift:** The initial goal of **"Azadi" (freedom)** was replaced by a **pan-Islamist jihadist ideology**, especially with groups like LeT and JeM.
  - The **number of foreign terrorists** (mostly Pakistanis) increased from the mid-1990s onward, making the conflict more **sectarian and religiously motivated**.
- **Socio-Economic Factors and Youth Unemployment: Unemployment rate in J&K** (especially among youth) is one of the **highest in India** – around **17-18%** as of 2023. Lack of private sector development, industrialization, and job avenues.
  - Militants like **Burhan Wani**, who joined Hizbul Mujahideen at age 15, came from **middle-class families** – not always the most deprived but frustrated. **Alienated youth** find a sense of purpose and power in militancy.
- **Abrogation of Article 370 (2019) and Political Vacuum:** Article 370, which gave special status to J&K, was **revoked in August 2019**. State was **bifurcated into two UTs**, and mainstream politicians were detained. No elections held in J&K until 2024, leaving a **governance vacuum**.
  - While large-scale violence didn't erupt, there was a **rise in targeted killings**.
  - Youth disillusioned by the **lack of political expression**.
- **Hybrid Militancy and Social Media Radicalization: Hybrid militants** are part-time or sleeper militants with no criminal records, activated for specific attacks.
  - Many recent attacks (e.g., killings of migrant workers in 2021–2022) were carried out by **radicalized youth** without known militant links.

- Militants now **use encrypted messaging apps**, post videos, and glorify "martyrdom" to recruit youth online.
- Harder for security agencies to pre-empt attacks; more **lone wolf-style violence**.

- **Failure of Reconciliation and Rehabilitation Policies: Surrender and rehabilitation policy** (2004, 2010) failed due to **lack of reintegration support**, **police harassment**, and **social stigma**.
  - Many returnees from Pakistan-occupied Kashmir faced **legal troubles**, **poor economic prospects**, and **no employment**.
  - Rehabilitated militants either returned to militancy or lived in limbo, deterring others from surrendering.
- **Perceived Injustice and Human Rights Violations:** Cases of **excessive force**, **fake encounters**, and **civilian killings** (e.g., **Shopian 2020**, **Amshipora encounter**) have led to **anger and alienation**.
  - Use of **AFSPA** (Armed Forces Special Powers Act) gives security forces **legal immunity**, fueling resentment.
- **Ethno-Religious Faultlines and Targeted Killings:** In recent years, **Kashmiri Pandits**, **Sikhs**, and **Hindu workers** from outside states have been **specifically targeted**.
  - 2022 killings in Pulwama and Shopian of non-local laborers.
  - Attempt to **create fear**, **undermine state authority**, and **disrupt communal harmony**.
  - **Glorification of Gun Culture:** The glorification of militants who achieve instant fame, recognition, and respect, encourages a militant culture. Social media and mainstream media also contribute to this glorification.

SHIFT IN TERROR:

Increased Security and Counterinsurgency Success in the Valley: Number of active militants in the Valley has decreased sharply from ~300 in 2018 to under 100 by 2024.

- **Targeted operations by security forces**, including operations like **"All-Out"**, have weakened militant networks in the Valley.
- **Terror groups are unable to operate freely** in the Valley due to surveillance, intelligence penetration, and military pressure.
- Militants are now **looking for "softer targets" and less saturated zones**, leading to a pivot towards Jammu.

Topography and Porous LoC in Rajouri–Poonch Sector

- **Pir Panjal Range** separates Jammu from Kashmir and provides **forest cover and mountainous terrain** ideal for guerrilla warfare.
- The **Rajouri-Poonch belt** has a **porous Line of Control (LoC)** with **multiple infiltration routes**. **Poonch-Rajouri attacks (2023–2024)** involved **heavily armed, foreign terrorists** who were **infiltrated through forested LoC patches**.
- Terrorists are **establishing hideouts and operating in remote areas** to avoid detection, similar to the Valley in the 1990s.

Focus on Communal Polarization and Instigating Fear

- Jammu has a **mixed population** of Hindus and Muslims, unlike the **Muslim-**

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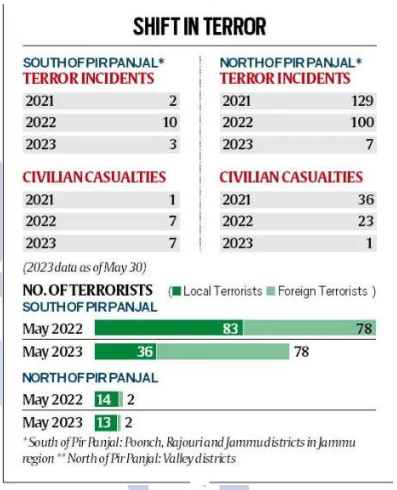
majority Valley.

- **Rajouri attacks (2023)** targeted **Hindu civilians**, including a **shooting in Dangri village**, where 7 civilians were killed.
- Pattern of **targeted killings and IED attacks** aimed at **creating communal unrest**.
- Shift to Jammu is aimed at **disrupting communal harmony**, provoking backlash, and drawing attention.

Surprise Element and Lower Vigilance

- Jammu, especially **south and west of Pir Panjal**, has traditionally been **less militarized and more peaceful** than the Valley.
- Attacks in Doda (2024) and Rajouri (2023) show **gaps in intelligence and area domination** due to the assumption of relative peace.
- Militants exploit **complacency in security deployment** and use **newer routes** to avoid detection.



Reactivation of Old Sleeper Cells and Local Networks

- Militant activity in Jammu had **waned post-2003 ceasefire**, but **older sleeper cells and overground workers (OGWs)** still existed.
- In 2023, several **local OGWs were arrested** in Poonch and Rajouri for **providing logistical support to foreign terrorists**.
- Terrorists **rely on local support for shelter, food, and movement**, reactivating old networks dormant since the early 2000s.

Use of Hybrid Militants and Foreign Fighters

- Most recent attacks in Jammu involved **foreign terrorists (mainly Pakistanis)**, often without any prior engagement in Kashmir.
- The **April 2023 Poonch attack** on an Army truck involved **highly trained foreign militants** who used **IEDs and ambush tactics**.
- Shift to Jammu allows **less-experienced hybrid militants** and **foreign infiltrators** to operate with **lower exposure and risk**.

Geopolitical Pressures and Tactical Diversification by Pakistan

- After **FATF greylisting**, Pakistan has faced pressure to **reduce overt cross-border support in the Valley**.
- However, it continues **"plausible deniability" operations** in remote Jammu areas.
- Militancy in Jammu offers **low-cost, high-impact opportunities** for Pakistan to sustain unrest in J&K.

CHALLENGES IN DEALING MILITANCY IN JAMMU AND KASHMIR:

- **Difficult Terrain and Geography:** Militants often operate in mountainous, forested, and remote regions such as Rajouri, Poonch, and parts of the Kashmir Valley which provide natural cover and make it difficult for security forces to conduct continuous surveillance and search operations.
- **Changing Nature of Militancy:** Militancy has evolved from organized insurgent groups to more decentralized, fluid, and covert forms such as hybrid militancy. Hybrid militants have no prior record, making them hard to detect through

conventional intelligence methods. The shift to lone-wolf attacks, often ideologically motivated and inspired online, makes pre-emption difficult.

- **Cross-border Infiltration and Pakistan's Involvement:** The porous Line of Control (LoC) continues to serve as a conduit for infiltration of militants from Pakistan. Persistent support from Pakistan-based groups like Lashkar-e-Taiba and Jaish-e-Mohammed remains a major security challenge.
- **Intelligence Gaps and Local Support Networks:** Militants often rely on overground workers (OGWs) who provide shelter, logistics, and intelligence. Identifying and neutralizing these networks is challenging due to their deep integration in local communities. Civilians may be reluctant to cooperate with security forces due to fear of retaliation or mistrust of authorities.
- **Political Vacuum and Alienation:** Delay in holding Assembly elections, combined with detentions of mainstream leaders, limits political engagement and dialogue. This vacuum is often exploited by extremist elements to radicalize youth and spread anti-state sentiment.
- **Radicalization and Online Propaganda:** Militants increasingly use social media to radicalize youth, glorify violence, and disseminate extremist content. Encrypted messaging apps like Telegram, Signal, and WhatsApp complicate surveillance and tracking. De-radicalization efforts are still evolving and often lack local cultural sensitivity and psychological depth.
- **Civilian Casualties and Human Rights Concerns:** Civilian deaths during counterinsurgency operations (e.g., mistaken identity, crossfire) generate resentment and anti-state feelings. Allegations of excesses by security forces—such as custodial deaths or fake encounters—undermine public trust. International human rights criticism may also place diplomatic pressure on the Indian government.
- **Communal Polarization and Targeted Killings:** Militancy is increasingly targeting religious minorities and non-local workers to instigate communal violence and economic disruption. Maintaining law and order without inflaming communal tensions is a delicate task.
- **Rehabilitation and Reintegration Challenges:** Existing surrender and rehabilitation policies have not yielded expected results due to bureaucratic delays, lack of employment, and social stigma. A comprehensive deradicalization and integration strategy is still under development.

WAY FORWARD:

- **Strengthening Security and Intelligence Framework**
  - Continue **targeted counter-terror operations** using high-quality intelligence.
  - Invest in **modern surveillance technologies**: drones, satellite imaging, AI-based threat monitoring.

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- **Unified Command Mechanism** to streamline operations in the Union Territory. Deployment of **multi-tiered security grid** in vulnerable areas (especially Rajouri–Poonch).

- **Containing Radicalization and Online Extremism**
  - Launch **digital literacy and counter-radicalization campaigns** to challenge extremist narratives.
  - Involve **teachers, parents, and religious leaders** in identifying early signs of radicalization.
  - **Cyber Coordination Centre (CyCord)** launched by MHA to monitor and act against online radical propaganda.
  - The **Dineshwar Sharma Committee** (2017) suggested engagement with youth and families at risk of radicalization.
- **Political Engagement and Restoration of Democracy**
  - Conduct regular **Legislative Assembly elections** in Jammu and Kashmir to restore political participation.
  - Re-engage with **mainstream regional parties** while marginalizing separatist narratives.
  - Encourage **decentralized governance** via Panchayati Raj institutions.
  - In 2020, the government conducted **District Development Council (DDC) elections**, which saw significant turnout.
  - **Justice (Retd.) Ranganath Mishra Commission** recommended building confidence through **inclusive political dialogue**.
- **Economic Development and Job Creation**
  - Promote **private investment**, especially in sectors like tourism, horticulture, IT, and handicrafts.
  - Develop **infrastructure projects** like road connectivity, power, and internet to integrate Kashmir with the national economy through schemes like UDAAN an industry initiative for skill development and training of youth.
  - Launch targeted **youth employment and skill development programs like Himayat, Nai Manzil, USTAAD Schemes.**
  - **Interlocutors' Report (2010)** advised a "development-centric approach" with special focus on **youth entrepreneurship** and **agri-based industries**.
- **Rehabilitation and De-radicalization of Militants**
  - Strengthen and reform **surrender-cum-rehabilitation policies**, ensuring dignity, education, and employment for returnees.
  - **2010 Rehabilitation Policy** for returnees from Pakistan-occupied Kashmir (PoK).
  - **Surrender Policy (2004)** provides financial assistance and support for those giving up arms.

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- **Think tanks like IDSA** have proposed "soft intervention models" combining vocational training with mentorship and mental health support.

- **Community Engagement and Civil Society Involvement**
  - Promote **community policing** and involve local elders, imams, teachers, and women in peacebuilding.
  - Encourage **youth clubs, sports programs, and cultural platforms** to offer alternatives to violence as in Panchayat level youth clubs.
- **Diplomatic Pressure on Pakistan**
  - Continue exposing Pakistan's support to cross-border terrorism at international platforms.
  - Strengthen **border fencing, smart surveillance**, and cooperation with friendly nations.
  - Persistent efforts at **UN, FATF, and OIC forums** to expose Pakistan's duplicity on terrorism.

The future of peace in Kashmir lies in a **balanced, empathetic, and integrated approach**. While security forces must remain vigilant, the long-term solution must prioritize **dialogue, development, dignity, and democratic engagement**. The central and UT governments, alongside civil society and local stakeholders, must work in coordination to transform Kashmir from a conflict zone to a zone of peace and opportunity.

PRACTICE QUESTION

Q. Examine the reasons behind the persistence of militancy in Jammu and Kashmir. Discuss the emerging trends in militancy post-2019 and suggest a comprehensive way forward. (15 marks, 250 words)

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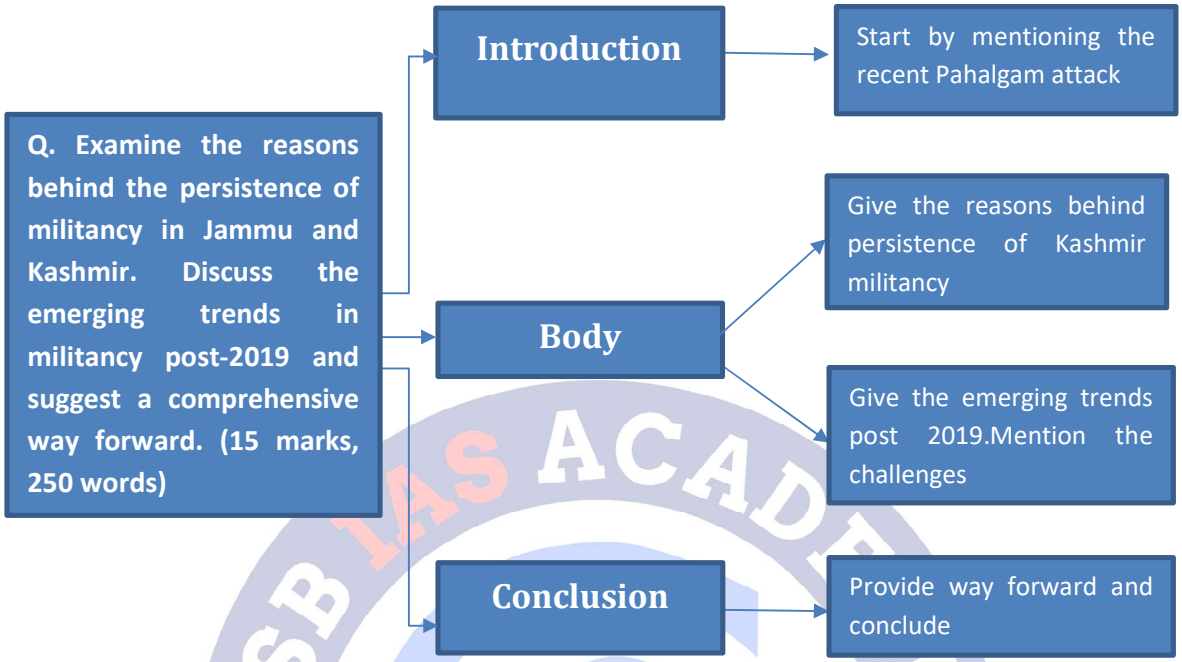
APPROACH



MODEL ANSWER

With the recent attack of tourist spot of Baisaran valley in Pahalgam, militancy in Jammu and Kashmir has taken a different route affecting the economic potential and local life of the valley. This also instigated a nation-wide call against terrorism. Post 2019, after the abrogation of Article3 370, the Kashmir militancy saw a pattern change.

Reasons for Persistence and Rise in Militancy:

1. **Political Disenfranchisement and Alienation**: The rigging of the 1987 Assembly elections, where the Muslim United Front was denied a fair chance, triggered widespread disillusionment, pushing youth like Yasin Malik toward militancy.

2. **Cross-Border Support**: Pakistan's ISI has systematically provided training and support to militant groups such as Hizbul Mujahideen, LeT, and JeM. The conflict transformed into a proxy war by the 1990s.

3. **Islamic Radicalization**: The early goal of "Azadi" has been overtaken by pan-Islamist ideologies, especially propagated by groups like LeT and JeM, with a significant rise in foreign fighters.

4. **Socio-Economic Deprivation**: As of 2023, J&K's youth unemployment rate is around 17-18%. Economic frustration among educated youth creates fertile ground for radical narratives.

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5. **Abrogation of Article 370 and Political Vacuum**: The 2019 move to revoke Article 370, followed by the detention of political leaders and the delay in elections, led to a vacuum exploited by extremist elements.

6. **Hybrid Militancy and Online Radicalization**: The rise of sleeper militants, with no criminal history, using encrypted platforms for planning attacks, has complicated intelligence operations.

Emerging Trends Post-2019:

1. **Geographic Shift to Jammu Region**: Due to effective security operations in the Valley, militants have moved towards Rajouri, Poonch, and Doda. These areas offer forest cover and porous LoC routes, as seen in the 2023 Dangri and 2024 Doda attacks.

2. **Communal Targeting**: Militants have deliberately targeted minorities and non-local workers, aiming to polarize communities and provoke unrest.

3. **Use of Hybrid and Foreign Militants**: The use of part-time militants without prior records, often working with foreign terrorists, has become a tactical strategy.

4. **Operational Tactics**: There has been an increase in IED-based ambushes, lone wolf attacks, and use of advanced weapons by foreign-trained operatives.

Challenges in Countering Militancy:

1. **Difficult Terrain and Geography:** Militants often operate in mountainous, forested, and remote regions such as Rajouri, Poonch, and parts of the Kashmir Valley which provide natural cover and make it difficult for security forces to conduct continuous surveillance and search operations.
2. **Changing Nature of Militancy:** Militancy has evolved from organized insurgent groups to more decentralized, fluid, and covert forms such as hybrid militancy. The shift to lone-wolf attacks, often ideologically motivated and inspired online, makes pre-emption difficult.
3. **Intelligence Gaps and Local Support Networks:** Militants often rely on overground workers (OGWs) who provide shelter, logistics, and intelligence. Identifying and neutralizing these networks is challenging due to their deep integration in local communities.
4. **Civilian Casualties and Human Rights Concerns:** Civilian deaths during counterinsurgency operations (e.g., mistaken identity, crossfire) generate resentment and anti-state feelings.
5. **Rehabilitation and Reintegration Challenges:** Existing surrender and rehabilitation policies have not yielded expected results due to bureaucratic delays, lack of employment, and social stigma.

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Way Forward:

1. **Counter-Radicalization Measures**: Cyber Coordination Centre (CyCord) for tracking online propaganda. Involve civil society, teachers, and religious leaders in community-level de-radicalization.

2. **Economic Development**: Implement schemes like **UDAAN**, **Himayat**, and **USTAAD** effectively. Create jobs through tourism, IT, and handicrafts. Focus on skill development and entrepreneurship.

3. **Rehabilitation and Reintegration**: Revamp surrender policies with education, employment, and psychological support. Adopt "soft intervention models" recommended by IDSA and other think tanks.

4. **Community Policing and Civil Engagement**: Promote peace through local youth clubs, cultural programs, and sports. Train community volunteers for early warning and trust-building.

5. **Diplomatic Pressure**: Continue raising Pakistan's terror sponsorship at FATF, UN, and OIC forums. Strengthen smart border surveillance and fencing.

The Kashmir issue cannot be resolved through security means alone. A balanced strategy, incorporating dialogue, development, dignity, and democracy, is essential. Sustainable peace in Jammu and Kashmir will depend on coordinated efforts by the government, security forces, civil society, and the local population to transform the region from conflict to cooperation.

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21. PERIODIC LABOUR FORCE SURVEY

iMPACT ANALYSIS

SYLLABUS:

GS 3 > Economic Development >> Labour Force

REFERENCE NEWS:

The **Ministry of Statistics and Programme Implementation (MoSPI)** released the Periodic Labour Force Survey 2024. This data provides crucial insights into India's evolving labour market dynamics across both rural and urban sectors.

PERIODIC LABOUR FORCE SURVEY:

Launched by National Statistics Office in 2017 with the aim of generating labour force statistics at more frequent intervals. The survey aims to:

- Estimate the key employment and unemployment indicators (viz. **Worker Population Ratio, Labour Force Participation Rate, Unemployment Rate**) in the short time interval of three months for the urban areas only in the 'Current Weekly Status' (CWS).
- Estimate **employment and unemployment indicators** in both 'Usual Status' (Principal activity status + Subsidiary economic activity status) (ps+ss) and CWS in both rural and urban areas annually.
- **Usual Status (ps+ss):** Based on the activity status over last 365 days prior to survey date.
- **CWS**: Captures the activity status over the 7 days preceding the survey date.

Labour Force Participation Rate (LFPR): LFPR is defined as the percentage of persons in labour force (i.e. working or seeking or available for work) in the population.

$$\text{Labour Force Participation Rate (LFPR):} \quad \frac{no.\ of\ employed\ \ persons + no.of\ unemployed\ \ persons}{total\ \ population} * 100$$

Worker Population Ratio (WPR): WPR is defined as the percentage of employed persons in the population.

$$\text{Worker Population Ratio (WPR):} \quad \frac{no.\ of\ employed\ \ persons}{total\ \ population} * 100$$

Unemployment Rate (UR): UR is defined as the percentage of persons unemployed among the persons in the labour force.

$$\text{Unemployment Rate (UR):} \quad \frac{no.of\ unemployed\ \ persons}{no.\ of\ employed\ \ persons + no.of\ unemployed\ \ persons} * 100$$

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KEY FINDINGS OF THE REPORT:

- **Labour Force Participation Rate (Usual Status (ps+ss), Age 15+):** Overall LFPR (2024) shows slight **decline from** 59.8% (2023) to **59.6% in 2024.**
  - Rural LFPR is 62.9%, Urban LFPR is 52.2% and Combined is 59.6%
  - **Gender gap persists**: Female LFPR (combined): **40.3%**, significantly lower than male LFPR (79.2%).
- **Worker Population Ratio (WPR) Usual Status:** Overall WPR (2024) showed a **marginal drop** from 58.0% (2023) to **57.7% (2024).**
  - Rural at 61.4%, Urban at 49.6% and combined at 57.7%
  - **Female WPR** remains low at **39.0%**, reflecting continued barriers to women's employment compared to 76.6% for men.
- **Unemployment Rate (UR) (Usual Status (ps+ss), Age 15+): Marginal increase** in overall unemployment from **3.1% (2023)** to **3.2%**.
  - Rural UR is 2.5%. Urban UR is at 5.0%

Current Weekly Status (CWS) Indicators (7-day reference period, age 15+)

- **Labour Force Participation Rate (LFPR):** Urban LFPR rose for males (74.3% to 75.6%) and slightly for females (25.5% to 25.8%), raising overall urban LFPR to 51.0%. All-India LFPR remained stable at 56.2%.
- **Worker Population Ratio (WPR):** Urban WPR rose slightly from 47.0% to 47.6% and all-India WPR was nearly unchanged at 53.5%.
- **Unemployment Rate (UR):** Rural unemployment fell slightly to 4.2%. Urban male UR rose, female UR declined, keeping overall urban UR rate at 6.7%. All-India UR dipped from 5.0% to 4.9%.

Gender-Disaggregated Occupational Indicators (CWS, 2024)

- **Female:Male ratio among Legislators/Senior Managers is at 13.2%**
- **Female:Male ratio among Professionals/Technical Workers is at 45.7%**
- **Women with Advanced Degrees among Employed (25+ yrs) is at 1.5% in rural, 75 in urban and 3% as combines.**
- There is **notable underrepresentation of women in leadership roles**.
- **Higher educational attainment among urban employed women**, but remains **very low in rural areas**.

CONCERNS REGARDING THE FINDINGS OF THE SURVEY:

- **Persistently Low Female Labour Force Participation Rate (FLFPR): Female LFPR (15+ years)** remains low at **40.3% (usual status)** and **30.4% (current weekly status)**. In contrast, **male LFPR is 79.2%**, revealing a **39-point gender gap**.
  - Indicates **discouraged female workers**, patriarchal norms, lack of safety, and caregiving responsibilities.

- Undermines **India's demographic dividend** and economic potential.
- Despite high education levels, **only 13.2% of leadership positions** are held by women (Female:Male ratio in legislators/senior officials), showing a glass ceiling.

- **Urban-Rural Disparity in Employment Quality and Access: Unemployment Rate (UR)** is **5.0% in urban areas**, compared to 2.5% in rural. However, **urban jobs are more informal or gig-based**, especially for youth and migrants.
  - Rural WPR (61.4%) may reflect **distress employment in agriculture**, not productive or high-wage jobs.
  - Urban areas may show **higher unemployment due to better access to job markets**, while rural underemployment is masked in WPR data.
- **Quality of Employment and Informality Concerns:** PLFS does not directly measure **informality**, but WPR figures suggest high reliance on **self-employment and unpaid family work**, especially in rural and female segments.
  - **Female WPR (usual status):** 39% – many are likely unpaid household workers in agriculture or family businesses.
  - Only **3% of employed women (25+ years)** have advanced degrees, limiting access to formal sector jobs.
- **Youth Unemployment and Skill Mismatch:** The report does not disaggregate youth unemployment specifically, but India's youth face **high unemployment and underemployment**, especially in urban areas.
  - **NEET (Not in Education, Employment or Training)** rates remain high among youth, particularly females.
- **Underrepresentation in Technical and Managerial Roles: Female:Male ratio in technical/professional roles is only 45.7%**. In leadership roles, it's even lower at **13.2%**, despite efforts toward gender equity and representation.
  - Reflects **lack of vertical mobility**, even for educated women.
  - Hints at barriers in career progression and institutional discrimination.
- **Regional and Sectoral Blind Spots:** The report **aggregates rural and urban data** nationally but doesn't highlight **state-level disparities**. This can hide significant employment gaps in backward or aspirational districts.
- **Exclusion of Migration and Informal Economy Insights:** PLFS doesn't fully capture **migrant labour patterns**, gig economy expansion, or **seasonal labour migration**, which are critical in post-COVID recovery.
- **Low Productivity:** According to ILO, India has 2nd longest average workweek globally at 46.7 hours, with 51% working over 49 hours. Despite this, India's labour productivity remains low with a GDP per working hour of just USD 8, placing it 133rd globally as of 2023.

WAY FORWARD TO IMPROVE INDIA'S LABOUR FORCE:

- **Boost Female Labour Force Participation:**

- Provide **safe and accessible public transport**, crèche facilities, and workplace safety.
- Expand **flexible work arrangements**, work-from-home, and part-time opportunities in both public and private sectors.
- Implement **gender-sensitive skilling programs**, especially in digital and green economy sectors.
- **Rajasthan's Indira Mahila Shakti Nidhi** supports women's employment through SHGs and skill-building.
- **Bangladesh's garment sector** employs millions of women due to focused infrastructure and safety laws.

- **Formalize Informal Employment**
  - Expand coverage under **ESIC and EPFO** for gig and informal workers.
  - Encourage **registration of unorganized workers** through the **e-Shram portal**, and link them to welfare schemes.
  - Incentivize MSMEs to **shift to formal operations** with tax and compliance benefits.
  - **Brazil's "Simples Nacional" tax regime** simplified registration and taxation for small businesses, increasing formalization.
- **Invest in Skilling and Upskilling**
  - Integrate **industry-relevant skills** into formal education (coding, digital finance, green energy).
  - Strengthen **apprenticeship programs** and expand schemes like **PMKVY** with local demand mapping.
  - Promote **skill certification and RPL (Recognition of Prior Learning)** for informal workers.
  - **Germany's dual vocational training model** blends classroom education with on-the-job training, improving job readiness.
- **Address Youth and Regional Employment Gaps**
  - Set up **District Employment Facilitation Centres** with job-matching services and career counselling.
  - Promote **rural industrial clusters** and **agri-tech entrepreneurship** to absorb youth in backward regions.
  - Support **start-ups in Tier 2 and Tier 3 cities** with credit and digital tools.
  - **Kerala's Kudumbashree model** successfully empowered rural youth and women through collective enterprises.
- **Align Labour Market Policies with Emerging Sectors**
  - Invest in job creation in **green economy, healthcare, logistics, and tourism**.
  - Provide **incentives for private sector job creation**, especially for women and youth.

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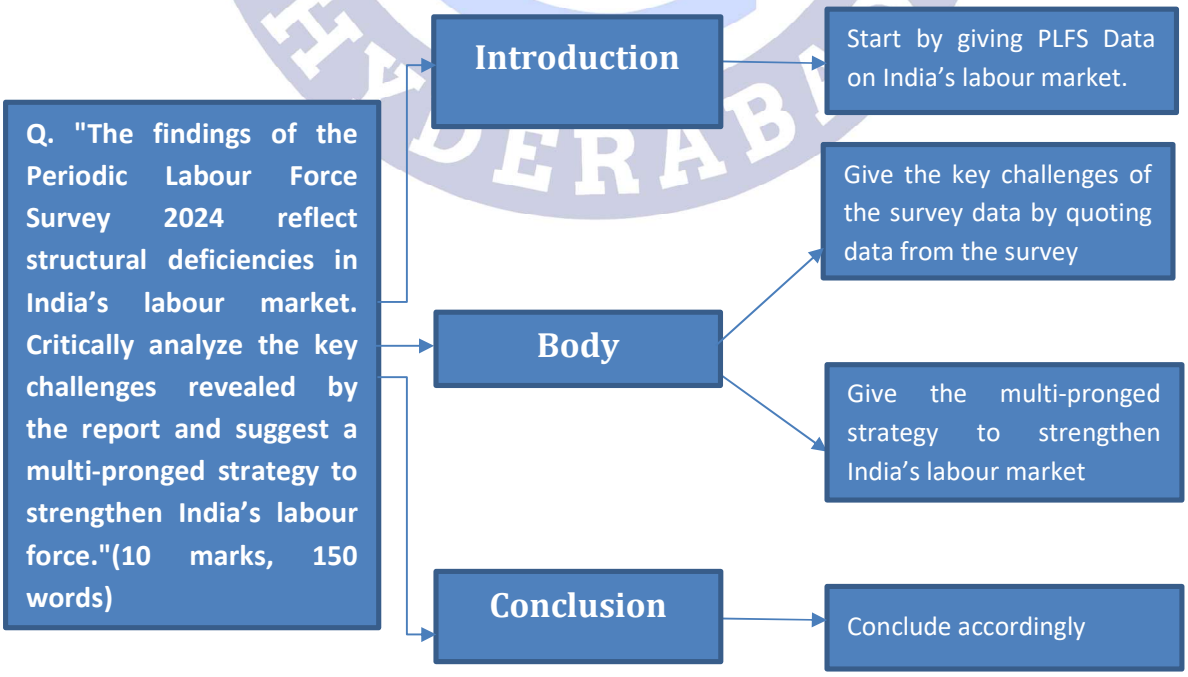
- **Vietnam's targeted investment in electronics and textiles** led to large-scale job creation and export growth.

- **Enhance Labour Market Data and Monitoring**
  - Improve **real-time employment data collection** using digital platforms.
  - Expand **scope of PLFS** to include data on gig work, platform jobs, and migrant labour.
- **Promote Labour Law Simplification and Social Security**
  - Ensure **effective implementation of the new Labour Codes**, especially related to wage security, working hours, and safety.
  - Universalize access to **health insurance (Ayushman Bharat), pension (Atal Pension Yojana), and maternity benefits**.
- **Leverage Technology and Digital Platforms**
  - Scale up platforms like **National Career Service (NCS)** to connect job seekers and employers.
  - Promote **digital literacy** among rural and semi-skilled workers to access e-commerce and remote jobs.

PRACTICE QUESTION

Q. "The findings of the Periodic Labour Force Survey 2024 reflect structural deficiencies in India's labour market. Critically analyze the key challenges revealed by the report and suggest a multi-pronged strategy to strengthen India's labour force."(10 marks, 150 words)

APPROACH



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MODEL ANSWER

The **Periodic Labour Force Survey (PLFS) 2024**, conducted by the National Statistical Office, provides vital insights into India's labour market. The survey shows a **marginal increase** in overall unemployment from **3.1% (2023)** to **3.2%**.

Key Challenges Identified:

- **Persistently low Female Labour Force Participation Rate (FLFPR)**: Female LFPR (15+ years) remains low at 40.3% (Usual Status) compared to 79.2% for males, reflecting gender disparity, unpaid care work, and social barriers.
- **Urban-Rural Employment Divide**: Urban Unemployment Rate stands at 5.0% vs. 2.5% in rural areas. Yet, rural WPR may mask underemployment in agriculture, while urban jobs are increasingly informal and insecure.
- **High Informality and Low-Quality Employment**: WPR data implies a dominance of self-employment and unpaid family labour, especially among women (female WPR: 39%).
- **Skill Mismatch and Youth Unemployment**: The survey lacks granular youth employment data, but NEET (Not in Education, Employment or Training) rates remain high.
- **Underrepresentation of Women in Leadership**: Only 13.2% of leadership roles are held by women, despite rising education levels.

Way Forward:

- **Increase FLFPR** through workplace safety, flexible jobs, and digital skilling (e.g., Rajasthan's Indira Mahila Shakti Nidhi).
- **Formalize employment** via ESIC/EPFO coverage, e-Shram portal linkage, and MSME support (e.g., Brazil's Simples Nacional).
- **Skill enhancement** using demand-driven models (e.g., Germany's dual training system) and localized mapping through PMKVY.
- **Bridge urban-rural gaps** with Employment Facilitation Centres and promote start-ups in Tier 2/3 cities (e.g., Kudumbashree model in Kerala).
- **Expand PLFS coverage** to include gig economy, migrant labour, and real-time job market data.

India's labour force policy must evolve from merely reducing unemployment to **enhancing job quality, inclusivity, and sustainability**. A **gender-sensitive, tech-driven, and regionally tailored approach** is key to achieving productive and equitable labour market outcomes.

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22. 10 YEARS OF THE PRADHAN MANTRI MUDRA YOJANA (PMMY)

iMPACT ANALYSIS

SYLLABUS:

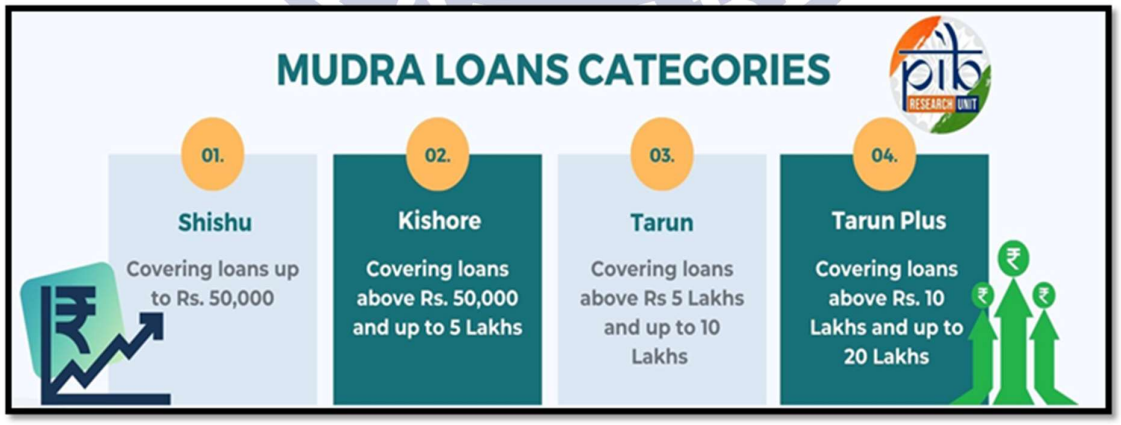
GS 3 > Economic Development > Indian Economy and Issues > Government Schemes

REFERENCE NEWS:

- 8th April 2025 marked 10 years of the Pradhan Mantri MUDRA Yojana (PMMY), the flagship programme aimed at **funding the unfunded microenterprises and small businesses.** By **removing the burden of collateral and simplifying access**, MUDRA laid the foundation for a new era of grassroots entrepreneurship.

ABOUT PRADHAN MANTRI MUDRA YOJANA (PMMY):

- Pradhan Mantri Mudra Yojana (PMMY) under the Micro Units Development and Refinancing Agency (MUDRA) was set up by Government of India for **development and refinancing activities relating to micro units.**
- PMMY ensures **collateral-free institutional credit up to Rs 20 lakh is provided by Member Lending Institutions (MLIs)** i.e. Scheduled Commercial Banks (SCBs), Regional Rural Banks (RRBs), Non-Banking Financial Companies (NBFCs) and Micro Finance Institutions (MFIs).
- The loans are given for **income-generating activities in manufacturing, trading and services sectors and for activities allied to agriculture**
- Under the scheme, **three categories** of interventions have been formulated which include:



Tarun Plus: Loans above **₹10 lakh and up to ₹20 lakh** (designed specifically for Tarun category, who have **previously availed and successfully repaid loans**)

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- **MUDRA Card** is an **innovative credit product** wherein the borrower **can avail of credit in a hassle free and flexible manner.** It provides a facility of working capital arrangement in the form of an overdraft facility to the borrower. Since MUDRA Card **is a RuPay debit card**, it can be used for drawing cash from ATM or Business Correspondent or make purchase using Point of Sale (POS) machine. Facility is also there to repay the amount, as and when, surplus cash is available, thereby reducing the interest cost.

- **MUDRA App- "MUDRA MITRA":** is a mobile phone application available in Google Play Store and Apple App Store, providing **information regarding 'Micro Units Development and RefinanceAgency Ltd. (MUDRA)' and its various products/ schemes.** It will guide a loan seeker to approach a Banker in availing MUDRA loan under PMMY. Users can also access useful loan related material including sample loan application forms in this app.

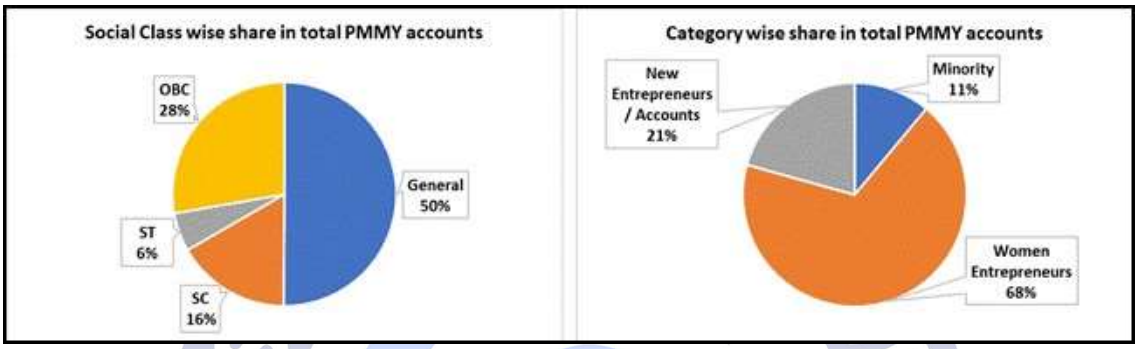
ACHIEVEMENTS OF PM MUDRA YOJANA (2015–2025):

- **Loan Sanctions and Reach:**
  - Since its launch in April 2015, PMMY has sanctioned over **52 crore loans worth ₹32.61 lakh crore**, thereby catalysing **a nationwide entrepreneurial transformation.** *(source: Ministry of Finance)*
  - Business development **is no longer concentrated in metropolitan areas; it is progressively expanding into smaller towns and rural regions,** where first-generation entrepreneurs are actively taking charge of their economic aspirations.
- **MSME Credit Boom:**
  - As per the SBI report:
    - **MSME lending surged** from ₹8.51 lakh crore in FY14 to ₹27.25 lakh crore in FY24.
    - It is projected to **cross ₹30 lakh crore in FY25**.
    - The **share of MSME credit** in total bank credit rose from **15.8% in FY14 to nearly 20% in FY24**, highlighting its increasing role in India's economy.
- **Empowering Women:**
  - **68%** of all Mudra beneficiaries are women.
  - Between FY16 and FY25:
    - **Per woman PMMY disbursement** rose at a **CAGR of 13%**, reaching ₹62,679.

- **Per woman incremental deposits** grew at a **CAGR of 14%** to ₹95,269. *(source: Ministry of Finance)*

- States with higher disbursement shares to women recorded **significantly higher employment** generation through women-led MSMEs.

- **Financial Inclusion for Marginalised Communities:**
  - **50%** of Mudra accounts are held by **SC, ST, and OBC** entrepreneurs.
  - **11%** of loan holders belong to **minority communities**. This reflects the scheme's impact in breaking traditional credit barriers and promoting inclusive growth. *(source: Ministry of Finance)*



- **Progressive Lending: Shishu to Tarun:**
  - Over **52 crore loan accounts** have been opened in 10 years.
  - **Kishor loans (₹50,000 to ₹5 lakh)** grew from **5.9% in FY16 to 44.7% in FY25**.
  - **Tarun category loans (₹5 lakh to ₹10 lakh)** are also gaining momentum, indicating that Mudra supports not only business inception but also scaling. *(source: Ministry of Finance)*
- **Average Loan Size and Entrepreneurial Confidence:**
  - **Average loan ticket size**:
    - **₹38,000 in FY16 → ₹72,000 in FY23 → ₹1.02 lakh in FY25.**

  - **Loan disbursal** rose by **36% in FY23**, reflecting a strong revival of entrepreneurial confidence. *(source: Ministry of Finance)*
- **Leading States and UTs in Loan Disbursal *(As of 28 February 2025)*:**

- **Top States**:

- **Top Union Territory**:
  - **Jammu & Kashmir**: ₹45,815.92 crore across 21,33,342 loan accounts *(source: Ministry of Finance)*

- **Role in Supporting the Informal Sector:**
  - Micro enterprises, which provide employment to nearly **10 crore people**, are mostly **non-corporate, own-account enterprises**. PMMY has been instrumental in offering **collateral-free credit up to ₹20 lakh** through Member Lending Institutions (MLIs) such as SCBs, RRBs, NBFCs, and MFIs. *(source: Ministry of Finance)*
- **International Recognition:**
  - The **International Monetary Fund (IMF)** has consistently recognised PMMY:
    - In **2017**, for enabling **women-led businesses**.
    - In **2019**, for its role in **refinancing micro enterprises**.
    - In **2023**, it noted the **growth of 2.8 million women-owned MSMEs**.
    - In **2024**, the IMF reaffirmed that PMMY is contributing to **self-employment and formalisation through credit access**. *(source: Ministry of Finance)*

CHALLENGES AND CONCERNS:

- **Inadequate Skill Development and Entrepreneurial Training:**
  - A large number of PMMY beneficiaries have limited exposure to essential business management, digital literacy, and vocational training.
  - According to the **NSDC Report (2024)**, only **25% of Mudra loan recipients** had undergone any formal skill development programme. This gap often results in misallocation of funds, operational inefficiencies, and higher rates of enterprise failure.

- **Weak Market Linkages and Limited Commercial Reach:**
  - A significant proportion of micro-entrepreneurs are unable to access formal markets due to the absence of structured supply chains, procurement support, or marketing networks.
  - For instance, a study by **NITI Aayog (2023)** found that only **15% of products manufactured under the Mudra scheme** make it to organised markets. This lack of visibility and scale hinders revenue growth and restricts long-term business viability.
- **Infrastructure Shortcomings and Operational Bottlenecks:**
  - Micro enterprises in rural and semi-urban areas frequently suffer from poor access to critical infrastructure such as reliable electricity, transport, and digital connectivity.
  - As per **World Bank data (2022)**, only **60% of rural MSMEs** have access to consistent power supply, negatively impacting productivity and contributing to elevated non-performing assets (NPAs) within this segment.
- **Limited Awareness of Policy Incentives and Regulatory Complexity:**
  - Navigating the regulatory ecosystem remains a significant challenge for many small businesses, particularly due to limited awareness about available government schemes, exemptions, and compliance requirements.
  - The **CAG Audit (2022)** revealed that **40% of PMMY beneficiaries** were unaware of **GST exemptions** designed to benefit small businesses, thereby missing out on key incentives.
- **Low Technology Adoption and Digital Backwardness:**
  - The uptake of basic digital tools such as e-payment systems, accounting software, and inventory management remains low among micro-entrepreneurs, largely due to affordability issues and limited digital literacy.
  - A **Deloitte Study (2023)** found that just **20% of Mudra-funded enterprises** use such technologies, which constrains their ability to modernise operations and compete effectively.
- **Credit Risk Perceptions and Data Gaps in Lending:**
  - Financial institutions often face difficulty in assessing borrower risk due to limited availability of reliable credit data, leading to risk aversion and higher rejection rates.
  - According to **TransUnion CIBIL (2024)**, **35% of rejected Mudra applications** were declined due to insufficient credit history, indicating an urgent need for improved credit information infrastructure for the informal sector.
- **Informal Lending Dependence Due to Credit Access Barriers:**
  - Although PMMY has eased credit access, many micro-entrepreneurs still struggle to secure loans due to lack of collateral, proper documentation, or banking access.

    - For instnace,the **RBI Report (2023)** indicated that **around 30% of Mudra loan rejections** were due to incomplete paperwork. This often pushes borrowers toward informal credit sources with exploitative terms.
- **Subsistence Orientation and Limited Scale Ambitions:**
    - A considerable portion of PMMY lending is concentrated in the **Shishu category** (loans up to ₹50,000), reflecting a focus on subsistence rather than scalable business models.
    - As highlighted in the **SIDBI Study (2023)**, nearly **80% of Mudra loans** fall into this category, and only **5% of beneficiaries** have successfully transitioned into larger enterprises, indicating limited upward mobility.
- **Financial and Legal Literacy Deficits:**
    - A substantial number of borrowers lack a clear understanding of basic financial concepts, loan conditions, or regulatory obligations, which can result in loan defaults and legal non-compliance.
    - For instance, the **SEBI Survey (2023)** reported that **60% of Mudra borrowers** did not fully understand the terms of their loans, pointing to a pressing need for financial education and borrower awareness initiatives.

WAY FORWARD:

To unlock the full potential of the Pradhan Mantri MUDRA Yojana and ensure long-term sustainability of micro-enterprises, a multi-pronged strategy is essential:

- **Strengthen Capacity Building**: Integrate structured entrepreneurial and digital literacy training programs with loan disbursement, in collaboration with NSDC and state skill missions.
- **Enhance Market Linkages**: Develop formal marketing and distribution networks through government e-marketplaces (GeM), SHG federations, and public-private partnerships.
- **Upgrade Infrastructure**: Focus on improving electricity, internet connectivity, and last-mile logistics in rural and semi-urban areas to support enterprise productivity.
- **Leverage Fintech and Data Analytics**: Promote digital onboarding, real-time credit scoring, and credit history creation through Aadhaar-linked platforms to reduce risk perception among lenders.
- **Policy Simplification and Outreach**: Streamline compliance procedures for micro-enterprises and improve awareness about tax exemptions, subsidies, and support schemes through localized outreach programs.
- **Support Scale-Up**: Facilitate transition from micro to small and medium scale by incentivising growth-stage loans (Kishor and Tarun categories) and providing targeted mentoring and incubation support.

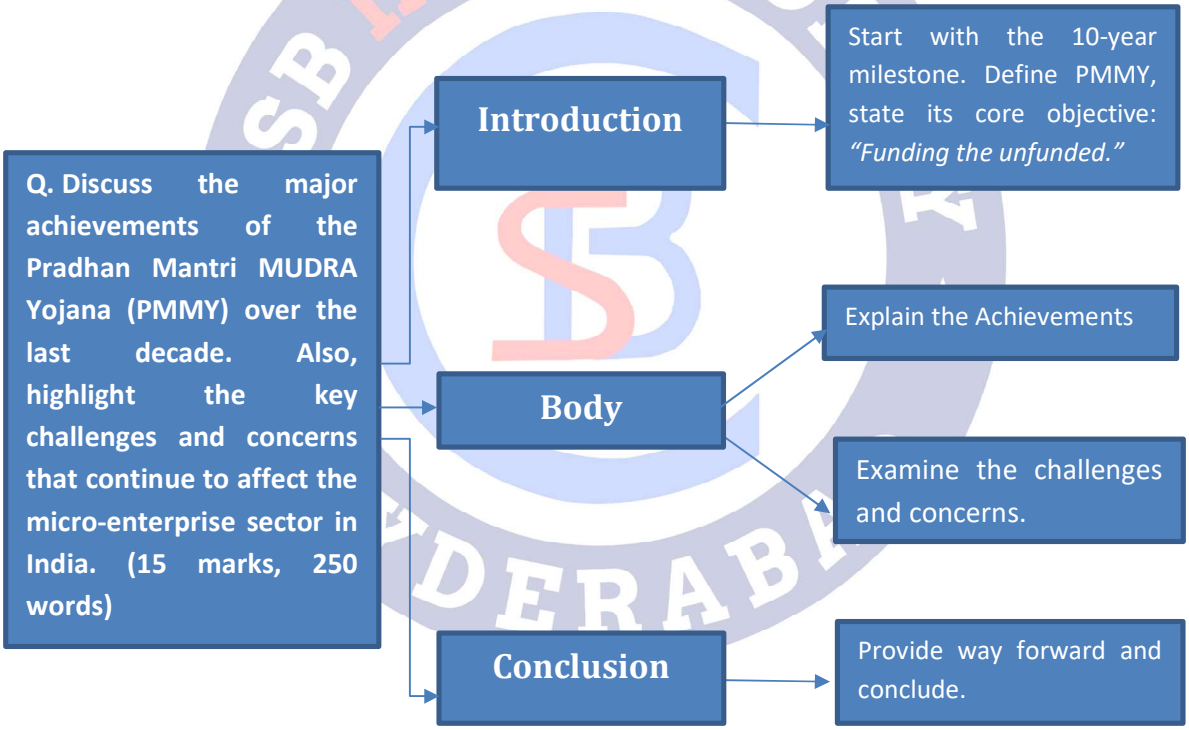
CONCLUSION:

- Over the last decade, PMMY has transformed access to credit for India's grassroots entrepreneurs, particularly women and marginalised communities. However, to sustain and scale this impact, targeted reforms and ecosystem-level support are imperative. With the right interventions, India's micro enterprises can evolve from survival units into engines of inclusive and resilient economic growth.

PRACTICE QUESTION

Q. Discuss the major achievements of the Pradhan Mantri MUDRA Yojana (PMMY) over the last decade. Also, highlight the key challenges and concerns that continue to affect the micro-enterprise sector in India. (15 marks, 250 words)

APPROACH



MODEL ANSWER

On **8th April 2025**, India marked **10 years** of the **Pradhan Mantri MUDRA Yojana (PMMY)**—a flagship initiative launched in 2015 to "**fund the unfunded**" micro and small enterprises by providing **collateral-free loans** through institutional mechanisms. Operated under the **Micro Units Development and Refinance Agency (MUDRA)**, the scheme aims to empower **grassroots entrepreneurship and promote financial inclusion, especially for women, SC/ST/OBC, and first-time entrepreneurs.**

Achievements of PMMY over the last decade (2015–2025):

1. Widespread Reach and Credit Expansion

- Over **52 crore loans** sanctioned, worth **₹32.61 lakh crore** since 2015.(Source: *Ministry of Finance)*
- Business growth has expanded beyond metro cities to rural and semi-urban India, fueling a grassroots entrepreneurial shift.

2. Boost to MSME Credit

- MSME lending rose from **₹8.51 lakh crore (FY14)** to **₹27.25 lakh crore (FY24)**.(Source: *Ministry of Finance)*
- MSME credit share in total bank lending grew from **15.8% to nearly 20%**, indicating increasing reliance on small business finance.

3. Women Empowerment

- **68%** of PMMY beneficiaries are women.
- Per woman disbursement grew at **13% CAGR** (₹62,679) and deposits at **14% CAGR** (₹95,269), enhancing women's economic participation. (Source: *Ministry of Finance)*

4. Social Inclusion

- **50%** of accounts held by **SC/ST/OBC** entrepreneurs; **11%** by minorities, breaking long-standing credit access barriers.(Source: *Ministry of Finance)*

5. Progression from Shishu to Tarun

- Shift from subsistence-level to growth-stage lending: **Kishor loans** rose from **5.9% (FY16)** to **44.7% (FY25)**.(Source: *Ministry of Finance)*
- Increasing uptake in **Tarun** category loans (₹5–10 lakh), indicating enterprise scale-up.

6. Rising Average Loan Size

- From **₹38,000 in FY16** to **₹1.02 lakh in FY25**, reflecting enhanced business confidence and higher capital utilisation.(Source: *Ministry of Finance)*

7. State-Level Outreach

- Leading states: Tamil Nadu, Uttar Pradesh, Karnataka.
- **Jammu & Kashmir** emerged as top disbursing UT with ₹45,815.92 crore across 21+ lakh loan accounts.

8. International Recognition

- Recognised by **IMF (2017–2024)** for promoting financial inclusion, self-employment, and support for women-led MSMEs.

Challenges and Concerns:

1. Skill Gaps and Lack of Training

- Only **25%** of beneficiaries received formal skill development (source: NSDC, 2024), resulting in inefficient fund utilisation and business failures.

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2. Weak Market Connectivity

- Just **15%** of Mudra-backed products enter organised markets (source: NITI Aayog, 2023), limiting income potential and sustainability.

3. Infrastructure Deficiencies

- **60%** of rural MSMEs lack stable electricity (source: World Bank, 2022), hindering production and increasing NPAs.

4. Regulatory and Policy Unawareness

- **40%** unaware of **GST exemptions** (source: CAG, 2022), pointing to ineffective scheme awareness and outreach.

5. Digital and Tech Deficiency

- Only **20%** of enterprises use digital tools (source: Deloitte, 2023), affecting competitiveness and financial management.

6. Incomplete Credit Histories

- **35%** of loan rejections due to insufficient credit records (source: TransUnion CIBIL, 2024), reflecting poor data access and documentation.

7. Informal Lending Dependence

- **30%** of rejections linked to lack of documents (source: RBI, 2023), pushing many toward high-risk informal credit systems.

8. Subsistence-Level Financing Dominance

- **80%** of loans are Shishu category (<₹50,000), with only **5%** of borrowers graduating to small-scale operations (source: SIDBI, 2023).

9. Financial and Legal Literacy Gaps

- **60%** unaware of loan terms (source: SEBI, 2023), increasing the risk of misuse, defaults, and non-compliance.

Way Forward:

- **Skill Integration**: Link credit disbursement with digital, financial, and entrepreneurial skill training.
- **Market Access**: Facilitate e-commerce linkages, rural haats, and SHG federations for product visibility.
- **Infrastructure Investment**: Focus on reliable electricity, internet, and logistics in underserved regions.
- **Fintech Innovation**: Encourage digital onboarding, Aadhaar-linked credit scores, and e-documentation.
- **Policy Simplification**: Streamline GST filing, reduce paperwork, and enhance digital grievance redressal.
- **Targeted Support for Scaling**: Strengthen Kishor and Tarun lending with mentorship and incubation.

In its decade-long journey, PMMY has played a transformative role in deepening financial inclusion and enabling entrepreneurship at the grassroots level. However, to build on this success, the focus must now shift to ensuring **quality of enterprise outcomes**, **credit sustainability**, and **long-term scalability**. A supportive ecosystem—comprising infrastructure, market access, training, and digital empowerment—will be key to transforming micro-enterprises into engines of inclusive growth.

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23. AUTOMOTIVE INDUSTRY IN INDIA

iMPACT ANALYSIS

SYLLABUS:

GS 3 > Economic Development > Indian Economy and Issues

REFERENCE NEWS:

- According to a recently released NITI Aayog report titled ***'Automotive Industry: Powering India's Participation in Global Value Chains'*** , the Indian automotive sector can emerge as a key player in the global value chain (GVC) as the world transitions toward **electric mobility, autonomous driving, advanced driver assistance systems (ADAS), the Internet of Things (IoT), and sustainable production**.

AUTOMOTIVE INDUSTRY:

- The automotive industry encompasses a broad range of companies and activities involved in the design, development, manufacturing, marketing, selling, repairing, and modification of motor vehicles. This includes **not only passenger cars but also trucks, buses, motorcycles, and other motorized vehicles.** It covers the entire supply chain, from **raw material suppliers and component manufacturers to assembly plants and dealerships.** The industry also involves service and maintenance providers, making it one of the world's largest economic sectors by revenue

The terms **"automotive industry"** and **"automobile industry"** are often used **interchangeably,** but they differ in scope:

- The **automotive industry** covers the manufacturing and servicing of all motor vehicles, including cars, trucks, buses, and motorcycles.
- The **automobile industry is a subset of the automotive industry**, primarily focusing on the production of **passenger vehicles** designed for personal transportation. This includes cars, sedans, hatchbacks, and similar vehicles. The term emphasizes the manufacturing and selling of these vehicles, often **excluding other types like commercial trucks or motorcycles.**

AUTOMOTIVE INDUSTRY IN INDIA: KEY STATISTICS FROM NITI AAYOG REPORT:

- India's automotive industry is a cornerstone of the nation's manufacturing and economic growth, contributing **7.1% to India's Gross Domestic Product (GDP)** and **49% to manufacturing GDP**.
- As the **fourth-largest automobile producer globally**, India possesses the scale and strategic depth to emerge as a global leader in the automotive value chain.

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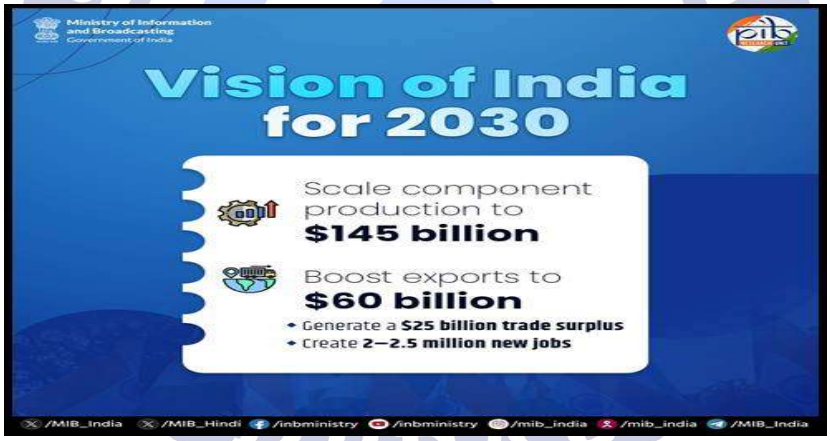
- The sector spans a vast ecosystem, from vehicle assembly and auto component manufacturing to deep interlinkages with **critical industries such as steel, electronics, rubber, IT, and logistics.**
- In recent years, India has seen exponential growth in vehicle production, with over **28 million units manufactured in 2023–24** alone.
- The global **automotive component market was valued at $2 trillion in 2022**, with **$700 billion** traded across borders.
- Despite India's strong manufacturing base, its share in the globally traded auto component market remains at just **3% (~$20 billion)**, highlighting a vast scope for expansion.
- India's **trade ratio in auto components is near-neutral (~0.99)**, with exports and imports nearly balancing each other.
- With the right enabling conditions, India can triple exports to **$60 billion**, generate a **$25 billion trade surplus**, and create **over 2-2.5 million direct jobs** by **2030**, propelling it toward becoming a globally competitive, innovation-driven manufacturing hub.

INDIA'S VISION FOR AUTOMOTIVE INDUSTRY:



This vision aligns with India's aspirations to become a **global manufacturing hub under the Make in India and *Atmanirbhar Bharat* initiatives.**

SIGNIFICANCE OF THE AUTOMOTIVE INDUSTRY FOR INDIA

- **Contribution to India's GDP:**
  - The automotive industry contributes a substantial **7.1% to India's GDP** and **49% to the manufacturing GDP**. (Source: NITI Aayog report).
  - This makes it a **cornerstone of the nation's economic structure**, driving industrial output and contributing to significant employment.
  - The sector's growth supports India's ambition to become a **global manufacturing hub**, as outlined in initiatives like **Make in India** and

Atmanirbhar Bharat (Self-Reliant India). By expanding its global footprint, India can enhance its economic resilience and growth trajectory.

- **Employment Generation:**
  - The automotive sector directly and indirectly employs millions of people. According to the NITI Aayog report titled ***'Automotive Industry: Powering India's Participation in Global Value Chains'***, the industry not only provides jobs in manufacturing but also in related sectors like **steel**, **electronics**, **rubber**, and **IT services**.
  - The **Vision 2030 roadmap**, which aims to generate **2-2.5 million new jobs** by 2030, underscores the sector's potential as a major employment generator.
- **Key to India's Global Value Chain (GVC) Integration:**
  - The automotive industry is vital to India's participation in **Global Value Chains (GVCs)**. India is already the **4th largest vehicle producer globally** but holds only a **3% share of global traded auto components**.
  - This indicates significant untapped potential. With the right reforms, India could increase its share of the global auto component market to **8%** by 2030. Strategic efforts to enhance India's **exports** and **trade surplus** (forecasted to reach $60 billion and $25 billion respectively by 2030) would strengthen its position in the GVC (source: NITI Aayog report).
- **Supporting India's Green Mobility Transition:**
  - India's automotive sector is central to its **green mobility transition**, a key element of the country's **climate action strategy**.
  - The rise of **Electric Vehicles (EVs)**, which India is actively embracing through schemes like **FAME India**, is critical to reducing carbon emissions and dependency on fossil fuels. With global demand for EVs skyrocketing, India's growing **EV manufacturing capacity** is a major opportunity. The government's support through the **PM E-Drive Scheme** and **Production Linked Incentive (PLI)** for electric vehicles is expected to boost India's EV production and infrastructure.
- **Strategic Government Schemes and Reforms:**
  - The Indian government has introduced several schemes to boost the automotive industry, including **Make in India** to promote domestic manufacturing, **Atmanirbhar Bharat** for self-sufficiency in key components, **FAME India** to incentivize EV adoption and charging infrastructure, and the **PLI Scheme for Auto and Advanced Chemistry Cells (ACC)** to support advanced automotive technologies and position India as a hub for EVs and battery storage.
- **Technological and Digital Advancements:**
  - India's automotive sector is adopting **Industry 4.0** technologies like **AI**, **IoT**, **robotics**, and **3D printing** to enhance efficiency and productivity, positioning itself as a hub for **smart factories**.

- For instance, with **Tesla's plans to establish a manufacturing facility** in India and **Ola's success in the EV market**, the country is increasingly seen as a destination for **high-tech automotive manufacturing**.

MAJOR GOVERNMENT INTERVENTIONS

Make in India: Launched in 2014, the Make in India initiative has provided a significant boost to the country's manufacturing sector, particularly in automobiles. This policy promotes domestic manufacturing, reduces reliance on imports, and encourages foreign direct investment.

Atmanirbhar Bharat: The Atmanirbhar Bharat initiative aims to foster self-sufficiency in manufacturing and reduce the country's dependence on foreign components. In the automotive sector, this has resulted in increased domestic production of critical components such as engines, transmissions, and EV batteries. The government has also extended support to start-ups and small and medium enterprises (SMEs) in the automotive space, helping them integrate into global supply chains.

FAME India Scheme (Phases I & II): The Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme has been pivotal in promoting clean mobility in India. Phase II, with an outlay of ₹11,500 crore, focuses on demand incentives for electric two-wheelers, three-wheelers, buses, and the development of public charging infrastructure. It also aims to promote technology platforms for EVs and create a robust domestic EV ecosystem.

PM E-Drive Scheme (2024–26): Launched to accelerate EV adoption and reduce urban pollution, this scheme has a budget of ₹10,900 crore and targets large-scale procurement of electric vehicles:

- **24.79 lakh** electric two-wheelers
- **3.2 lakh** electric three-wheelers
- Procurement of **14,028** electric buses by State Transport Undertakings (STUs)/public transport agencies
- **₹2,000 crore** earmarked for national-level charging infrastructure expansion.

Production Linked Incentive (PLI) Scheme for Auto and ACC Batteries: With a total allocation of ₹44,038 crore (PLI scheme- INR 25,938 crore, PLI scheme for ACC Battery Storage- INR 18,100 crores), this flagship initiative aims to boost the domestic manufacturing of advanced automotive technologies, including EVs, hydrogen fuel cell vehicles, and advanced battery storage solutions. It provides financial incentives to OEMs and component manufacturers for investing in cutting-edge technologies, achieving economies of scale, and integrating into global supply chains. The scheme also prioritises domestic value addition, export readiness, and job creation through technology-driven innovation.

INDIA'S OPPORTUNITIES IN THE AUTOMOTIVE INDUSTRY:

- **Dominance in Electric Vehicle (EV) Manufacturing:** India has a major opportunity to become an EV manufacturing hub, supported by government schemes like **FAME India**, **PM E-Drive**, and the **PLI scheme** for EVs and batteries. India's **EV market**, particularly in **two-wheelers** and **three-wheelers**, is growing rapidly. With **Tesla's entry** into India and **Ola Electric's success** in EV production, India can further establish itself as a leader in **lithium-ion battery manufacturing** and **EV supply chains**.

- **Expanding Export Opportunities:** India holds a modest **3% share** in the global traded auto components market (~$20 billion), but aims to grow exports to **$60 billion** by 2030. This can be achieved by focusing on **high-precision manufacturing** of components like **engine parts**, **transmission systems**, and leveraging **cost advantages** from competitive labor and technology.
- **Integration into Global Value Chains (GVCs):** India has significant potential to expand its share in **global value chains (GVCs)** by fostering **international collaborations** and adopting **Industry 4.0** technologies like **AI**, **robotics**, and **3D printing** to enhance manufacturing efficiency and competitiveness.
- **Technological Innovation and Smart Manufacturing:** India can lead in **automotive innovation** by adopting **Industry 4.0** for **smart factories** and focusing on **R&D** in **electric mobility**, **autonomous driving**, and **ADAS**. Embracing **digital transformation** will enable India to produce **high-quality, cutting-edge vehicles** and become a key player in **connected cars**.
- **Green Mobility and Sustainability:** India can become a **green mobility hub**, focusing on **carbon neutrality**, **material recycling**, and **energy-efficient manufacturing**. The **circular economy** model can be enhanced by investing in **EV battery recycling**, following the example of companies like **BMW** and **Volkswagen**.
- **Growing Domestic Market:** India is the **4th largest automotive market** globally. By producing **affordable EVs**, India can cater to **domestic consumers** and expand into **emerging markets**. Additionally, investments in **charging infrastructure** will drive EV adoption and create a self-sustaining ecosystem.
- **Strengthening Local Manufacturing Ecosystem:** India has opportunities to enhance **local production** and reduce dependency on imports through **component manufacturing**, focusing on critical parts like **engines**, **batteries**, and **electric drivetrains**. Strengthening **MSMEs** can support local supply chains and create jobs.
- **Policy and Regulatory Support:** The government's policies like **Make in India**, **Atmanirbhar Bharat**, and **PLI schemes** provide incentives for manufacturers to invest in **advanced technologies**. Continued **regulatory support** and efforts to ease business regulations will strengthen India's competitive edge globally.

CHALLENGES ASSOCIATED WITH THE AUTOMOTIVE INDUSTRY IN INDIA:

- **Cost Disadvantages:**
  - India faces a **10% cost disadvantage** compared to competitors like China, due to:
    - **Higher raw material and machinery costs**: India imports components, raising manufacturing costs.
    - **Logistics and financing costs**: High transportation and financing costs affect competitiveness.
    - **Energy costs**: Higher energy prices in India increase production costs. These disadvantages make it difficult for India to compete in **high-**

precision automotive components like **engines** and **transmissions** (source: NITI Aayog).

- **Limited Penetration in High-Precision Segments:**
  - India holds just **2-4%** of the global market in **high-precision components** like **engine parts** and **transmission systems**. This underperformance is due to:
    - **Lack of technological capability**
    - **Inadequate R&D investment**
    - **Limited intellectual property (IP) ownership** India's lag in advanced technologies like **electric mobility** and **autonomous driving** affects global competitiveness (source: NITI Aayog).
- **Dependence on Imports for Critical Components:**
  - India remains dependent on **imports** for key components like **engines**, **transmissions**, and **batteries** for **electric vehicles (EVs)**.
  - This dependence makes India vulnerable to **supply chain disruptions**, such as during the **COVID-19 pandemic** and **geopolitical tensions**, and limits the growth of a resilient domestic supply chain (source: NITI Aayog, McKinsey).
- **Challenges in Scaling EV Production:**
  - India's **EV market** faces several obstacles:
    - **Lack of charging infrastructure**: Insufficient charging stations hinder widespread EV adoption.
    - **Battery production**: India lacks **domestic capacity** for large-scale **lithium-ion battery** production, though the **PLI scheme** aims to boost local manufacturing.
    - **High EV costs**: EVs are still more expensive than traditional vehicles, primarily due to **imported battery costs** (source: NITI Aayog).
- **Infrastructure Deficiencies**:
  - Infrastructure issues that affect the automotive sector include:
    - **Poor road quality**: Some regions still have inadequate road infrastructure, affecting transportation efficiency.
    - **Limited connectivity**: Poor connectivity between manufacturing hubs and ports increases logistics costs and delays.
    - **Inadequate testing facilities**: Testing and R&D facilities in India do not meet global standards.
- **Regulatory and Policy Challenges:**
  - Despite interventions like the **FAME India Scheme** and **PLI for Auto and ACC Batteries**, India faces:
    - **Policy inconsistency**: Frequent changes in policies and tax structures create uncertainty.
    - **Compliance with international standards**: Indian manufacturers still struggle to meet **international emission** and **safety norms**, causing production delays (source: World Bank).

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- **Skill Gap and Talent Shortage:**
  - India's automotive sector suffers from a significant **skill gap** in **advanced manufacturing** and **engineering**. There is a growing demand for skilled labor in **electric mobility**, **autonomous systems**, and **AI-driven manufacturing**, but the availability of skilled workers is limited. Despite initiatives like **skill development programs**, the industry struggles to address the pace of talent development.

WAY FORWARD:

India's automotive industry, despite its significant growth potential, faces several challenges that need to be addressed to become a global leader in the sector. Based on the NITI Aayog recommendations and additional insights, here are key strategies to move forward:

Fiscal Measures

- **Operational Expenditure Support**: India should focus on scaling up manufacturing capabilities by providing capital expenditure (Capex) support for tooling, dies, and infrastructure.
- **Skill Development**: The government must invest in skill development programs to bridge the talent gap in advanced manufacturing, particularly in **electric mobility** and **AI-driven manufacturing**.
- **R&D and IP Transfer**: To foster innovation, the government should incentivize **R&D**, facilitate **IP transfer**, and promote international branding. Empowering **MSMEs** through these efforts will help integrate them into global supply chains.
- **Cluster Development**: Promoting collaboration through **common R&D** and **testing centers** will strengthen India's supply chain and foster growth in critical areas like high-precision components.

Non-Fiscal Reforms

- **Industry 4.0 Adoption**: India must accelerate the integration of **AI**, **robotics**, and **IoT** into manufacturing processes to improve efficiency and quality. Smart factories will drive global competitiveness.
- **International Collaboration**: Encouraging **joint ventures**, **foreign collaborations**, and **free trade agreements (FTAs)** will enable access to new markets and technology.
- **Ease of Doing Business**: Simplifying regulatory processes, offering **worker hour flexibility**, and improving **supplier discovery** will create a more favorable business environment for automotive firms in India.

CONCLUSION:

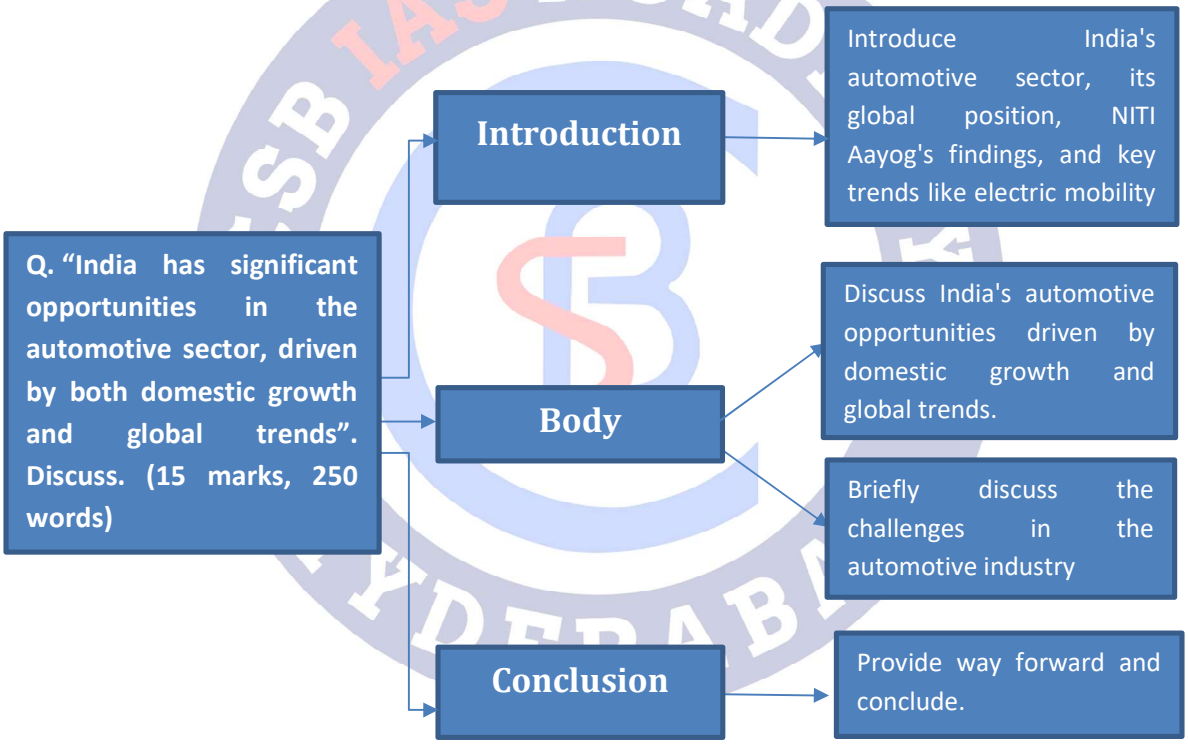
- India's automotive sector stands at a decisive inflection point, where focused reforms, policy clarity, and industry alignment can elevate it into the league of global leaders in automotive manufacturing. With the **world shifting rapidly towards clean, smart, and connected mobility**, India must accelerate its integration into global

value chains by building **competitiveness in high-precision components, fostering innovation, and deepening its export footprint.** Over the next five years, the effective execution of planned interventions—**ranging from skilling and infrastructure to R&D and global partnerships**- will determine whether India becomes a hub for high-value auto components or remains a low-cost player in traditional segments. With the right mix of ambition and action, India can become a globally recognised supplier of next-generation mobility solutions.

PRACTICE QUESTION

Q. "India has significant opportunities in the automotive sector, driven by both domestic growth and global trends". Discuss. (15 marks, 250 words)

APPROACH



MODEL ANSWER

India's automotive sector, as per the NITI Aayog report *'Automotive Industry: Powering India's Participation in Global Value Chains'*, presents significant opportunities driven by **domestic growth** and **global trends**. As the world shifts toward **electric mobility**, **autonomous driving**, and **sustainable production**, India is positioned to become a major player in the **global automotive value chain**. The sector contributes **7.1% to GDP** and **49% to manufacturing GDP**, with India being the **fourth-largest automobile producer** globally.

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India's Opportunities in the Automotive Sector:

1. **Dominance in Electric Vehicle (EV) Manufacturing**: India has a major opportunity to become an **EV manufacturing hub**, supported by government schemes like **FAME India**, **PM E-Drive**, and the **PLI scheme for EVs**. The growing demand for **two-wheelers** and **three-wheelers** positions India to lead in **lithium-ion battery production** and **EV supply chains**, with **Ola Electric** and **Tesla's entry** further reinforcing this potential.
2. **Expansion of Export Opportunities**: India's **3% share** in the global traded auto components market (~$20 billion) offers substantial room for growth. The **Vision 2030 roadmap** aims to increase exports to **$60 billion**, creating a **$25 billion trade surplus**. This offers significant room for growth and enhanced participation in **global supply chains**.
3. **Integration into Global Value Chains (GVCs)**: India can enhance its position in **GVCs** by fostering **international collaborations** and adopting **Industry 4.0 technologies** such as **AI**, **robotics**, and **IoT**, improving manufacturing efficiency and product quality.
4. **Technological Innovation and Smart Manufacturing**: By investing in **R&D** focused on **electric mobility**, **autonomous driving**, and **ADAS**, India can position itself as a leader in **automotive innovation**. Adopting **Industry 4.0** for **smart factories** will drive India's transition to cutting-edge automotive manufacturing.
5. **Green Mobility and Sustainability**: India has a growing opportunity to become a **green mobility hub**, focusing on **carbon neutrality**, **material recycling**, and **energy-efficient manufacturing**. The **circular economy model**, particularly in **EV battery recycling**, aligns with global sustainability trends and can attract international investment.
6. **Growing Domestic Market**: As the **4th largest automotive market** globally, India can cater to **domestic demand** for **affordable EVs** and **expand into emerging markets**, particularly in **Asia** and **Africa**. Investments in **charging infrastructure** will help drive **EV adoption** and create a self-sustaining ecosystem.

Challenges in the Automotive Industry:

1. **Cost Disadvantages**: India faces a **10% cost disadvantage** compared to competitors like China due to **higher raw material**, **logistics**, and **energy costs**.
2. **Limited Penetration in High-Precision Segments**: India holds only **2-4%** of the global market for high-precision components, reflecting a need for **technological advancements** and **R&D investment**.
3. **Dependence on Imports**: India remains reliant on imports for key components like **batteries** and **engines**, limiting its ability to build a **resilient domestic supply chain**.

4. **Challenges in Scaling EV Production**: India's **EV market** faces barriers such as **insufficient charging infrastructure**, **high EV costs**, and **limited domestic battery production**.
5. **Infrastructure Deficiencies**: Poor **road quality**, limited **connectivity** between manufacturing hubs and ports, and **inadequate testing facilities** hinder efficiency and increase logistics costs.

Way Forward:

- **Operational Expenditure Support**: Provide **capital expenditure** support for tooling, dies, and infrastructure.
- **Skill Development**: Invest in programs to bridge the gap in **advanced manufacturing** and **electric mobility**.
- **R&D and IP Transfer**: Incentivize **R&D**, facilitate **IP transfer**, and support **MSMEs** in global supply chains.
- **Cluster Development**: Promote **collaboration** through **common R&D and testing centers**.
- **Industry 4.0 Adoption**: Speed up the adoption of **AI**, **robotics**, and **IoT** to enhance manufacturing.
- **International Collaboration**: Encourage **joint ventures** and **free trade agreements (FTAs)**.
- **Ease of Doing Business**: Simplify **regulatory processes** and improve **business conditions**.

India's automotive industry holds immense growth potential, supported by **green mobility**, **technological innovation**, and **global market integration**. By addressing **cost disadvantages**, **limited high-precision manufacturing**, and **import dependence**, India can realize its vision of becoming a **globally competitive automotive manufacturing hub** by 2030. The **effective execution** of recommended reforms will determine whether India becomes a leader in **next-generation mobility solutions** or remains a low-cost player in traditional segments.

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24. NATIONAL WATERWAYS

iMPACT ANALYSIS

SYLLABUS:

GS 1 > Geography >> Inland waterways

REFERENCE NEWS:

The Inland Waterways Authority of India (IWAI) under the Ministry of Ports, Shipping and Waterways reached a significant milestone in cargo movement on National Waterways. For the fiscal year 2024-25, IWAI has successfully achieved record-breaking **145.5 million tonnes of cargo movement**, marking an all-time high in the IWT sector. Along with this, the total number of **operational waterways** has gone up from **24 to 29 during the year**.

Cargo traffic on National Waterways has increased from 18.10 MMT to 145.5 MMT between FY-14 and FY-25, recording a CAGR of 20.86%.

INLAND WATER TRANSPORT IN INDIA:

Inland Waterways Transport (IWT) is the transportation of cargo over rivers, backwaters, canals and creeks. India has an estimated **14500 km of navigable inland waterways**, including river systems, canals, backwaters, creeks and tidal inlets that can effectively support mechanized crafts. About 5200 km of major rivers and 485 km of canals are suitable for inland transport.

IWT contributes about 8.5% of total cargo movement in USA, about 8.3% in China, 38% in Netherlands, 24% in Belgium and 13% in Germany. IWT enjoys a share of less 0.5% in the total transportation in the country.

It has been estimated that diversion of one billion tonne-km of cargo to the IWT mode will reduce transport fuel costs by 5 million USD and the overall transport costs by 9 million USD.

Ancient Period:

- **Lothal Dockyard (2400 BC):** Oldest known dockyard discovered in Lothal (Gujarat) from the Indus Valley Civilization. Connected Harappan towns to the Arabian Sea via the Sabarmati River.
- **Ganges and Tributaries as Trade Routes:** Used for trade and commerce for centuries, especially along Ganga, Yamuna, and their tributaries.
- **Greek Historian Megasthenes (4th Century BC):** Documented navigation on the Ganges as early as 4th century BC.
- **Kautilya's Arthashastra (Mauryan Era):** Detailed navigation rules, port charges, boat regulations, and taxation policies related to river trade.

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Medieval Period (Mughal Era):

- **Active River Trade under Mughals:** Key trade routes existed between Agra and Bengal (Satgam).
- Important ports: Mirzapur, Varanasi, Patna, Munger.
- Goods were moved via small to large vessels along rivers.

Colonial Period (18th–20th Century)

- **Use of Brahmaputra and Barak-Surma Rivers:** Facilitated trade between Northeast India and Kolkata Port. Became crucial for tea industry logistics.
- **East India Company Initiatives (1844 Onwards):** Kolkata–Dibrugarh route started on Brahmaputra. Kolkata–Agra steamer service on the Yamuna. By 1863, services extended to Assam, Garhmukteshwar (645 km above Allahabad), and Ayodhya.
- **Peak River Trade (1877): 180,000 country boats registered at Kolkata, 124,000 at Hooghly, 62,000 at Patna – indicating massive scale of river transport.**
- The **British colonial administration** developed inland water routes mainly for **moving raw materials like jute, coal, and tea** from eastern India.
- Notable river navigation companies emerged: **India General Navigation & Railway Co. (1880) and River Steam Navigation Co.**

Post-Independence Era (1947–1985)

- Focus remained on **railways and road transport**, leading to **further decline of IWT**.
- The **Central Inland Water Transport Corporation (CIWTC)** was set up in 1967 but was not financially sustainable.
- Some inland ports like **Kolkata and Assam's river ports** continued minor operations.

Institutional Reform and Revival (1986–2000)

- **Inland Waterways Authority of India (IWAI)** was established in **1986** under the **IWAI Act, 1985**, to regulate and develop IWT.
- **NW-1 (Ganga-Bhagirathi-Hooghly, 1,620 km)** was declared the **first National Waterway** in 1986.
- Other NWs notified later: **NW-2**: Brahmaputra (891 km) – 1988, **NW-3**: West Coast Canal (205 km, Kerala) – 1993

BENEFITS OF INLAND WATERWAYS IN INDIA:

- **Cost-Effective and Fuel-Efficient Transportation: IWT is cheaper per tonne-kilometer** compared to rail and road: **Cost/km/tonne**: **Road** – ₹2.50, **Rail** – ₹1.50, **Waterways** – ₹1.06
    - **Cargo movement on NW-1 (Ganga)** has reduced logistics costs for bulk materials like cement and fly ash by up to **30%**.

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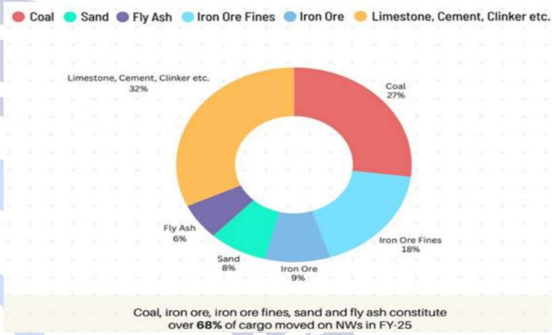
- **Environmentally Sustainable:** Waterways emit **50% less CO_2** than road transport along with less noise and air pollution.
    - The **Jal Marg Vikas Project** (JMVP) promotes low-emission cargo movement on NW-1 between **Varanasi and Haldia**, benefiting air quality in the Ganga basin.
- **Decongests Road and Rail Networks:** Shifting freight to waterways reduces pressure on highways and rail corridors. Helps reduce **traffic congestion, accidents, and road wear and tear**.
    - The **Ro-Ro services on NW-2** (Brahmaputra) in Assam have reduced road traffic and improved goods movement to the Northeast.
- **Boost to Trade and Logistics:** Facilitates movement of **bulk commodities** (coal, cement, food grains, iron ore) and **containerized cargo**. Reduces dependence on last-mile connectivity through road.
    - **Scheduled cargo services on NW-1 and NW-2** have increased inland cargo traffic significantly.
    - The **Jalvahak Scheme (2023)** provides **35% operational subsidy**, encouraging modal shift from road to waterways.



- **Infrastructure and Economic Development:** Development of **multimodal terminals, jetties, fairways, and navigational locks** generates infrastructure investment and jobs.
    - **Multimodal terminals at Varanasi, Sahibganj, and Haldia** under JMVP have created employment and improved local economies.
- **Regional and Rural Connectivity:** Waterways provide affordable transport in **remote and economically backward regions**. Ideal for **island and riverine communities** in Northeast, Kerala, and West Bengal.
    - **NW-3 (West Coast Canal, Kerala)** connects villages and towns, aiding **tourism and fishing communities**.
- **Enhances Cross-Border Connectivity:** India uses waterways for trade with **Bangladesh** under the **Indo-Bangladesh Protocol on Inland Water Transit and Trade**.
    - **Cargo from Kolkata to Tripura** via Bangladesh reduces distance by over **1,000 km** compared to land routes.
- **Promotes Tourism and Cultural Integration:** Cruise tourism and houseboat services are being promoted on rivers like Ganga, Brahmaputra, Mandovi and Kerala backwaters.
    - **River cruise services on Ganga and Brahmaputra** are attracting international tourists and promoting cultural heritage.

- **Emergency and Disaster Utility:** Waterways are useful for **transporting relief materials and evacuation** during floods and natural disasters.
    - During **Assam floods**, **IWAI used NW-2** to deliver food and medicines to inaccessible areas.

CHALLENGES OF INLAND WATERWAYS OF INDIA:

- **Seasonal Navigability and Low Water Depth:** Many rivers have **seasonal flow variations**, becoming non-navigable during dry months. Maintaining the **Least Available Depth (LAD)** of 2–3 meters year-round is difficult.
    - **Peninsular rivers are seasonal in nature.**
- **Siltation and Sediment Load:** Rivers like the **Ganga and Brahmaputra** carry heavy sediment, leading to frequent **channel shifting and silting of navigable routes**. Makes route maintenance **technically complex and expensive**.
    - **Assam Earthquakes (1897, 1950)** altered Brahmaputra's riverbeds, worsening siltation and navigability even today.
    - **NW-1 (Ganga)** requires continuous dredging to ensure navigation from **Varanasi to Haldia** due to **siltation and low water levels**.
- **Infrastructure Deficiency:** Lack of **adequate terminals, jetties, loading/unloading facilities, night navigation systems**, and **mechanised vessels**. **Limited multimodal integration** with rail and road transport.
    - Many of the **111 notified National Waterways** still lack **basic navigation infrastructure**, and **only ~29 are operational** as of 2024.
    - Inland shipping industry is also under development.
- **Limited Private Sector Participation:** Despite new policies, **private investment is low** due to high capital costs, regulatory uncertainty and long gestation periods for returns.
    - The **National Waterways (Jetties/Terminals) Regulations, 2025** aim to ease approvals, but uptake remains low.
- **Policy and Coordination Gaps:** Multiple authorities (IWAI, State Water Resources Depts., Port Authorities) cause **overlapping jurisdiction and bureaucratic delays**. Inconsistent policies on **water use, land acquisition, and environmental clearance**.
- **Competing Water Use Priorities:** Rivers are also used for **irrigation, drinking water, hydropower**, which reduces flow available for navigation. Water-sharing disputes between states can affect river navigation.
- **Lack of Modern Vessels and Skilled Manpower:** Majority of vessels are **unmechanised country boats**, unsuitable for cargo handling. Shortage of **trained river pilots, crew, and river traffic controllers**.
    - The government launched **Jalyaan and Navic portals** to register vessels and train personnel, but uptake is still limited.

- **Environmental and Ecological Concerns: Dredging, bank erosion, oil spillage, and noise pollution** affect river ecosystems and aquatic life. Opposition from **fisherfolk and environmentalists** over terminal construction and dredging.
    - Environmentalists raised concerns about the **impact of Jal Marg Vikas Project** on **dolphin habitats in the Ganga River**.
- **Low Awareness and Commercial Utilization:** Logistics companies still prefer **road and rail**, due to faster delivery and better connectivity. **Awareness about cost savings** from IWT remains low.
    - Only about **3% of India's freight** is moved through inland waterways, compared to **47% in China** and **16% in Bangladesh**.

WAY FORWARD:

- **Ensure Year-Round Navigability:** Undertake **scientific dredging** and channel marking to maintain **Least Available Depth (LAD)**. Use **river training works** and **silt management systems** to reduce frequent sedimentation.
    - **China's Yangtze River** has successfully used **automated dredging and silt prediction systems** to maintain navigability.
- **Accelerate Development of Infrastructure:** Build **multi-modal terminals**, **floating jetties**, **navigational locks**, and **night navigation systems**. Integrate with **road, rail, and coastal shipping networks** for seamless logistics.
    - **Germany's Rhine-Main-Danube Canal** connects multiple transport modes efficiently through well-planned terminals and real-time vessel management.
- **Promote Private Sector Participation:** Simplify the process of obtaining **No Objection Certificates (NOCs)** via **digital portals**. Offer **Viability Gap Funding (VGF)** and PPP models for terminal and vessel development.
    - **Bangladesh Inland Waterways Transport Authority** promotes private jetties with leasing and revenue-sharing models.
- **Focus on Cargo Promotion and Modal Shift:** Expand and promote schemes like **Jalvahak**, offering **35% operational cost subsidy**. Identify high-potential cargo routes and offer incentives for bulk cargo movement.
    - **The EU's NAIADES Programme** promotes cargo modal shift to waterways with subsidies and green shipping incentives.
- **Ensure Environmental Sustainability:** Adopt **eco-friendly dredging**, enforce **no-spill zones**, and protect **riverine biodiversity** (e.g., dolphins). Conduct **EIA and Social Impact Assessments** before major projects.
    - **The Danube River Commission** implements ecological corridors and fish ladders to preserve biodiversity alongside navigation.
- **Leverage Digital Technology for Smart Navigation:** Scale up use of **Naudarshika** (national river navigation system), **PANI**, and **CAR-D** for digital permits, traffic monitoring, and cargo tracking.

- **USA's Inland Electronic Navigation Charts (IENC)** and real-time data systems have revolutionized barge logistics.

- **Enhance Regional Cooperation and Protocol Routes:** Strengthen the **Indo-Bangladesh Protocol on Inland Water Transit and Trade**. Expand cross-border cargo and passenger services with **Nepal, Bhutan, and Bangladesh**.
    - **Mekong River Commission (Southeast Asia)** manages shared navigation across multiple countries with joint river management.

Key Initiatives:

- **Jalvahak – Cargo Promotion Scheme:** Encourages cargo shift to **Inland Water Transport (IWT)** by offering **35% subsidy** on operational costs. Scheduled services started on **NW-1, NW-2, and NW-16** via Indo-Bangladesh Protocol. Expected to divert **800 million tonne-km**, nearly **17% of current IWT cargo**.
- **Digital NOC Portal for IWT Infrastructure:** Simplified online process to obtain **No-Objection Certificates (NOCs)** for setting up **jetties/terminals**. Encourages **private sector participation** under new regulations (2025).
- **Other Infrastructure and Digital Enhancements: Fairway development and dredging** for navigability. **Ro-Ro/Ro-Pax services** to enhance connectivity. **Digital platforms**: CAR-D, PANI, Jalyaan, Navic, and **Naudarshika** for traffic management and digitisation. Development of **night navigation**, **navigational locks**, and **IWT terminals**.
- **Inland Vessels Act, 2021** aims to promote safe, economical inland water transport, ensure legal uniformity and vessel procedures.
- The Budget 2015-26 has expanded the tonnage tax scheme. The scheme was previously available to sea going ships. Now it is available to inland vessels to promote water transport. The scheme encourage more cargo movement and further incentivises shipping companies to invest in inland waterways vessels.

Outcomes and Vision:

- These measures are **making IWT more efficient and sustainable**.
- Under the leadership of **PM Modi** and **Minister Sonowal**, IWAI is expanding its reach across NWs, particularly NW-1, NW-2, NW-3, and NW-16.
- The shift towards **inland waterways** is proving successful and is set to become a **preferred mode of cargo transport** in India.

PRACTICE QUESTION

Q. "Inland Waterways have immense potential to transform India's freight transport landscape, yet remain underutilized." Critically examine the current status, challenges, and way forward for National Waterways in India. (15 marks, 250 words)

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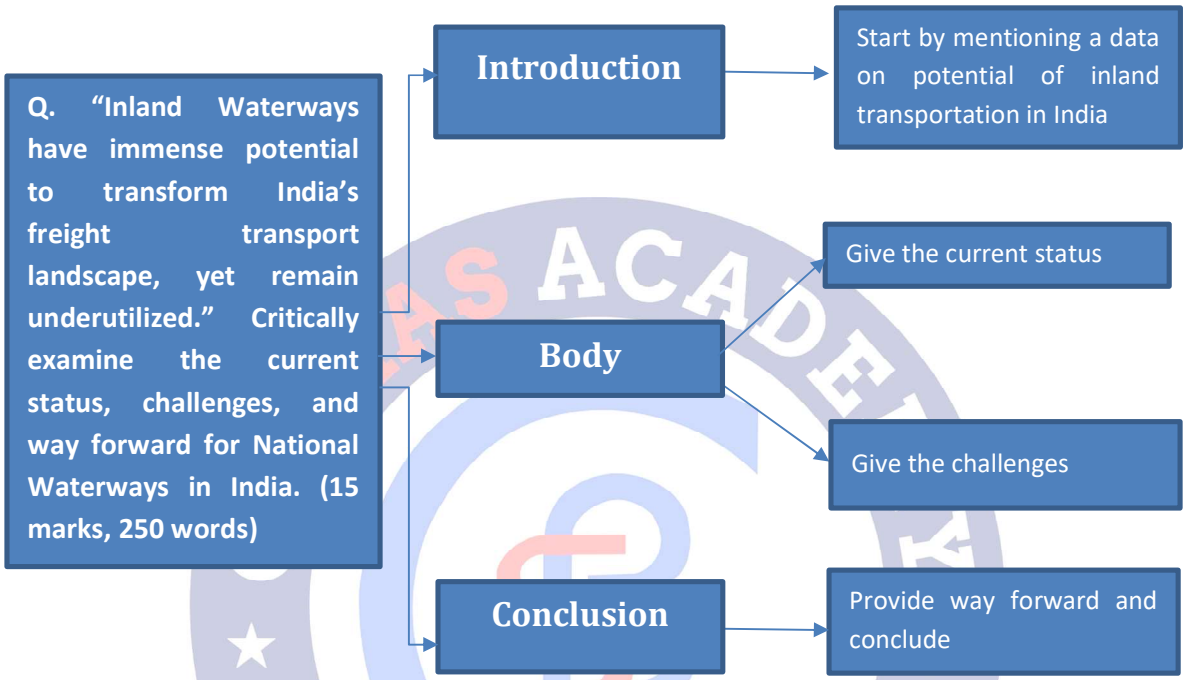
APPROACH



MODEL ANSWER

Inland Water Transport (IWT) is globally recognised as a **fuel-efficient, low-cost, and eco-friendly mode of freight movement**. In India, despite having **14,500 km of navigable rivers and canals**, the share of IWT in cargo movement remains negligible at around **2-3%**, compared to **47% in China** and **16% in Bangladesh**.

IWT is cheaper per tonne-kilometer compared to rail and road: **Cost/km/tonne**: **Road** – ₹2.50, **Rail** – ₹1.50, **Waterways** – ₹1.06**. Cargo movement on NW-1 (Ganga)** has reduced logistics costs for bulk materials like cement and fly ash by up to **30%**.

Current Status:

- As of 2024, **111 National Waterways (NWs)** have been notified under the **National Waterways Act, 2016**.
- Only **29 waterways are currently operational**, with **NW-1 (Ganga), NW-2 (Brahmaputra)** and **NW-3 (West Coast Canal)** being the most active.

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- Freight movement has increased from **18.1 MMT in 2014 to 145.5 MMT in 2023–24**, aided by infrastructure projects like the **Jal Marg Vikas Project (JMVP)** and schemes such as **Jalvahak (2023)**.
- **Multimodal terminals** at Varanasi, Sahibganj, and Haldia now support seamless cargo transfer.
- **68% of the cargo traffic include coal, iron ore, limestone etc.**
- **There has been development of inland cruising and tourism projects like Ganga Vilas cruise and houseboat tourism of Kerala.**

Challenges:

1. **Navigability Issues**: Seasonal flow variations and siltation affect depth, especially in NW-1 and NW-2.
2. **Infrastructure Gaps**: Inadequate terminals, night navigation, and handling facilities hinder scale-up.
3. **Environmental Concerns**: Dredging and riverbed modification threaten aquatic biodiversity (e.g., Gangetic dolphins).
4. **Regulatory Bottlenecks**: Fragmented jurisdiction across Centre, states, and IWAI.
5. **Limited Private Participation**: Uncertain returns and long gestation periods deter investment.
6. **Lack of Integration**: Poor linkage with road-rail networks affects last-mile connectivity.

Way Forward:

- **Enhance Navigability**: Deploy modern dredging technologies and river training (as seen on China's Yangtze).
- **Expand Infrastructure**: Scale up digital NOC systems (as per 2025 Regulations), Ro-Ro/Ro-Pax terminals, and multimodal hubs.
- **Promote Modal Shift**: Extend schemes like Jalvahak with performance-linked subsidies.
- **Leverage Digital Platforms**: Broaden use of PANI, CAR-D, and Naudarshika for real-time monitoring and logistics coordination.
- **Strengthen Policy Coordination**: Harmonise efforts across IWAI, MoRTH, and state agencies.
- **Ecological Safeguards**: Integrate EIA norms and community participation for sustainable river management.

India's inland waterways, if developed systematically, can **reshape freight logistics** by reducing costs, decongesting roads and rails, and lowering emissions. Transforming IWT from a peripheral mode to a **mainstream logistics backbone** demands an integrated, environment-sensitive, and investment-friendly approach — vital for realising India's ambition of becoming a **logistics hub for the Global South**.

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25. SATELLITE INTERNET

iMPACT ANALYSIS

SYLLABUS:

GS 3 > Economic Development > Indian Economy and issues > Communication technology

REFERENCE NEWS:

- In a significant move to enhance India's digital connectivity, **SpaceX's Starlink** has entered into **strategic partnerships with leading Indian telecom operators**, Bharti Airtel and Reliance Jio. These collaborations aim to leverage **satellite technology to provide high-speed internet services,** particularly in remote and underserved regions of India.

WHAT IS SATELLITE INTERNET?

- Satellite internet is internet access delivered through a **wireless connection** created by **signals transmitted between a satellite and an antenna (or dish)** on a home or business.
- Unlike land-based internet services such as fiber, cable, or Digital Subscriber Line (DSL), **it doesn't rely on wires to transmit data.**
- It's also **different from wireless networks like LTE or 5G**, **which depend on nearby towers** for connectivity.
- Notably, satellite internet can also be used at a **temporary location** like a construction site or emergency shelter, or on **moving objects like aircraft, ships, trains, and more.**
- **Examples of Major Satellite Internet Providers:**
    - **Starlink (SpaceX, USA)** operates in **Low Earth Orbit with over 7,000 satellites,** offering global coverage for residential, mobile, and military use. It has **partnered with Airtel and Jio** in India and is the current market leader. **Starlink is the world's first and largest satellite constellation** using a low Earth orbit to deliver broadband internet.
    - **OneWeb (UK, partly owned by Bharti Group, India)** has around 648 satellites in LEO, focused on enterprise and government services. Supported by Airtel, it's a key competitor to Starlink in India.
    - **Project Kuiper (Amazon, USA)** is a planned LEO network with 3,200 satellites. Launches begin in 2025, positioning it as a future rival to Starlink.

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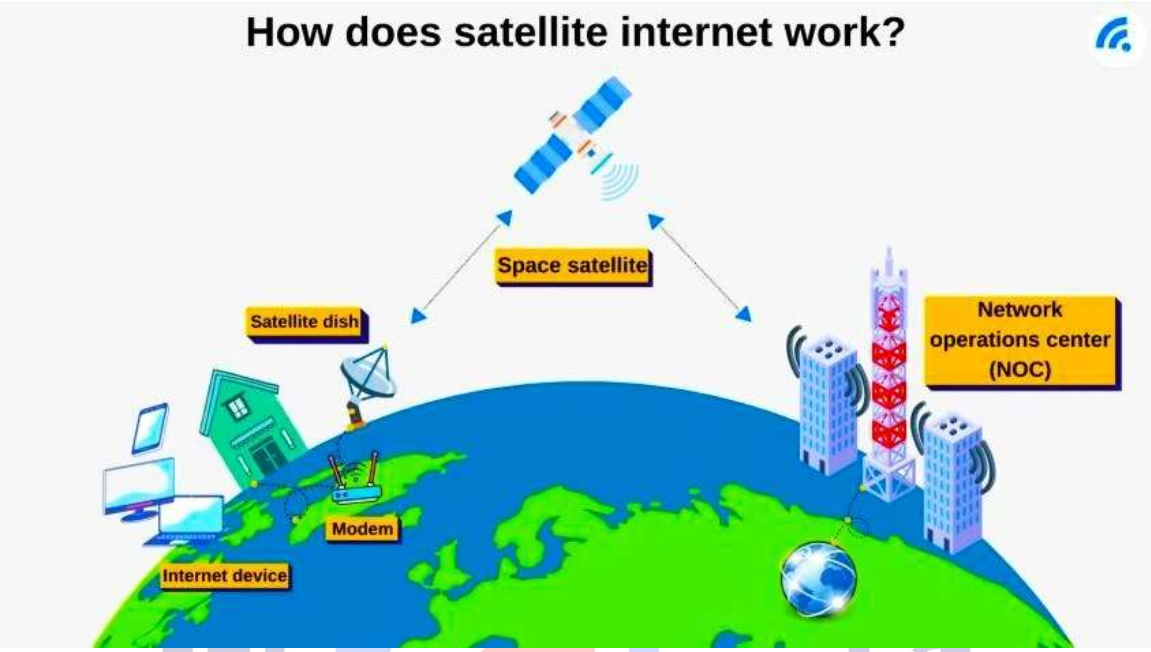
- **GuoWang (China)** is a large state-run LEO constellation with 13,000+ satellites planned. It's part of **China's push for digital sovereignty** and a counter to Western systems.



ADVANTAGES OF SATELLITE INTERNET

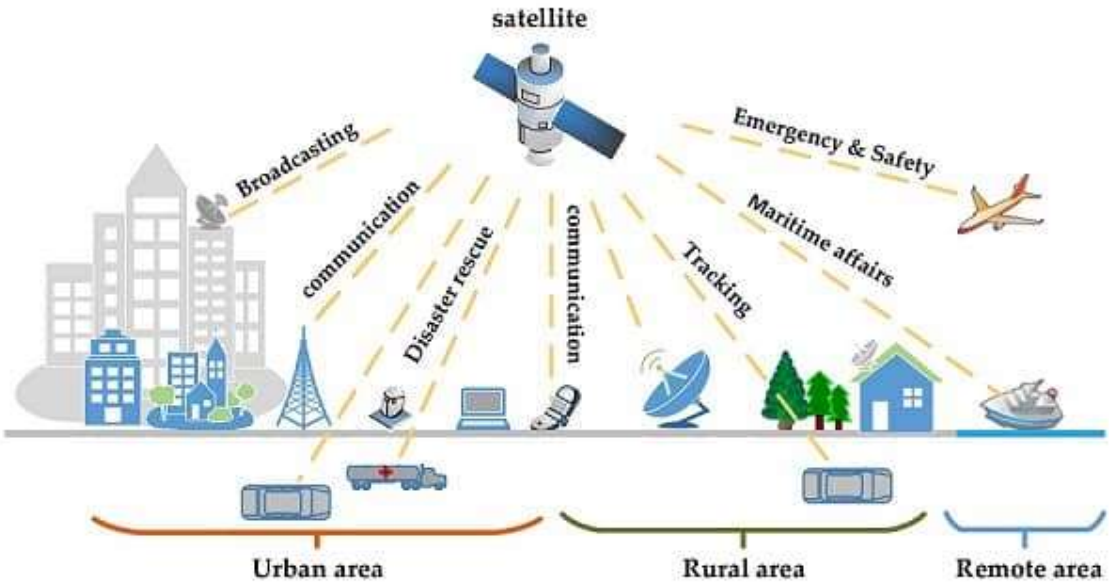
- High speed internet solution
- Larger coverage area compared to LTE base stations.
- Once implemented, service availability practically every part of the world especially remote areas where commercial LTE network or broadband infrastructure not feasible.
- Options to switch to other satellite (according to availability and complete satellite constellation is deployed).
- It is one of the feasible solutions for regions where conventional infrastructure has not been implemented or limited availability (rural areas in developing countries).
- During absence of other services due to disaster (earth quake, hurricane etc.), satellite internet become an essential tools for disaster management.

DISADVANTAGES OF SATELLITE INTERNET:

- High latency signals (minimum 30 – 100 ms and maximum 600 – 700 ms).
- High cost during initial stages.
- Not suitable for low latency applications and live gamming.
- Number of customers and speed is limited for individual satellites.
- Satellite maintenance is complex and it could affect service.

- Increased competition in market could contribute to space debris and it will disrupt astronomers
- Atmospheric changes could affect quality of service (heavy rain, snow fall etc.)

APPLICATIONS OF SATELLITE INTERNET:



THE SIGNIFICANCE OF SATELLITE INTERNET FOR INDIA:

- **Expanding Access Beyond the Grid:**
  - India still has large regions where fiber optic cables have never been laid and mobile networks are unreliable or absent.
  - According to the NSSO data, **only 24% of rural Indian households have access to the Internet**, compared to a 66% penetration in cities.
  - Satellite internet provides an efficient **alternative to bridge this digital divide.**
  - **For instance**, Airtel and Jio's collaboration with Starlink allows them to extend internet access to remote villages without incurring the high costs of laying terrestrial networks
- **Path to Digital Sovereignty:**
  - India's **indigenous satellite capabilities**, led by **ISRO**, are still under development. In the meantime, partnerships like those with Starlink create a **buffer of managed dependency**.
  - *For instance*, routing Starlink through **domestic players like Airtel and Jio**, along with technology transfer and **local data storage**, helps maintain **some measure of sovereignty**, though the **real control remains external**.

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- **Shaping Global Internet Governance:**
  - India's hybrid model — importing technology but controlling access through local players — may become a **blueprint for other developing nations**. It reflects a balanced approach: **technological pragmatism** without surrendering **strategic autonomy**.
- **Unlocking Socio-Economic Growth:**
  - Satellite internet unlocks opportunities in **education, healthcare, agriculture, governance, and enterprise**.
    - **E-learning and Telemedicine**: Platforms like **PM e-Vidya** and **e-Sanjeevani** can reach the most remote users.
    - **Disaster Resilience**: Satellite links remain functional when floods or cyclones disrupt ground networks. For example, during the **2018 Kerala floods**, **ISRO's satellite communication systems** played a key role in **rescue operations.**
    - **Agricultural Monitoring**: Real-time satellite data aids schemes like **PM Fasal Bima Yojana** through better crop and weather tracking.
    - **5G Expansion**: Satellites help deliver **low-latency backhaul** in areas not served by fiber, similar to Starlink's partnership with **T-Mobile in the U.S.**
- **A Strategic Choice:**
  - The decision to adopt Starlink reflects more than just commercial sense — it represents a **geopolitical alignment**. Choosing a **U.S.-based system** over China's state-run **GuoWang** constellation suggests India is placing trust in **democratic digital ecosystems**, distancing itself from authoritarian digital infrastructure models.
  - This positions India more firmly within the **Indo-Pacific's democratic alliance** while avoiding dependence on Chinese technology.

CHALLENGES AND CONCERNS:

- **Monopolistic Risks and Market Dependency:**
  - One of the biggest concerns is the **emerging monopoly** in the low-earth orbit (LEO) satellite internet space.
  - For instance, **Starlink already has over 7,000 satellites**, giving it a huge lead over competitors like **OneWeb (~650 satellites)** and **Amazon's Kuiper (still nascent)**.
  - This dominance raises fears of a **quasi-monopoly** where India — and other countries — may become **over-reliant on one foreign provider** for critical internet infrastructure.
  - For example, **SpaceX's temporary restriction of Starlink access to Ukraine** during a military operation in 2022 shows how private corporations can wield **state-level power**, affecting national security and sovereignty.

- **Sovereignty and Strategic Autonomy Concerns:**
  - Satellite networks directly intersect with questions of **national security**, especially when operated by foreign entities.
  - The Indian government must tread carefully, as **routing critical communication through U.S.-controlled infrastructure (Starlink)** could expose India to **external influence or surveillance**.
  - India's decision to work with Starlink instead of China's GuoWang constellation was a strategic move, but it still places India in a **"managed dependency" model** — gaining economic benefit while giving up full control.
  - **BSNL**, a **state-run telecom with deep rural reach**, was not included in Starlink's partnerships. This could have allowed the government **greater oversight and control** over this crucial infrastructure.
- **Economic Viability and Affordability:**
  - Satellite internet services tend to be **more expensive** than terrestrial options, posing a barrier to adoption in price-sensitive rural areas.
  - If services are not priced accessibly or require large **government subsidies**, they may not be sustainable long-term.
  - There is concern that the **digital divide may persist** — or even widen — if rural users cannot afford satellite internet packages.
- **Regulatory and Legal Challenges:**
  - India's complex telecom regulations pose both a hurdle and a safeguard. While routing services via **domestic telcos like Airtel and Jio** helps align with local laws, the **true control still lies with the foreign provider**.
  - Concerns regarding **data storage**, **cybersecurity**, and **compliance with Indian law** remain crucial.
  - There's also a **lack of clear international legal frameworks governing satellite constellations**, which complicates cross-border issues.
- **Governance of Orbital Space:**
  - As more satellite constellations are launched, the **risk of orbital debris** and **space traffic congestion** increases dramatically.
  - With thousands of satellites launched by Starlink, Amazon, OneWeb, and others, **Low Earth Orbit (LEO)** is getting crowded.
  - Without coordinated international rules, the world could face a **"tragedy of the orbital commons"**, where overuse and lack of management leads to collisions or lost satellites.

WAY FORWARD:

- **Strengthen Indigenous Capabilities**: Invest in ISRO and public-private partnerships to build India's own satellite internet systems, reducing long-term dependence on foreign networks.

- **Involve Public Sector Enterprises**: Integrating state-run entities like **BSNL** can offer both rural outreach and greater government oversight, ensuring strategic control over vital digital infrastructure.
- **Ensure Regulatory Clarity and Data Sovereignty**: Update telecom and cybersecurity laws to cover satellite systems, enforce **data localization**, and mandate **technology transfer** in foreign collaborations.
- **Make Services Affordable and Inclusive**: Promote **tiered pricing**, subsidies, and bundled services to make satellite internet accessible to low-income users, especially in rural areas.
- **Promote Global Governance in Space**: Lead or support multilateral efforts to develop global rules on **orbital traffic**, **debris control**, and **spectrum use** to protect the shared space environment.
- **Encourage Competition and Innovation**: Facilitate a healthy ecosystem by encouraging multiple players (domestic and foreign) to avoid monopolistic practices and drive technological improvements.

CONCLUSION:

- Satellite internet offers India a powerful tool to bridge digital divides, drive economic inclusion, and enhance strategic autonomy. But its success will depend on smart policymaking, technological self-reliance, and strong governance — both on Earth and in orbit.

PRACTICE QUESTION

Q. What is satellite internet? Discuss its importance for India and analyse the key challenges in its implementation. (10 marks, 150 words)

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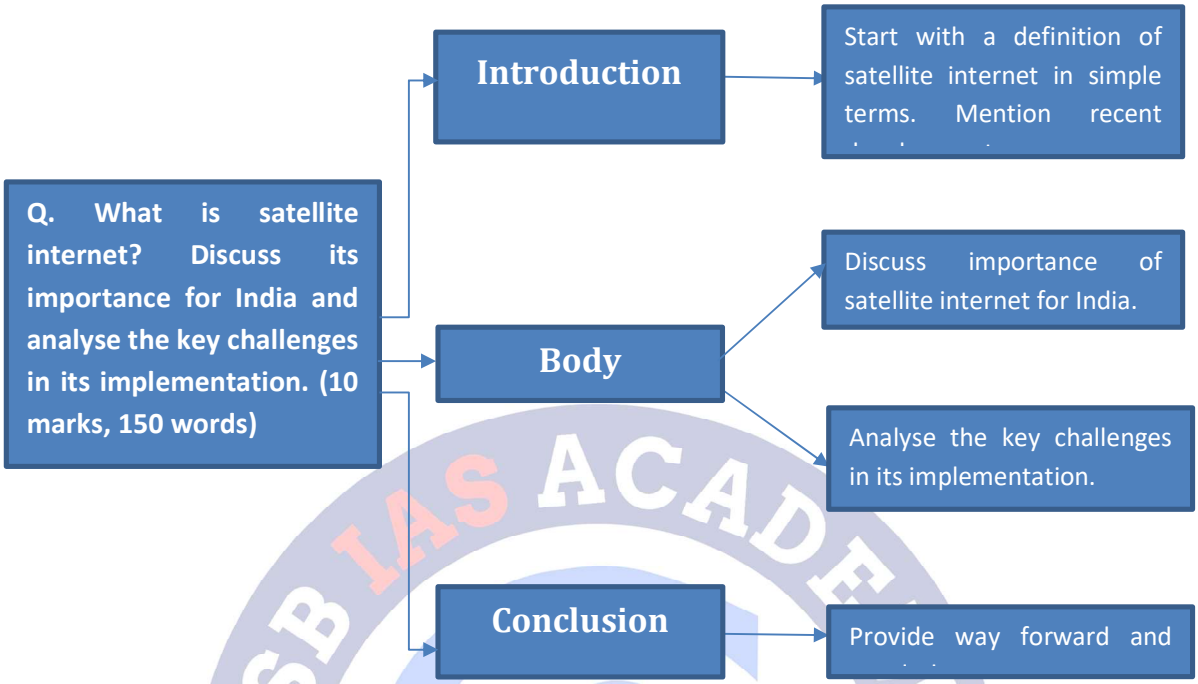
APPROACH



MODEL ANSWER

Satellite internet refers to internet access delivered through wireless signals transmitted between satellites in orbit and ground-based antennas or dishes. Unlike fiber, cable, or DSL, it doesn't rely on land-based infrastructure and can cover remote or mobile areas. In a significant recent development, **SpaceX's Starlink partnered with Indian telecom giants Airtel and Reliance Jio** to offer satellite internet services across underserved and remote regions in India. Other players include **OneWeb (UK/India), Project Kuiper (Amazon), and GuoWang (China)**.

Importance of Satellite Internet for India:

1. **Bridging the Connectivity Gap:** Only 24% of rural households have internet access (NSSO), compared to 66% in urban areas. Satellite internet offers connectivity where laying fiber is unviable — like tribal belts, Himalayan regions, or Northeast India. **Example**: Jio-Starlink's model can bring high-speed access without terrestrial infrastructure.
2. **Strengthening Digital Public Services**:Satellite connectivity enables delivery of critical government services in remote areas such as:
    - **Education** (e.g. PM e-Vidya)
    - **Telemedicine** (e.g. e-Sanjeevani)
    - **e-Governance** platforms

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3. **Boosting Agriculture and Disaster Management**: Real-time data from satellites aids **weather prediction**, **crop insurance (PM Fasal Bima Yojana)**, and **climate resilience**. ***Example:*** *ISRO's satellite support was crucial during the 2018 Kerala floods.*
4. **Supporting 5G and Emerging Technologies**: Satellite internet can serve as **backhaul support** for 5G in areas where fiber rollout is difficult, enabling the spread of next-gen connectivity across India**.** ***Example:*** *Starlink's model with T-Mobile in the U.S. offers a similar approach.*
5. **Enhancing Strategic and Geopolitical Positioning:** Collaborating with Starlink over China's GuoWang reflects India's preference for **democratic digital ecosystems**. The hybrid model ensures some **local oversight via Indian telecom partners**, reducing overdependence.
6. **Template for Other Developing Nations**: India's approach — combining foreign tech with domestic control — could serve as a **model for balanced internet governance**, especially for other nations in the Global South.

Challenges in Implementation:

1. **Monopolistic Concerns:** Starlink's dominance (7,000+ satellites) raises fears of **over-dependence on one foreign provider**, threatening competition and strategic leverage.
2. **Sovereignty and Oversight:** Routing critical data via U.S.-based systems may **compromise autonomy**. Not including **BSNL**, a state-owned operator, limits government oversight.
3. **Affordability and Rural Adoption:**Satellite internet is **costlier than terrestrial options**. Without subsidies or tiered pricing, it may widen the digital divide.
4. **Regulatory & Legal Complexity:** India lacks comprehensive satellite internet regulations and still grapples with **data sovereignty, cybersecurity, and compliance** issues.
5. **Orbital Space Governance:** Increasing satellites raise risks of **space debris** and **collisions**, especially in **Low Earth Orbit (LEO)**. Global rules are still evolving.

Way Forward:

- **Boost ISRO's Indigenous Capabilities** to reduce foreign dependency.
- **Involve Public Sector Units like BSNL** for strategic control and rural reach.
- **Ensure Regulatory Clarity**, enforce **data localization**, and demand **technology transfer**.
- **Make Services Affordable** via **tiered pricing and subsidies**.
- Promote **global cooperation** on orbital traffic, spectrum use, and debris management.
- Encourage **healthy competition** to avoid monopolies.

Satellite internet presents a transformative opportunity for India — enabling connectivity, resilience, and strategic depth. However, realizing its full potential will require prudent policymaking, investment in indigenous tech, and international cooperation to ensure sovereignty and sustainability in both digital and orbital realms.

26. CYBER SECURITY

iMPACT ANALYSIS

SYLLABUS:

GS 3 > Security > Cyber Security

REFERENCE NEWS:

- Recently, the **Digital Threat Report 2024** for the Banking, Financial Services, and Insurance (BFSI) sector was released by the Indian Computer Emergency Response Team (CERT-In), the Computer Security Incident Response Team in the Finance sector (CSIRT-Fin), and SISA, a global Cybersecurity company.
- The report has flagged **cryptocurrency as a new frontier for cyber threats.**
- It states that while threat actors initially used Bitcoin for illicit transactions, they have since migrated to other cryptocurrencies like Monero (XMR).

KEY TAKEAWAYS FROM THE REPORT:

- **Crypto Exchanges Under Attack:** The report highlights the increasing targeting of crypto exchanges. India's WazirX, one of India's major crypto exchanges, lost over **$230 million** in a cyberattack.
- **Malware Targeting Crypto Wallets:** A new malware variant scans compromised systems for **crypto wallets and private keys**, allowing attackers to **steal digital assets** and cause significant financial losses.
- **Deepfakes in Social Engineering: AI-generated deepfake audio and video** are now key tools in social engineering, enabling attackers to impersonate **executives and employees** to gain unauthorized access.
- **LLM Prompt Hacking Risks:** Locally hosted **large language models (LLMs),** which are AI systems designed to understand and generate human-like text, are more vulnerable to prompt injection attacks compared to APIs (Application Programming Interfaces) offered by platforms like OpenAI and DeepSeek, which provide more secure and controlled access to these models.
- **Jailbreaking ChatGPT:** ChatGPT has been jailbroken in the past using tactics like the **"grandma exploit"**, where users tricked it into bypassing safeguards by role-playing.

  Jailbraking is the process of removing software restrictions imposed by the device's manufacturer to install unauthorized software, modify the device's operating system, and access hidden features. For instance, in 2023, ChatGPT users discovered that they could bypass the AI chatbot's safeguards by asking it to pretend to be a dead grandmother. This technique came to be known as the **'grandma exploit'.**
- **Rise of Malicious LLMs – FraudGPT & WormGPT:** Tools like **FraudGPT** and **WormGPT** are being used to generate **phishing emails**, write **malicious code**, and develop **automated exploits**.

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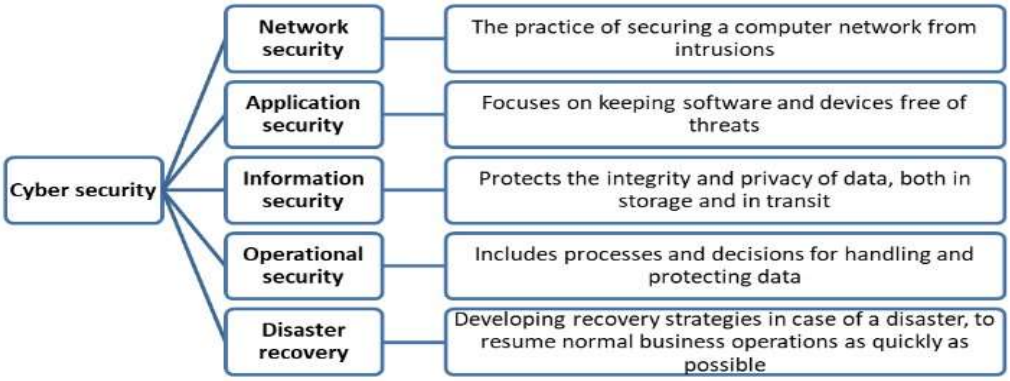
FraudGPT is a bot that is used for offences such as creating cracking tools, phishing emails, etc. It can be used to write malicious code, create undetectable malware, detect leaks, and vulnerabilities. The chatbot has been circulating on Dark Web Forums and Telegram since July 22.

- **Policy Recommendations:** The report calls for **clear AI regulations** in the BFSI sector and urges companies to conduct **security testing of APIs** within AI-native applications to find and fix hidden vulnerabilities.

WHAT IS CYBER SECURITY?

- Cyber security **involves the techniques of protecting computers, networks, programs and data** from unauthorized access or attacks that are aimed for exploitation.
- The concept includes **guidelines, policies, safeguards, technologies, tools and training** to provide the best protection for the cyber environment and its users.



TYPES OF CYBER ATTACKS:

Cyber-attacks compromise the security of individuals, organizations, or nations in cyberspace. They can be categorized into:

- **Cyber Espionage**: Illicit access to confidential information through networks, often targeting governments or organizations (e.g., 2019 Kudankulam nuclear plant attack).
- **Cyber Crime**: Criminal activities using computers or networks, often for financial gain or to spread malware or illegal content.
- **Cyber Terrorism**: Attacks on computers or networks intended to intimidate or coerce governments or people, advancing political or social objectives.
- **Cyber Warfare**: Actions by nation-states to damage or disrupt another nation's networks for espionage or conflict, seen as the fifth domain of warfare.

RECENT EXAMPLES OF MAJOR CYBER-ATTACKS IN INDIA:

- **Telecom Data Breach (2024)**: Data of 750 million Indian telecom users, including Aadhaar details, was compromised and sold online, prompting a DoT security audit.
- **AIIMS, 2023:** The systems at AIIMS and its centers were corrupted by the

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cyberattack, which wiped outpatient and research data from its primary and backup servers.

- **Attack on Air India (2021)**: Cyber attackers compromised data of 4.5 million customers, exposing sensitive information like passport and credit card details.
- **Kudankulam Nuclear Power Plant Malware Attack (2019)**: A malware attack targeted the administrative network, compromising its systems.
- **Aadhaar Data Leak (2019)**: Personal information of 6.7 million Aadhaar users was exposed in a massive data breach.
- **WannaCry & Petya Ransomware Attacks (2017)**: These global ransomware attacks locked down thousands of systems in India, affecting government utilities and organizations.
- **Scorpene Submarine Data Leak (2016)**: Confidential details of India's Scorpene-class submarines were leaked, raising serious national security concerns.

STATISTICS:

- According to data from the **Indian Cyber Crime Coordination Centre (I4C)** up to May 2024 , India registered over **1.7 million cybercrime complaints**, averaging nearly **7,000 cases daily**. This represents a **113.7% increase** compared to 2021–2023 and a **60.9% rise** over 2022–2023.
- According to the **Kaspersky Security Network (KSN) study**, **20% of internet users in India** were affected by cyber threats in the **first quarter of 2024**. The study highlighted that **browser-based attacks** and **social media engineering** were the most common forms of cyber threats during this period, reflecting the increasing vulnerability of online users in the country.
- **India lost approximately Rs 11,333 crore to cyber fraud** in the first nine months of 2024, according to data compiled by the Indian Cyber Crime Coordination Centre (I4C).
- In the **Global Cybersecurity Index (GCI) 2024** by the **International Telecommunication Union (ITU)**, India achieved **Tier 1 status**, ranking among 46 countries recognized for strong commitments in legal measures, technical advancements, capacity development, and cooperation.

SIGNIFICANCE OF CYBER SECURITY:

- **Increasing Internet Use in India**:
  - As per data from the Union Home Ministry, shared during the First Foundation Day of I4C in 2024, India's internet user base has dramatically increased from **25 crore in 2014 to 95 crore in 2024**.
  - Correspondingly, average data consumption surged from **0.26 GB to 20.27 GB, a 78-fold increase.** This substantial growth in digital activity amplifies the need for enhanced cyber security to safeguard against rising threats in cyberspace.

- **Increasing Digitization in India**:
  - Initiatives like **Digital India**, **Land records digitization**, **Aadhaar**, and the **cashless economy** increase the need for secure cyber architecture.
  - For instance, as per data from the **Union Home Ministry**, shared during the First Foundation Day of I4C in 2024, **46% of the world's digital transaction volume** now takes place in India.
- **Constitutional Obligations**:
  - After the **K.S. Puttaswamy verdict**, the state is obligated to protect citizens' **right to privacy**, making cyber security essential.
- **Economic Value of Data**:
  - The rise of **big data**, **AI**, and **social media marketing** makes data more valuable, heightening vulnerabilities in cyberspace.
- **Rise in Cyber-Crimes**:
  - Cyber-crimes like **WannaCry ransomware**, the **Stuxnet attack**, and the **Scorpene submarine leak** are on the rise.
  - For instance, an **Android device** experienced an average of **three cyberattacks per month** in India in 2023, the India Cyber Security Threat report published by the **Data Security Council of India (DSCI)** revealed.
- **Critical Infrastructure**:
  - Protection of critical infrastructure like **Aadhaar**, **NATGRID**, and **nuclear plants** depends on robust cyber security.
- **Cost of Cyber-Attacks**:
  - The financial impact of cyber-attacks continues to rise globally and in India.
  - According to the **2023 IBM Cost of a Data Breach Report,** the average cost of a data breach in India reached **₹179 million (₹17.9 crore),** an all-time high and a 28% increase since 2020. Globally, the cost of cyber-attacks is projected to reach USD8.44 trillion in 2023, emphasizing the growing complexity and scale of cyber threats worldwide.

MEASURES TAKEN TO IMPROVE CYBER SECURITY:

Institutions:

- National Critical Information Infrastructure Protection Centre (NCIIPC)
- National Cyber Security Coordinator (NCSC)
- Computer Emergency Response Team (CERT-In)
- Defence Cyber Agency (DCA)
- Indian Cyber Crime Coordination Centre (I4C)
- Cyber Swachhta Kendra
- National Technical Research Organization (NTRO)

Policies:

- National Cyber Security Strategy 2020
- National Cyber Security Policy 2013

Surveillance:

- Central Monitoring System (CMS)
- Network Traffic Analysis (NETRA)
- National Intelligence Grid (NATGRID)

Legal Framework:

- Information Technology Act, 2000
- Indian Telegraph Act, 1885
- Personal Data Protection Bill

Global Cooperation:

- Convention on Cybercrime (Budapest Convention)
- Paris Call for Trust and Security in Cyberspace
- Global Centre for Cybersecurity (WEF)

CONCERNS IN CYBER SECURITY:

- **Lack of Awareness**: According to cybersecurity experts, **80% of cybercrime frauds** occur due to a lack of cyber hygiene and awareness.
- **Digital Growth and Vulnerability**: The rapid expansion of the digital space due to the pandemic has exposed vulnerabilities. **During COVID-19**, overuse of social media and online financial activity led to an increase in cybercrimes.
- **Weak Digital Security**: India's outdated infrastructure and weak cybersecurity measures, as seen in the **Aadhaar data leakage** and **Scorpene submarine leak**, highlight the lack of robust protections.
- **Institutional Issues**: With **36 central bodies** handling cyber issues, there is a lack of clear institutional boundaries and accountability, which limits coordination.
- **Private and Public Sector Collaboration**: The private sector has not been sufficiently engaged in cybersecurity initiatives, despite being a major stakeholder.
- **Lack of a Cyber Security Doctrine**: India lacks a comprehensive cyber deterrence strategy, which leaves it vulnerable to low-scale cyber operations by state and non-state actors.
- **Service Hub Vulnerability**: India's large IT and service sectors, along with initiatives like **Digital India**, attract both investment and cybercriminals.
- **Cryptocurrency Risks**: The rise in cryptocurrency use, especially Bitcoin, has fueled the growth of the ransomware industry.
- **Resource Shortage**: India faces a shortage of trained cybersecurity professionals and lacks the hardware and software capabilities for robust cyber defense. In 2020, India had a shortfall of **1.5 million cybersecurity professionals**.
- **Anonymity of Cybercriminals**: The anonymity of cybercriminals and offshore servers hinder law enforcement efforts.
- **Regulatory Shortcomings**: The **IT Act, 2000**, is outdated and struggles to address modern cyber threats. The tussle between the government and tech companies like Twitter on intermediary guidelines also hampers effective cybercrime management.

- **External Attacks**: Examples like **Shadow Network** (China), **Suckfly** (China), **Dtrack** (targeting Indian banks and Kudankulam nuclear plant), and spying concerns with **Huawei** and **ZTE** highlight external threats.
- **Obsolete Systems**: India's reliance on cheap electronic imports with inadequate security features and rampant use of unlicensed software makes the country vulnerable to attacks.
- **Jurisdictional Uncertainty**: The transnational nature of cybercrimes complicates the application of domestic laws, leading to enforcement challenges.
- **Reliance on Chinese Equipment**: Telecom sectors rely heavily on Chinese equipment, with companies like **Bharti Airtel** and **Vodafone Idea** having significant portions of their networks composed of Chinese components

WAY FORWARD:

- **Cyber-Security Doctrine**: India needs a clear cyber-security doctrine to enhance stability and transparency in cyber defense.
- **National Cyber Security Commission (NCSC)**: Establish an NCSC to coordinate with ministries on critical infrastructure and cyber warfare.
- **Human Resource Development**: Cybersecurity jobs are expected to rise, creating opportunities for **1 million jobs by 2025**. Investment in skill development is key.
- **Digital Education**: Incorporate cybersecurity awareness into school curriculums and expand the **Digital India** campaign to enhance public knowledge. Include awareness on **deepfake threats** and misuse of AI tools like FraudGPT and WormGPT in social engineering.
- **Atmanirbhar in Cyber Systems**: Boost indigenous electronics manufacturing and tighten monitoring of imports to ensure security.
- **Private Sector Collaboration**: Improve coordination between the private sector and government agencies to enhance cyber defense.
- **Zero-Trust Security**: Organizations should adopt a **zero-trust** approach, requiring strict identity verification for all users.
- **Cutting-Edge Technologies**: Encourage research in **AI** to enhance threat detection and response automation.
- **Cyber Deterrence**: Strengthen India's cyber warfare capabilities to confront threats from adversarial nations and non-state actors.
- **Cyber Safety for Children**: Develop child-safe digital spaces to ensure safe online education and digital awareness.
- **Upgrade Cyber Cells**: Establish dark web and social media monitoring cells to improve the capabilities of existing cyber cells.
- **Address Gender Gap**: Promote gender diversity in the cybersecurity workforce to address the projected shortage of **3.5 million professionals** by 2025.

Case Study: Kerala's Cyberdome Project

- Cyberdome is Kerala Police's cybersecurity initiative aimed at preventing

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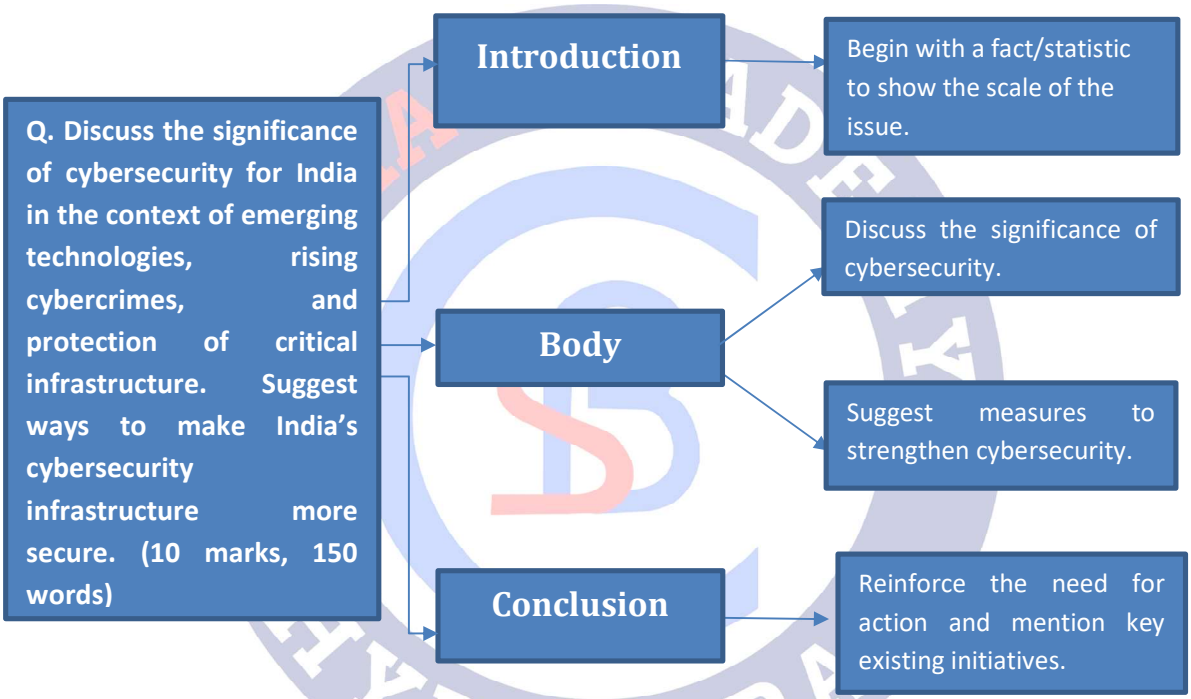
cybercrime. It brings together ethical hackers, law enforcers, and volunteers to enhance cyber safety.

PRACTICE QUESTION

Q. Discuss the significance of cybersecurity for India in the context of emerging technologies, rising cybercrimes, and protection of critical infrastructure. Suggest ways to make India's cybersecurity infrastructure more secure. (10 marks, 150 words)

APPROACH



MODEL ANSWER

India's digital expansion has made cybersecurity a national imperative. As per the Indian Cyber Crime Coordination Centre (I4C), over **1.7 million cybercrime complaints** were registered by May 2024, **with financial losses exceeding ₹11,000 crore.** The growing scale and complexity of threats call for immediate and strategic responses.

Significance of Cybersecurity for India:

1. **Increasing Digital Penetration**: India's internet user base has risen from 25 crore in 2014 to 95 crore in 2024. With 46% of global digital transactions taking place in India, cybersecurity is essential to ensure safe and reliable online ecosystems.
2. **Economic and Financial Stability**: Cyberattacks targeting financial institutions and crypto exchanges (e.g., WazirX's $230 million breach) show how digital assets are vulnerable, threatening investor confidence and financial stability.

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3. **Emerging Technological Threats**: The Digital Threat Report 2024 highlights new-age risks:
   - Prompt injection attacks in large language models (LLMs)
   - Jailbreaking AI models (e.g., the "grandma exploit")
   - Spread of malicious tools like FraudGPT and WormGPT
   - Deepfakes used in phishing and impersonation attacks
4. **Protection of Critical Infrastructure**: Incidents like the BSNL telecom breach, AIIMS ransomware attack, and Kudankulam malware infiltration highlight vulnerabilities in India's vital infrastructure.
5. **Constitutional and Legal Obligations**: Following the K.S. Puttaswamy verdict, the state is obligated to protect the right to privacy, elevating cybersecurity from a technical concern to a constitutional responsibility.

Measures to Strengthen India's Cybersecurity Infrastructure:

- **Formulate a National Cybersecurity Doctrine**: Create a comprehensive doctrine to address AI misuse, crypto-driven crime, and cyber warfare.
- **Establish a National Cyber Security Commission (NCSC)**: Centralize coordination and decision-making across ministries and critical sectors.
- **Build Human Resource Capacity**: Close the cybersecurity talent gap by training 1 million professionals with special focus on AI, forensic investigation, and crypto security.
- **Deepfake and Social Engineering Protection**: Deploy AI tools to detect synthetic audio/video content and run awareness campaigns to prevent executive impersonation attacks.
- **Enhance Cryptocurrency Oversight**: Introduce regulatory frameworks for exchanges, traceable wallet usage, and real-time surveillance to prevent laundering and theft.
- **Upgrade Dark Web and Social Media Surveillance**: Strengthen cyber cells to track cybercriminal activity on forums, Telegram bots, and underground markets.
- **Promote Indigenous Cyber Infrastructure**: Invest in domestic development of secure AI models, encrypted systems, and anti-malware solutions under Atmanirbhar Bharat.
- **Ensure Cyber Safety for Children**: Implement child-safe online platforms and include cyber hygiene education in school curricula.

Cybersecurity is central to safeguarding India's digital economy, national security, and citizen privacy. With rising threats from AI, cryptocurrency, and deepfakes, India must adopt a forward-looking, resilient cyber strategy. Key initiatives like **CERT-In**, **I4C**, **Cyber Swachhta Kendra**, and the proposed **National Cybersecurity Strategy** lay a strong foundation—but timely implementation, innovation, and coordination are essential to secure India's digital future.

27. DEFORESTATION

iMPACT ANALYSIS

SYLLABUS:

GS 3 > Environment and Ecology >> Habitat Destruction

REFERENCE NEWS:

The students of the University of Hyderabad at Gachibowli have been protesting ever since the news of the auction of a **400-acre land parcel known as Kancha Gachibowli** within campus premises broke. The battle has now reached the Supreme Court, which has acknowledged the destruction of greenery and the existence of wildlife in the area, before taking it up suo motu. Three PILs have already been filed in the Telangana High Court against the auction.

DEFORESTATION IN INDIA:

Deforestation refers to the **clearing or thinning of forests by humans**, leading to the permanent destruction of forests to make land available for other uses such as agriculture, urbanization, mining, and infrastructure development.

- **Forest Cover Status:** As per the **India State of Forest Report (ISFR) 2023**, the total forest and tree cover in India is **25.71% of the geographical area**. However, this rise masks the **degradation of quality and density** of forests.
- **India lost 2.33 million hectares of tree cover since 2000 as per Global Forest Watch.**
- The Global Forest Watch, which tracks forest changes in near real-time using satellite data and other sources, said the country lost 4,14,000 hectares of **humid primary forest (4.1 per cent)** from 2002 to 2023, making up 18 per cent of its total tree cover loss in the same period.
- According to the Food and Agriculture Organisation, the rate of deforestation in India was 668,000 hectares per year between 2015 and 2020, the **second highest worldwide.**

MAJOR CAUSES OF DEFORESTATION IN INDIA:

- **Agricultural Expansion and Encroachment: Population growth and food security needs** have led to forest land being cleared for cultivation.
    - In **central Indian states** like **Madhya Pradesh and Chhattisgarh**, large tracts of forest land have been encroached upon for paddy and maize cultivation.
- **Infrastructure Development**: India's push for **roads, railways, highways, airports, and energy infrastructure** has led to large-scale deforestation.

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- In last 15 years, over **3 lakh hectares** of forest land were diverted for non-forestry purposes under the **Forest Conservation Act, 1980**.
- The **Char Dham Highway project** in Uttarakhand led to significant tree felling and concerns over landslides and ecological disruption.
- **Great Nicobar Transshipment Project** will see greater destruction of biodiversity hotspot of Great Nicobar Island.

- **Mining and Quarrying:** Mining activities in mineral-rich states like **Jharkhand, Odisha, and Chhattisgarh** have led to large-scale forest clearance.
  - Coal mining in **Hasdeo Arand forest** in Chhattisgarh has been a focal point of ecological protests and biodiversity loss.
- **Shifting Cultivation (Jhum) and Monoculture Plantations:** Practiced in **Northeastern states** like Mizoram, Nagaland, and Arunachal Pradesh. Leads to cyclical burning and clearing of forests for temporary cultivation.
  - **Mizoram**, despite being one of the greenest states, recorded a **loss of 1,062 sq. km** in forest cover between 2009 and 2021 (ISFR data), mainly due to shifting cultivation.
- **Forest Fires:** Frequent in **dry deciduous forest regions** like Madhya Pradesh, Chhattisgarh, and Uttarakhand. According to FSI (Forest Survey of India), over **35,000 forest fire incidents** are reported annually.
  - In **2021**, Uttarakhand reported over **1,100 fire incidents**, affecting more than **1,200 hectares** of forest land.
- **Urbanization and Industrialization:** Rapid urban expansion leads to **clearing of peri-urban forest areas**. Real estate and industrial corridors in states like Maharashtra, Karnataka, and Tamil Nadu have contributed to deforestation.
  - The expansion of **Mumbai's urban sprawl into Aarey forest** sparked protests over environmental concerns.
- **Illegal Logging and Timber Smuggling:** Particularly rampant in **tribal belts** of central and northeast India. Leads to degradation of forest density and biodiversity loss.
  - In parts of Odisha and Andhra Pradesh, red sandalwood smuggling has led to severe depletion of forest patches.
- **Invasive Species and Biodiversity Threats:** Invasion by species like **Lantana camara** and **Eupatorium** outcompete native species and degrade forest quality. Reduces habitat quality for wildlife and alters forest composition.
  - **Eucalyptus invasion in Western Ghats have destroyed the natural forests there.**
- **Poor Implementation of Forest Conservation Laws:** Though the **Forest Conservation Act (1980)** and **Wildlife Protection Act (1972)** exist, enforcement remains weak. Forest clearance processes are often **fast-tracked without proper Environmental Impact Assessment (EIA)**.

IMPACTS OF DEFORESTATION IN INDIA:

Environmental and Ecological Impacts

- **Loss of Biodiversity:** India is home to 7–8% of the world's recorded species, many of which are endangered. **Deforestation disrupts habitats**, leading to the extinction or migration of species.
    - The habitat of the **Great Indian Bustard**, a critically endangered bird, is shrinking in Rajasthan and Gujarat due to deforestation and land conversion.
- **Soil Erosion and Degradation:** Tree roots bind the soil; their removal leads to **increased soil erosion**, reduced fertility, and siltation of rivers.
    - In the Himalayan states, deforestation for roads and development has led to frequent **landslides and erosion**.
- **Disruption of Water Cycle:** Forests help in **groundwater recharge and maintaining river flow**. Deforestation leads to **reduced rainfall infiltration**, affecting water availability.
    - Drying of streams in forest regions of **Western Ghats** like Bharatapuzha due to loss of natural cover.

Climate and Weather Impacts

- **Global Warming and Carbon Emissions:** Forests act as carbon sinks. Their destruction increases atmospheric **CO_2**, contributing to climate change.
    - India lost over **1.93 million hectares of tree cover between 2001 and 2020**, releasing **~990 Mt of CO_2 equivalent**, as per Global Forest Watch.
- **Microclimate Disruption:** Urban deforestation leads to **urban heat islands**.
    - In cities like **Bangalore and Hyderabad**, tree loss has led to higher local temperatures and altered rainfall patterns.

Economic Impacts

- **Loss of Livelihoods:** Over **275 million people**, including tribal communities, depend on forests for fuel, fodder, food, and employment. **Deforestation disrupts forest-based livelihoods**, pushing people into poverty and migration.
- **Increased Natural Disaster Costs:** Forest loss makes regions more prone to **floods, landslides, and droughts**.
    - The **2013 Kedarnath floods** were worsened by unregulated deforestation and construction in ecologically sensitive areas.
    - The **2018 Kerala Floods'** higher devastation rate was also contributed by encroachment and diversion of Western Ghats.

Social and Cultural Impacts

- **Displacement of Tribal and Forest Communities:** Loss of forests often leads to **displacement of indigenous communities**, loss of cultural heritage, and conflict over land rights.

- **Health Impacts:** Reduced forest cover contributes to **air and water pollution**. The loss of medicinal plant diversity affects **traditional health practices** of rural and tribal communities.

Governance and Conflict

- Conflicts arise over **land rights, compensatory afforestation, and biodiversity access**. **Implementation gaps in Forest Rights Act, 2006** have led to protests and legal battles over forest clearances.
    - The ongoing **Hasdeo Aranya coal conflict** in Chhattisgarh involves clashes between development, tribal rights, and ecological preservation.

WAY FORWARD:

Strengthening Legal and Policy Frameworks

- **Amend the Forest Conservation Act (1980)** to clearly define forests and regulate non-forest use.
- Make **Environmental Impact Assessments (EIAs)** more rigorous, participatory, and transparent.
- Implement **Forest Rights Act (2006)** effectively by ensuring fair review of rejected claims and empowering Gram Sabhas to manage forest resources.
- **Niyamgiri Hills case (Odisha)** – Supreme Court upheld the role of Gram Sabhas in deciding forest diversion, setting a strong precedent.

Promote Ecological Restoration, Not Just Afforestation

- Shift from monoculture plantations to **mixed native species plantations** that restore biodiversity.
- Integrate afforestation programs with **soil and water conservation, wildlife corridors, and ecosystem services**.
- Promote social forestry, agroforestry methods for sustainable afforestation and agriculture.
- Include regional based study and scientific approach towards afforestation.
- **Miyawaki forests** developed in urban areas like **Hyderabad and Bengaluru** – high-density native plantations that rejuvenate microclimates.

Empower Communities through Decentralized Forest Governance

- Revive and strengthen **Joint Forest Management (JFM)** with genuine power-sharing and benefit-sharing mechanisms.
- Recognize and incentivize the role of **tribal and forest-dwelling communities** in conservation.
- **Mendha Lekha Village (Maharashtra)** – community-managed forest under FRA shows sustainable harvesting and conservation of biodiversity.

Improve Monitoring, Transparency, and Accountability

- Utilize **GIS, drones, and satellite imagery** for real-time monitoring of deforestation and illegal activities.
- Make **Forest Survey of India (FSI) reports more granular**, reporting quality and biodiversity along with forest cover.
- **Global Forest Watch platform –** tracks deforestation globally; India can develop similar public tools for transparency.

Sustainable Development and Infrastructure Planning

- Integrate forest conservation in land-use planning and **conduct cumulative ecological impact assessments** for large projects.
- Enforce the **'No-Go' areas policy** for critical biodiversity hotspots and dense forests.
- **Bhutan's Gross National Happiness (GNH) model** – development without ecological degradation, maintaining over 70% forest cover.
- **Development of Eco-sensitive Zones and buffer zones.**

Strengthen CAMPA and Green Financing

- Improve **utilization of CAMPA funds** for genuine ecosystem restoration, not just planting.
- Promote **green bonds and CSR funding** for forest conservation and climate adaptation programs.

Tackle Drivers of Deforestation

- Regulate **unsustainable mining, logging, infrastructure, and agriculture expansion** through inter-ministerial coordination.
- Encourage **agroforestry** and **ecotourism** as alternative livelihoods.
- **Himachal Pradesh's agroforestry policy** integrates trees on farmlands, enhancing income and sustainability.

Enhance Climate Resilience and Carbon Sequestration

- Link forest conservation with **India's climate goals (NDCs under Paris Agreement)**.
- Expand programs like **Green India Mission** and incentivize **carbon credits** for community-managed carbon sinks.

Averting deforestation and conserving India's forests requires a shift from **token tree-planting to true ecological stewardship**. This involves **empowering communities**, **leveraging science and technology**, and ensuring **development does not come at the cost of ecological security**. With sincere implementation and adaptation of global and local best practices, India can turn its forests into engines of **climate resilience, biodiversity protection, and rural prosperity**.

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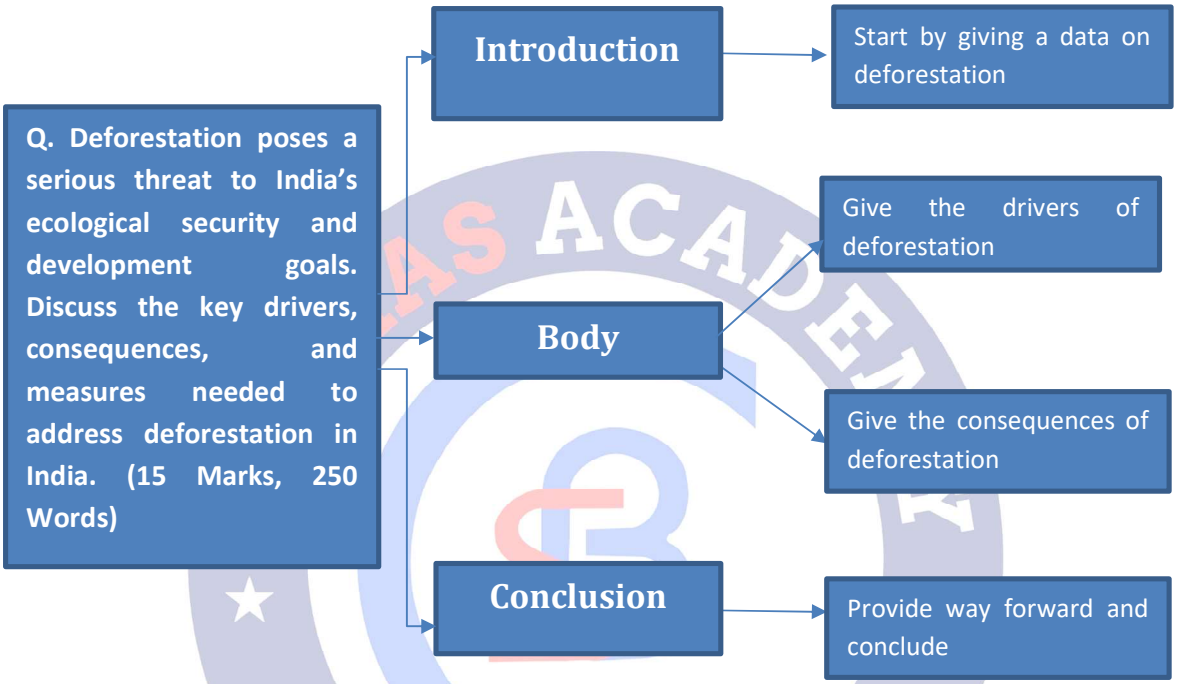
PRACTICE QUESTION

Q. Deforestation poses a serious threat to India's ecological security and development goals. Discuss the key drivers, consequences, and measures needed to address deforestation in India. (15 Marks, 250 Words)

APPROACH



MODEL ANSWER

Deforestation—the large-scale clearing of forested areas—has emerged as a critical environmental issue in India. Despite modest gains in overall forest cover reported by the India State of Forest Report (ISFR) 2023, the quality, density, and biodiversity of forests have been deteriorating, threatening ecological sustainability.

India lost 2.33 million hectares of tree cover since 2000 as per Global Forest Watch.

Key Drivers of Deforestation in India:

1. **Agricultural Expansion:** Encroachment for cultivation in states like Madhya Pradesh and Chhattisgarh. Shifting cultivation in Northeast leads to recurring forest clearance.
2. **Infrastructure Development:** Over 3 lakh hectares of forest land diverted in the past 15 years. Projects like the Char Dham highway and Great Nicobar Island development have caused biodiversity losses.

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3. **Mining and Urbanization:** Coal mining in Hasdeo Arand forests. Urban sprawl into green belts like Aarey in Mumbai.
4. **Forest Fires and Illegal Logging:** Over 35,000 forest fire incidents reported annually. Red sandalwood smuggling in Andhra Pradesh and Odisha.
5. **Weak Enforcement of Laws:** Fast-tracking of forest clearances without effective Environmental Impact Assessment (EIA).

Consequences of Deforestation:

- **Loss of Biodiversity:** India is home to 7–8% of the world's recorded species, many of which are endangered. **Deforestation disrupts habitats**, leading to the extinction or migration of species.
  - The habitat of the **Great Indian Bustard**, a critically endangered bird, is shrinking in Rajasthan and Gujarat due to deforestation and land conversion.
- **Soil Erosion and Degradation:** Tree roots bind the soil; their removal leads to **increased soil erosion**, reduced fertility, and siltation of rivers.
  - In the Himalayan states, deforestation for roads and development has led to frequent **landslides and erosion**.
- **Global Warming and Carbon Emissions:** Forests act as carbon sinks. Their destruction increases atmospheric **CO_2**, contributing to climate change.
  - India lost over **1.93 million hectares of tree cover between 2001 and 2020**, releasing **~990 Mt of CO_2 equivalent**, as per Global Forest Watch.
- **Microclimate Disruption:** Urban deforestation leads to **urban heat islands**.
  - In cities like **Bangalore and Hyderabad**, tree loss has led to higher local temperatures and altered rainfall patterns.
- **Loss of Livelihoods:** Over **275 million people**, including tribal communities, depend on forests for fuel, fodder, food, and employment. **Deforestation disrupts forest-based livelihoods**, pushing people into poverty and migration.
- **Increased Natural Disaster Costs:** Forest loss makes regions more prone to **floods, landslides, and droughts**.
  - The **2013 Kedarnath floods** were worsened by unregulated deforestation and construction in ecologically sensitive areas.
  - The **2018 Kerala Floods'** higher devastation rate was also contributed by encroachment and diversion of Western Ghats.
- **Displacement of Tribal and Forest Communities:** Loss of forests often leads to **displacement of indigenous communities**, loss of cultural heritage, and conflict over land rights.
- **Health Impacts:** Reduced forest cover contributes to **air and water pollution**. The loss of medicinal plant diversity affects **traditional health practices** of rural and tribal communities.

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Way Forward:

- **Strengthen Legal Frameworks:** Amend the Forest Conservation Act, improve EIA norms.
- **Community Empowerment:** Expand Joint Forest Management (JFM) and enforce the Forest Rights Act.
- **Technological Monitoring:** Use GIS, drones, and satellite tools like Global Forest Watch.
- **Sustainable Development Planning:** Identify 'No-Go' zones; learn from Bhutan's GNH model.
- **Promote Agroforestry & Ecotourism:** Himachal Pradesh's agroforestry policy as a model.
- **Improve CAMPA Utilization:** Ensure green funds are used for biodiversity restoration.

India's forests are critical for climate resilience, biodiversity, and livelihood security. Combating deforestation requires a multidimensional approach—combining policy reform, community participation, scientific monitoring, and global best practices. Only a sustainable balance between development and ecology can secure India's environmental future.

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28. CORAL BLEACHING

iMPACT ANALYSIS

SYLLABUS:

GS 3 > Environment and Ecology >> Marine Ecosystems

REFERENCE NEWS:

Scientists have confirmed that the world's worst ongoing global coral bleaching event has now affected nearly **84 per cent of the world's coral reefs**.

The US National Oceanic and Atmospheric Administration in partnership with the International Coral Reef Initiative, confirmed that the world is witnessing its **fourth global bleaching event.**

The bleaching-level heat stress has impacted 83.7 per cent of the planet's coral reef area and mass coral bleaching has been recorded in at least 83 countries and territories, the scientists said.

CORAL ECOSYSTEM:

A **coral ecosystem**, also known as a **coral reef ecosystem**, is one of the most **diverse, productive, and valuable marine ecosystems** on Earth. Often called the "**rainforests of the sea**," coral reefs provide critical ecological, economic, and social benefits.

Key components:

- **Corals (polyps)**: Corals are small (0.25-12 inches), soft-bodied marine invertebrates that live in colonies formed by a process called budding, related to jellyfish and anemones.
- **Zooxanthellae**: Symbiotic algae that live within coral tissues and provide energy via photosynthesis.
- **Calcium carbonate**: The hard substance corals secrete to form reefs.

Types of Coral Reefs

- **Fringing Reefs**: Found along coastlines (e.g., Gulf of Mannar, India).
- **Barrier Reefs**: Separated from land by a lagoon (e.g., **Great Barrier Reef**, Australia).
- **Atolls**: Circular reefs surrounding a lagoon (common in Maldives and Lakshadweep).
- **Patch Reefs**: Isolated outcrops, usually within a lagoon.

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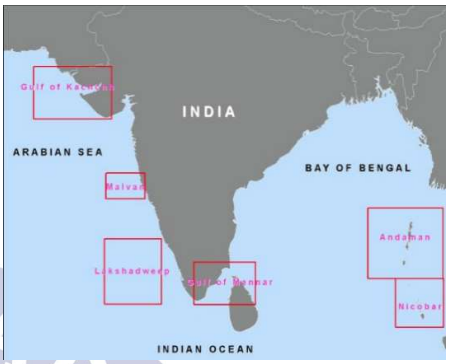
Global Distribution: Found in **tropical and subtropical** waters between 30°N and 30°S. Prefer **shallow, warm waters (23–29°C)**, **low turbidity**, and **salinity around 34–37 ppt**. Major regions are Indo-Pacific, Red Sea, Caribbean, and Indian Ocean.

Major Coral Reef Areas in India



- **Gulf of Mannar (Tamil Nadu):** One of the richest biodiversity hotspots in India. Contains **21 uninhabited islands** with fringing reefs. Designated as **India's first Marine Biosphere Reserve**.
- **Gulf of Kachchh (Gujarat):** Reefs are mostly **intertidal** and **fringing type**. Influenced by high turbidity and extreme tidal ranges. **Narara Island** and **Pirotan Island** are key reef zones.
- **Lakshadweep Islands (Arabian Sea):** Comprises **atoll reefs**, which are rare and fragile. 36 coral islands and several submerged banks. Significant coral bleaching events occurred in **1998** and **2010**. Subject to conservation projects like **coral transplantation**.
- **Andaman & Nicobar Islands (Bay of Bengal):** Richest and most diverse coral system in India. Contains both **fringing and barrier reefs**. Home to over **200 species of coral**.
- **Malvan and Netrani (West Coast):** Small, isolated coral patches. **Netrani Island (Karnataka)** has been a site for reef regeneration and scuba diving.

CAUSES OF CORAL BLEACHING IN INDIA:

Coral bleaching occurs when corals expel their colourful zooxanthellae due to environmental stress, leaving them white and deprived of their main food source. This can lead to mass coral death if prolonged.

- **Rising Sea Surface Temperatures (SST) :** Corals live in a **narrow temperature range (23–29°C)**. Even a **1–2°C rise** above normal for **a few weeks** can cause mass bleaching. Warmer waters disrupt the relationship between corals and *zooxanthellae*.
    - **1998**: First **mass bleaching event** in India during the **El Niño year**. Over **80% coral bleaching** recorded in **Lakshadweep** and **Gulf of Mannar**.

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- **2010**: High SSTs during pre-monsoon months led to bleaching in **Andaman and Nicobar Islands**, **Gulf of Kachchh**, and **Lakshadweep**.
- **2016**: Global coral bleaching event; **Andaman Islands reported bleaching in over 70% of corals** (ZSI report).

- **Ocean Acidification:** Increased atmospheric CO_2 is absorbed by oceans, forming carbonic acid. Lowers pH of seawater → reduces availability of **calcium carbonate** → impairs coral skeleton formation and weakens reefs.
  - Studies by the **National Institute of Oceanography (NIO)** have shown declining pH trends in **Lakshadweep** waters.
  - Weak skeletons make corals more **susceptible to stress and erosion**.
- **El Niño Events and Climate Change: El Niño** increases SSTs in the Indian Ocean, causing prolonged heat stress on corals. Climate change makes these events **more frequent and intense**.
  - **1998, 2005, 2010, 2016**: All linked to **El Niño years**, each causing **regional mass bleaching** in Indian reef areas.
  - **Lakshadweep** and **Andaman reefs** experienced significant damage during these years.
- **Sedimentation and Turbidity from Coastal Development:** Runoff from land-based development increases **sediment load**. Blocks sunlight, crucial for photosynthesis of zooxanthellae. Leads to **smothering** and stress in corals.
  - **Gulf of Kachchh** suffers from **high turbidity** due to **port development, dredging, and industrial activity**.
  - **Reefs near Tuticorin (Gulf of Mannar)** are affected by **mining and thermal effluent discharges**, increasing sedimentation and bleaching susceptibility.
- **Pollution and Eutrophication:** Nutrient-rich runoff from agriculture, sewage, and aquaculture causes **algal blooms**. Excessive algae **compete with corals** and reduce oxygen and light availability.
  - **Gulf of Mannar**: Affected by **nutrient loading** from agriculture and fish farming.
  - Coral colonies near **Mandapam and Rameswaram** have shown signs of stress and localized bleaching.
- **Overfishing and Reef Imbalance:** Overfishing of herbivorous fish (like parrotfish) leads to **algal overgrowth** on reefs. Reduces coral health and ability to recover from bleaching.
  - In the **Gulf of Mannar**, **destructive fishing practices** (like bottom trawling and cyanide fishing) have weakened reef ecosystems.
  - Coral cover in some islands has declined by **up to 50%** over the past three decades.
- **Tourism and Mechanical Damage: Unregulated tourism**, scuba diving, and anchoring **physically damage coral structures**. Stressed and broken corals are more prone to bleaching.

- **Coral gardens in Andaman** near popular tourist beaches (e.g., Havelock Island) show signs of **fragmentation and bleaching** due to trampling and anchoring.
- **Netrani Island (Karnataka)** saw bleaching effects and reef damage due to **naval target practice and tourism pressure**.

- **Invasive Species and Coral Disease:** Invasive species like **crown-of-thorns starfish** prey on coral polyps. Coral diseases spread more easily when corals are stressed, often after bleaching events.
  - Outbreaks of **crown-of-thorns** in the **Andaman Islands** have caused local coral depletion. Coral disease incidence increases after **thermal stress events**.

CONSEQUENCES OF CORAL BLEACHING IN INDIA:

- **Loss of Marine Biodiversity:** Coral reefs support nearly **25% of all marine species** despite covering less than 1% of the ocean floor. Bleached and dead reefs provide **less shelter and food**, disrupting entire food chains and causing **species decline**.
  - **Andaman & Nicobar reefs**, home to 1,000+ reef fish species, saw a **noticeable decline in fish populations** after the 2010 bleaching.
  - Coral-dependent species like **parrotfish, clownfish**, and invertebrates suffer habitat loss.
- **Decline in Fisheries and Livelihoods:** Coral bleaching leads to **reduced fish stocks**, affecting **millions of small-scale fishermen** who rely on reef fisheries. Degraded reefs yield **fewer economically important fish**, impacting food security and income.
  - In the **Gulf of Mannar**, Tamil Nadu, bleaching events have caused a **sharp decline in reef-associated fish catch**.
  - Coral reef tourism and fishing support **over 2 million people in coastal India**—bleaching jeopardizes these livelihoods.
- **Collapse of Tourism Industries:** Coral reefs are a major attraction for **scuba diving, snorkelling, and eco-tourism**. Bleached or dead reefs **lose aesthetic and ecological value**, leading to a decline in tourism revenue.
  - The **Great Barrier Reef** experienced a **loss of over $1 billion in tourism revenue** after back-to-back bleaching events (2016–17).
  - **Havelock Island (Andamans)**, once famous for vibrant coral diving, saw **a dip in tourist visits** post bleaching in 2010 and 2016.
- **Reduced Coastal Protection:** Healthy coral reefs act as **natural breakwaters**, absorbing up to **97% of wave energy**. Bleached and degraded reefs **lose structural integrity**, increasing vulnerability to **coastal erosion, storms, and flooding**.
  - Post-bleaching, many reef areas in **Lakshadweep and the Maldives** showed **increased coastal erosion**, threatening low-lying islands.

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- During the **2004 Indian Ocean tsunami**, intact reefs **reduced wave impact** in some areas, while degraded reefs offered little protection.

- **Alteration of Biogeochemical Cycles:** Coral reefs are important in **carbon and nitrogen cycling**. Bleaching and death of coral organisms affect **nutrient dynamics**, potentially altering marine productivity and oxygen levels.
  - Research shows that bleaching reduces the reef's role as a **carbon sink**, potentially accelerating **ocean acidification**.
  - Algal blooms may follow coral death, altering **oxygen levels** and harming nearby marine life.
- **Loss of Medical and Scientific Value:** Coral ecosystems are sources of **novel bioactive compounds** used in **pharmaceuticals**, including treatments for cancer, HIV, and inflammation. Bleaching reduces coral health and **biodiversity**, shrinking this potential.
  - **Soft corals** from the Andaman Sea have yielded compounds under research for **anti-cancer drugs**.
  - With coral deaths rising, these sources may be **lost before fully explored**.
- **Cultural and Traditional Impacts:** Many coastal and island communities (e.g., **Lakshadweep**, **Andaman tribes**) have **cultural ties to coral reefs**, including food traditions and spiritual beliefs. Reef degradation affects these **intangible heritage values**.

WAY FORWARD:

- **Mitigating Climate Change**
  - Fulfil and strengthen commitments under the **Paris Agreement**.
  - Promote **renewable energy**, reduce fossil fuel dependence.
  - Support **carbon offset initiatives** like afforestation and blue carbon projects (e.g., mangrove conservation).
  - Advocate for India's updated **Nationally Determined Contributions (NDCs)** to prioritize marine ecosystems.
- **Enhancing Coral Resilience through Scientific Interventions**
  - **Coral gardening** and **fragment transplantation** using resilient species (ongoing in **Lakshadweep** and **Andaman Islands**).
  - Develop **climate-resilient or heat-tolerant corals** using selective breeding and **gene-editing technologies (e.g., CRISPR)**.
  - Deploy **artificial reefs** using eco-friendly materials to provide habitat and relieve pressure on natural reefs.
- **Strengthening Monitoring and Early Warning Systems**
  - Use **satellite-based remote sensing** (e.g., NOAA Coral Reef Watch) and underwater sensors to monitor sea temperatures and coral health.

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- Set up **early warning systems** for coral bleaching in key reef zones (e.g., Gulf of Mannar, Lakshadweep).
- Regular reef health assessments by institutions like **Zoological Survey of India (ZSI)** and **National Centre for Coastal Research (NCCR)**.

- **Reducing Local Stressors**
  - Ban **coral mining**, regulate **coastal construction**, and enforce **environmental clearance** processes.
  - Reduce **sewage and nutrient discharge** through proper wastewater treatment.
  - Promote **sustainable fishing practices**; ban destructive methods like cyanide and dynamite fishing.
  - Strict regulation of **marine tourism** (e.g., no-anchor zones, diver education, carrying capacity norms).
- **Community Involvement and Capacity Building**
  - Train local fishers, youth, and women in **reef monitoring and conservation**.
  - Promote **community-managed marine protected areas (MPAs)**.
  - Encourage **eco-tourism** models with local ownership (e.g., reef guides, homestays, handicrafts).
  - Involve NGOs like **REEF WATCH**, **Dakshin Foundation** for outreach and conservation work.
- **Legal and Policy Frameworks**
  - Strengthen implementation of **Environment Protection Act (1986)** and **Coastal Regulation Zone (CRZ) norms**.
  - Declare **more Marine Protected Areas (MPAs)** focused on coral-rich zones (e.g., parts of Lakshadweep and Gulf of Kachchh).
  - Mainstream coral reef conservation into **Integrated Coastal Zone Management (ICZM)** and **Blue Economy policy**.
- **Education, Awareness, and Research**
  - Integrate coral reef topics into **school and university curricula**.
  - Support **citizen science programs** for reef monitoring (e.g., coral ID apps).
  - Fund interdisciplinary **marine research centres** focusing on coral ecology, climate resilience, and socio-economic impacts.

PRACTICE QUESTION

Q. Discuss the causes and consequences of coral bleaching in India. Suggest a comprehensive way forward for coral reef conservation. (15 marks, 250 words)

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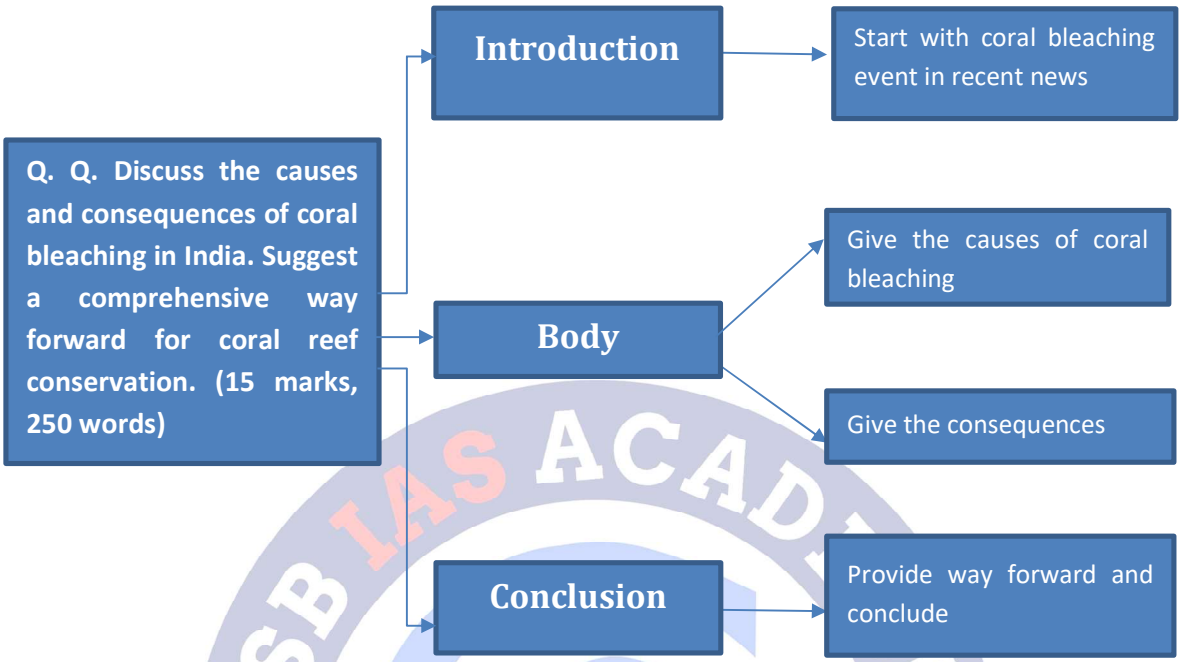
APPROACH



MODEL ANSWER

The US National Oceanic and Atmospheric Administration in partnership with the International Coral Reef Initiative, confirmed that the world is witnessing its **fourth global bleaching event affecting nearly 84% of coral reefs.** An underwater survey conducted after the marine heatwave in May 2020 revealed that 85 per cent of corals in the Gulf of Mannar, near the Tamil Nadu coast, had undergone bleaching.

Causes of Coral Bleaching in India:

1. **Rising Sea Surface Temperatures (SST):** Corals survive within a narrow thermal range (23–29°C). SST rise of 1–2°C leads to mass bleaching.
    - In 1998 (El Niño year), over 80% of coral in Lakshadweep and Gulf of Mannar bleached.
2. **Ocean Acidification:** Absorption of CO_2 lowers seawater pH, reducing calcium carbonate availability.
    - Studies by the **National Institute of Oceanography (NIO)** show declining pH in Lakshadweep waters.
3. **El Niño Events and Climate Change:** Linked to mass bleaching years: 1998, 2005, 2010, and 2016.

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- In 2016, the Andaman Islands reported bleaching in over 70% of corals (ZSI report).

4. **Sedimentation and Coastal Development:** Dredging, mining, and port construction increase turbidity.
    - Gulf of Kachchh suffers high turbidity; Tuticorin reefs affected by thermal discharges.
5. **Pollution and Eutrophication:** Runoff from agriculture and aquaculture causes algal blooms that smother corals.
    - Reefs near Mandapam and Rameswaram have shown stress and localized bleaching.
6. **Overfishing and Reef Imbalance:** Decline in herbivorous fish leads to algal overgrowth.
    - Coral cover in Gulf of Mannar has declined by up to 50% due to destructive fishing.
7. **Tourism and Mechanical Damage:** Anchor drops, trampling, and unregulated diving physically damage corals.
    - Havelock Island (Andaman) and Netrani Island (Karnataka) experienced reef degradation.

Consequences of Coral Bleaching:

1. **Loss of Marine Biodiversity:** Reefs support 25% of marine species.
    - Post-2010 bleaching in Andamans led to decline in fish populations like parrotfish and clownfish.
2. **Decline in Fisheries and Livelihoods:** Millions of small-scale fishers rely on reef ecosystems.
    - Reef-associated fish catch declined in Gulf of Mannar.
3. **Collapse of Tourism:** Coral reefs are key attractions for eco-tourism.
    - Havelock Island saw a drop in tourist visits post-bleaching in 2010 and 2016.
4. **Reduced Coastal Protection:** Coral reefs absorb 97% of wave energy.
    - Post-bleaching erosion increased in Lakshadweep; tsunami impacts were worse in degraded reef areas.

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5. **Disruption of Biogeochemical Cycles:** Coral death affects nutrient cycling and oxygen levels.
    - Bleaching reduces coral role as carbon sinks, contributing to ocean acidification.
6. **Loss of Medicinal Value:** Corals provide bioactive compounds for drugs.
    - Soft corals from the Andaman Sea are under study for anti-cancer compounds.

Way Forward:

1. **Mitigating Climate Change:** Fulfill Paris Agreement goals; promote renewable energy. Support blue carbon projects like mangrove restoration.
2. **Scientific Restoration:** Coral gardening and fragment transplantation (e.g., Lakshadweep). Develop heat-resistant corals using gene editing (CRISPR).
3. **Early Warning Systems and Monitoring:** Use NOAA Coral Reef Watch and local sensors. Strengthen agencies like **ZSI** and **NCCR** for regular assessments.
4. **Reducing Local Stressors:** Ban coral mining, regulate tourism, enforce CRZ norms. Promote sustainable fisheries and effective wastewater treatment.
5. **Community Participation:** Train local fishers and youth in reef conservation. Promote eco-tourism and community-managed MPAs. NGOs like **REEF WATCH** play a key role in outreach.
6. **Legal and Policy Support:** Expand Marine Protected Areas (MPAs) in coral zones. Integrate coral protection into **ICZM** and **Blue Economy policy**.
7. **Education and Awareness:** Include coral ecology in curricula. Support citizen science apps and public engagement campaigns.

Coral bleaching in India is a warning sign of worsening marine health. As biodiversity reservoirs and protectors of coastlines and livelihoods, coral reefs deserve urgent attention. A multi-pronged, community-driven and scientifically supported strategy is crucial for ensuring their long-term survival and resilience in a changing climate.

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29. INDIA'S INNOVATION SECTOR

iMPACT ANALYSIS

SYLLABUS:

GS 3 > Economic Development >> Research and Development

REFERENCE NEWS:

Indian startups are already suffering from a funding shortage – and on top of that, there are regulatory concerns. Whereas in China, the state itself backs startups – it even directly invests in many of them.

INDIA'S INNOVATION SECTOR:

- India has achieved a significant milestone in the Global Innovation Index (GII) 2024, securing the 39th position among 133 global economies from 81st position in 2015.
- **India ranks 4th globally in the World Intellectual Property Organization's (WIPO) Science & Technology (S&T)** Cluster Ranking, with key cities like Mumbai, Delhi, Bengaluru, and Chennai listed among the World's Top 100 S&T clusters.
- **It ranks 5th in ICT services exports, 6th in venture capital received, 11th in science and engineering graduates, and 13th in global corporate R&D investors.**
- India stands 7th globally in intangible asset intensity and excels in innovation outputs, ranking 33rd, marking a notable improvement from the previous year.
- India has **over 111 unicorns** (startups valued at over $1 billion), valued at over $350 billion. India is the 3rd largest startup ecosystem in the world.
- By 2030, the number of tech start-ups is expected to grow from 68,000 to 1,80,000.
- In 2024, China's total R&D spending was $496 billion. Meanwhile, in India's 2025 budget, a fund of just $23.45 billion was made for private-sector-driven R&D.

PROSPECTS OF INDIA'S INNOVATION SECTOR:

- **Science and Technology:** India is emerging as a **global science and technology powerhouse**, especially in **space**, **biotechnology**, **AI**, and **quantum computing**.
    - **ISRO's Chandrayaan-3** (2023): Successfully landed on the Moon's south pole, showcasing **indigenous innovation in space exploration**.
    - **National Quantum Mission** (2023): ₹6,000 crore investment to develop quantum technologies over 8 years.
- **Information Technology and Digital Economy:** India's **IT sector** is pivoting from service delivery to **deep tech innovation** in areas like AI, cybersecurity, blockchain, and IoT.

- **Digital India programme** will continue to drive innovations in e-governance, fintech, and smart infrastructure.
- **India Stack**: A global model for digital public infrastructure combining Aadhaar, UPI, DigiLocker, etc.
- **Unified Payments Interface (UPI)**: Facilitated **11 billion digital transactions monthly** (as of early 2024).

- **Healthcare and Biotechnology:** Huge scope for innovation in **vaccines**, **bioinformatics**, **genomics**, **telemedicine**, and **medical devices**.
  - **Bharat Biotech's Covaxin**: India's indigenously developed COVID-19 vaccine.
  - India's **Biotech sector** projected to reach **$150 billion by 2025** (NITI Aayog estimate).
- **Agriculture and AgriTech:** Innovations in **precision farming**, **AI-based crop monitoring**, **gene-editing for crops**, and **supply chain technologies**. Potential to address food security and rural incomes.
  - **Ninjacart** and **DeHaat**: Leading AgriTech startups connecting farmers directly with buyers through digital platforms.
  - **E-NAM** (Electronic National Agriculture Market): Integration of 1,000+ mandis into one digital platform.
- **Renewable Energy and Green Innovation:** India aims for **500 GW of non-fossil fuel energy capacity by 2030** under COP26 commitments. Innovation opportunities in **solar energy, green hydrogen, battery storage, and EVs**.
  - **ReNew Power**: India's largest renewable energy company scaling up innovations in storage solutions.
  - **Ola Electric** and **Ather Energy** leading EV innovations with indigenous R&D.
- **Manufacturing and Industry 4.0: Make in India** and **PLI Schemes** (Production Linked Incentives) encourage innovations in electronics, semiconductors, and defence manufacturing. Integration of **AI, robotics, and 3D printing** into manufacturing processes.
  - **Tata Electronics** investing heavily in India's nascent semiconductor manufacturing sector.
  - **PLI scheme** has led to **₹6 lakh crore+ worth of new investments** in sectors like mobile manufacturing and medical devices.
- **Education and EdTech:** Massive opportunity for innovation in **digital education**, **skill development**, **personalized learning**, and **remote learning platforms**.
  - **BYJU'S**, **Unacademy**, **Vedantu**: EdTech startups using AI and gamification to personalize education.
  - **National Education Policy 2020** emphasizes on innovation-driven, multidisciplinary learning.
- **Defence and Space Innovation:** Indigenous defence innovation growing under the **Atmanirbhar Bharat** initiative. Collaboration with private players and startups in **drones**, **missiles**, **satellite launches**, and **defence equipment**.

- **DRDO's Tejas Light Combat Aircraft** and **BrahMos missile** demonstrate India's indigenous defense R&D capability.
- Private players like **Skyroot Aerospace** (space startup) successfully launched India's first privately developed rocket **Vikram-S**.

- **Urban Development and Smart Cities:** Innovative opportunities in **smart mobility**, **smart grids**, **waste management**, and **urban sustainability**.
  - Under **Smart Cities Mission**, cities like **Bhopal, Pune, and Surat** have deployed AI-powered surveillance, smart traffic systems, and IoT-based waste management.

CHALLENGES OF INDIA'S INNOVATION SECTOR:

- **Low Investment in Research and Development (R&D):** India's R&D expenditure remains low at **around 0.7% of GDP**, compared to countries like Israel (4.5%), South Korea (4.8%), and USA (2.7%).
  - Despite being home to top institutions like **IISc Bengaluru** and **IITs**, India lags behind China, which invests **over 2%** of its GDP in R&D.
  - Limits breakthrough innovations and deep-tech research. Reduces global competitiveness in cutting-edge fields like AI, quantum computing, biotechnology when competitors developed Deepseek, GPT, India lacks its own model.
- **Brain Drain and Talent Flight:** Many talented scientists, engineers, and entrepreneurs migrate abroad due to better research opportunities, infrastructure, and funding.
  - According to the US National Science Foundation, India ranks **second** after China in sending students abroad for STEM fields.
  - Indian-origin innovators are leading **top technology companies** (e.g., Sundar Pichai at Google, Satya Nadella at Microsoft).
  - **World Bank data tells us that in 1980, India's per capita income was $266 while that of China was only $194. But by 2000, things took a turn, and India was at $1357 and China at $4450. In 2022, India's per capita income was $2388 while China had raced much ahead at $12,720.**
- **Weak Linkages between Academia, Industry, and Research:** Lack of strong collaboration between universities, research institutions, and industries hampers commercialization of research.
  - In developed countries like Germany (through the **Fraunhofer Institutes**) or the US (through **Silicon Valley ecosystems**), university-industry collaborations are very strong, leading to high innovation output.
  - Out of 15 lakh engineering graduates produced yearly, only 10% are employed in related jobs.

- **Intellectual Property Rights (IPR) Challenges:** While patent filings are increasing, **IPR protection and enforcement** in India are still relatively weak compared to developed countries.
    - In the **International IP Index 2023**, India ranked **42nd out of 55 countries**.
    - Long legal battles discourage startups and MNCs from investing heavily in R&D.
- **Limited Focus on Deep Technology and High-Risk Innovation:** Indian startups tend to focus on **e-commerce, fintech, and service models** rather than deep tech like **semiconductors, advanced biotech, robotics, or quantum tech**.
    - **Business Standard says that in 2023, only 5% of Indian startup funding went into deep tech, whereas China invested 35% in deep tech.**
- **Regional and Sectoral Imbalance:** Innovation is highly concentrated in metropolitan cities like Bengaluru, Hyderabad, Mumbai, and Delhi. Over **75% of India's startup ecosystem** is concentrated in a few urban centres.
- **Regulatory and Policy Uncertainties:** Frequent policy changes and regulatory uncertainties, especially in emerging sectors like fintech, cryptocurrency, drones, and biotechnology, create confusion and risks.
    - Lack of a clear regulatory framework for **cryptocurrencies** and **genetically modified (GM) crops** affects innovation in these sectors.
- **Infrastructure Bottlenecks:** Inadequate availability of world-class research labs, testing facilities, venture capital access, and incubation spaces.
    - Deep-tech startups often find it difficult to access **sophisticated labs** or **prototype testing infrastructure**, unlike counterparts in Silicon Valley or Europe.
    - **60% of cars in the country are run on just 10 generic engines. China has over 200 car manufacturers, making myriad varieties of cars.**
- **Cultural Attitude Toward Risk and Failure:** Social stigma associated with entrepreneurial failure discourages risk-taking behaviour, which is critical for high-impact innovation.
    - In the US, "fail fast, learn faster" is part of the innovation culture. In India, failure is often seen as a social and financial setback.

WAY FORWARD:

Increase Investment in Research and Development (R&D)

- **Public and Private Sector Collaboration**: Follow the model of countries like South Korea where corporations contribute significantly to R&D.
- **National Research Foundation (NRF)**: Proposed under NEP 2020, must be operationalized swiftly to fund interdisciplinary research.
- **Economic Survey (2017–18)** recommended raising R&D spending to **at least 2% of GDP**, with a major role for the private sector.

Strengthen Education-Research-Industry Linkages

- Build **university innovation clusters** with industry participation (as practiced in Germany's **Fraunhofer model**).
- Strengthen **Technology Transfer Offices (TTOs)** in universities and research institutions.
- **Kothari Commission (1964–66)** emphasized linking education closely with economic and social needs.
- **National Innovation Council** suggested creating **Innovation Universities** focused on applied R&D.

Skilling and Upskilling for Future Jobs

- Implement **Skill India Mission 2.0** focused on **deep tech**, **data sciences**, **green energy**, and **advanced manufacturing**.
- Promote **Vocational Training Centres** linked with innovation hubs.
- **Germany's Dual Education System**: Combines classroom education with apprenticeships in industries.

Foster a Culture of Entrepreneurship and Risk-taking

- Expand **Startup India** programs to **Tier 2 and Tier 3 cities**.
- Provide **seed funding**, **incubation support**, and **tax incentives** for innovation-led startups.
- Celebrate innovation through national awards (like **National Startup Awards**).
- **Israel's Innovation Ecosystem**: Heavy investment in startups and a culture that embraces entrepreneurial risk.

Strengthen Intellectual Property Rights (IPR) Protection

- Speed up patent and trademark processing (target: less than 12 months).
- Strengthen patent enforcement mechanisms and provide affordable legal assistance to startups and researchers.
- **Mashelkar Committee on IPR (1999)** stressed strengthening the legal framework to incentivize innovation.

Promote Inclusive Innovation for Rural and Underserved Areas

- Scale up initiatives like **Atal Tinkering Labs** in rural schools.
- Support **grassroots innovators** through schemes like the **National Innovation Foundation (NIF)**.
- Encourage **frugal innovation** for affordable healthcare, education, and agriculture.
- **Amul Model**: A rural cooperative innovation in dairy farming that uplifted millions of farmers.

Focus on Strategic and Emerging Technologies

- Implement **National Mission on Quantum Technologies** and **AI Mission** with measurable goals.
- Build **Centres of Excellence** in critical technologies through platforms like WAVE Summit.
- **Science, Technology, and Innovation Policy (STIP) 2020 draft** emphasized leadership in frontier technologies.

Create Robust Innovation Infrastructure

- Expand **Innovation and Research Parks** across all major universities.
- Establish **regional innovation hubs** (similar to Bengaluru, Hyderabad) in Eastern and North-Eastern states.
- **Silicon Valley Model**: Synergistic interaction between academia (Stanford), industry (tech firms), and venture capital.

Sustainable and Green Innovation Focus

- Promote **green startups** through the **Mission Innovation** platform.
- Incentivize industries adopting **sustainable practices** and **circular economy models**.
- **European Union's Green Deal Innovation Fund** to support sustainable startups.

To fully reap the **demographic dividend**, India must transform its **youth energy into innovation-led growth**. A **comprehensive national innovation strategy**, based on global best practices and guided by Indian policy recommendations, must focus on **investment in R&D**, **skills development**, **entrepreneurship promotion**, **inclusive innovation**, and **strategic technology leadership**. If nurtured properly, **India can become a global innovation powerhouse** by 2040, ensuring sustained economic growth and societal progress.

PRACTICE QUESTION

Q. Examine the prospects and challenges of India's innovation sector. Suggest a way forward to harness its full potential to achieve sustainable economic growth. (15 marks, 250 words)

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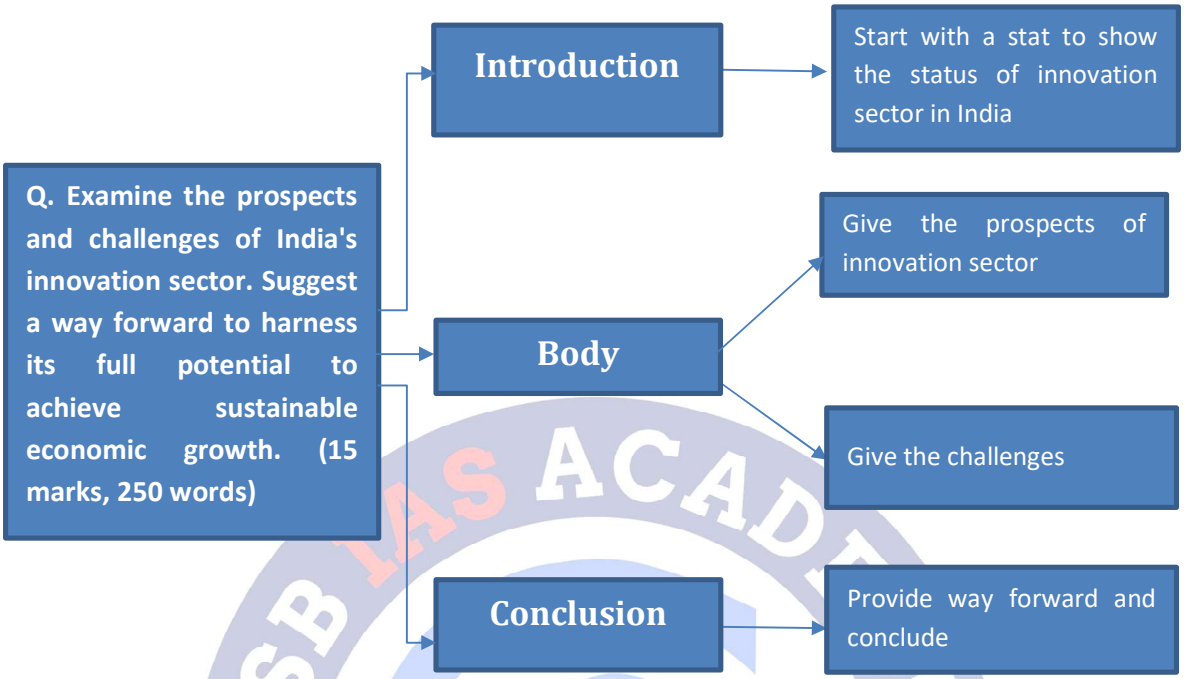
APPROACH



MODEL ANSWER

India's rising position in the **Global Innovation Index (39th rank in 2024)** reflects its growing potential, yet significant challenges remain. To fully reap the **demographic dividend**, India must transform its **youth energy into innovation-led growth**.

Prospects of India's Innovation Sector

1. **Science and Technology:** India is emerging as a global S&T hub, especially in **space, biotechnology, AI, and quantum computing**.
    - ISRO's **Chandrayaan-3** successfully landed near the Moon's south pole, showcasing indigenous innovation.
2. **Information Technology and Digital Economy:** Pivot from IT services to **deep tech innovations** like cybersecurity, blockchain, and IoT.
    - **India Stack** and **UPI** facilitating **11 billion digital transactions monthly** in 2024.
3. **Healthcare and Biotechnology:** Huge potential in **vaccines, telemedicine, genomics**.
    - Bharat Biotech's development of **Covaxin**, India's indigenous COVID-19 vaccine.
4. **Agriculture and AgriTech:** Innovations in **precision farming**, **AI-based crop monitoring**, and **supply chain tech**.

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- **Ninjacart** and **DeHaat** are digitally linking farmers to markets.

5. **Renewable Energy and Green Innovation:** Target of **500 GW non-fossil fuel energy capacity by 2030**.
    - **ReNew Power** and **Ola Electric** leading innovation in clean energy and EVs.
6. **Education and EdTech:** EdTech revolution via AI and gamification.
    - **BYJU'S** and **Unacademy** expanding access to personalized learning.
7. **Defence and Space Startups:** Growing indigenous innovation under **Atmanirbhar Bharat**.
    - **Skyroot Aerospace** successfully launched **Vikram-S**, India's first private rocket.

Challenges Hindering India's Innovation Potential

1. **Low R&D Investment:** India spends **~0.7% of GDP** on R&D, compared to **2-4%** in developed countries. China's R&D spending ($496 billion) dwarfs India's ($23.45 billion in 2025 budget).
2. **Brain Drain:** Significant talent flight to developed countries for better research opportunities. Indian-origin leaders at Google, Microsoft highlight this trend.
3. **Weak Academia-Industry Linkages:** Poor commercialization of research outputs. Unlike Germany's Fraunhofer Institutes, India's university-industry collaboration remains weak.
4. **Intellectual Property Rights (IPR) Challenges:** India ranked **42nd** in the **International IP Index 2023**. Weak patent enforcement deters investment.
5. **Limited Focus on Deep Tech:** Only **5% of Indian startup funding** in 2023 went to deep tech, vs. **35% in China**.
6. **Regulatory and Infrastructure Bottlenecks:** Policy uncertainty in fintech, crypto, biotechnology. Lack of advanced labs and prototyping facilities hinders startups.

Way Forward

1. **Boost R&D Spending:** Implement **Economic Survey (2017–18)** recommendation: raise R&D spending to **at least 2% of GDP**. Encourage private sector contribution through tax incentives.
2. **Strengthen Education-Research-Industry Linkages:** Develop **university innovation clusters** (Fraunhofer model). Operationalize the **National Research Foundation (NRF)** under NEP 2020.

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3. **Skilling Youth for Future Industries:** Launch **Skill India 2.0** focusing on AI, green energy, biotech. Follow **Germany's dual education system**: vocational training + formal education.
4. **Promote Deep-Tech Entrepreneurship:** Expand Startup India programs to **Tier 2 and Tier 3 cities**. Provide targeted **deep tech funding pools**.
5. **Strengthen IPR Regime:** Implement **Mashelkar Committee (1999)** suggestions. Speed up patent processing to within 12 months.
6. **Foster Inclusive Innovation:** Support grassroots innovations through **National Innovation Foundation (NIF)**. Scale up **Atal Tinkering Labs** in rural areas.

India stands at a critical juncture where **leveraging innovation** can **transform its demographic dividend into a global competitive advantage**. A strategic focus on **investment, skills, deep technologies, inclusivity, and sustainability** is essential. If nurtured properly, India's innovation sector can **drive economic growth**, **create millions of jobs**, and **position India as a leading knowledge economy by 2040**.

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30. GREEN HYDROGEN

iMPACT ANALYSIS

SYLLABUS:

GS 3 > Science and Technology

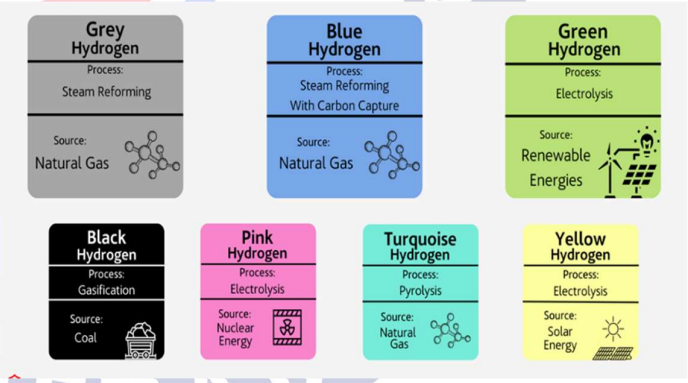
REFERENCE NEWS:

Union Minister for New and Renewable Energy, **Pralhad Joshi**, emphasized that **green hydrogen is the fuel of the future** and encouraged **MSMEs** to play a key role in developing technologies for its production.

The Minister **launched India's Green Hydrogen Certification Scheme** to ensure credible production standards. Additionally, he announced that **India has signed an agreement with Japan for 4.12 lakh tonnes** of green hydrogen derivatives, with a national target of producing **5 million tonnes by 2030** under Prime Minister Modi's leadership.

GREEN HYDROGEN:

Green hydrogen is hydrogen gas produced through the process of **electrolysis of water** using **renewable energy sources** like solar, wind, or hydro power.



Green hydrogen is a colourless, odourless, tasteless, non-toxic, and highly combustible gaseous substance. It is the lightest, simplest, and most abundant element in the universe. The term "green" refers to the method of production, which involves the use of renewable energy sources like solar, wind, or hydel power for electrolysis.

Potential Uses of Green Hydrogen

- **Industrial Use**
  - **Steel production**: Can replace coke/coal in blast furnaces (e.g., Direct Reduced Iron – DRI method).
  - **Fertilizers**: Ammonia production using green hydrogen instead of natural gas.
  - **Refineries and chemical industries**: Used in desulfurization and as a feedstock.

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- **Transportation**
  - **Fuel-cell electric vehicles (FCEVs)**: Trucks, buses, trains, and even aircraft.
  - **Maritime transport**: Can be used as clean fuel for shipping vessels.
- **Power and Energy Storage**
  - Acts as a **storage medium** for surplus renewable energy (converted back into electricity using fuel cells or gas turbines).
  - Helps stabilize the grid and balance intermittent solar/wind power.
- **Export Commodity:** Green hydrogen and its derivatives (like **green ammonia**) can be exported to countries like **Japan, Germany, and South Korea**, which lack sufficient renewable resources.

SIGNIFICANCE OF GREEN HYDROGEN TO INDIA:

- **Reducing Carbon Emissions:** India is the **3rd largest emitter of CO_2** globally. Replacing fossil fuels with green hydrogen in industry and transport can **significantly cut emissions**.
  - India's **Nationally Determined Contributions (NDCs)** under the **Paris Agreement** include reducing the emission intensity of GDP by **45% by 2030**.
- **Enhancing Energy Security:** India imports over **85% of its oil and 50% of its gas needs**. Domestic green hydrogen production will **reduce dependency on energy imports**.
  - According to NITI Aayog, green hydrogen could help India **save $246 billion** in energy imports by 2047.
- **Driving Industrial Transition:** Helps **decarbonize hard-to-abate sectors** such as steel, cement, and fertilizers. Makes Indian industries globally competitive in a carbon-constrained world.
  - The **Indian Oil Corporation** is already piloting green hydrogen blending in refineries.
- **Boosting the Green Economy and Job Creation:** Potential to create **2–3 million jobs** in manufacturing, installation, and operation of hydrogen infrastructure.
  - CII estimates that the green hydrogen sector could **attract over ₹8 lakh crore (~$100 billion)** in investments by 2030.
- **Geopolitical and Trade Advantage:** India aims to be a **global export hub** for green hydrogen and derivatives.
  - India signed an agreement with **Japan** for **4.12 lakh tonnes** of green hydrogen derivatives (April 2025).
  - India targets **5 million tonnes of green hydrogen production per year by 2030** under the **National Green Hydrogen Mission**.
- **Promoting MSME Participation:** MSMEs can contribute in **manufacturing components**, **engineering solutions**, and **technology development** for hydrogen production and storage.

- MSMEs are key to developing a robust green hydrogen supply chain and launched **India's Green Hydrogen Certification Scheme** to ensure quality standards.

INDIA'S GREEN HYDROGEN MISSION:

The National Green Hydrogen Mission (NGHM): January 2023 by the **Ministry of New and Renewable Energy (MNRE)**

- Make India a **global hub** for the production, utilization, and export of green hydrogen.
- Develop **capacity to produce 5 million metric tonnes** of green hydrogen per annum by **2030**, along with associated renewable energy capacity of ~125 GW.
- Promote **R&D, manufacturing, and domestic demand creation**.
- Encourage **public-private partnerships** and **MSME involvement** in hydrogen value chain.

Key Components of the Mission

- **Strategic Interventions for Green Hydrogen Transition (SIGHT):** Incentives for **electrolyzer manufacturing** and **green hydrogen production**. **SIGHT-I** incentivizes domestic electrolyzer capacity. **SIGHT-II** supports green hydrogen production.
- **Pilot Projects:** Focus areas **Steel**, **mobility**, **shipping**, and **refineries**. Support for demonstrating **green hydrogen applications** in real-world settings.
- **R&D and Innovation:** Support for **low-cost electrolyzers**, **hydrogen carriers**, and **storage solutions**.
- **Human Resources Development:** Training programs, academic curriculum integration, and skill-building initiatives.

Policy and Institutional Developments

- **Green Hydrogen Standards** notified by **Bureau of Energy Efficiency (BEE)**: Defines green hydrogen as having **emissions ≤2 kg CO_2/kg H_2**.
- **Green Hydrogen Certification Scheme** launched in **April 2025** by Union Minister Pralhad Joshi.
- India signed an agreement with **Japan for 4.12 lakh tonnes** of green hydrogen derivatives.
- MoUs signed with **Japan, EU, Germany**, and **Saudi Arabia** for joint R&D and trade of green hydrogen.
- India is part of the **International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE)**.

ADVANTAGES OF GREEN HYDROGEN:	**DISADVANTAGES OF GREEN HYDROGEN:**
It does not emit greenhouse gases during its production or use, unlike fossil fuels.	It still has a **high production cost** when compared with other energy sources.
It can be used flexibly in a variety of applications including energy transmission, generation and storage.	For its use as a substitute, automobile industry would need to adapt to using hydrogen, in addition to having other options, such as the electric car, which could be used as an alternative.
High calorific value of hydrogen makes it an excellent fuel.	The low density of hydrogen, whether in the liquid or gaseous state, also results in a low energy density. Evidencing that hydrogen, in its pure form, is not a good means of transporting energy.
It can be used in fuel cells to generate electricity and be stored for future use.	**Water Demand**: Requires significant water resources, which can be challenging in water-scarce regions.
It can be used as a raw material for the chemical, petrochemical and pharmaceutical, cement and steel industries, replacing fossil fuels and reducing greenhouse gas emissions.	**Storage and Transport Challenges:** Hydrogen is highly flammable and difficult to store, requiring specialized infrastructure.

CHALLENGES OF GREEN HYDROGEN PRODUCTION AND UTILISATION IN INDIA:

- **High Production Cost:** Green hydrogen costs around **$4–6 per kg** in India, compared to **$1–2 per kg** for grey hydrogen (from natural gas). Electrolyzers and renewable power inputs are expensive.
  - As per NITI Aayog and IEA estimates, India must reduce green hydrogen costs to **below $2/kg** to make it viable.
- **Lack of Domestic Electrolyzer Manufacturing:** India currently relies on **imported electrolyzers** (mainly from Europe and China), increasing cost and limiting self-reliance.
  - India aims to establish **25 GW electrolyzer manufacturing capacity by 2030**, but it is still at an early stage. Companies like **L&T**, **Reliance**, and **Greenko** have only recently entered the electrolyzer production space.
- **Infrastructure Gaps in Storage, Transport, and Distribution:** Hydrogen is **light and highly flammable**, requiring special infrastructure for storage (cryogenic tanks) and transport (high-pressure pipelines or ammonia carriers).
  - India currently lacks a dedicated **hydrogen pipeline network or storage terminals**.

- **Limited Demand and Commercial Viability:** Most industries in India are still dependent on **grey hydrogen** or fossil fuels due to cost-effectiveness. No mandatory green hydrogen blending targets currently exist for sectors like fertilizers or refineries.
    - Indian Oil Corporation (IOCL) has initiated green hydrogen projects, but full substitution of grey hydrogen remains economically unattractive without subsidies.
- **Policy Uncertainty and Lack of Regulation:** Regulatory standards for **certification, blending mandates, and pricing mechanisms** are still evolving.
    - India launched its **Green Hydrogen Certification Scheme** only in April 2025; state-level policies are still fragmented.
    - Absence of a clear **carbon pricing** mechanism reduces the incentive for industries to switch from grey to green hydrogen.
- **Water Scarcity for Electrolysis:** Electrolysis requires large volumes of **pure water**, creating competition with drinking and agricultural needs, especially in arid zones.
    - Producing **1 kg of hydrogen** requires approximately **9–10 liters of demineralized water**.
- **Technological and Skill Gaps:** India lacks adequate **skilled workforce**, **research capacity**, and **testing labs** for advanced hydrogen technologies.
    - The hydrogen value chain (electrolyzers, storage, fuel cells) is still emerging in India.
- **Global Competition and Trade Barriers:** Other countries (like EU, Australia, UAE, Saudi Arabia) are advancing faster in green hydrogen production and trade.
    - India needs to **build global supply chains and certification systems** to compete in export markets.
    - India signed an MoU with **Japan** for exporting **4.12 lakh tonnes of green hydrogen derivatives**, but infrastructure for such trade is still under development.

WAY FORWARD:

Enhance R&D and Domestic Manufacturing Capacity

- Operationalize the **National Research Foundation (NRF)** to fund hydrogen R&D.
- Promote **public-private partnerships (PPP)** for indigenizing electrolyzer and fuel cell technology.
- Create **Hydrogen Technology Parks** for testing, prototyping, and incubation.
- **STIP 2020 (Science, Technology, and Innovation Policy)** emphasized building mission-oriented R&D clusters and fostering collaborative innovation ecosystems.

Develop Hydrogen Infrastructure and Logistics

- Identify and develop **hydrogen hubs/corridors** in RE-rich areas (e.g., Gujarat, Rajasthan).
- Invest in **compressed and liquefied hydrogen storage**, and **green ammonia export infrastructure**.
- Facilitate **hydrogen blending in existing natural gas pipelines**.
- **Japan's "Basic Hydrogen Strategy"** focuses on developing hydrogen-ready infrastructure and import terminals.
- NITI Aayog's 2022 strategy on green hydrogen proposed **hydrogen clusters** and logistics development zones.

Enable Market Creation and Demand Assurance

- Mandate **green hydrogen/ammonia blending targets** for fertilizer, refining, and steel sectors.
- Launch **Contracts for Difference (CfD)** or **viability gap funding (VGF)** to bridge cost gap with grey hydrogen.
- Establish a **carbon pricing framework or emissions trading system** to incentivize green hydrogen.
- **European Union's Hydrogen Bank** offers CfD schemes to support green hydrogen producers.

Promote Inclusive and MSME-Centric Innovation

- Offer MSMEs **innovation grants, skilling programs, and design challenges** under the Green Hydrogen Mission.
- Create **cluster-based innovation models** for electrolyzer parts, sensors, valves, etc.
- Include hydrogen skilling in **Skill India 2.0** and **PMKVY**.

Ensure Water Sustainability in Hydrogen Production

- Promote **wastewater and desalinated water use** for electrolysis, especially in arid states.
- Mandate **water management plans** for green hydrogen projects.
- Invest in **water recycling technologies** integrated with electrolyzers.
- **Saudi Arabia's NEOM hydrogen plant** uses desalinated seawater for hydrogen electrolysis.

Set Clear Standards and Regulatory Framework

- Operationalize the **Green Hydrogen Certification Scheme** launched in April 2025.
- Develop **uniform safety and quality standards** through BIS and BEE
- Create a **National Hydrogen Regulatory Authority** to coordinate pricing, access, and safety norms.

Integrate Green Hydrogen into Urban and Rural Applications

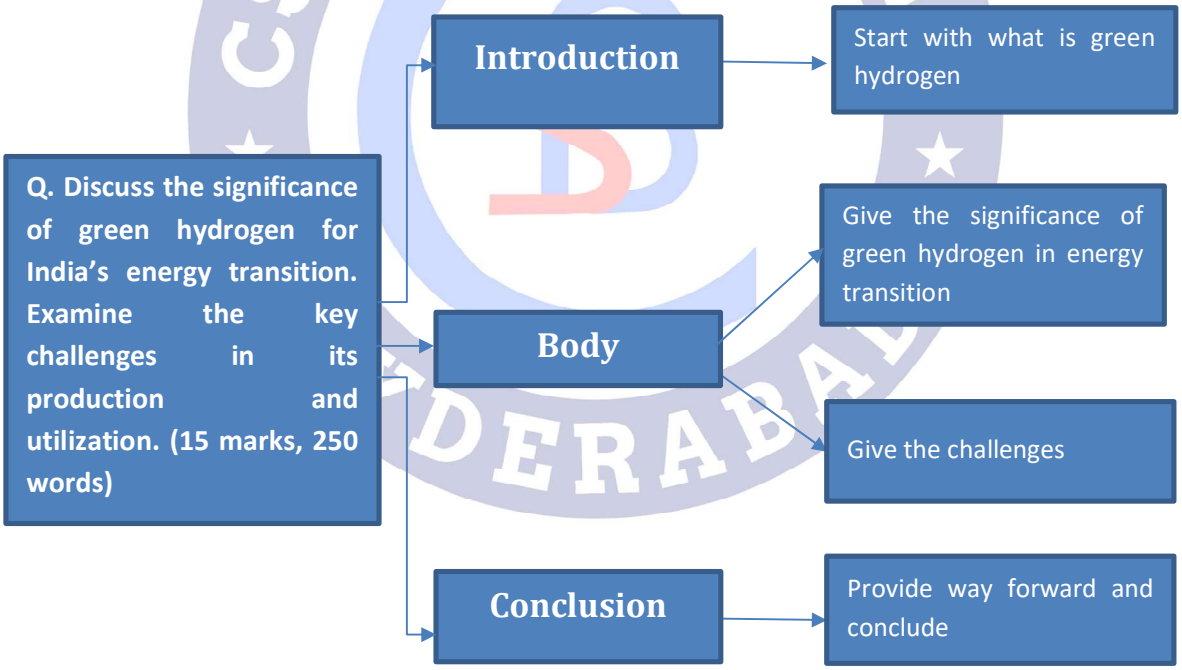
- Deploy **hydrogen-powered buses** and **refuelling stations** in urban smart cities.
- Support **microgrids and rural hydrogen pilot projects** linked to solar energy.
- Use **green hydrogen in sewage treatment plants** and **municipal transport systems**.
- **South Korea's "Hydrogen City" initiative** integrates hydrogen into transport, heating, and grid storage.

The Green Hydrogen Mission is a strategic opportunity to **decarbonize India's economy, achieve energy self-sufficiency, and lead the global green hydrogen value chain**. With **policy stability, public-private collaboration, and global cooperation**, India can become a **global leader in green hydrogen by 2030**.

PRACTICE QUESTION

Q. Discuss the significance of green hydrogen for India's energy transition. Examine the key challenges in its production and utilization. (15 marks, 250 words)

APPROACH



MODEL ANSWER

Green hydrogen, produced through electrolysis using renewable energy, is increasingly recognized as a critical pillar in India's **clean energy transition**. As a **non-polluting and versatile energy carrier**, it can decarbonize hard-to-abate sectors like **steel, cement, fertilisers, and transport**, supporting India's **net-zero target by 2070**.

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Significance of Green Hydrogen for India

1. **Decarbonization of Economy**: India is the **third-largest CO_2 emitter globally**. Green hydrogen can reduce emissions in industries and transport.
2. **Energy Security**: India imports over **85% of its oil** and **50% of its gas**. NITI Aayog estimates green hydrogen could help save **$246 billion in energy imports by 2047**.
3. **Industrial Competitiveness**: Adoption in **refineries**, **chemical production**, and **fertilisers** can make Indian industry **globally competitive**.
4. **Economic and Employment Generation**: Expected to attract **₹8 lakh crore (~$100 billion)** in investments. Could generate **2–3 million jobs** by 2030 (CII estimate).
5. **Export Opportunities**: India signed an agreement with **Japan for 4.12 lakh tonnes** of green hydrogen derivatives (2025). National target: **5 million tonnes/year by 2030** under the Green Hydrogen Mission.
6. **MSME Involvement**: MSMEs can provide critical support in **component manufacturing, storage solutions**, and **R&D**.

Challenges in Production and Utilization

1. **High Production Cost**: Green hydrogen costs **$4–6/kg**, while grey hydrogen is **$1–2/kg**. Electrolyzers and renewable energy inputs are expensive.
2. **Lack of Domestic Manufacturing:** India relies on **imported electrolyzers**; aims to build **25 GW capacity** by 2030.
3. **Infrastructure Deficit**: Absence of hydrogen pipelines, refuelling stations, and storage facilities. Hydrogen is **flammable** and difficult to store/transport.
4. **Low Demand and Adoption**: No mandatory blending targets in fertilisers or refineries. Grey hydrogen still dominates due to cost advantage.
5. **Water Scarcity**: **9–10 litres of demineralized water** required per kg of hydrogen—challenging in arid regions like Rajasthan.
6. **Technological and Skill Gaps**: Shortage of trained workforce and testing infrastructure. Hydrogen technology is still **emerging in India**.

Sustainable Way Forward

1. Boost R&D and Manufacturing

- Operationalize **National Research Foundation (NRF)** for hydrogen innovation.
- Promote **PPP models** for indigenous electrolyzer and fuel cell tech.
- Set up **Hydrogen Technology Parks** (STIP 2020 recommendation).

2. Build Infrastructure

- Develop **hydrogen hubs and corridors** in renewable-rich states.
- Invest in **cryogenic storage, pipeline transport, and ammonia-based export systems**.
- Learn from **Japan's Basic Hydrogen Strategy**.

3. Create Market Demand

- Introduce **blending mandates** in key sectors.
- Use **Contracts for Difference (CfD)** and **viability gap funding** to bridge cost gaps.
- Launch a **carbon pricing system** to promote green hydrogen over grey.

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4. Encourage MSME Participation

- Provide **innovation grants**, design challenges, and skilling under **PMKVY** and **Skill India 2.0**.
- Foster **cluster-based manufacturing** of valves, sensors, etc.

5. Ensure Water Sustainability

- Promote **wastewater reuse** and **desalinated water** in hydrogen production.
- Mandatory **water management plans** for hydrogen projects.
- Example: Saudi Arabia's **NEOM** plant uses desalinated seawater.

6. Strengthen Regulation and Certification

- Implement **Green Hydrogen Certification Scheme** (April 2025).
- Create a **National Hydrogen Regulatory Authority** to oversee pricing, safety, and quality.

7. Integrate Urban and Rural Applications

- Use in **smart cities**: hydrogen buses, microgrids, sewage treatment plants.
- Support **pilot projects in rural energy storage** using solar-hydrogen systems.
- Inspired by **South Korea's Hydrogen City Model**.

India's Green Hydrogen Mission is a **bold and forward-looking initiative** that aligns clean energy goals with industrial growth and global leadership. However, to make it a sustainable reality, India must focus on **affordable technology**, **regulatory clarity**, **infrastructure readiness**, and **inclusive innovation**. With these reforms, green hydrogen can become a cornerstone of **India's 21st-century green economy**.

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