# 7 PM COMPILATION

**1st and 2nd week September, 2026**

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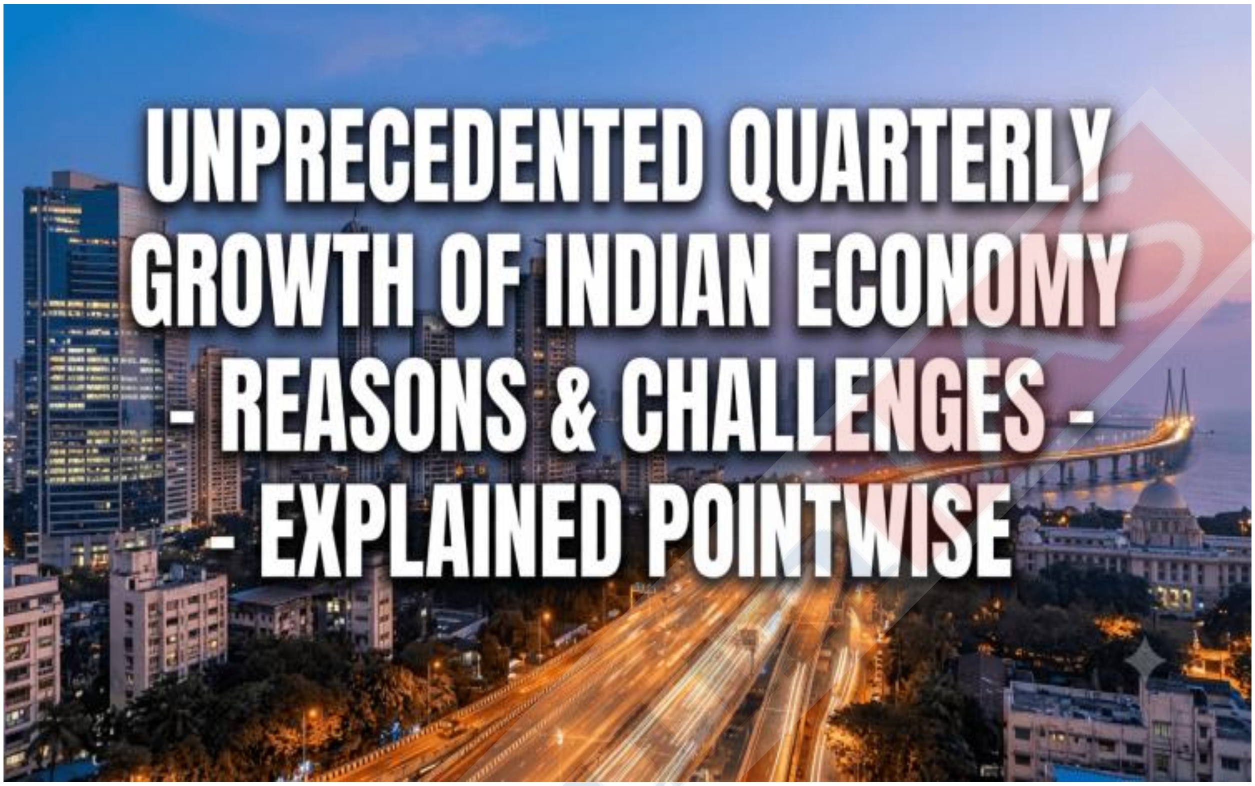
# Unprecedented Quarterly Growth of Indian Economy – Reasons & Challenges – Explained Pointwise




India's real GDP grew **7.8% in Q1 FY2026-27**, surpassing the RBI's **7% forecast**, despite the West Asian conflict, oil-price shocks, supply-chain disruptions and global trade uncertainty. However, it also calls for examining the drivers of growth and structural challenges that could affect its sustainability in the coming years.

**What are the major factors driving India's recent economic growth?**

1. **Surge in Investment**: The most significant factor is the sharp increase in investment, with fixed capital formation growing nearly **12%**. This strong investment activity is occurring across both government and private sectors, particularly in areas like power, metal, and data centers.
2. **Strong private consumption**: Household consumption (which makes up nearly 60% of the economy) grew by **7.1% in Q1 FY2026-27**, up from 6.8% a year earlier, supported by resilient domestic demand and improving consumer spending, contributing significantly to overall 7.8% GDP growth.
3. **Higher government capital expenditure**: The government allocated **₹12.22 lakh crore for capital expenditure in FY2026-27**, up from ₹11.2 lakh crore in FY2025–26. This investment in infrastructure and productive assets is supporting demand, investment and long-term economic capacity.
4. **Strong manufacturing growth**: Manufacturing grew by **9.2% in Q1 FY2026-27**, supported by strong performance in electrical equipment (**27%**), transport equipment (**19.5%**), and electronics (**12.4%**), boosting overall economic activity.
5. **Robust services sector**: The tertiary sector continues to expand rapidly, led by financial services, real estate, travel, and Global Capability Centers (GCCs) setting up tech hubs in the country. The **services sector grew by 10.0% in Q1 FY2026-27**, up from 8.0% a year earlier. Financial, real estate, IT and

professional services recorded particularly strong **12.1% growth**, supporting India's overall GDP expansion.

6. **Resilient exports**: India's exports grew by **12%** in Q1 FY2026–27, supporting aggregate demand and cushioning global headwinds.
7. **Infrastructure and construction activity**: Sustained public capital expenditure boosted infrastructure and construction demand. In Q1 FY2026-27, the IIP for infrastructure/construction goods grew **7.2%**, while cement production rose **8.9%** and steel consumption **8.3%**, supporting overall economic growth.

**What were the major challenges faced by the Indian economy during the first half of 2026?**

1. **Geopolitical tensions and energy shock:** The conflict in West Asia pushed up crude oil prices. Since India imports over 80% of its crude oil, higher prices threatened inflation, the current account and economic growth.
2. **Uneven Monsoon Distribution:** Even with an overall normal monsoon headline, erratic rainfall distribution and El Niño aftermaths created regional water deficits across major agricultural belts.
3. **Capital outflows:** Global uncertainty and geopolitical tensions encouraged foreign investors to withdraw capital from Indian equities, putting additional pressure on the rupee and financial markets. Foreign investors withdrew nearly ₹2.74 lakh crore ($29.28 billion) from Indian equities in H1 2026. This was a key factor behind the Sensex logging its worst first-half decline since the pandemic.
4. **Rupee depreciation:** The relentless FPI selling, combined with the high oil prices, pushed the rupee to record lows against the dollar, making it one of Asia's worst-performing major currencies, increasing the cost of imported oil, machinery and other inputs.
5. **Global trade uncertainties:** Protectionism, tariff-related disruptions and weak global demand posed risks to India's exports and manufacturing, particularly for sectors integrated into global value chains. India faced the steepest US tariffs in Asia (50% on many goods) hurting export-oriented sectors & especially the labor-intensive industries which account for nearly a quarter of India's exports to the US.
6. **External-sector vulnerability:** Higher energy import bills, currency depreciation and volatile capital flows could widen the current account deficit and increase external financing pressures.
7. **Balancing growth with fiscal consolidation:** The government had to simultaneously maintain high infrastructure spending and support economic activity while keeping the fiscal deficit on a sustainable path.

**What are the various initiatives taken by the government to drive India's economic growth?**

1. **Aggressive Public Capital Expenditure (Capex):** Direct government capital spending grew by **18.6%**, driving overall investment growth (Gross Fixed Capital Formation) up by 11.9%. Prioritizing mega-infrastructure projects (high-speed rail corridors, national highway expansion, and power-grid modernization) helped crowd in private sector investments.
2. **Manufacturing Expansion & PLI Schemes:** Targeted allocation under the **Production-Linked Incentive (PLI)** schemes for electronics, semiconductors, auto components, and advanced chemistry cells helped push manufacturing sector growth up to 9.2%.
3. **Household Demand Stimulus via Tax Relief:** Income-tax rationalisation made income up to ₹12 lakh tax-free under the new regime, while GST 2.0 lowered rates on essentials and consumer durables. Together, these measures raise disposable income and purchasing power, supporting consumption-led growth.
4. **Rural Economy & MSP Support:** To cushion rural purchasing power, the government raised Minimum Support Prices (MSPs) across major Kharif crops alongside targeted direct-benefit transfers

(DBT). This initiative, paired with favorable monsoon distribution, aided a 3.6% growth in the agriculture and allied sector.

5. **Digital Public Infrastructure:** UPI, Aadhaar and India Stack have lowered transaction costs and promoted financial inclusion. UPI now handles nearly **49% of global real-time payment volumes**, while India's digital economy contributes around **12–14% of GDP**.
6. **Export Promotion:** Despite US tariff pressures, India's exports remained resilient. Total exports grew 11.37% to $232.73 billion in Q1 FY2026-27. The government is promoting FTAs, export diversification, Export Promotion Mission and logistics reforms to reduce market concentration.
7. **De-risking private investment**: An Infrastructure Risk Guarantee Fund was set up in the FY27 Budget to provide partial credit guarantees to lenders, aimed at encouraging private developers to commit capital during the riskier construction phase of large projects.

**What are the major challenges that could affect the sustainability of India's high economic growth in the coming years?**

1. **Low private investment**: Private investment remains below the level required for sustained high growth. The World Bank recommends raising India's investment rate from around 33.5% of GDP to 40% by 2035, requiring stronger credit access, FDI and business reforms.
2. **Employment generation**: India faces the challenge of converting rapid GDP growth into adequate, productive jobs. Around 12 million young people enter the labour market annually, making employment-intensive manufacturing, MSMEs, services and skilling crucial for sustaining inclusive growth.
3. **Low labour-force participation**: Despite improvement, India's LFPR fell to **54.6% in April-June 2026**, from 55.5% in the previous quarter. Female participation remains a concern, at **32.7% in June 2026**, limiting effective utilisation of India's demographic dividend.
4. **Global trade uncertainty**: Rising protectionism, tariff disputes and geopolitical fragmentation threaten India's export competitiveness and supply chains. In April 2026, India's merchandise trade deficit widened to **$28.38 billion**, as imports surged amid global disruptions, highlighting external-sector vulnerabilities.
5. **Energy security**: India's crude-oil import dependence exceeded **90% in FY2025-26**, exposing the economy to global price and geopolitical shocks. Rising energy demand, import bills and supply disruptions can increase inflation, widen the current-account deficit and constrain sustainable growth.
6. **Climate change and environmental pressures**: Rising temperatures, water stress and extreme weather threaten productivity, agriculture and infrastructure. In 2024, extreme heat caused an estimated 250 million lost workdays, costing India $1.3-1.8 billion (0.3-0.4% of GDP).

**Conclusion**: India's robust quarterly growth demonstrates strong economic resilience amid global turbulence. However, sustaining this momentum requires converting cyclical strength into **productivity-driven, employment-intensive and inclusive growth**, while strengthening private investment, human capital, energy security and resilience against external shocks.

UPSC GS-2: Indian Economy
Read More: The Indian Express

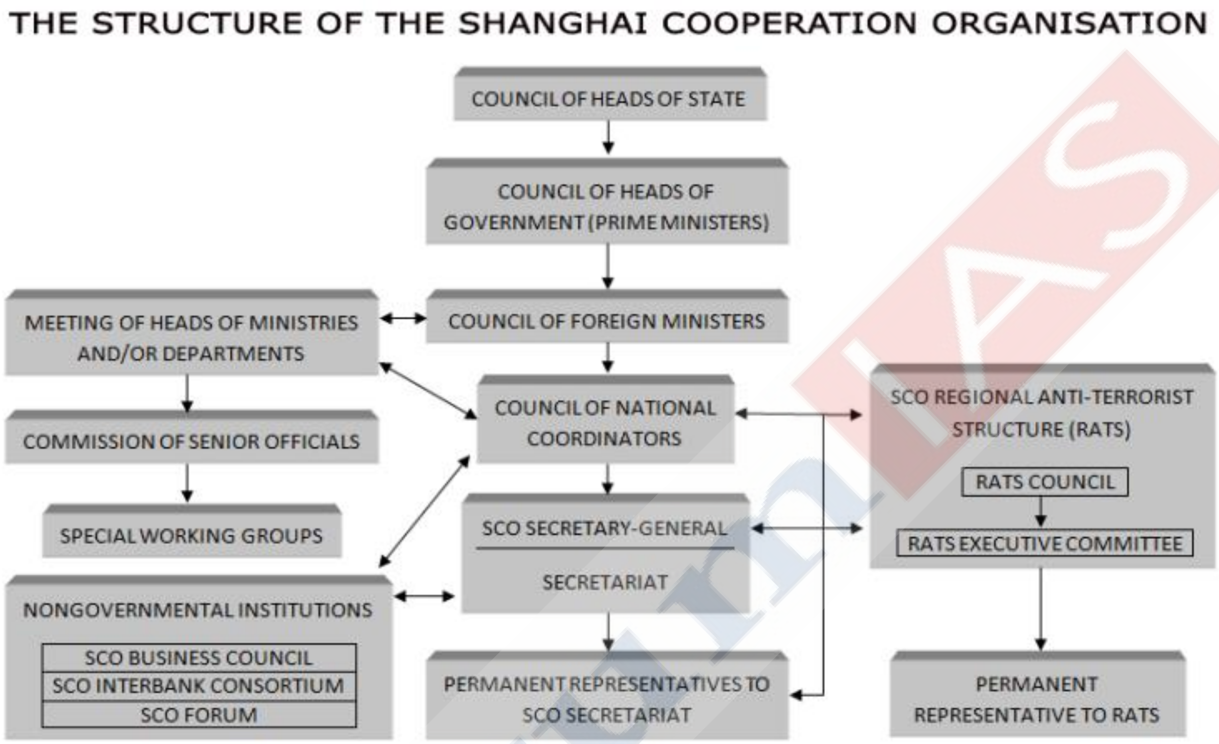
# SCO (Shanghai Cooperation Organization) – Significance & Challenges – Explained Pointwise


The **SCO Summit 2026**, held recently in **Bishkek, Kyrgyzstan**, brought together leaders of its 10 member states to address regional security, terrorism, connectivity and economic cooperation, reaffirming the organisation's growing geopolitical significance.
In this regard, let us understand the significance & challenges of the Shanghai Cooperation Organization (SCO).

**What is SCO?**

- **Shanghai Cooperation Organization (SCO)** is a Eurasian political, economic, international security, and defense organization. It was established on June 15, 2001, in Shanghai, China.
- SCO's roots lie in the **"Shanghai Five"** formed in 1996, consisting of **China, Russia, Kazakhstan, Kyrgyzstan, and Tajikistan**. This group was initially created to address security concerns and manage border issues after the dissolution of the Soviet Union. With the admission of **Uzbekistan** in 2001, the "Shanghai Five" was officially transformed into the SCO.
- At present, SCO comprise of 10 members: **People's Republic of China, Kazakhstan, Kyrgyzstan, Russia,** and **Tajikistan**, **Uzbekistan, India** and **Pakistan** (both joined in 2017), **Iran** (joined the in 2023), and **Belarus** (joined in 2024).
- **Secretariat:** Located in **Beijing, China**, handling administrative and diplomatic affairs.
- **RATS (Regional Anti-Terrorist Structure):** Located in **Tashkent, Uzbekistan**, focusing on intelligence sharing, counter-terrorism, and security coordination.

- **Head of State Council:** The supreme decision-making body that meets annually at the SCO Summit.
- **Guiding Principle:** The **"Shanghai Spirit"** – emphasizing mutual trust, mutual benefit, equality, consultation, and respect for cultural diversity.




Source: Wikipedia

- **26th SCO Summit** (2026): The **26th SCO Summit was held in Bishkek, Kyrgyzstan,** concluded with the adoption of the **Bishkek Declaration:**

**BISHKEK DECLARATION (2026): Key Takeaways & Outcomes:**

- **Zero "Double Standards":** The declaration explicitly condemns terrorism in all forms, stating that "double standards" in fighting terrorism are unacceptable.
- **Cross-Border Terrorism:** It calls on the international community to dismantle cross-border movement of terrorists, terror financing, radicalization, and safe havens.
- **Institutional Security Upgrade:** Leaders approved regulations establishing the **Universal Center for Countering Challenges and Threats to the Security of SCO Member States** to coordinate against cybercrime, organized crime, and drug trafficking.
- **Condemnation of Strikes on Iran:** The joint statement expressed deep concern over West Asian escalation and explicitly condemned military strikes on Iranian territory, calling for resolutions strictly via diplomatic means.
- **Position on Afghanistan:** Called for an independent, peaceful, and neutral Afghanistan with an inclusive government representing all ethno-political groups.

- **Multipolar World Order:** Reaffirmed commitment to an equitable multipolar international order, while clarifying that the SCO is **not** a military-political alliance targeted against third nations.
- **Anti-Narcotics Cooperation**: Regulations for the **SCO Anti-Narcotics Centre** were approved. Members agreed to strengthen cooperation against drug trafficking, narco-terrorism and synthetic drugs.
- **English Added as an SCO Official Language**: English was added as an official and working language of the SCO, alongside the existing languages.
- **AI governance**: The declaration also called for responsible use of artificial intelligence.

**What is the SIGNIFICANCE of SCO?**

1. **Geopolitical and Strategic Influence:**
   - The SCO is the world's largest regional organization in terms of geographic scope and population. It covers approximately **80% of the Eurasian landmass** and about **40% of the world's population**.
   - Its members range from nuclear powers (Russia, China, India, Pakistan, and now Iran) to resource-rich Central Asian states. This diversity of political systems, economies, and cultures makes it a unique platform for dialogue.
2. **Economic and Connectivity Potential:**
   - SCO member states collectively account for about **30% of global GDP**. The inclusion of major economies like India and resource-rich nations like Iran further enhances its economic weight.
   - With the inclusion of Iran, the SCO members control a significant percentage of the **world's oil (20%)** and **natural gas (44%)** reserves. The **SCO Energy Club** promotes cooperation between major energy producers and consumers within the bloc.
   - SCO emphasizes promoting connectivity and infrastructure development across Eurasia. It aligns significantly with China's Belt and Road Initiative (BRI) (though India has concerns about BRI), promoting projects that enhance trade networks and transportation routes, such as the Central Asia-China Gas Pipeline.
3. **Counter-Terrorism and Security:** A primary and highly successful initiative of the SCO is its focus on combating terrorism, separatism, and extremism. The **Regional Anti-Terrorist Structure (RATS)** based in Tashkent facilitates intelligence sharing and coordinated efforts against these threats, making it the primary security organization in Central Asia.
4. **Regional Stability in Eurasia:** The SCO plays a crucial role in maintaining peace, security, and stability across the vast Eurasian region, particularly in Central Asia, which is strategically vital. While not always directly intervening, the SCO provides a platform for its members to discuss and coordinate approaches to regional issues, including the instability in Afghanistan.
5. **Platform for Dialogue:** The SCO provides a crucial platform for high-level political and security dialogue among its diverse members, including those with bilateral tensions (e.g., India-China, India-Pakistan). This can help in de-escalating tensions and fostering understanding.
6. **Consensus-Based Decision Making:** While dominated by China and Russia, the SCO's consensus-based decision-making process means that all members (including India) have a voice, even if it sometimes leads to slower action.
7. **Quad v/s SCO:** While India's membership in the [Quadrilateral Security Dialogue (Quad)]() with the US, Japan, and Australia is often viewed as a mechanism to balance China's growing influence, India simultaneously engages with China and Russia through the SCO. This reflects India's policy of **multi-**

**alignment**, enabling it to engage with both Western and non-Western groupings while preserving its **strategic autonomy**.

**What are the LIMITATIONS/CHALLENGES of SCO?**

1. **Internal Conflicts and Bilateral Tensions:**
   - **India-China Border Disputes:** Ongoing border disputes and geopolitical tensions between India and China (e.g. the Ladakh standoff) frequently spill over into SCO discussions, making it difficult for the two major powers to fully cooperate on broader issues.
   - **India-Pakistan Animosity:** The historical animosity and persistent issues between India and Pakistan create a challenging environment for consensus-building. India often expresses concerns about cross-border terrorism emanating from Pakistan, which Pakistan may try to deflect or downplay within the SCO forum.
   - **Central Asian Border Disputes:** Conflicts and border disputes between Central Asian member states (e.g. Kyrgyzstan-Tajikistan) can also affect regional stability and divert the SCO's focus.
   - **Lack of Conflict Resolution Mechanism:** The SCO lacks a formal and effective mechanism for resolving disputes between its member states, which means bilateral tensions often fester and can impede collective action.
2. **Dominance of China and Russia:** There is an inherent power imbalance within the organization, with China and Russia being the dominant players. This can lead to concerns among other members about disproportionate influence and decision-making, particularly from China due to its growing economic might e.g. The official languages of SCO are Russian & Chinese.
3. **Selective Definitions of Terrorism:** While security against the "Three Evils" (terrorism, separatism, extremism) is a founding principle, members apply double standards. India often criticizes state-sponsored cross-border terrorism, while other members protect regional proxies or disagree on specific terror group designations.
4. **"Anti-Western" Perception:** Despite its claims of being an open and non-aligned organization, the SCO is often perceived by Western countries as a grouping aimed at challenging the US-led global order and a potential counter to NATO. This perception can limit its ability to engage with Western partners on global issues.
5. **BRI Concerns:** China's Belt and Road Initiative (BRI), particularly the China-Pakistan Economic Corridor (CPEC) which passes through Pakistan-Occupied Kashmir (PoK), remains a major sovereignty concern for India. While all other SCO members endorse BRI, India remains isolated in its opposition, which limits its participation in some economic connectivity initiatives within the SCO framework.
6. **Lack of a Free Trade Area:** Despite discussions, the SCO does not have a comprehensive free trade agreement among its members. This limits its potential for deep economic integration compared to other blocs like ASEAN or the EU.
7. **Limited Mandate:** While expanding, the SCO's primary focus remains on security (the "three evils" of terrorism, separatism, extremism). This strong emphasis sometimes overshadows other crucial areas like economic and cultural cooperation, which could offer broader benefits.
8. **Weak Security Structure**: Unlike a military alliance such as NATO, the SCO has no binding security treaty. It has not been able to meaningfully mediate or stop conflicts involving its members, which is a major failure given its founding purpose of preventing conflict.
9. **Gap Between Declarations and Implementation**: The SCO frequently adopts ambitious declarations on counter-terrorism, connectivity and economic cooperation. However, weak institutional

mechanisms, divergent interests and limited enforcement capacity often hinder effective implementation, creating a persistent gap between commitments and outcomes.

**What can be the WAY FORWARD?**

1. **Strengthening Trust and Dialogue:** While the SCO is a multilateral forum, its most immediate utility for managing internal tensions often lies in providing opportunities for high-level bilateral meetings on its sidelines (e.g. India-China, India-Pakistan). These informal channels can be crucial for de-escalation and addressing specific grievances.
2. **Unified Stance on Terrorism – Zero Tolerance, No Double Standards:** The SCO must unequivocally condemn terrorism in all its forms and manifestations, without any justifications or differentiation between "good" and "bad" terrorists.
3. **Actionable intelligence sharing:** SCO needs to actively utilize the **Regional Anti-Terrorist Structure (RATS)** for intelligence sharing, capacity building, and joint exercises & also push for RATS to be more effective and less susceptible to political maneuvering by individual members. India should insist on cross-border terrorism being addressed without political shielding of state-sponsors.
4. **Strengthen Institutional Mechanisms**: The SCO should strengthen its Secretariat, establish effective monitoring and implementation mechanisms, set measurable targets, and improve coordination among member states to ensure timely implementation of decisions and commitments.
5. **Deepening Economic and Connectivity Initiatives:**
    - **Establishing the SCO Development Bank**: Establishing SCO Development Bank is often been cited as a vital step for financial independence and infrastructure financing. It would help members reduce reliance on Western financial systems and fund regional projects in transport, energy, and digital infrastructure.
    - **Focus on Regional Connectivity:** Respect territorial sovereignty on infrastructure initiatives (addressing concerns like India's over CPEC). Fully utilize and expand existing and nascent corridors like INSTC, Chahbahar Port promoting their integration with regional transport networks.
    - **Digital Connectivity:** Emphasize digital infrastructure development, cross-border e-commerce, and digital payment systems to foster seamless economic interaction e.g. sharing India's UPI success, digital public infrastructure models.
    - **Local Currency Trade Settlement:** Build viable financial settlement architecture in local currencies for intra-bloc trade to reduce exposure to external economic shocks and currency volatility.
    - Identify specific sectors for enhanced cooperation, such as energy (including renewables), agriculture (food security), pharmaceuticals, and digital technology, where members have complementary strengths.
6. **Non-Traditional Security Threats:**
    - **Counter-Narcotics:** Enhance cooperation through RATS to combat illicit drug trafficking, which often funds terrorism and organized crime in the region.
    - **Cyber Security:** Push for joint initiatives and capacity building in cybersecurity, a growing threat to all member states.
    - **Disaster Management:** Promote cooperation in disaster response and humanitarian assistance, drawing on India's expertise and resources.
    - **Climate Change:** Advocate for greater cooperation on climate change mitigation and adaptation strategies, particularly given the shared environmental challenges like water scarcity and desertification in the region.

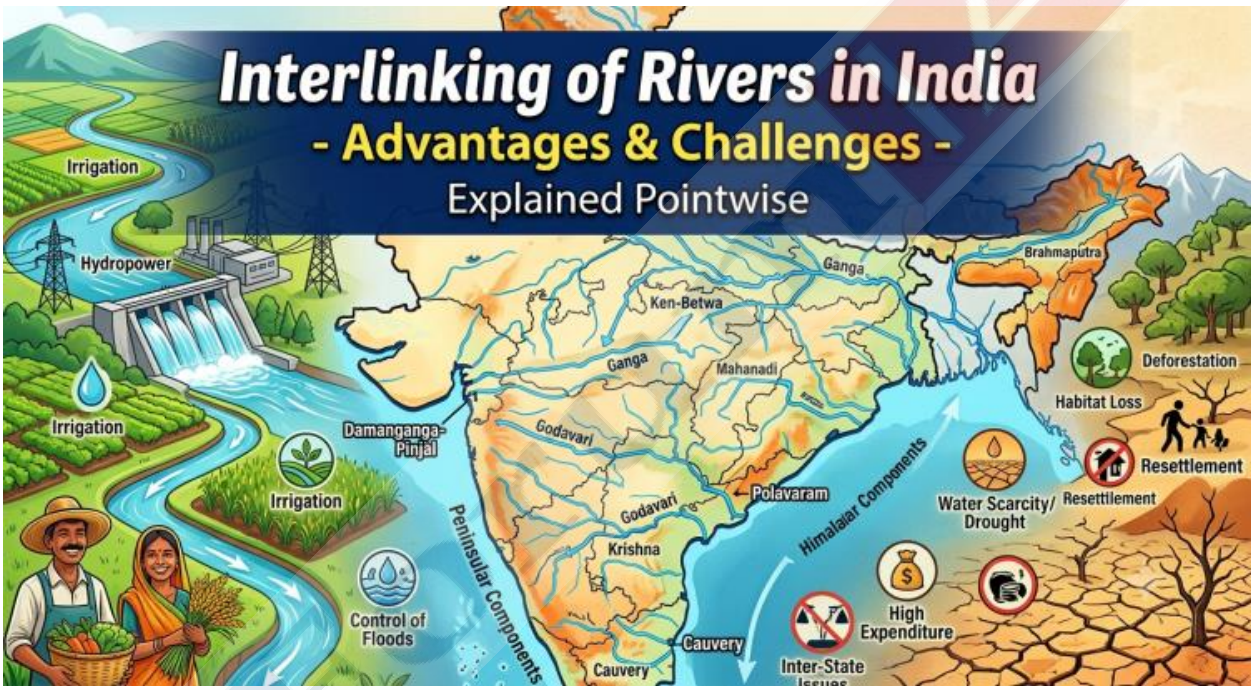
7. **Balance Major-Power Influence**: The SCO should maintain an inclusive and balanced framework by preventing dominance by any single power, ensuring equal participation, mutual respect, consensus-based decision-making and consideration of smaller members' interests.

**Conclusion:**

For India, the SCO remains a platform of both opportunities and constraints. Thus, India needs to devise a strategy that is **assertive on core national interests (like terrorism and sovereignty), pragmatic in economic engagement, and diplomatically nimble in balancing competing geopolitical currents.**

**Read more: The Indian Express, Wikipedia**
**UPSC GS Paper-2: International Relations**

## Interlinking of Rivers in India – Advantages & Challenges – Explained Pointwise




Recently, Union Home Minister Amit Shah proposed linking major rivers from the Brahmaputra to the Godavari and Cauvery at the Southern Zonal Council meeting. He argued this could prevent water shortages for 100 years, create waterways, and reduce fuel costs. He also urged southern states to resolve water disputes through dialogue.

### What is the National River Linking Project (NRLP)?

- The **National River Linking Project (NRLP)**, formerly known as the National Perspective Plan (formulated in 1980), is an ambitious Government of India initiative to **transfer water from relatively water-surplus river basins to water-deficit regions** through a network of dams, reservoirs, canals and other water-transfer structures.
- It proposes to connect 14 Himalayan and 16 peninsular rivers with 30 canals and 3,000 reservoirs to form a gigantic South Asian Water Grid. In total, 30 interlinking projects have been identified under the project.

- The initial plan to interlink India's rivers came in 1858 from a British irrigation engineer, **Sir Arthur Thomas Cotton**.
- NRLP includes two components:

| | |
|---|---|
| **Himalayan component** | ○ This component aims to construct storage reservoirs on the **Ganga** and **Brahmaputra** rivers, as well as their tributaries in India and Nepal.<br>○ It includes **14 links**.<br>○ It will connect:<br>1. The **Ganga** and **Brahmaputra** basins to the **Mahanadi** basin.<br>2. The **Eastern tributaries** of the **Ganga** with the **Sabarmati** and **Chambal** river systems. |
| **Peninsular component** | ○ It includes **16 links** that propose to connect the rivers of South India.<br>○ It envisages linking:<br>1. The **Mahanadi** and **Godavari** to feed the **Krishna**, **Pennar**, **Cauvery**, and **Vaigai** rivers<br>2. The **Ken** river to the **Betwa**, **Parbati**, **Kalisindh**, and **Chambal** rivers<br>3. **West-flowing rivers** to the south of Tapi to the north of Bombay<br>4. Linking some **west-flowing rivers** to **east-flowing rivers**. |

- The NRLP is managed by **National Water Development Agency** (NWDA) under the Ministry of Jal Shakti. NWDA was set up in 1982, to conduct surveys and see how feasible proposals for interlinking river projects are. Recently, it has been reported that the Centre is deliberating on creation of a National River Interlinking Authority (NIRA). It will have powers to set up SPV for individual link projects.
- As of August 2026, the **Ken-Betwa Link Project (KBLP)** is the only one that has entered the implementation stage.
- **Previous examples of river-linking in India:** In the past, several river linking projects have been taken up. For instance:
    1. **Periyar-Vaigai Project**: Under the **Periyar Project**, transfer of water from Periyar basin to Vaigai basin was envisaged. It was commissioned in 1895.
    2. **Godavari-Krishna Link:** Godavari River has also been formally interlinked with the Krishna River at Ibrahimpatnam (near Vijayawada) in Andhra Pradesh in September 2015.

**What are the advantages of Interlinking of Rivers?**

1. **Addressing the Hydrological Imbalance of India (Drought and Flood Mitigation):** India has a large-scale hydrological imbalance with an effective rainfall period of 28 to 29 days. Some regions receive very high rainfall while some face droughts. Transfers water from flood-prone basins (Brahmaputra, Ganga tributaries in Bihar/Assam) to drought-prone peninsular basins, offering a dual solution to two recurring disasters.

2. **Improvement of inland waterways:** Interlinking of rivers will create a network of navigation channels for the growth and development of inland waterways in India. Expanding canal networks can create interconnected, eco-friendly inland shipping routes for bulk cargo, reducing logistics costs and highway congestion and supporting the broader push under the **Jal Marg Vikas Yojana**.
3. **Aiding irrigation potential:** The interlinking of rivers has the potential to irrigate around **35 million hectares** of land in the water-scarce western peninsula. This will help in reducing the dependence on monsoon variability, stabilizing farmer incomes and cropping intensity, especially in drought-prone Bundelkhand, Marathwada, and Rayalaseema. For e.g. The Ken-Betwa project alone is expected to irrigate approximately **10.62 lakh hectares** of farmland annually.
4. **Hydropower Generation:** The interlinked rivers have the potential to generate a total hydropower of around **34 GW**. This will help India to reduce coal-based power plant usage and will help to achieve India's targets under the Paris agreement. For e.g. The Ken-Betwa project will generate 103 MW of hydropower.
5. **Drinking water supply:** The project envisages a supply of clean drinking water amounting to **90 billion cubic meter**. It can help in the resolution of the issue of drinking water scarcity in India. For e.g. The Ken-Betwa project will benefit approximately **62 lakh people** in Madhya Pradesh and Uttar Pradesh.
6. **Boost to industries:** Interlinking of rivers has the potential to provide around 64.8 billion cubic meter of water for industrial use. Thus, by ensuring reliable water availability, interlinking of river can support industrial expansion, attract investment, generate employment and promote balanced regional economic development.
7. **Groundwater Relief**: By providing surface water alternatives, interlinking of rivers can reduce over-extraction of groundwater in over-exploited blocks (e.g. Punjab, parts of Tamil Nadu), aiding long-term aquifer recovery.
8. **Environmental benefits:** Interlinking can improve ecological water availability, support wetlands and wildlife habitats, sustain riverine ecosystems, and reduce drought-induced forest-fire risks by maintaining moisture levels and water availability in vulnerable landscapes.

**What are the issues/challenges in Interlinking of Rivers?**

The interlinking of rivers project has a variety of challenges. They are,

1. **Impact of the Climate change:** Reports suggest that climate change could lead to the loss of nearly one-third of the Hindu Kush region's glaciers by 2100. Consequently, Himalayan rivers may not remain "water-surplus" for long. Moreover, changing rainfall patterns and water availability across the Indian subcontinent could undermine the long-term viability of river-linking projects. Thus, investing billions in such infrastructure may yield diminishing or only short-term benefits if future hydrological conditions differ significantly from present projections.
2. **Human cost of Displacement:** Large infrastructure projects may submerge villages and agricultural land. It will lead to large scale displacement & loss of livelihood of mainly **Tribal and forest-dependent communities.** For e.g. Ken-Betwa project alone is expected to displace **over 7,000 families**, with many belonging to indigenous **Gond and Kol** tribes whose livelihoods are tied to the land and forests.
3. **Huge financial cost:** NRLP is a highly capital-intensive project. In 2001, the total cost for linking the Himalayan and peninsular rivers was estimated at **Rs 5,60,000 crore**, excluding the costs of relief and rehabilitation, and other expenses. The cost-benefit ratio might no longer be favourable for the implementation of river interlinking projects. For e.g. the cost of the Ken-Betwa project has skyrocketed by over **2,100%** from its initial estimate, raising questions about financial viability.

4. **Impact on ecology and biodiversity:**
    - Construction of dams, reservoirs and canals can lead to deforestation, habitat fragmentation and biodiversity loss for e.g. **Ken-Betwa Link Project**, which submerges nearly **6,000 hectares** of the core area of the **Panna Tiger Reserve**.
    - Moreover, with the ecology of every river being unique, letting the waters of rivers mix may affect biodiversity. Also, when most of the rivers in the country are polluted, this may cause mixing of a less polluted river with a more polluted one.
    - A key risk is the movement of **invasive alien species** from "surplus" to "deficit" basins. For instance, linking the Krishna River (which hosts 13-15 invasive species) to the Kaveri basin (which hosts 7-9) is projected to facilitate the spread of these invasives southward, threatening native biodiversity
5. **Impact on Wildlife**: River-linking projects can fragment wildlife habitats, disrupt migration corridors and alter aquatic ecosystems. For example, the **Ken-Betwa project** involves forest submergence in **Panna**, raising concerns over tiger habitat and biodiversity conservation.
6. **International Challenges:** Interlinking Himalayan rivers like the Brahmaputra involves transboundary water-sharing dynamics with neighboring countries like **Nepal, Bhutan, and Bangladesh**, raising international diplomatic and sovereignty concerns.
7. **Inter-State River Disputes:** Water is a State subject in India. So the implementation of the NRLP primarily depends on Inter-State cooperation. Several states including Kerala, Andhra Pradesh, Assam, and Sikkim have already opposed the NRLP.
8. **Infrastructural Challenges:** The government is proposing a canal irrigation method for transmitting water from one area to the other. The maintenance of canals is also a great challenge, as it includes preventing sedimentation, clearing logging of waters. Further, the government faces the challenge of acquisition of large-scale lands for the smooth implementation of the project.

**What should be the way forward?**

1. **Comprehensive Reassessment**: Commission an independent, comprehensive and transparent reassessment of all proposed river links, incorporating the latest climate models rather than relying solely on historical data. This would help identify which basins are genuinely water-surplus or water-deficit under future climate scenarios.
2. **Prioritize Intra-State & Small-Scale Links:** Instead of massive inter-state mega-links that trigger political disputes, focus on smaller, intra-basin projects (for e.g. the Kosi-Mechi or localized intra-state links) that carry lower ecological footprints and are easier to execute.
3. **Prioritise Economically Viable Links**: Prioritise river-linking projects where long-term benefits in irrigation, drinking water and power generation clearly outweigh financial, environmental and rehabilitation costs, ensuring efficient and sustainable utilisation of public resources.
4. **Climate-Resilient Planning**: River-linking projects should incorporate climate projections, glacier dynamics, changing monsoon patterns and extreme weather events into planning, ensuring that infrastructure remains viable and water transfers remain sustainable under future hydrological uncertainties.
5. **Minimise Displacement and Ecological Damage**: River-linking projects should minimise displacement through careful site selection, environmental impact assessments and alternative designs. Ecologically sensitive forests and wildlife habitats must be protected, while affected communities receive fair compensation, rehabilitation and livelihood support.
6. **National Waterways Project (NWP):** As per some experts, the govt should consider the National Waterways Project (NWP) instead of the NRLP. Under NWP, water from a flooded river will flow to the other. It acts like a water grid, similar to a power grid. It just needs 1/3rd the land required for

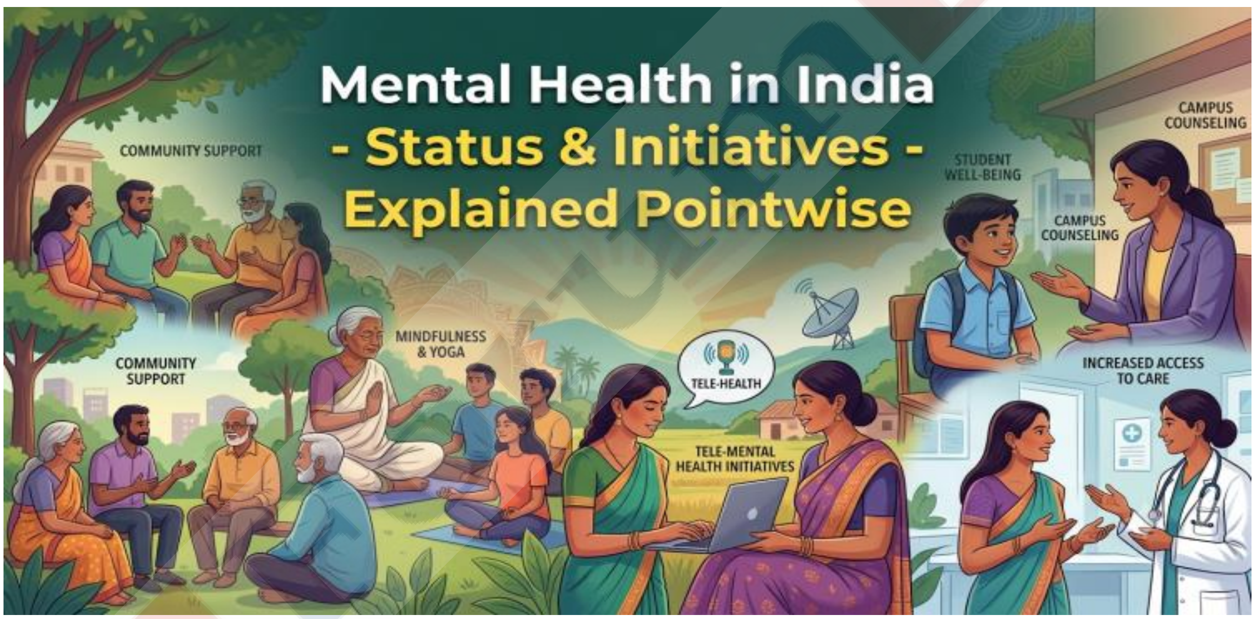
interlinking of rivers, is open to navigation throughout the year and involves zero pumping. Furthermore, it can irrigate almost double the land and has a 76% more power generation capacity (60 GW) compared to the interlinking of rivers project.

7. **Prioritize Local and Nature-Based Solutions**: Initiatives like watershed development, rainwater harvesting, groundwater recharge, and rejuvenation of local water bodies can provide sustainable water security at a local level. These are often cheaper and create less social and environmental disruption than massive inter-basin transfers.

**Conclusion**: The interlinking project offers immense potential for water security but demands a science-based, people-centric approach, prioritizing ecological safeguards and fair rehabilitation over financial ambition.

Read More: The Hindu
UPSC Syllabus- GS 1- Indian Geography

## Mental Health in India – Status & Initiatives – Explained Pointwise




Rising suicides among students, farmers, and homemakers across India underline a silent yet deepening mental health crisis. Despite progressive legislation and growing awareness, mental healthcare remains underfunded, understaffed, and stigmatized.

### What is Mental Health?

- **Mental health** refers to a state of emotional, psychological and social well-being that enables an individual to cope with the normal stresses of life, develop and maintain healthy relationships, work productively, and contribute to society. It is an integral part of overall health and well-being.
- The World Health Organization (WHO) defines mental health as **"a state of well-being in which an individual realizes their own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to their community."**

- **Core pillars of mental health**: Mental health has 4 core pillars:
  1. **Emotional Well-being:** The ability to process and express a full range of emotions. It's not about avoiding negative emotions, but about riding them out without being destroyed by them.
  2. **Psychological Well-being:** How you perceive yourself and your life. This includes having a sense of purpose, feeling capable of learning and growing, and having the ability to make your own decisions.
  3. **Social Well-being:** The ability to build and maintain healthy relationships, feel a sense of belonging, and communicate effectively with others.
  4. **Cognitive Well-being:** The ability to think clearly, focus, remember information, and solve problems.

**What is the current Mental Health Scenario in India?**

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| **Prevalence and Burden** | • The National Mental Health Survey (NMHS) estimated that **10.6% of adults** were suffering from a current mental disorder.<br>• According to WHO 2023 estimates, over 200 million Indians (roughly 1 in 7) live with a diagnosable mental health condition.<br>• **Depression** affects an estimated **56 million** Indians (about **4.5% of the population**), and **anxiety disorders** affect around **38 million**, per WHO data.<br>• India accounts for roughly **15% of the global mental health burden**, per a 2017 Lancet estimate.<br>• **Lifetime prevalence** stands at **13.7%**, while **WHO** estimates **16.3 suicide deaths per 1,00,000 people**.<br>• India's mental health burden equals **2,443 Disability-Adjusted Life Years (DALYs)** per 10,000 population. |
| **Suicide Statistics (NCRB 2023)** | • **1,71,418 suicides** were recorded, with **men comprising 72.8%** of victims.<br>• **Family problems (31.9%)**, **illness (19%)**, and **marital issues (10%)** were leading causes.<br>• **Farmer suicides** stood at **10,786**, or **6.3% of total suicides**.<br>• **Andaman & Nicobar Islands, Sikkim, and Kerala** reported the highest suicide rates. |
| **Treatment Gap and Workforce Shortage** | • Treatment gaps remain extremely high **(70-92%)** across different mental disorders, with 85% gap in common disorders like depression. This indicates that a large proportion of affected people do not receive appropriate care.<br>• Only **0.75 psychiatrists** and **0.12 psychologists** per 1 lakh population, far below the **WHO norm of 3**.<br>• Rehabilitation services meet less than **15%** of national needs. |

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| **Economic and Social Costs** | ● Untreated mental illnesses may cost India **over $1 trillion by 2030**.<br>● Employers lose **₹1.1 lakh crore annually** due to absenteeism and burnout.<br>● Suicide remains the **leading cause of death among youth (15-29 years)**. |

**What are the major factors contributing to the mental health crisis in India?**

1. **Socio-Economic and Financial Stress:** High unemployment (7.3% in 2024), rising debt, and job insecurity have triggered widespread anxiety. As per **NCRB (2023)**, **31.9% of suicides** stemmed from family and financial distress, with farmers and informal workers most affected. Farmer suicides, driven by debt, crop failure, and market shocks, remain a persistent tragedy, with over **1,00,000 farmers** having taken their lives since 2014.
2. **Educational and Professional Pressure:** Exam stress and fear of failure have made students vulnerable. A 2024 Indian Psychiatric Society study found around **40% of Indian teenagers** cite stress and anxiety as their main concern, linked to academic pressure (NEET, JEE, coaching-hub isolation in places like Kota). Long working hours and workplace burnout add to adult psychological strain.
3. **Urbanisation and Social Isolation:** Migration, nuclear families, and digital lifestyles have eroded traditional support systems, making **urban residents twice as likely** to report loneliness as rural populations.
4. **Gendered and Domestic Challenges:** Nearly **29% of women** (NFHS-5) have faced domestic violence, leading to high rates of depression and anxiety linked to emotional neglect and unpaid care work.
5. **Digital & Social Media Exposure:** Excessive or harmful use of digital platforms can contribute to social comparison, cyberbullying, sleep disruption and anxiety, particularly among young people. Excessive screen time and social media usage heighten anxiety, low self-esteem, and body-image issues. **National Institute of Mental Health and Neurosciences (NIMHANS), 2022** found adolescents online for **4+ hours daily** more prone to such disorders.
6. **Social Stigma and Cultural Misconceptions:** Over **half of Indians** still view mental illness as weakness, causing delayed diagnosis and low treatment-seeking, especially in rural areas. Fear of social ostracization, damaging "family honor," or ruining marriage prospects leads families to hide conditions or delay medical intervention.
7. **Lack of Awareness:** A large part of the population, especially in rural areas, lacks awareness about mental illness and may not even recognize its symptoms. It often leads to symptoms being dismissed as physical weakness, lack of willpower, or spiritual faults.
8. **Systemic Deficiencies:** With just **1.05% of the health budget** for mental health and **0.75 psychiatrists per lakh people**, India faces a **70-92% treatment gap**, reflecting weak infrastructure and policy execution. Moreover, mental healthcare infrastructure is heavily concentrated in urban areas, leaving rural populations with an almost complete lack of services and support.

**What are the major government initiatives for promoting mental health in India?**

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| **Mental Healthcare Act, 2017** | ● Establishes a **rights-based framework for mental healthcare**, including the right to access mental-health services, protection from discrimination and regulation of mental-health establishments.<br>● Recognises mental health as a legal right under **Article 21**. |

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| | • Decriminalises suicide, mandates insurance coverage, and guarantees affordable, dignified care.<br>• Empowers individuals to make advance directives for treatment. |
| **Rights of Persons with Disabilities Act, 2016** | • It includes mental illness within its disability framework, extending reservation and protection benefits. |
| **National Mental Health Policy (2014)** | • Provides a policy framework focused on mental well-being, prevention, treatment, rehabilitation, reduction of stigma and protection of the rights of persons with mental illness. |
| **National Mental Health Programme (NMHP) (1982)** | • Aims to integrate mental healthcare into **primary health systems**.<br>• Now expanded to **767 districts**, though many face staff and funding shortages. |
| **District Mental Health Programme (DMHP) (1996)** | • It is the grassroots operational arm of the NMHP.<br>• Provides mental-health services at the district level, including early detection, treatment, counselling, awareness generation and training of healthcare workers.<br>• It has been sanctioned for **767 districts.** The programme now covers more than 90% of the districts.<br>• It integrates mental health services into Primary Health Centres (PHCs) and Community Health Centres (CHCs). |
| **Tele MANAS (2022)** | **National Tele Mental Health Programme (Tele-MANAS):**<br>• Provides **24×7 tele-mental-health counselling and care** through the toll-free number **14416**, particularly benefiting people in remote and underserved areas.<br>• Has conducted **over 20 lakh tele-counselling sessions**, improving access in underserved areas.<br>• **Tele-MANAS Mobile Application**: Launched in 2024, the app provides mental-health support and complements the Tele-MANAS helpline. |

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| **NIMHANS (National Institute of Mental Health and Neurosciences)** | • It is the apex institute for treatment, training, and research on mental health in India.<br>• It anchors much of India's psychiatric workforce training and policy research. |
| **National Suicide Prevention Strategy (2022)** | • Aims to reduce suicide rates by 10% by 2030 through early detection, awareness campaigns, and responsible media reporting. |
| **Manodarpan Initiative** | • Launched during COVID-19 to provide psychosocial support to students, teachers, and families under the Atmanirbhar Bharat Abhiyan.<br>• Reached over 11 crore students through school-based awareness programmes |
| **Judicial Backing** | • In **Sukdeb Saha vs State of Andhra Pradesh**, the **Supreme Court** affirmed mental health as part of the **Right to Life (Article 21)**, binding the state to ensure accessible and quality care. |

**What should be the way forward to improve mental healthcare in India?**

1. **Increase Budgetary Allocation:** Increase the overall health budget and mental health's share within it to at least 5% (currently ~1%) of total health expenditure to improve infrastructure, medicine supply, and service delivery in mental healthcare.
2. **Expand and Train Workforce:** Build a stronger pool of mental health professionals by training mid-level providers, counsellors, and community nurses. Expand psychiatry seats and mandate stronger psychiatric training in undergraduate (MBBS) curricula.
3. **Expanding Infrastructure Beyond Metros:** Strengthen mental-health infrastructure in tier-2/3 cities, rural and remote areas through district hospitals, community centres, trained professionals, telemedicine and referral networks. Offer fellowships, targeted postgraduate seats, and financial incentives for doctors, clinical psychologists, and psychiatric nurses willing to serve in rural and semi-urban districts.
4. **Integrate Mental Health into Primary Care:** Integrate routine mental health checkups and essential psychotropic medication distribution into local Ayushman Arogya Mandirs (formerly Health & Wellness Centres) and ensure basic counselling at every Primary Health Centre (PHC).
5. **Promote Community-Based Interventions:** Strengthen peer support networks and village-level counselling through trained ASHA and Anganwadi workers to enhance accessibility at the grassroots level. India must invest more systematically in community-based care. Programmes like Zimbabwe's Friendship Bench that focus on training the community workers can help in bridging the gap between awareness & treatment – particularly in rural & underserved populations.

6. **Address Stigma and Raise Awareness:** Launch a massive, country-wide public awareness campaign (like those for TB or HIV) to tackle stigma and educate people about symptoms, introduce mental health education in schools, and encourage open discussions to normalise help-seeking behaviour. Mandate age-appropriate mental health literacy, stress management, and full-time counselors across state and central education boards.
7. **Ensure Digital and Regulatory Safeguards:** Regulate mental health apps and AI tools to ensure privacy, ethical standards, and professional oversight, preventing misinformation and misuse.
8. **Enhance Governance and Coordination:** Establish a National Mental Health Observatory for monitoring outcomes and align inter-ministerial efforts across Health, Education, Women & Child Development, Labour, and Agriculture for an integrated approach.
9. **Adopt a Whole-of-Society Approach:** Address underlying determinants such as poverty, unemployment, domestic violence, social isolation, substance abuse and discrimination through coordinated action across health, education, labour and social-welfare sectors. WHO specifically advocates a **multisectoral, life-course and whole-of-government approach** to mental health.

**Conclusion:** India's mental health crisis is a profound challenge, but the path forward is clear. Bridging the vast treatment gap requires moving beyond awareness to systemic action i.e. integrating care into communities, destigmatizing help-seeking, and transforming policy into accessible, compassionate reality for every citizen. Prioritising mental well-being is essential for building a **healthy, productive and inclusive Viksit Bharat.**

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| **Read more:** The Hindu<br>**UPSC Syllabus- GS 2-** Issues related to health |

## India's GDP Growth – Methodology & Concerns – Explained Pointwise

India's latest GDP data has ignited controversy, with critics alleging that a sharp downward revision of the previous year's base artificially inflated the growth figures. While the government defends updated methodologies, the opacity surrounding these revisions has intensified demands for greater transparency, reliability, and credibility in India's national income statistics.

**How is GDP estimated in India?**

- Gross Domestic Product (GDP) is the total monetary value of all final goods and services produced within the geographical boundaries of India during a given period.
- In India, GDP estimates are prepared by the **National Statistical Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI)**. The NSO releases GDP estimates on a **quarterly and annual basis**.
- India aligns its methodology with the United Nations **System of National Accounts (SNA 2008)** framework, calculating GDP primarily using two complementary sides: the **production/supply side (Gross Value Added)** and the **expenditure/demand side:**

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| **Production Side** | **Gross Value Added (GVA):**<br>○ To calculate the GDP, GVA at basic prices across eight major economic sectors is calculated first.<br>○ The GDP at market price is then calculated using the formula:<br><br>**GDP = GVA at basic prices + Product Taxes – Product Subsidies** |
| **Expenditure Side** | ○ To cross-verify and capture aggregate demand in the economy, NSO calculates GDP using the expenditure method:<br><br>**GDP = PFCE + GFCE + GFCF + CIS + Valuables + (X – M)**<br><br>**PFCE (Private Final Consumption Expenditure):** Spending by households and non-profit institutions serving households on goods and services.<br><br>**GFCE (Government Final Consumption Expenditure):** Current operational expenditures by central and state governments (wages, salaries, goods/services), excluding transfers. |

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| | **GFCF (Gross Fixed Capital Formation):** Domestic capital investment in infrastructure, machinery, buildings, and intellectual property.<br><br>**CIS (Changes in Stocks/Inventories):** Net additions to inventory holdings.<br><br>**Net Exports (X – M):** Total exports of goods and services minus total imports |

- For calculating real GDP, a **base year** is used to compare economic activity after removing price effects. India has recently shifted its GDP base year from **2011-12 to 2022-23**, as part of an effort to make national income estimates more representative of the current structure of the economy.

**Why are GDP estimates revised periodically & What are the challenges associated with such revisions?**

1. **Availability of more complete data**: Initial GDP estimates are often based on limited or provisional data. As more comprehensive information from industries, government departments and surveys becomes available, earlier estimates are revised to improve their accuracy and reliability.
2. **Improvement in data quality**: As more comprehensive and reliable data become available from surveys, administrative records, industries and government agencies, GDP estimates are revised to incorporate this information, thereby improving their accuracy and reflecting actual economic activity more effectively.
3. **Changes in methodology**: Statistical authorities periodically update the methods, data sources and estimation techniques used to calculate GDP to reflect structural changes in the economy, improve accuracy, incorporate new datasets and provide a more reliable picture of economic activity.
4. **Change in base year**: The periodic revision of the GDP base year helps capture structural changes in the economy, updated consumption patterns, emerging sectors and improved data sources, thereby making GDP estimates more relevant and representative of current economic conditions.

**Challenges associated with GDP revisions:**

1. **Difficulty in comparing different estimates**: Frequent revisions to GDP estimates can make it difficult to compare preliminary and revised figures. Changes in methodology, base year and data sources may also affect historical growth rates, complicating meaningful economic comparisons.
2. **Impact on policy decisions**: GDP revisions can affect fiscal and monetary policy decisions, as policymakers may reassess economic conditions, growth prospects and policy priorities based on updated estimates, potentially altering government spending, taxation and interest-rate decisions.
3. **Credibility concerns**: Large or unexpected revisions in GDP estimates may raise doubts about the reliability and transparency of official statistics, affecting public trust, investor confidence and the credibility of economic policymaking.
4. **Impact on investor confidence**: Frequent or significant revisions in GDP estimates can create uncertainty about India's economic performance, potentially affecting investor confidence. Greater

transparency, consistency and timely communication regarding revisions can help maintain trust among investors.

**What are the major concerns raised over the latest GDP growth estimates of India?**

1. **Change in the GDP base year**: The government has shifted the GDP base year from **2011-12 to 2022-23.** Though, this is a standard statistical exercise, but comparisons between the old and new series can create confusion. The critics have questioned whether the revised series makes current growth appear stronger because of changes in the historical data.
2. **Concerns over GDP deflator**: Real GDP growth is calculated by adjusting nominal GDP for inflation using a deflator, and in recent quarters India's real GDP growth has moved unusually close to nominal GDP growth because the price deflator used has been exceptionally low. This occurs because the deflator is heavily influenced by a depressed Wholesale Price Index (WPI), which is weighted toward global commodity prices that have remained soft, even as the Consumer Price Index (CPI) has stayed significantly higher.
3. **Large revisions to past GDP estimates**: The new series has substantially revised earlier GDP levels and growth rates. This has raised questions about the comparability of the old and new series and the interpretation of historical economic performance. However, MoSPI maintains that revisions are normal and reflect improved data and methodology.
4. **Disconnect between GDP growth and employment**: A major concern is whether strong headline GDP growth is translating into adequate employment and wage growth, particularly for India's large youth population. Critics have pointed out that weak employment conditions are inconsistent with such a high growth rate.
5. **Investment and Capital Flows:** Despite the impressive GDP figure, foreign investors have been net sellers of Indian stocks, offloading over $230 billion this year. This suggests that global investors are not fully convinced by the growth narrative and are concerned about underlying structural weaknesses.
6. **Question of domestic investment**: Critics have raised concerns about whether the high GDP growth is accompanied by a proportionate increase in private investment and productive capacity. This raises questions about the sustainability of the reported growth rate.

**What measures can be taken to improve the transparency, reliability and credibility of India's national income statistics?**

1. **Statutory Backing for the National Statistical Commission (NSC)**: As originally recommended by the Rangarajan Commission, the NSC should be given statutory authority and legislative independence, making it directly accountable to Parliament rather than the Ministry of Statistics and Programme Implementation (MoSPI).
2. **Improve data collection**: Strengthen statistical surveys and administrative databases to ensure timely, accurate and comprehensive data. Greater use of digital technologies, GST records and other reliable administrative sources can improve coverage and reduce data gaps.
3. **Increase transparency**: The government should make GDP-related datasets, methodologies, assumptions and revision procedures publicly accessible. Clear explanations of changes in estimation methods and periodic revisions can enable independent scrutiny and strengthen public confidence in official statistics for e.g. when major series or base-year overhauls occur, MoSPI should provide complete technical documentation, data scripts, and open access to anonymized unit-level microdata.
4. **Regularly update the base year**: The GDP base year should be periodically updated to reflect changes in the structure of the economy, consumption patterns, prices and emerging sectors, thereby ensuring that GDP estimates accurately represent contemporary economic activity.

5. **Strengthen independent scrutiny**: Strengthen independent scrutiny by involving independent economists, statisticians and experts in reviewing GDP estimation methodologies and data. Regular peer reviews and external audits can identify methodological gaps, improve accuracy and enhance public confidence.
6. **Improve coordination among agencies**: Strengthen coordination between MoSPI, RBI, government ministries and State Statistical Agencies to ensure consistent data collection, minimise discrepancies, improve data sharing and enhance the accuracy and reliability of national income estimates.
7. **Build statistical capacity**: Build statistical capacity by investing in skilled manpower, modern technology, digital data systems and training across statistical institutions. This can improve data collection, processing and analysis, thereby enhancing the accuracy, timeliness and reliability of national income statistics.

**Conclusion**: A credible statistical system requires not only accurate data but also transparency in methodology and revisions. Strengthening India's statistical institutions, improving data quality and enabling independent scrutiny can enhance confidence in national income estimates.

UPSC GS-3: Indian Economy
Read More: Indian Express

## Inflation Targeting in India – Effectiveness & Challenges – Explained Pointwise


India has just completed a decade of inflation targeting as a formal policy framework of the RBI. The RBI adopted the Inflation Targeting on the recommendations of the **Urjit Patel Committee** in 2016. Hence, there is a requirement for an elaborate review to examine the performance of this method. In this article, we will analyze the performance of Inflation Targeting in India so far.

**What is Inflation Targeting (IT)?**

- Inflation Targeting is a **monetary policy framework** in which the central bank publicly announces a specific inflation-rate target and uses policy tools – especially **interest rates –** to keep inflation close to that target.
- Inflation Targeting was first formally adopted by **New Zealand in 1990**, followed by countries such as **Canada (1991), the UK (1992), and Sweden (1993).** It subsequently emerged as a widely used monetary policy framework globally. In India, **Inflation Targeting** was formally institutionalised in **2016** through amendments to the **RBI Act, 1934**, (**Section 45ZA**), based on the recommendations of the **Urjit Patel Committee (2014)**.
- **Types of inflation targeting**:
    1. **Strict inflation targeting(SIT):** Under this, the central bank only focuses on keeping inflation, close to a given inflation target.
    2. **Flexible inflation targeting(FIT):** Under this, apart from inflation, the central bank is also concerned about other variables like the stability of interest rates, exchange rates, output and employment ratios.
- The Reserve Bank of India follows **Flexible Inflation Targeting**, with a target of **4% CPI inflation ± 2 percentage points** (i.e., **2%-6%**).

**Basic Terminologies:**

- **Monetary Policy:** It is the macroeconomic policy laid down by the central bank that focuses on the management of money supply and interest rates.
- **Inflation:** It refers to a sustained/continuous rise in the general price level of goods and services in an economy over a period of time.
- **Headline inflation:** It is a measure of total inflation in an economy. In India, Consumer Price Index Combined (CPI -C) represents Headline Inflation.
- **Core inflation:** It is the inflation level after subtracting the food and fuel inflation from the Headline Inflation.
- **Repo Rate:** It is the rate at which RBI provides short-term loans to banks against the collateral of government and other approved securities under the liquidity adjustment facility (LAF).
- **Shut Period:** It is the period for which the securities cannot be traded

**Background of Inflation Targeting:**

- The Finance Act, 2016 amended the Reserve Bank of India Act, 1934 (RBI Act) . The amendment facilitated a statutory and institutionalized framework for a **Monetary Policy Committee(MPC)**.
- MPC was entrusted with the task of fixing the benchmark policy interest rate (repo rate) to **contain inflation** within the specified target level i.e. inflation targeting.
- A flexible inflation target (FIT) of 4% was decided with a deviation of +or-2%. Further, **headline consumer price inflation** was chosen as the **key indicator.**
- This agreement between the Center and the RBI on inflation targeting is set to end on 31st March 2021.

**What are the advantages of adopting the Inflation Targeting framework?**

1. **Price Stability**: Inflation targeting framework provides a clear, quantifiable target (4% +/-2%) that anchors long-term price expectations for households, firms, and investors, reducing uncertainty in economic planning.

2. **Anchors Inflation Expectations:** A credible numerical target helps households and businesses form stable expectations about future inflation.
3. **Reduces Inflation Volatility**: A credible inflation target enables timely monetary policy responses to demand and supply shocks, preventing temporary price pressures from becoming persistent and reducing overall inflation volatility.
4. **Improves Investment Climate**: Stable and predictable inflation reduces uncertainty over costs, interest rates and returns, encouraging domestic and foreign investment and facilitating long-term economic planning.
5. **Protects Vulnerable Sections**: Low and stable inflation safeguards the purchasing power of poorer households, whose incomes are often fixed and who spend disproportionately on essential goods.
6. **Enhances Transparency & Accountability**: A clearly defined inflation target enables assessment of the central bank's performance against measurable objectives, thereby promoting greater transparency, responsibility and accountability in monetary policy.
7. **Supports Sustainable Growth:** By maintaining macroeconomic stability, inflation targeting creates conditions conducive to long-term economic growth rather than short-term growth driven by excessive monetary expansion.
8. **Global alignment and easier benchmarking**: Inflation targeting framework aligns India with the dominant global monetary policy framework, easing cross-country comparison and enhancing sovereign credit assessments.

**What has been the performance of Inflation Targeting framework in India so far?**

1. **Lower Average Inflation:** Average CPI inflation declined from **6.8% during 2012-16** to around **4.9% after adoption of FIT**, indicating improved price stability.
2. **Reduced Inflation Volatility:** The standard deviation of headline inflation declined from **2.3% during 2012-16 to 1.5% after 2016**, suggesting greater stability.
3. **Better Anchoring of Inflation:** Inflation has generally remained closer to the **4% target**, strengthening the credibility of monetary policy and helping anchor inflation expectations.
4. **Resilience to Major Shocks:** The framework faced severe disruptions such as **COVID-19 and the Russia-Ukraine war**, which pushed inflation above 6%. Nevertheless, inflation subsequently moderated towards the target.
5. **Institutionalised Monetary Policy:** The creation of the **Monetary Policy Committee (MPC)** has made interest-rate decisions more collective, transparent and accountable.
6. **Growth Not Sacrificed**: A major concern before adoption was that a strict focus on inflation might hinder economic growth. However, RBI analysis indicates that average GDP growth remained broadly stable, while inflation declined substantially, following the second five-year review held in March 2026.
7. **Institutional Validation:** Recognizing its effectiveness in stabilizing macroeconomic fundamentals, the Government of India renewed the **4% target (±2% band)** framework for another 5-year term through March 2031.

**What are the major challenges and limitations of the Inflation Targeting framework in India?**

1. **Dominance of Food Inflation:** Food and beverages account for roughly **46% of the CPI basket**. Food prices are heavily influenced by monsoons, crop output and supply disruptions, which cannot be effectively controlled through interest rates.
2. **Limited Effectiveness Against Supply Shocks:** Monetary tightening can reduce demand but cannot directly increase food supply or resolve disruptions caused by oil-price shocks, weather events or global supply-chain disruptions.

3. **Weak Monetary Transmission:** Changes in the RBI's policy rate do not always transmit quickly or fully to lending and deposit rates, particularly because of structural rigidities in India's financial system. This transmission lag reduces the framework's real-time effectiveness in controlling inflation.
4. **Administered Prices:** Prices of commodities such as fuel and some agricultural products are influenced by government policies, taxation and administered mechanisms, limiting the effectiveness of monetary policy alone.
5. **Missed Targets and Forecast Errors:** During the 2019-2024 period, the RBI experienced large and persistent forecast errors, primarily due to the non-transience of food price shocks. Inflation remained above the 6% upper tolerance band for three consecutive quarters, triggering a requirement for the central bank to write a formal explanation to the government.
6. **Vulnerability to external/global shocks**: Global events can trigger inflation beyond the RBI's control. For example, the **Russia-Ukraine war (2022)** caused a sharp rise in crude oil and commodity prices, increasing India's inflationary pressures.
7. **Regional and distributional heterogeneity**: A single national CPI target masks wide regional variation in inflation experience (rural vs urban, state-wise food price differentials), meaning the "average" target may not reflect price stress felt by specific segments of the population.

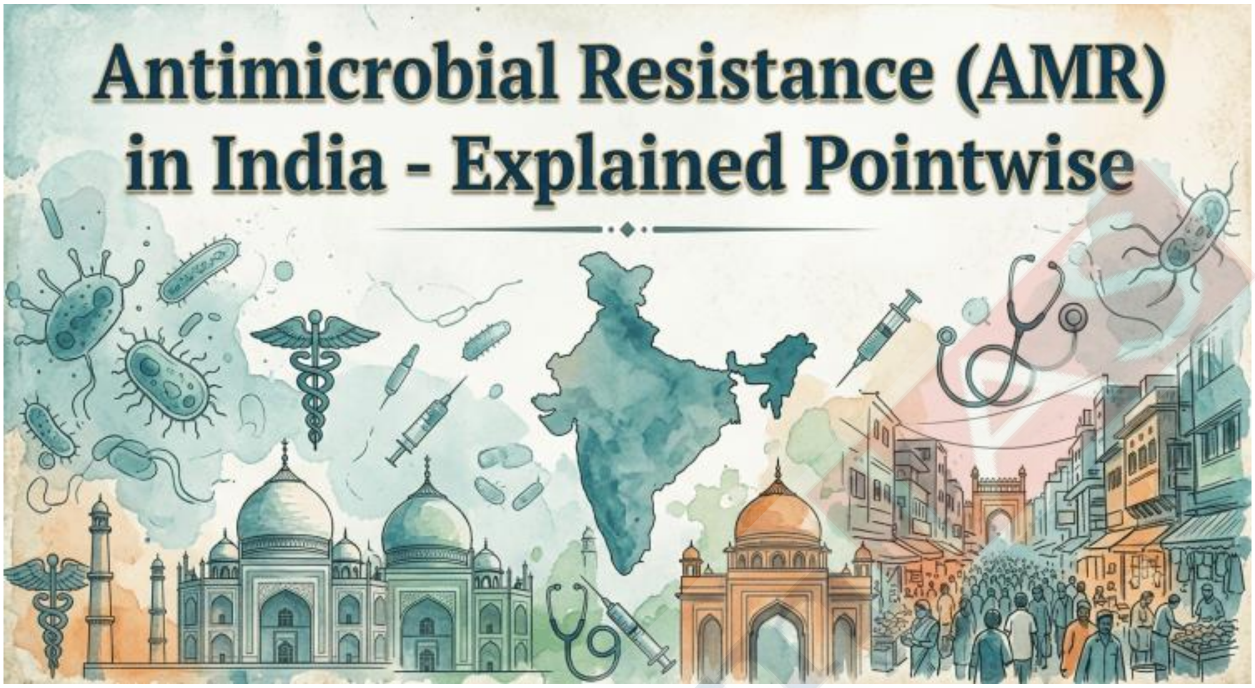
**What are the suggestions for improving the Inflation Targeting framework in India?**

1. **Improve Inflation Forecasting**: Strengthen RBI's forecasting models, especially for food prices, since persistent forecast errors weaken credibility among forward-looking and adaptive economic agents. This was flagged as a top priority in the 2026 review discussion.
2. **Strengthen Monetary Policy Transmission**: Ensure faster and fuller transmission of RBI policy-rate changes to bank lending rates by improving liquidity management, financial-market depth and banking-sector efficiency, thereby enhancing monetary policy effectiveness.
3. **Address Supply-Side Constraints:** Improve agricultural productivity, storage, logistics and supply chains, while promoting climate-resilient crops to reduce food-price volatility and mitigate inflation arising from supply shocks.
4. **Strengthen Fiscal-Monetary Coordination**: Align fiscal and monetary policies to manage inflation effectively, with the government addressing supply-side pressures while the RBI manages demand, without compromising central bank independence.
5. **Periodically Review the CPI Basket**: Update CPI weights and components regularly to reflect changing consumption patterns, ensuring inflation measurement accurately represents household expenditure and improves the effectiveness of monetary policy.
6. **Address regional and distributional inflation gaps**: Develop supplementary regional or segment-specific inflation indicators to inform policy, given that a single national average can mask significant rural-urban or state-wise price divergence.

**Conclusion:** Inflation targeting should not operate in isolation. Its effectiveness in India depends on combining credible monetary policy with sound fiscal management, stronger supply chains, agricultural reforms, better data and effective government-RBI coordination.

UPSC GS-3: Indian Economy
Read More: The Hindu

## Antimicrobial Resistance (AMR) in India – Explained Pointwise




A recent major study of hospitalised patients across India has found that infections caused by antibiotic-resistant bacteria are more likely to be fatal and more expensive to treat than infections caused by drug-susceptible strains. Conducted by the ICMR's AMR Surveillance Network across 20 tertiary-care hospitals, the study analysed data from nearly 1.6 lakh patients.

**What is Antimicrobial Resistance? What are the different kinds of Antimicrobial Resistance?**

- Antimicrobial Resistance (AMR) is the resistance of microorganisms (bacteria, virus, parasites and fungi) to an antimicrobial agent (antibiotics, fungicides, antiviral agents and parasiticides), to which they were first sensitive.
- As a result of AMR, standard treatments become ineffective, and infections can persist, potentially spreading to others.
- WHO declared AMR one of the top 10 global public health threats.

Types of Antimicrobial Resistance:

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| **Target Pathogen** | 1. **Antibacterial Resistance (Antibiotic Resistance):** Bacteria develop defenses against antibiotics (e.g., MRSA, drug-resistant *E. coli*).<br>2. **Antiviral Resistance:** Viruses adapt to resist antiviral medications (e.g., drug-resistant HIV or Influenza strains). |

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| | 3. **Antifungal Resistance:** Fungi become resistant to antifungal treatments (e.g., drug-resistant *Candida auris*).<br>4. **Antiparasitic Resistance:** Parasites survive antiparasitic drugs (e.g., chloroquine-resistant *Plasmodium falciparum*, which causes malaria). |
| **Origin & Transmission** | 1. **Intrinsic (Natural) Resistance:** Natural resistance is caused by the structural characteristics of microbes. It is not associated with the use of antimicrobials. It has no hereditary property (e.g. a bacterium's outer membrane naturally blocking a specific drug).<br>2. **Acquired Resistance:** Acquired resistance develops due to the changes in the genetic characteristics of microbes, like changes in structures of chromosomes. This makes the microbes resistant to previous antimicrobial treatment.<br>3. **Cross-Resistance:** Resistance developed in microbes against antibiotics having similar structure. |
| **Clinical Severity** | 1. **Multidrug-Resistant (MDR):** Microbes resistant to at least one agent in three or more antimicrobial categories.<br>2. **Extensively Drug-Resistant (XDR):** Microbes resistant to almost all approved antimicrobial agents, leaving only one or two treatment options.<br>3. **Pandrug-Resistant (PDR):** "Superbugs" resistant to all available antimicrobial agents across all categories. |

**What is the extent of AMR in India according to the National Centre for Disease Control (NCDC) Report on AMR?**

1. Bacteria like **E. coli**, **Klebsiella**, **Acinetobacter**, **Staphylococcus aureus**, **enterococcus** have become resistant to even the latest generation of antibiotics.
2. Third-generation antimicrobial drugs like **cephalosporins, imidazoles, amino-glycosides, ceftriaxone, metronidazole, amikacin** and **piperacillin**, used to treat cold, fever, skin diseases and urinary tract infection have become ineffective.
3. **E. coli** showed over 80% resistance to ampicillin and more than 70% resistance to the third-generation cephalosporin cefotaxime.
4. **MRSA (methicillin-resistant *Staphylococcus aureus*)** prevalence stood at a national average of 47.8%, but reached as high as 65% in states such as Bihar, where weaker healthcare infrastructure compounds the problem.
5. Inappropriate use of antibiotics in human, animal and agricultural sectors has generated superbugs that are resistant to these antibiotic drugs, which spread due to inadequate sanitation and improper infection prevention in healthcare.

**What are the reasons behind the growth of Antimicrobial Resistance in India?**

1. **Misuse of antimicrobial medicines:** The use of antibiotic medicine in non-bacterial infections, use of over-the-counter antibiotics, self-medication and emergence of fixed drug compositions, have contributed to the increase in antimicrobial resistance in India. **For e.g.** Overuse of antimicrobial medicines during the Covid-19 outbreak.

2. **Inadequate laboratory facilities:** India lacks severely in the laboratory network and capacity to support Clinicians/Doctors with the bacterial culture test and suggesting an appropriate antibiotic.
3. **Lack of trained healthcare personnel:** There is lack of adequate training of healthcare personnel in antibiotic selection, escalation, and de-escalation.
4. **Inadequacy of healthcare facilities:** Overcrowded hospitals have left very little time for the doctors to examine patient's medical history, conduct proper blood tests and then recommend proper antimicrobial treatment.
5. **Inappropriate use of antimicrobials in agriculture and allied sectors:** The overuse of antimicrobials in agriculture and allied sector have led to increase in AMR. **For e.g.** Use of Colistin as growth promotional agent in poultry farming has led to Colistin AMR in India.
6. **Inadequate monitoring:** India lacks proper monitoring system to control the antibiotic prescription and dispensing practice by health system. **For e.g.** Ineffective monitoring to stop the sale of over the counter antibiotics.
7. **Self-Medication:** Patients often take leftover antibiotics or stop their prescribed courses early when symptoms improve, leaving surviving, resistant bacteria to multiply.
8. **Patient Non-Compliance:** When patients don't complete their full course of antibiotics, the infection isn't fully cleared, and the surviving bacteria are more likely to develop resistance.
9. **Crony capitalism:** The pharmaceutical industry incentivises the sale of antibiotics by being hand in gloves with the healthcare personnel like doctors, pharmacists etc.
10. **Contamination around pharmaceutical manufacturing sites:** The untreated waste from the pharmaceutical industries releases large amounts of active antimicrobials into the environment.
11. **Inadequate sanitation facilities:** Poorly functioning sanitation systems like open defecation, poorly contained septic tanks have led to increase in AMR.
12. **Improper infection prevention in healthcare institutions:** AMR has also spread due to the lack of proper infection prevention mechanism in hospitals, clinics and laboratories. **For e.g.** <u>Candida auris</u> acquired by hospital patients.
13. **No new antimicrobial developments:** The exit of big pharma from antibiotic development and lack of investment from venture capitalists to support the commercial viability of antibacterial agents, has pushed AMR into a global health crisis.

**What are the challenges posed by spread of Antimicrobial Resistance?**

1. **Threat to the healthcare system:** The antimicrobials helped in significantly reducing the mortality rates in low and middle-income countries (LMICs) of Asia and Africa. The ineffectiveness would impair the modern health system by failing to prevent infections post a routine surgery or cancer treatment.
2. **Loss of Human Lives:** Drug-resistant infections can lead to severe complications and deaths, particularly among ICU patients, newborns, elderly people and immunocompromised patients. AMR is responsible for up to 7 lakh deaths a year (GRAM Project Report). **For e.g.** E.coli and MRSA (Methicillin Resistant Staphylococcus Aureus) are among the drug-resistant bacteria that lead to most deaths.
3. **Economic Brunt:** Prolonged illness and disability keep working-age adults out of the workforce. The World Bank estimates that by 2050, AMR could cause a **3.8% reduction in global GDP**, pushing up to 28 million people into poverty, with developing nations hit the hardest. As per an estimate by the Global Research on Antimicrobial resistance (GRAM) project, AMR can lead to an economic brunt on the world economy to the tune of US $1 trillion by 2050.
4. **Threat to Food Security**: AMR in livestock, poultry and aquaculture can affect animal health and productivity and facilitate transmission of resistant organisms through the food chain, making AMR a major **One Health** challenge.

5. **Inequality in Healthcare**: Poorer populations are particularly vulnerable because they may face limited access to diagnostics, quality medicines and specialist care, while resistant infections impose higher treatment costs.
6. **Looming possibility of next pandemic:** There is a looming possibility that the next pandemic will be caused by a superbug. **For e.g.** Concerns about the spread of C. Auris superbug.

**What steps have been taken to control AMR?**

Domestic Steps and Actions:

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| **Ban of antimicrobial usage in Agriculture** | The Government of India has passed an order banning the use of **streptomycin** and **tetracycline** in agriculture and the growth promotional use of **colistin** in poultry farming. |
| **National Programme on AMR Containment** | It was launched during 12th FYP in 2012-17. Under this programme, AMR Surveillance Network has been strengthened by establishing labs in State Medical Colleges. |
| **National Action Plan on AMR (NAP-AMR)** | Launched in **2017**, it focuses on awareness, surveillance, infection prevention, rational antimicrobial use, research and international collaboration. |
| **National AMR Surveillance Network (NARS-Net)** | NCDC has established a laboratory-based surveillance network to monitor resistance patterns and generate evidence for treatment and policy decisions. |
| **Delhi Declaration on AMR** | An inter-ministerial consensus was signed by the ministers of the concerned ministries pledging their support in AMR containment. |
| **Chennai Declaration** | New **H1 rule** was introduced which banned the use of only second and third-line antibiotics. (H1 rule was brought out to regulate over-the-counter use of antibiotics). |
| **Red Line campaign** | To prevent irrational use of prescription-only antibiotics and create awareness on the dangers of taking antibiotics without prescription. |
| **Antimicrobial Resistance Strategic Action Plan (KARSAP)** | Kerala's state-level **Antimicrobial Resistance Strategic Action Plan (KARSAP)** serves as a successful model for integrating AMR management into a healthcare system using a "One Health" approach. |

Global Steps and Actions:

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| **WHO's Global Action Plan (GAP) on AMR (2015)** | WHO launched this comprehensive global action plan to reduce the incidence of AMR by improving awareness and understanding about AMR, optimisation of antimicrobial usage and initiating effective sanitation and hygiene.<br>Adopted globally with five major objectives: **awareness, surveillance/research, infection prevention, responsible antimicrobial use and sustainable investment.** |
| **Global Antimicrobial Resistance and Use Surveillance System (GLASS)** | WHO established **GLASS** to enable countries to systematically collect and share comparable data on AMR and antimicrobial consumption. |
| **WHO AWaRe Classification** | Antibiotics are categorized into three groups: **Access** (first/second choice), **Watch** (higher resistance potential), and **Reserve** (last-resort options) – to guide rational prescription practices globally. |
| **One Health Approach** | A joint alliance formed by the **WHO**, the Food and Agriculture Organization (**FAO**), the World Organisation for Animal Health (**WOAH**), and the UN Environment Programme (**UNEP**) to drive cross-sector action on human, animal, and environmental fronts. |

**What measures should be adopted to effectively combat & reduce AMR?**

AMR is a complex socio-economic and political challenge and not just a scientific issue to be solved by doctors and researchers alone.

1. **Promote Antimicrobial Stewardship**: Ensure antibiotics are prescribed only when necessary, using the right drug, dose and duration. Strengthen hospital antimicrobial-stewardship committees, prescription audits and standard treatment guidelines among healthcare professionals to prevent misuse and resistance.
2. **Strengthen AMR Surveillance**: Expand **NARS-Net** and antimicrobial-consumption surveillance across India and data from humans, animals, food and the environment under a One Health surveillance system. For e.g. NCDC's surveillance of *E. coli*, *Klebsiella* and MRSA helps track resistance trends and guide treatment policies.
3. **Regulate Antimicrobial Use in Animals & Agriculture**: Restrict non-essential antimicrobial use in livestock, poultry and aquaculture. Strengthen veterinary prescription systems and surveillance of antimicrobial consumption in agriculture.
4. **Improvement of Sanitation and Hygiene:** The sanitation in hospitals and basic access to personal hygiene must be improved to reduce the spread of AMR. Improving Clean **W**ater, **A**dequate **S**anitation, and **H**ygiene infrastructure in low- and middle-income communities cuts off sewage-to-waterway transmission routes.

5. **Implementation of the Chennai Declaration on AMR:** The new H1 rule which banned the use of only second and third-line antibiotic must be implemented at the earliest to prevent the over-the-counter sales of antibiotics.
6. **Investment in Public Health infrastructure:** The investment in public health infrastructure like network of laboratories, hospitals, recruitment of trained medical professionals must be enhanced at the earliest. **For e.g.** NCCD reports points out that states with good public health systems have lower AMR.
7. **Improving governance and monitoring framework:** Environmental governance, planning and regulatory frameworks must be enhanced to combat the menace of AMR. **For e.g.** Involve the Ministry of environment to stop the contamination of antimicrobials.
8. **One Health Approach:** Any actions on AMR must be guided by the 'One Health Approach'- a holistic approach that links the health of humans with our shared environment. Create stronger coordination among MoHFW, NCDC, ICMR, ICAR, FSSAI, environmental authorities and veterinary institutions, with shared data and accountability.
9. **Robust investment in R&D of new antibiotics:** Develop new antibiotics, antifungals, vaccines, diagnostics and alternative therapies. Support genomic surveillance and research into AMR transmission pathways.
10. **Awareness Generation on AMR:** Discourage self-medication and incomplete courses. Expand AMR awareness among doctors, pharmacists, farmers, veterinarians and the public. Peru's efforts on patient education to reduce unnecessary antibiotic prescriptions must be used as a learning point.

**Conclusion:** The development of resistance to antimicrobials is a major public health problem all over the world. It makes even minor infections tough to treat, causing severe illnesses and deaths. Hence, a clarion call to end this menace must be taken at local, national and global levels that would eventually help in attainment of **SDG 3** (ensuring good health and well-being for all).

Read More: Indian Express
UPSC Syllabus: GS 3- Science and Technology (Healthcare and emerging concerns)

# Anti-Microbial Resistance (AMR)

According to a report by Global Research on Antimicrobial resistance (GRAM) project, AMR has directly contributed to about 30% of deaths due to neonatal sepsis across India. Moreover, over 30% of the COVID-19 deaths in India, were due to failure to treat secondary bacterial infections caused by Multi Drug Resistant pathogens.

## Anti Microbial Resistance

- AMR- Resistance of microorganisms (bacteria, virus, parasites and fungi) to an antimicrobial agent (antibiotics, fungicides, antiviral agents and parasiticides), to which they were first sensitive
- Examples of AMR in India- Bacteria like E. coli, Klebsiella, Acinetobacter have developed AMR. Third-generation antimicrobial drugs like cephalosporins, imidazoles have become ineffective

## Challenges

- Threat to the health care system- Increase the mortality rates in Africa and Asia.
- Economic Brunt- To the tune of US$ 1 trillion by 2050 for the world economy.
- Looming possibility of next pandemic- C. Auris superbug has raised severe concerns.

## Initiatives

- Delhi Declaration on AMR
- Red Line campaign
- National programme on AMR containment
- WHO's Global Action Plan (GAP) on AMR, 2015

## Causes of AMR

- Misuse of antimicrobial medicines- Use of over-the-counter antibiotics & Overuse during Covid-19
- Inadequate healthcare facilities- Lack of large network of laboratories for bacterial culture tests & adequately trained healthcare personnel
- Improper usage in agriculture and allied sectors- Use of Colistin as growth promotional agent in poultry farming
- Crony capitalism- Pharmaceutical industry incentivising the sale of antibiotics
- No new antimicrobial development- Exit of big pharma from antibiotic development
- Inadequate sanitation facilities- Candida auris acquired by hospital patients

## Way Forward

- Chennai Declaration on AMR- Implement new H1 rule which bans the use of only second and third-line antibiotic.
- One Health Approach- Reduce use of biopesticides and fungicides in agriculture.
- Awareness Generation- Peru's efforts on patient education
- R&D of new antibiotics- Use of AMR Fund for support

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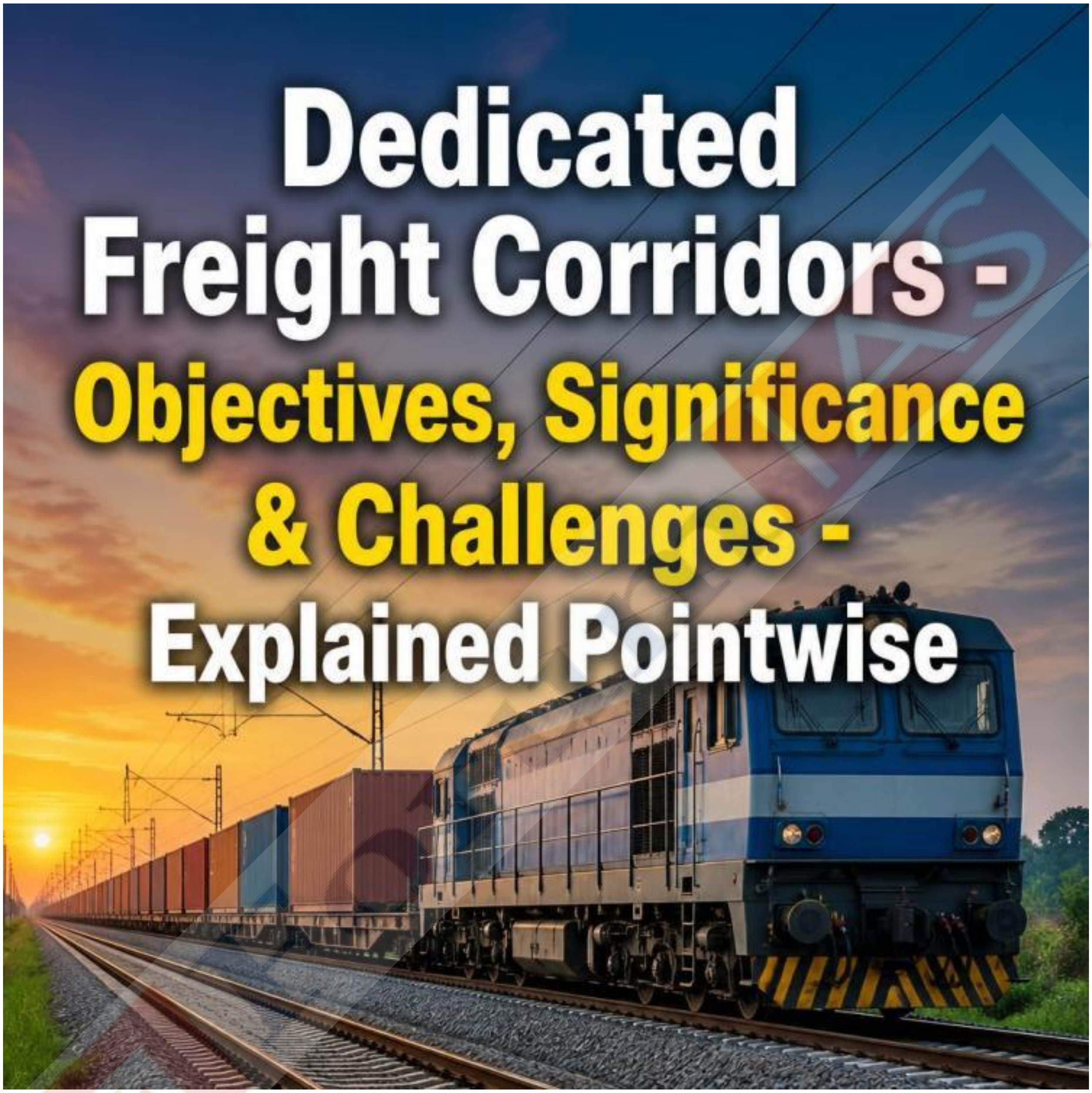
# Dedicated Freight Corridors – Objectives, Significance & Challenges – Explained Pointwise

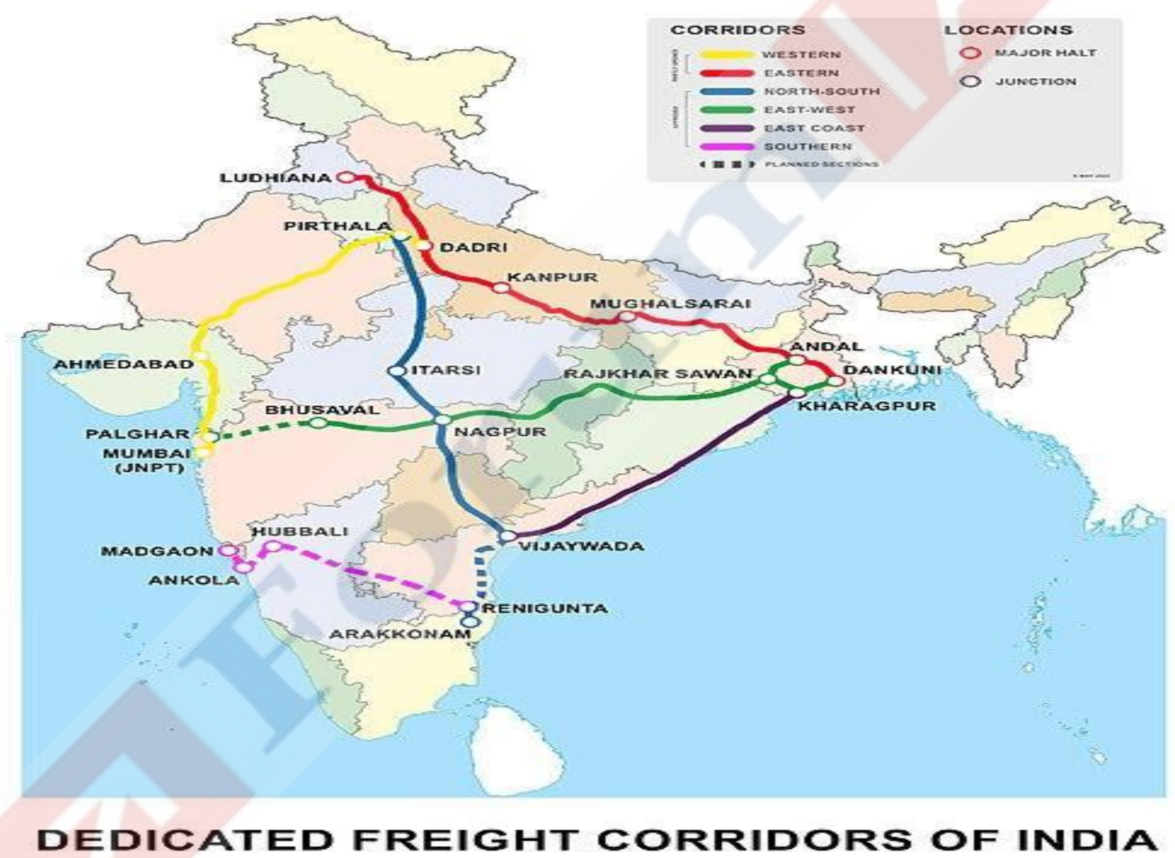



Recently, Prime Minister Narendra Modi inaugurated three key sections of the Western Dedicated Freight Corridor (WDFC), marking another milestone in strengthening India's freight infrastructure. The development is expected to enhance logistics efficiency, reduce transit time and costs, and improve connectivity between industrial centres and major ports.

**What is a Dedicated Freight Corridor (DFC)?**

- A Dedicated Freight Corridor (DFC) is a specially designed railway route meant exclusively for the movement of freight/goods trains, separating freight traffic from passenger trains on busy railway routes.

- In India, the government proposed building DFCs along the Golden Quadrilateral in 2005. Dedicated Freight Corridor Corporation of India Limited (DFCCIL) was set up in 2006 to construct and operate DFCs.
- The two major dedicated freight corridors are:
    1. **Eastern DFC:** From Ludhiana (Punjab) to Dankuni (West Bengal).
    2. **Western DFC:** From Dadri (Uttar Pradesh) to Jawaharlal Nehru Port Trust (JNPT) near Mumbai.
- Four further dedicated freight corridors are being developed:
    1. **East-West Corridor** (2327 km): Kolkata–Mumbai
    2. **North-South Corridor** (2328 km): Delhi–Chennai
    3. **East Coast Corridor** (1114 km): Kharagpur–Vijayawada
    4. **Southern Corridor** (892 km): Madgaon-Chennai




Source: Wikipedia

**What are its basic objectives?**

1. **Decongest existing railway network**: DFCs divert freight trains from congested routes, freeing railway capacity for faster, more efficient passenger services.

2. **Increase freight-carrying capacity**: DFCs provide dedicated, high-capacity railway lines, enabling faster movement of heavier and longer freight trains and reducing congestion on existing routes.
3. **Reduce logistics costs**: Dedicated Freight Corridors reduce transportation time, fuel consumption and freight handling costs, thereby lowering overall logistics costs and improving supply-chain efficiency.
4. **Improve transit speed**: Dedicated freight tracks enable faster movement of goods by reducing congestion, improving train speeds (from ~25 km/h to 75–100 km/h), and ensuring smoother, more reliable freight transportation.
5. **Promote modal shift**: The corridors are designed to carry much heavier loads and can replace a large number of trucks . This shift from road to rail helps decongest highways, reduces road accidents, and lowers carbon emissions, contributing to a more sustainable and greener logistics network.
6. **Boost Economic and Industrial Growth**: By providing a fast, reliable, and cost-effective link between industrial hubs and major ports (like JNPT in Mumbai), DFCs are expected to stimulate economic growth, enhance supply chain efficiency, and make Indian exports more competitive.

**What is the significance of Dedicated Freight Corridors for India's logistics sector?**

1. **Lowering India's Overall Logistics Cost**: Historically, logistics costs accounted for 13-14% of India's GDP. High-capacity rail movement helps drive the logistic cost below 8%, making Indian manufacturing and exports far more price-competitive globally.
2. **Drastic Reduction in Transit Times**: Cargo trains on standard lines average 25 km/h due to passenger priority. On DFCs, average speeds increase to 50-60 km/h with top speeds of 100 km/h, cutting transit times by 50% or more on key trunk routes (e.g. JNPT/Mundra ports to the Delhi-NCR hinterland).
3. **Double-Stack Containerization:** Overhead clearances on the Western DFC allow double-stack container trains, effectively doubling the cargo volume per run.
4. **Longer, Heavier Trains:** Standard tracks handle ~5,000 tonnes per train. DFCs accommodate heavy-haul trains up to 1.5 km long, carrying up to 13,000 tonnes. This drastically reduces freight cost per tonne-kilometer.
5. **Modal Shift from Road to Rail**: Moving freight via roadways is 2.5× more expensive per tonne-kilometer than long-haul rail and creates severe highway congestion. DFCs offer reliable schedules that allow companies to switch from trucks back to rail, targeting a national goal of a 45% rail freight modal share.
6. **Multi-Modal Integration**: DFCs act as the infrastructure anchor for the [PM Gati Shakti](PM Gati Shakti) program, connecting hinterland inland container depots (ICDs) directly to major sea ports (e.g. JNPT, Mundra, Pipavav).
7. **Industrial Growth**: By connecting inland industrial hubs directly to major ports like JNPT in Mumbai, DFCs are enabling the creation of new industrial corridors. DFCs serve as the backbone for mega-industrial hubs like the Delhi-Mumbai Industrial Corridor (DMIC). For e.g. Western DFC supports industrial growth around Gujarat, Rajasthan and Maharashtra through better port connectivity.
8. **Environmental Impact**: DFCs operate on 100% electrified lines featuring regenerative braking. Shifting bulk freight from diesel trucks to electric rail prevents millions of tonnes of carbon emissions annually, aligning with India's Net-Zero targets.

**What are the major challenges in the development and operation of Dedicated Freight Corridors in India?**

1. **Land acquisition delays**: Delays in acquiring land due to compensation disputes, rehabilitation concerns, legal challenges and fragmented ownership increase project costs and postpone timely

completion of DFC projects. For e.g. about **11,000 hectares** of land had to be acquired for the initial corridors, which involved removing structures and dealing with encroachments.

2. **Farmer Protests**: The project has triggered opposition from affected communities. In Gaya, Bihar, farmers have protested, claiming the construction of the Eastern DFC threatens irrigation for nearly 2,200 acres of farmland, which could render their fertile land barren.
3. **Cost and Time Overruns**: The original cost estimates, sanctioned during 2006–08, increased significantly due to inflation, rising land acquisition costs and implementation delays. The project took over 15 years to substantially complete, far exceeding the initial 5-7 year timeline.
4. **Speed Concerns**: The average speed of freight trains on the DFC network in 2024-25 was reported as 37 km/h. While this is a significant improvement over the 23.8 km/h on the conventional network, a parliamentary panel noted that there is "considerable scope for further enhancement".
5. **Complex terrain and engineering challenges**: DFC construction involves difficult terrain, major bridges, tunnels and river crossings, increasing engineering complexity, construction time, costs and technical requirements.
6. **First- and Last-Mile Connectivity**: A lack of robust connectivity to and from the DFC terminals is a major structural constraint. If goods cannot be efficiently moved from a factory to the DFC or from the DFC to a warehouse, the overall logistics efficiency is hampered.
7. **Coordination issues**: Delays may arise due to coordination gaps among Indian Railways, DFCCIL, state governments, ports and private logistics operators, affecting timely project execution and efficient operations.
8. **Limited Private Sector Participation**: Freight operations and rolling-stock investment remain heavily reliant on Indian Railways and public funding. Limited participation under private freight train operator schemes has constrained investment diversification, competition and innovation.
9. **Crew Shortages:** Dedicated Freight Corridor Corporation of India Limited (DFCCIL) relies on Indian Railways for operational staff. Significant vacancies in sanctioned roles for loco pilots, station masters, and goods train managers create operational constraints and limit maximum throughput.
10. **Environmental and social concerns:** Large linear infrastructure projects raise concerns around displacement, resettlement of affected communities, and environmental clearances, particularly where corridors pass through ecologically sensitive or densely populated zones.

**What should be the way forward?**

1. **Massive Recruitment & Training**: The most immediate threat to the DFC network's efficiency is the severe shortage of trained operational staff, especially loco pilots and goods train managers (guards). A parliamentary committee has urged the Railways to urgently resolve this shortage to minimize delays and improve throughput. This requires a major, accelerated recruitment and training drive to fill the existing vacancies.
2. **Expedite Remaining Corridor Development**: Fast-track planning and execution of the proposed East-West (Kolkata-Mumbai), North-South (Delhi-Chennai), East Coast (Kharagpur-Vijayawada), and Southern corridors to realize a truly pan-India freight network, learning from land acquisition and execution lessons of the Eastern/Western DFCs.
3. **Enhance First- and Last-Mile Connectivity**: Strengthen connections between DFCs and ports, industrial clusters, logistics parks, warehouses and highways through feeder rail lines and efficient road links. This will reduce cargo handling, trans-shipment delays and overall logistics costs, ensuring seamless first-mile-to-last-mile freight movement.
4. **Promote private-sector participation**: Encourage greater private investment in freight terminals, rolling stock, logistics parks and train operations through transparent PPP frameworks, predictable

regulations, competitive access to DFC infrastructure and viability-gap funding where necessary. This can reduce dependence on public financing while promoting competition, efficiency and innovation.

5. **Enhance capacity utilisation**: Maximise DFC usage by diversifying freight beyond coal and bulk commodities towards **containers, automobiles, agricultural produce, cement and manufactured goods.** Better integration with ports, industrial clusters and logistics parks can ensure higher and more consistent freight volumes.
6. **Create competitive freight markets**: Encourage greater private participation in freight train operations, rolling-stock ownership and terminal management through transparent regulations, competitive access to DFC infrastructure, stable tariffs and simplified licensing, promoting efficiency, innovation and better service quality.
7. **Address social and environmental concerns**: Ensure environmentally sustainable and socially inclusive construction by conducting rigorous environmental impact assessments, minimising forest and agricultural land diversion, restoring habitats, and providing fair compensation, rehabilitation and livelihood support to affected communities.

**Conclusion**: Dedicated Freight Corridors can transform India's logistics ecosystem by **reducing freight costs, improving connectivity, promoting multimodal transport and shifting cargo towards railways**. Their success will depend on timely execution, private participation, environmental sustainability and seamless integration with **PM Gati Shakti.**

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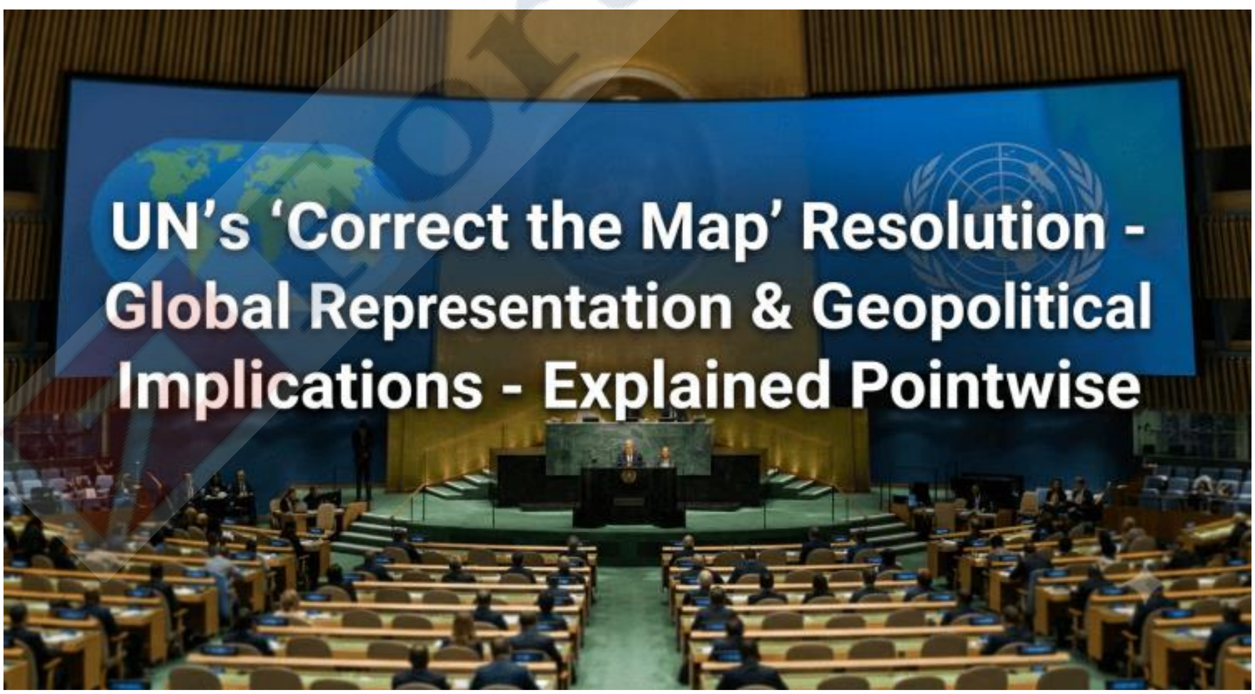
| UPSC GS-3: Indian Economy (Infrastructure)<br>Read More: [The Hindu] |

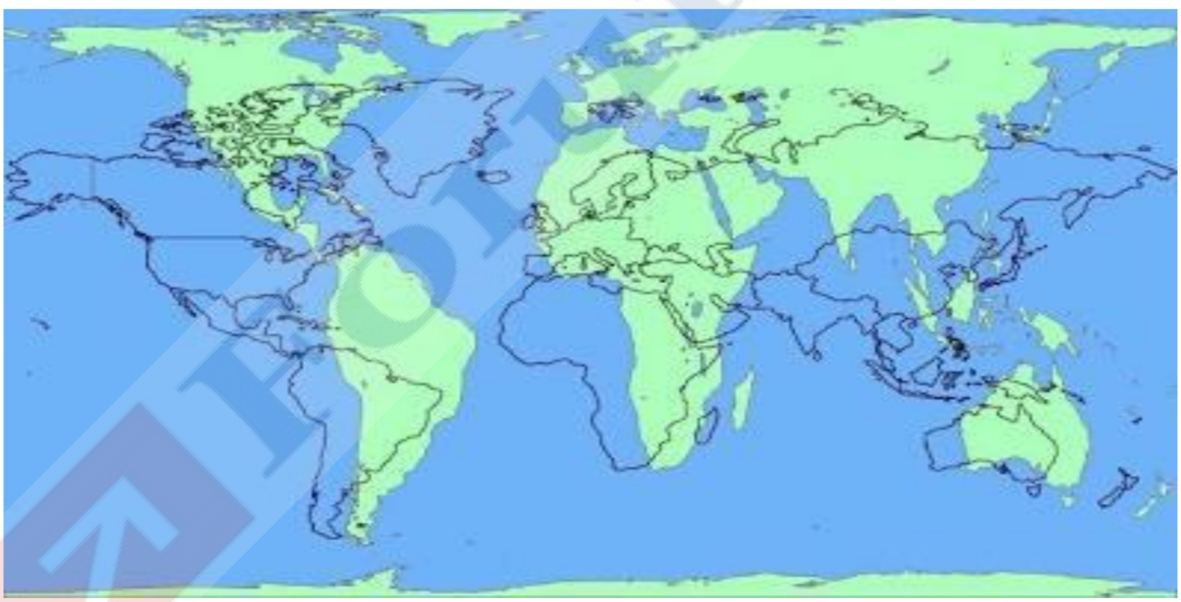
## UN's 'Correct the Map' Resolution – Global Representation & Geopolitical Implications – Explained Pointwise



Recently, the UN General Assembly adopted the **"Correct the Map: Rebalancing Global Cartographic Representation"** resolution, encouraging governments, educational institutions, international organisations and technology companies to consider equal-area map projections, such as Equal Earth, when accurately representing the relative size of continents is important. The **non-binding resolution** does not prohibit the use of the Mercator projection. It was adopted by a recorded vote of **164 in favour, 1 against (the United States), and 6 abstentions** (Estonia, Georgia, Lithuania, Moldova, Serbia and Ukraine).

**What is the Mercator projection?**

- The Mercator projection is a cylindrical map projection developed by **Gerardus Mercator in 1569**. It preserves **direction and angles**, making it highly useful for navigation, but it significantly distorts the **size and shape of landmasses**, especially near the poles.
- On a Mercator map:
  - **North-south distances are stretched** increasingly as you move away from the equator.
  - **East-west distances are stretched by the same factor** at each latitude, so that local shapes and compass bearings are preserved.
  - **Lines of constant compass bearing (rhumb lines)** appear as straight lines, which is why it became the standard navigational map for centuries.
- The key mathematical idea is that the vertical scale is made to match the horizontal scale at every latitude. Since the horizontal scale grows as you move toward the poles (because lines of longitude converge on a globe but are drawn parallel on the map), the vertical scale must grow too.



**What are the implications of the Mercator projection's distortion of the relative size of continents and countries?**

1. **Distorted perception of size**: The Mercator projection exaggerates areas near the poles while shrinking equatorial regions. For e.g. **Greenland** appears comparable to **Africa**, although Africa is nearly 14 times larger, **Alaska** looks comparable in size to Brazil, but Brazil is nearly **5 times larger**, **Antarctica**, which is actually smaller than South America, appears as a vast band stretching across the bottom of the map.

2. **Reinforcement of Eurocentric perceptions**: The Mercator projection visually enlarges Europe and North America while reducing the apparent size of equatorial regions, potentially reinforcing perceptions of Western regions as geographically dominant and more globally significant.
3. **Under-representation of the Global South**: Mercator's area distortion makes many equatorial countries in Africa, Asia and South America appear smaller than their actual size, potentially creating a misleading perception of their geographical significance compared with high-latitude regions. For e.g. Africa is often perceived as similar in size to North America, despite being larger than North America and China combined.
4. **Colonial legacy**: The widespread use of the Mercator projection during the European colonial era contributed to a Eurocentric representation of the world. By visually enlarging Europe and other high-latitude regions while reducing equatorial regions, it has been criticised for reinforcing perceptions of Western geographical and political dominance.
5. **Inaccurate Geographical Literacy:** Decades of classroom reliance on standard wall maps have left generations with persistent false assumptions. Common misconceptions include believing Greenland is as large as Africa (Africa is 14 times larger) or that Europe is larger than South America (South America is nearly double Europe's size).
6. **Distorted Scale of Global Issues:** Problems like tropical deforestation, disease spread, or resource allocation are mapped onto diminished spatial footprints, making equatorial land areas seem less extensive than they are in reality.
7. **Influence on geopolitical perceptions**: Mercator's distortion may make high-latitude regions appear disproportionately large, potentially shaping perceptions of their geographical importance and reinforcing Eurocentric worldviews. Maps can therefore subtly influence how global power and regional significance are perceived.

**What is the significance of the UN's recent "Correct the Map" resolution?**

1. **Corrects geographical distortions**: Promotes the use of **equal-area projections** that depict the relative size of continents and countries more accurately. This reduces the exaggerated appearance of high-latitude regions and gives a more realistic representation of landmasses, such as **Africa, South America and India.**
2. **Improves representation of Africa**: The resolution promotes equal-area maps that depict Africa closer to its actual geographical size, countering the significant underrepresentation created by Mercator projection. This can improve geographical awareness of Africa's place in the world.
3. **Challenges Eurocentric perceptions**: The resolution seeks to reduce the historical influence of cartographic representations that may have reinforced perceptions of Western regions as disproportionately large or important.
4. **Promotes Global South perspectives**: The initiative gives greater visibility to the geographical realities of **Africa, Asia and Latin America**, whose actual size is often understated in Mercator maps. It encourages a more balanced understanding of the world and challenges historically dominant Eurocentric representations.
5. **Educational significance**: The "Correct the Map" initiative can promote **greater geographical literacy** by helping students understand that different map projections involve different types of distortions. It can encourage critical thinking about how maps influence perceptions of **size, location and global importance**, while providing a more accurate representation of continents such as Africa and South America.
6. **Links cartography with power**: Maps are not purely neutral geographical tools; they can shape how people perceive territory, size, importance and global power. Thus, cartographic choices can reflect and sometimes reinforce historical power structures and dominant worldviews. The UN's "Correct the

Map" initiative highlights the importance of more balanced and accurate geographical representation, particularly for the Global South.

7. **Promotes informed use of maps**: The resolution encourages users to understand that every map projection involves trade-offs. It promotes choosing projections according to purpose (equal-area maps for comparing geographical size and Mercator for navigation) thereby preventing misleading interpretations of geography.

**What is India's position on the UN's "Correct the Map" initiative and its concerns regarding territorial representation?**

India **voted in favour** of the UN General Assembly's "Correct the Map" resolution, supporting the broader principle of equal-area cartographic representation. However, India clarified that its vote does not constitute endorsement of any particular map projection or map depicting national boundaries.

**India's position:**

- **Supports accurate representation:** India supports the objective of reducing distortions in the relative size of continents and promoting more equitable cartographic representation.
- **No endorsement of a specific projection:** India clarified that the resolution does not endorse the Equal Earth projection specifically. Different projections serve different purposes, and no single projection is suitable for every application.

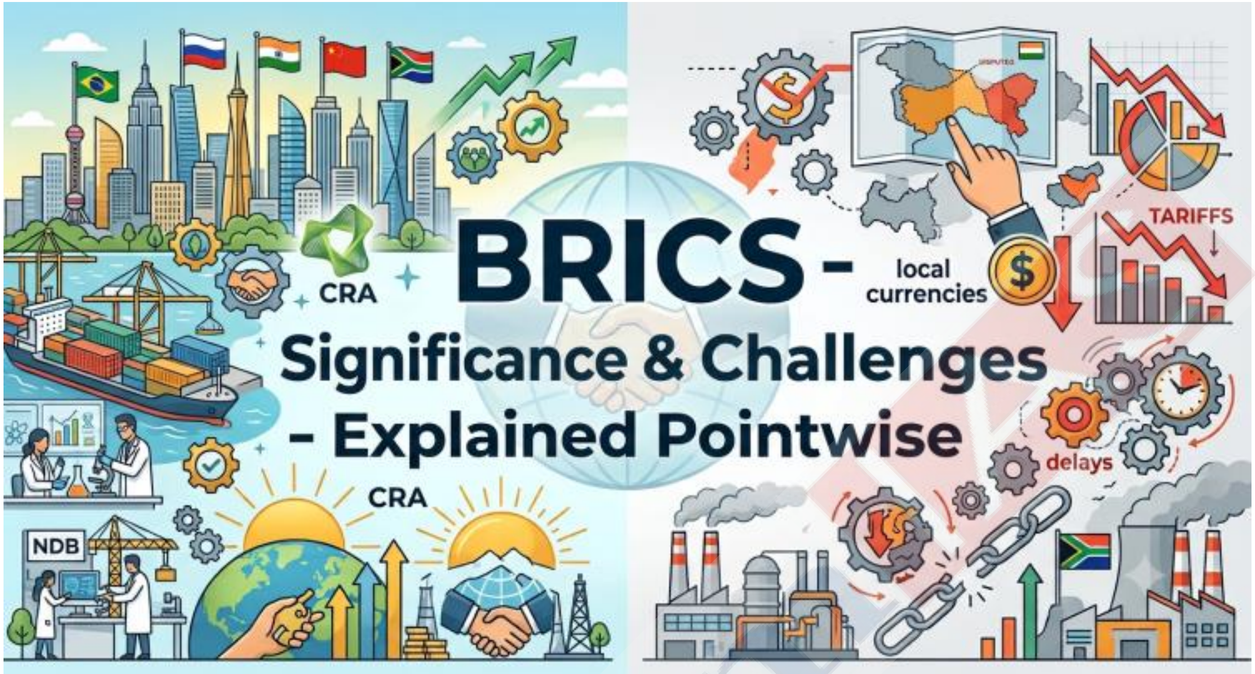
**India's concerns:**

- **Objects to misleading representations:** India stated that any **inaccurate or misleading depiction** of its territory is unacceptable.
- **Territorial integrity remains non-negotiable:** India stressed that its sovereign territory, including the Union Territories of Jammu & Kashmir and Ladakh, must be depicted in accordance with India's official map.

**Conclusion:** The resolution is significant because it goes beyond cartography. It seeks to promote greater geographical accuracy, inclusiveness and awareness of how maps can shape perceptions of the world.

UPSC GS-1: Geography, GS-2: International Relations
Read More: Indian Express

# BRICS – Significance & Challenges – Explained Pointwise




The **18th BRICS Summit**, being hosted by India in **New Delhi**, brings together the expanded BRICS membership amid growing geopolitical and economic uncertainties. Under India's theme of **"Building for Resilience, Innovation, Cooperation and Sustainability,"** the summit seeks to strengthen Global South cooperation and promote a more inclusive global order.
India sees BRICS as a vital platform for bringing inclusive multilateralism especially when the global institutions are facing a crisis of legitimacy & representation. Thus, it is important for us to examine the significance of the group & the challenges that it is facing presently.

### What is BRICS?

- BRICS is an intergovernmental organization comprising 11 countries – **Brazil, Russia, India, China, South Africa, Egypt, Ethiopia, Indonesia, Iran, Saudi Arabia & the United Arab Emirates**.
- The term **BRIC** was originally coined by **Jim O'Neil** in 2001 to designate the group of emerging markets.
- The first summit took place in 2009 featured the founding countries of **Brazil, Russia, India, and China**, where they adopted the acronym **BRIC** and formed an informal diplomatic club where their governments could meet annually at formal summits and coordinate multilateral policies. In 2010, **South Africa** was admitted & the organisation adopted the name **BRICS**.
- The acronym **BRICS+** has been informally used to reflect new membership since 2024.
- Originally, the group was formed to counterbalance the dominance of Western-led institutions like the G7, the International Monetary Fund (IMF), and the World Bank, BRICS advocates for a multipolar world order and increased representation for the Global South.

### Origin & Evolution:

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| **2001** | Economist **Jim O'Neill** (Goldman Sachs) coined the term "BRIC" in a 2001 report titled *Building Better Global Economic BRICs* to describe emerging markets that could become increasingly important in the global economy. |
| **2006** | The four countries began formal political cooperation in **2006**, when their foreign ministers met on the sidelines of the **UN General Assembly** in New York. |
| **2009** | The first summit of BRIC leaders was held in **Yekaterinburg, Russia,** in 2009. The grouping began focusing on:<br>1. Reform of global financial institutions<br>2. Greater voice for developing countries<br>3. International economic cooperation<br>4. Multilateralism and global governance |
| **2010** | **South Africa joined BRIC in 2010**, transforming the grouping into **BRICS.** Its participation strengthened the group's representation of the **African continent and Global South.** |
| **2014** | At the **2014 Fortaleza Summit in Brazil**, BRICS established two important institutions:<br>1. **New Development Bank (NDB):** Headquartered in Shanghai to fund infrastructure projects<br>2. **Contingent Reserve Arrangement (CRA):** A framework to mitigate short-term balance-of-payments pressures. |
| **2023** | At the **2023 Johannesburg Summit**, BRICS decided to expand its membership and invited several countries to join.<br>In **2024**: **Iran, Egypt, Ethiopia, and the United Arab Emirates** attended their first summit as member states in 2024 in Russia.<br>In **2025**: **Indonesia** officially joined as a member state, becoming the first Southeast Asian member. |

**What are the OBJECTIVES of BRICS?**

1. **Promote Economic Cooperation:** BRICS seeks to deepen economic ties among member countries by increasing intra-BRICS trade and investment, facilitating business cooperation, promoting infrastructure and development financing, and strengthening coordination on global economic issues. It also encourages greater use of local currencies and alternative payment mechanisms to reduce transaction costs and vulnerability to external financial shocks.
2. **Reform Global Governance:** BRICS act as a pressure group for a more inclusive, equitable, and representative multipolar international system. This includes pushing for reforms in international

financial institutions like the World Bank and IMF, and the United Nations Security Council, to better reflect the interests of emerging economies and developing countries.

3. **Strengthen Global South Cooperation:** BRICS provides a platform for emerging markets and developing countries (also known as **Global South**) to assert their influence on the international stage and address common challenges like climate finance, sustainable development, and access to technology.
4. **Reduce Reliance on Western Institutions and Currencies:** Explore alternative mechanisms for trade and finance, including increasing trade in local currencies and developing their own financial institutions, to reduce dependence on the U.S. dollar and Western-dominated financial systems.
5. **Support Infrastructure & Development**: BRICS promotes infrastructure financing in developing countries through the **New Development Bank (NDB)**, which funds projects in areas such as transport, renewable energy, water & sanitation, urban infrastructure and digital connectivity. This helps address infrastructure gaps and supports sustainable and inclusive economic growth.
6. **Cooperate on Global Challenges**: BRICS provides a platform for member countries to coordinate their positions and undertake joint action on major global challenges such as climate change, pandemics, terrorism, food and energy insecurity, and sustainable development.

**What are the KEY INITIATIVES of BRICS?**

1. **Alternative financial systems:**
    a. **New Development Bank (NDB):** Finances infrastructure and sustainable-development projects in member and other developing countries. It provides an alternative source of development finance alongside institutions such as the World Bank.
    b. **Contingent Reserve Arrangement (CRA):** CRA is a $100 billion financial safety mechanism designed to provide liquidity support to BRICS members facing balance-of-payments pressures and short-term external financial difficulties.
    c. **Local Currencies Trade Settlement and De-dollarization:** A proposal to introduce BRICS-PAY which aims to create a shared cross-border payment platform that would link national fast-payment networks and potentially support central bank digital currency (CBDC) transfers, facilitating seamless and potentially dollar-free transactions among members.
2. **BRICS Business Council**: Established in **2013**, it promotes **business-to-business cooperation**, trade, investment and private-sector partnerships among BRICS countries.
3. **Global Value Chains (GVC) Action Plan:** Frameworks aimed at easing customs procedures, reducing trade tariffs within the bloc, and mapping critical mineral and industrial supply chains to withstand Western market disruptions.
4. **BRICS Anti-Terrorism Strategy:** Members cooperate on counter-terrorism efforts, including intelligence sharing, capacity building, and preventing the financing of terrorism.
5. **BRICS Initiative on Denial of Safe Haven to Corruption:** Aims to improve anti-corruption cooperation and build anti-corruption capabilities through training and education.
6. **BRICS Partnership for the Elimination of Socially Determined Diseases:** A recent initiative aimed at addressing health challenges disproportionately affecting vulnerable populations.
7. **Unilateral Economic Sanctions:** BRICS openly condemned such sanctions.

**What is the SIGNIFICANCE of BRICS?**

1. **Economic Influence:**
    - **Share of Global GDP**: On a purchasing power parity basis, BRICS economies accounted for **almost 40% of global GDP in 2024**, compared to approximately **29% for the G7.**

- **Demographic and Trade Footprint**: The expanded grouping represents **49.5% of the world's population** and **26% of global trade**. Their share of global merchandise exports **doubled from 12% to 24%** between 2003 and 2024.
- **Intra-BRICS Trade**: Trade among members surged **more than 13-fold, from $84 billion in 2003 to $1.17 trillion in 2024.**

2. **Reforming Global Governance**: BRICS advocates for expanding the **UN Security Council** to include permanent seats for India and Brazil, and pushing for reforms at the **IMF and World Bank** to reflect current economic realities.
3. **Platform for Global South (South-South Cooperation):** BRICS has expanded to include more countries from Africa, the Middle East, and Asia, amplifying the voice of developing nations in global affairs and addressing issues like inequality and under-representation in institutions like UNSC.
4. **Alternative International Financial Institutions:** The creation of institutions like the New Development Bank (NDB) and the Contingent Reserve Arrangement (CRA) provides alternative financial mechanisms for development and stability, reducing reliance on Western-dominated bodies and the US dollar.
5. **De-dollarization Push**: BRICS is working on interoperable digital payment architectures and national-currency trade to reduce reliance on the US dollar, giving member states greater financial autonomy.
6. **Addressing Global Challenges:** BRICS provides a forum for members to coordinate positions on critical global and regional security issues, including counter-terrorism, cybersecurity, and peace and stability in various conflict zones. For e.g. 2025 BRICS Summit criticized Pahalgam Terrorist Attack, as well as, bombing of Iran's nuclear sites by USA.

**What are the CHALLENGES faced by BRICS?**

1. **Diverse Political Systems and Ideologies:** BRICS comprises a mix of democracies (India, Brazil, South Africa, potentially Indonesia, Egypt) and authoritarian states (China, Russia, Iran). This fundamental difference in political systems can lead to divergent approaches on human rights, governance, and international norms, making it challenging to forge a unified stance on all geopolitical issues.
2. **China's Dominance:** China's economy is significantly larger than all other BRICS members combined, creating an imbalance. There are concerns among other members, particularly India, about Beijing's overwhelming influence and its "predatory" economic practices or debt diplomacy.
3. **Varying Economic Structures:** Members have different economic structures (e.g. **commodity exporters** like Russia, Brazil, Saudi Arabia, UAE; **manufacturing hubs** like China; **service and IT hubs** like India). This can lead to conflicting trade interests and priorities.
4. **Limited Intra-BRICS Trade:** Despite BRICS representing a large share of the global economy and population, trade among its members remains below its potential. Differences in tariffs, regulations, standards, logistics, payment systems and geographical distance create barriers to deeper economic integration. India-China trade, for instance, is substantial but marked by a significant trade imbalance.
5. **Bilateral Tensions Among Members:** The ongoing border disputes and geopolitical rivalry between India and China are a major underlying tension. The recent expansion has brought in countries with existing regional rivalries (e.g. **Saudi Arabia vs. Iran**, **Egypt vs. Ethiopia** over the Nile River). Managing these tensions while fostering cooperation will be a delicate balancing act.
6. **"Asian NATO" Label:** Western nations, particularly the US, often view BRICS (and especially its expansion) as an attempt to form an "anti-Western" or "anti-American" bloc, akin to an "Asian NATO." This narrative can lead to increased geopolitical tensions.

7. **Russia-West Conflict**: The Russia-Ukraine conflict and resulting tensions between Russia and Western countries have created challenges for BRICS by introducing geopolitical divisions within the grouping. Western sanctions on Russia also complicate trade, investment, banking and payment transactions involving BRICS members. Different members have adopted different positions on the conflict, making consensus on major international issues difficult.
8. **Tariff Threats and Economic Coercion:** Last year, US President Donald Trump's threatened the BRICS countries to impose tariffs & other economic sanctions if they are perceived to be aligning against Western interests or undermining the US dollar.
9. **Informal Structure:** BRICS operates as an informal grouping without a binding treaty or a permanent secretariat (beyond the NDB). While this allows flexibility, it can also lead to a lack of institutional coherence and consistent implementation of decisions.
10. **Expansion-Related Challenges**: The expansion of BRICS has increased its geographical and economic diversity. A larger membership can make consensus-building, coordination and decision-making more complicated.

**What can be the WAY FORWARD?**

1. **Focus on Shared Economic and Development Goals:** While political ideologies differ, members generally agree on the need for economic development, poverty alleviation, and sustainable growth. Prioritizing cooperation on these tangible goals (e.g. green infrastructure, digital transformation, food security) can build trust and common ground.
2. **Fairer Intra-BRICS Trade:** Develop mechanisms to address trade imbalances, particularly with China. This could involve promoting diversification of imports/exports among members, encouraging joint ventures, and investing in less developed BRICS economies.
3. **Strengthening the NDB's Role:** The New Development Bank (NDB) must continue to expand its lending in local currencies and prioritize projects that benefit all members, especially the smaller and newer ones, thereby fostering a sense of shared economic benefit and reducing dependence on any single dominant economy within the bloc.
4. **Formalizing Decision-Making:** While maintaining its informal nature, BRICS could explore mechanisms to streamline decision-making and ensure commitments are followed through. This could involve a small, dedicated secretariat for coordination beyond annual summits.
5. **Manage Expansion Effectively**: With a larger membership, BRICS should establish clear membership criteria, decision-making procedures and institutional structures to maintain efficiency and cohesion.
6. **Pragmatic Multilateralism Over Anti-Western Rhetoric**: BRICS should avoid evolving into an explicitly anti-Western bloc and instead pursue pragmatic, issue-based cooperation. Members have different relationships with the US, EU and other Western institutions; therefore, a confrontational approach could undermine BRICS' cohesion and global appeal.
7. **Strategic De-dollarization:** BRICS countries can move towards de-dollarization by introducing certain steps in incremental manner:
    a. **Expand Bilateral Trade in Local Currencies:** Continue to promote and expand bilateral trade settlement in national currencies among members.
    b. **Develop BRICS PAY:** Accelerate the development and implementation of the BRICS PAY system and other digital payment platforms to facilitate efficient cross-border transactions in local currencies.
    c. **NDB Lending in Local Currencies:** The NDB should continue to prioritize and expand its lending in local currencies, providing a significant boost to their internationalization.

d. **Explore Basket of Currencies (like R5):** The idea of a unit of account based on a basket of BRICS currencies (like the proposed "R5") could be explored as a precursor to a common currency, serving as a reference point for trade and a potential store of value.

**CONCLUSION:**

BRICS is an important institution to challenge the **western dominated forums** & for providing an alternative idea of global governance. By systematically addressing the challenges that it is facing through cooperation, institutional strengthening, and strategic positioning, BRICS can solidify its role as a significant and constructive force in shaping a more inclusive and multipolar global order.

**Read More: The Indian Express, Wikipedia**
**UPSC GS-2: International Relations**

## Regulation of AI – Need & Challenges – Explained Pointwise


Calls for regulation of Artificial Intelligence has emerged stronger than ever with the recent rise in the cases of misuse of AI like proliferation of deepfakes. With the rapid advancement of AI and its potential impact on society, there is a growing consensus among experts that regulation is necessary to ensure responsible and ethical use of AI technology.

**What is the need for regulation of AI?**

1. **Bias and discrimination**: AI systems can inherit biases from the data they are trained on, leading to discriminatory outcomes. For e.g. Facial recognition algorithms have been shown to have higher error rates for women and people with darker skin tones.
2. **Lack of transparency:** Many AI algorithms operate as black boxes, making it difficult to understand how they reach their decisions. For e.g. Medical AI system recommending a specific medical treatment but cannot explain its reasoning.

3. **Privacy and data protection:** AI systems rely on vast amounts of personal data, raising concerns about privacy and data protection. For e.g. Lawsuits against Silicon Valley giants for data and privacy breach in their AI systems.
4. **Security risks:** AI systems can be vulnerable to cybersecurity threats and attacks. For e.g. Adversarial attacks can manipulate AI models posing risks in critical domains such as autonomous vehicles or healthcare.
5. **Ethical considerations:** AI raises ethical questions related to the impact on jobs, social inequality, and concentration of power. For e.g. automated decision-making in hiring processes have shown to perpetuate existing biases and result in unfair outcomes.
6. **Artificial General Intelligence:** AGI can self-learn and go beyond human intelligence, raising concerns of predictability and security.
7. **Autonomous Weapons Development:** These machines have the potential to make life-and-death decisions without direct human intervention, leading to ethical dilemma regarding the value of human life.
8. **Mass State Surveillance:** AI, equipped to conduct facial recognition and analyze extensive data, will empower governments to maintain round-the-clock profiles of citizens. This will make dissenting against governments difficult.
9. **Challenges associated with Deepfakes generated using AI:** There are concerns about women safety (morphed pornographic material), liar's dividend (an undesirable truth is dismissed as fake news) and fuelling radicalisation and violence (Fake videos showing armed forces committing 'crimes in conflict areas').

Read More- Deepfakes- Explained Pointwise

**What are the challenges in regulation of AI?**

1. **Defining AI**: Defining Artificial Intelligence is challenging because AI encompasses a broad and continuously evolving range of technologies, from simple rule-based systems to advanced generative and autonomous models. A narrow definition may quickly become outdated, while an overly broad one could unintentionally regulate ordinary software.
2. **Rapid technological advancement:** AI technologies are evolving at an unprecedented pace, with capabilities improving faster than traditional legislative and regulatory processes. Generative AI, autonomous systems and multimodal models are creating new risks and applications before regulators can fully understand their implications. Consequently, laws may become outdated soon after they are enacted, creating regulatory gaps and uncertainty.
3. **Balancing innovation and regulation**: AI regulation faces the challenge of protecting society from potential harms without stifling technological innovation. Overly stringent regulations can increase compliance costs, discourage start-ups and research, and reduce investments in emerging technologies. Conversely, inadequate regulation can allow privacy violations, algorithmic discrimination, misinformation and unsafe AI applications.
4. **Increased costs and competition:** AI regulation may impose higher compliance costs on businesses, particularly start-ups and small enterprises. Companies may need to invest in data governance, cybersecurity, audits, documentation, testing and human oversight to meet regulatory requirements. This could increase the cost of developing and deploying AI systems.
5. **Accountability and liability:** AI systems can make or influence decisions that significantly affect individuals, yet determining who should be held responsible when an AI system causes harm is often

difficult. Developers, technology companies, deployers and end-users may all contribute to the outcome.

6. **International cooperation:** AI transcends national borders, making unilateral regulation insufficient. Developing consensus among different countries with varying interests and priorities is a complex task.

**What is the status of regulation of AI in India and across the globe?**

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| **INDIA** | 1. **Digital Personal Data Protection Act, 2023:** Provides the broader framework for protection and processing of personal data, which is particularly relevant to data-intensive AI systems. The DPDP Rules, 2025 were notified in November 2025, operationalising the framework.<br>2. **IndiaAI Mission:** Focuses on developing AI compute capacity, datasets, indigenous AI capabilities, skills and responsible AI.<br>3. **AI Governance Guidelines:** The India AI Governance Guidelines is the country's first formal, comprehensive blueprint for how AI should be developed and used. Rather than proposing a brand-new overarching AI law immediately, the Guidelines adopt a lighter-touch, flexible regulatory strategy. They rely on existing laws (like the Information Technology Act, 2000 and Digital Personal Data Protection Act, 2023) and propose targeted amendments where necessary.<br>4. **National AI Programme:** India has established a National AI Programme to promote the efficient and responsible use of AI.<br>5. **National Data Governance Framework Policy:** India has implemented a National Data Governance Framework Policy to govern the collection, storage, and usage of data, including data used in AI systems. This policy will help ensure the ethical and responsible handling of data in the AI ecosystem.<br>6. **Draft Digital India Act:** The Ministry of Information Technology and Electronics (MeitY) is working on framing the draft Digital India Act, which will replace the existing IT Act. The new Act will have a specific chapter dedicated to emerging technologies, particularly AI, and how to regulate them to protect users from harm. |
| **REST OF THE WORLD** | 1. **European Union:** The EU AI Act is currently the world's most comprehensive dedicated AI regulatory framework. The Act entered into force in 2024 and is being implemented progressively. The EU has also introduced requirements for identifying certain AI-generated content and deepfakes, helping users distinguish synthetic content from authentic content.<br>2. **United States:** The White House Office of Science and Technology Policy has published a non-binding Blueprint for the Development, Use, and Deployment of Automated Systems (Blueprint for an AI Bill of Rights), listing principles to minimize potential harm from AI.<br>3. **Japan:** Japan's approach to regulating AI is guided by the Society 5.0 project, aiming to address social problems with innovation.<br>4. **China:** China has established the "Next Generation Artificial Intelligence Development Plan" and published ethical guidelines for AI. It has also introduced specific laws related to AI applications, such as the management of algorithmic recommendations. |

**What should be the way forward?**

1. **Adopt a risk-based framework**: AI applications have different levels of potential harm, so regulation should be proportionate to the risks involved rather than applying the same rules to every AI system. A risk-based framework ensures that regulation is neither too weak to protect society nor so excessive that it suppresses innovation. This will make regulation proportionate to the potential harm posed by an AI system.
2. **Universal adoption of the Bletchley Declaration**: The Bletchley Declaration, adopted at the first AI Safety Summit in the UK in 2023, recognised the need for international cooperation to address risks arising from frontier AI. Its wider adoption can provide a common foundation for responsible AI governance.
3. **Establish comprehensive and flexible regulatory framework**: The governments should develop clear guidelines and laws that address various aspects of AI, including data privacy, algorithmic transparency, accountability, and potential biases.
4. **Foster international cooperation:** Given the global nature of AI and its potential impact, collaboration among countries is essential. International standards and agreements should be developed to promote ethical practices and ensure consistency in regulation across borders. In this respect, the **G7 Hiroshima AI Process** (HAP) could facilitate discussions.
5. **Encourage industry self-regulation:** Given the rapid evolution of AI, government regulation alone may struggle to keep pace with emerging technologies. Industry-led codes of conduct, technical standards and voluntary safety commitments can complement formal regulation.
6. **Invest in AI research and education:** Governments, academic institutions, and industry stakeholders should allocate resources to R&D, and education in the field of AI. This will help create a well-informed workforce capable of addressing regulatory challenges and ensuring the safe and responsible deployment of AI technologies.

**Conclusion**: The objective should not be to **"regulate AI out of existence"**, but to **"regulate risks while enabling innovation."** This will ensure that AI becomes a tool for inclusive development rather than a source of new inequalities and vulnerabilities.

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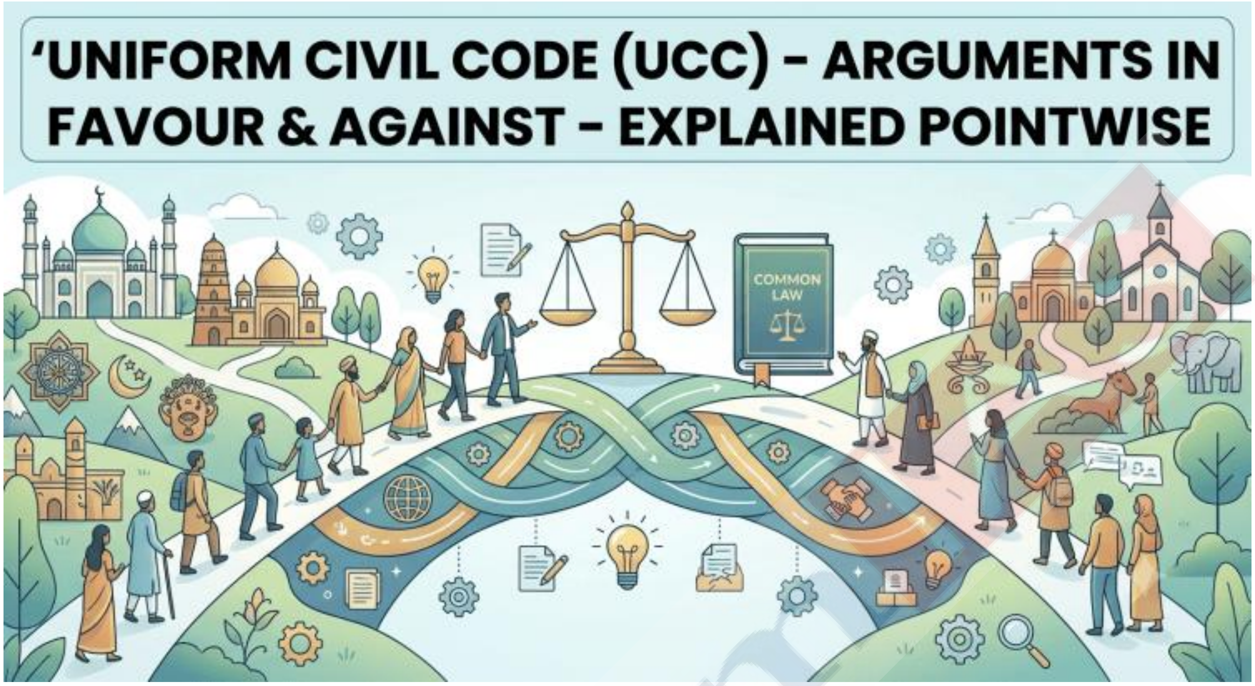
| UPSC GS-3: Technology<br>Read More: Indian Express |

## Uniform Civil Code (UCC) – Arguments in favour & Against – Explained Pointwise




Recently, Union Home Minister Amit Shah stated that the Uniform Civil Code (UCC) would be implemented in all NDA-ruled States before the 2029 Lok Sabha elections. The announcement has renewed the debate on balancing equality and gender justice with religious freedom and cultural diversity, necessitating an examination of the arguments for and against UCC.

**What is Uniform Civil Code (UCC)? What is the status of UCC in India?**

- The **Uniform Civil Code (UCC)** refers to a common set of laws governing **personal matters of all citizens**, irrespective of their religion. These matters include **marriage, divorce, inheritance, adoption, guardianship and succession**.
- The UCC is a proposal in India to formulate and implement personal laws that apply equally to all citizens regardless of their religion, gender, or sexual orientation.
- At present, personal matters like marriage, divorce, inheritance, adoption, and succession are governed by different sets of faith-based personal laws (such as Hindu Personal Law, Sharia Law, or Christian Personal Law). Under a UCC, these distinct religious codes would be replaced by a single, standard civil legal framework binding on all citizens.
- **Constitutional Basis of UCC:** The concept of UCC is enshrined in **Article 44** of the Indian Constitution. The implementation of UCC falls under the **Directive Principles of State Policy (DPSP)**.

**Status of UCC in India:**

- As of now, India does not have a nationwide Uniform Civil Code.
- The need for UCC was debated in the Constituent Assembly. After long deliberation, it was decided to place UCC under the DPSP.
- Since the adoption of constitution, governments (central & state) has made certain efforts towards implementation of UCC.

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| **Enactment of Special Marriage Act, 1954** | The Special Marriage Act,1954 was enacted to provide secular alternative in marriages. The inheritance rights of the off-springs of couples married under the Act were to be governed by the religion-neutral chapter on inheritance in the Indian Succession Act of 1925. |
| **Continued application of Uniform civil laws in Goa and Puducherry** | **Goa Civil Code/Goa Family Law:** Goa is the only Indian state with a functional uniform civil code (the Goa Civil Code), inherited from Portuguese rule in 1867.<br><br>**Puducherry:** In Puducherry, a sizable section of citizens called Renoncants (Indians whose ancestors had during the French rule abandoned personal la w) are still governed by the 218-year old French Civil Code of 1804. |
| **Uttarakhand UCC** | Uttarakhand became the first state in post-independence India to officially enforce a modern state UCC law in January 2025. It regulates marriage, divorce, succession, and mandatory registration of live-in relationships. |
| **Other States** | • **Gujarat, Assam, and Madhya Pradesh** have passed their respective state-level UCC Bills in 2026 and are undergoing the process of presidential assent and formal notification<br>• States like **Maharashtra, West Bengal, and Rajasthan** have set up formal state drafting committees to consult stakeholders and frame regional UCC draft Bills. |

- **UCC for the entire country is still a far fetched dream:** Most aspects related to marriage and divorces of persons belonging to different religions are continued to be governed by personal laws. For e.g. Hindu Marriage Act (1955), a Muslim Personal Law (Shariat) Application Act (1937), a Christian Marriage Act (1872) and a Parsee Marriage and Divorce Act (1937).

**What are the arguments in favour of implementing UCC?**

1. **Fulfilment of Constitutional mandate of equality:** Proponents argue that it is a constitutional mandate to work towards a UCC, which is prescribed by Article 44 of the DPSP. This would ensure equality before the law among all its citizens, irrespective of their religion, class, caste, gender.
2. **Promotion of gender justice and equality:** UCC can help eradicate discriminatory practices related to marriage, divorce, and inheritance in various religious personal laws. **For e.g.** Even though Hindu Succession Act, 1956 was amended in 2005 to give daughters equal inheritance rights at par with sons, but similar reforms have not been adopted universally across all personal laws.
3. **Protects Individual Rights**: UCC can prioritise individual rights, dignity and equality over discriminatory personal-law practices. It can ensure that individuals, particularly women and children, receive equal civil rights irrespective of their religion or community.
4. **Strengthens Secularism**: UCC can strengthen Indian secularism by ensuring that civil rights in matters such as marriage, divorce and inheritance are governed by common, religion-neutral principles, while individuals remain free to practise and propagate their faith under **Articles 25-28.**

5. **Promotes National Integration:** By applying common principles of equality, dignity and justice, UCC can strengthen citizens' identification with the Constitution rather than community-specific legal systems. UCC will affirm the notion of '**one nation, one law**'.
6. **Societal reforms:** A UCC can act as a catalyst for progressive social reform by replacing discriminatory or outdated personal-law practices with gender-neutral and rights-based provisions. It can promote monogamy, equal inheritance, uniform marriageable-age standards, safeguards against arbitrary divorce and stronger rights for children and spouses. **For e.g.** Ending the subdued status of women in the religious sphere.
7. **Simplification of legal matters:** UCC will simplify the cumbersome legal matters governed by different personal laws. It will also help in speedy disposal of cases and reduce burden on the judiciary. **For e.g.** Most of the cases pending cases in the judiciary pertain to the divorce, inheritance issues of persons belonging to different personal laws.
8. **Reflective of progressive jurisprudence:** UCC is an embodiment of the progressive jurisprudence exercised by the Supreme Court in matters related to gender and inter-religious equality. **For e.g.** In cases like Shah Bano case (1985) where SC allowed the grant of maintenance to divorcee woman, Shaira Bano case (2017) where SC banned the discriminatory practice of triple talaq.
9. **Precedent of Goa's Civil Code:** Proponents of the UCC cite the example of successful implementation of UCC in Goa where the civil laws of all Goans, irrespective of religion is governed by a Uniform Civil Code.

**What are the arguments against the UCC?**

1. **Violation of fundamental right to religious freedom:** Critics argue that the UCC infringes upon the right to religious freedom provided by **Article 25** of the Constitution. Also, UCC infringes upon the right of communities to preserve their distinct culture granted by **Article 29** of the Constitution.
2. **Diverse personal laws and customary practices in India:** Enforcing uniformity will interfere with the diverse personal laws and customary practices followed in India by different communities. **For e.g.** Special Marriage Act, 1954 (A Secular Law) prohibits marriage between first cousins, which is a common practice in some communities in India. Marriage between second cousins is a popular practice among the Hindu communities in South India.
3. **Cultural and Religious Diversity**: India's religious, linguistic, tribal and cultural diversity means that personal practices relating to marriage, inheritance and family life vary significantly across communities. Critics argue that a single UCC may overlook legitimate customary practices and identities, leading to a perception of cultural homogenisation. **For e.g.** Tribal communities in the North-East and other parts of India follow customary laws governing marriage, inheritance and property, some of which enjoy constitutional protection,
4. **Existence of secular laws:** Critics point to the existence of secular laws applicable to all citizens, irrespective of religion. **For e.g.** Section 125 of the Criminal Procedure Code, which is a secular law provides for maintenance, and existence of laws relating to domestic violence like the Domestic Violence Act.
5. **Imposition of 'Hinduised' Code:** Some critics suggest that the UCC might impose a 'Hinduised' code on all communities. **For e.g.** UCC could follow the Hindu practices in matters of marriage, divorce and inheritance and will legally force other communities to follow the same.
6. **Placement of Personal laws in Concurrent List:** Some constitutional law experts argue that perhaps the constitutional framers did not intend total uniformity in personal laws. They cite the placement of personal laws as Entry 5 of the Concurrent List (where the Parliament as well as the State Assemblies have the power to legislate).

7. **Lack of Broad Consensus:** UCC affects deeply rooted religious and customary practices; implementing it without extensive consultation and consensus among diverse communities may generate mistrust, social resistance and polarisation, undermining its broader objectives.
8. **Uniformity Does Not Necessarily Mean Equality**: A single set of laws may provide formal equality, but it does not automatically ensure substantive equality. Different communities may have distinct social, cultural and economic conditions, requiring context-sensitive legal provisions.

**What is the Judicial View on UCC?**

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| **Shah Bano Case (1985)** | Supreme Court directed the Government to enact a UCC. The SC observed that UCC will help the cause of national integration. |
| **Sarla Mudgal Case (1995)** | The Supreme Court directed the Government to reflect the steps taken towards securing a UCC for the citizens of India. |
| **Pannalal Bansilal Patil v. State of Andhra Pradesh (1996)** | Supreme Court observed that while a uniform law is desirable, its enactment in one go might be counter-productive to the unity and integrity of the nation. Gradual progressive change should be brought about. |
| **John Vallamattom and Ors. v. Union of India (2003)** | Supreme Court held that there is no necessary connection between religious and personal law in a civilized society. Matters of secular character like marriage cannot be brought within the guarantee enshrined under Article 25 and 26. |
| **Shayara Bano Case (2017)** | Although the case was not directly a judgment on UCC, it demonstrated the Court's willingness to subject personal-law practices to constitutional scrutiny and gender-justice considerations. |
| **Jose Paulo Coutinho Case (2019)** | The Supreme Court praised Goa as a "shining example" of a functioning UCC, observing that despite earlier judicial recommendations, no general attempt had been made at the national level to frame a common code. |

**What should be the way forward?**

1. **Awareness efforts to reform current personal laws:** This should be initiated and undertaken by the communities themselves. Legal intervention should be undertaken only if a practice violates fundamental rights of citizens (especially women).
2. **Gradual transformation of diverse personal civil codes to uniform civil code:** 21st Law Commission has recommended that a UCC is neither necessary nor desirable at this stage. Government must take a piecemeal approach in removing the gender disparities in matters of marriage, divorce, inheritance of personal laws. Government must restrain implementing all aspects in single legislation.

3. **Build Broad-Based Consensus:** UCC should emerge through consultations with communities, women's organisations, tribal groups, legal experts and states, ensuring that reforms reflect constitutional values while addressing legitimate concerns regarding religious freedom and cultural diversity.
4. **Equality between men and women in communities rather than equality between communities:** 21st Law Commission had recommended the government to first concentrate on ensuring the equality between men and women in the same community rather than focusing on the equality between communities.
5. **Protect Legitimate Tribal Customs**: UCC should recognise India's tribal and customary diversity rather than impose a uniform framework without safeguards. Many Scheduled Tribes follow distinct traditions governing marriage, inheritance, family relations and community life. Therefore, reforms should protect customary practices that are consistent with constitutional rights, while eliminating practices that are discriminatory or violate individual dignity.
6. **Learn from Existing Models**: India can draw lessons from Goa's common civil-law framework and Uttarakhand's UCC, particularly regarding codification, registration, exemptions and implementation. Rather than adopting a one-size-fits-all approach, their experiences can help identify practical challenges and best practices.
7. **Prioritise basic reforms:** The government must prioritise basic reforms such as **a)** Having 18 years as the marriageable age for girls for all across communities and genders **b)** Introducing a 'no-fault' divorce procedure and allowing the dissolution of marriage on the ground of irretrievable breakdown, and **c)** Having common norms for post-divorce division of assets.
8. **Follow Constitutional Morality**: The implementation of UCC should be guided by constitutional morality rather than religious or majoritarian preferences. It must balance equality and individual dignity with the constitutional protection of religious freedom and cultural diversity.

**Conclusion:**

UCC in its true spirit, must be brought about by making gradual changes. As recommended by the Law Commission, the focus should be on ending discriminatory practices against women, rather than enforcing uniformity. However, until that is done, the better course would be to bring about small reforms, correcting some inherent irrationality in some of the personal laws, and make them suitable for modern times. This will lay the foundation of implementing a nationwide UCC at a later date.

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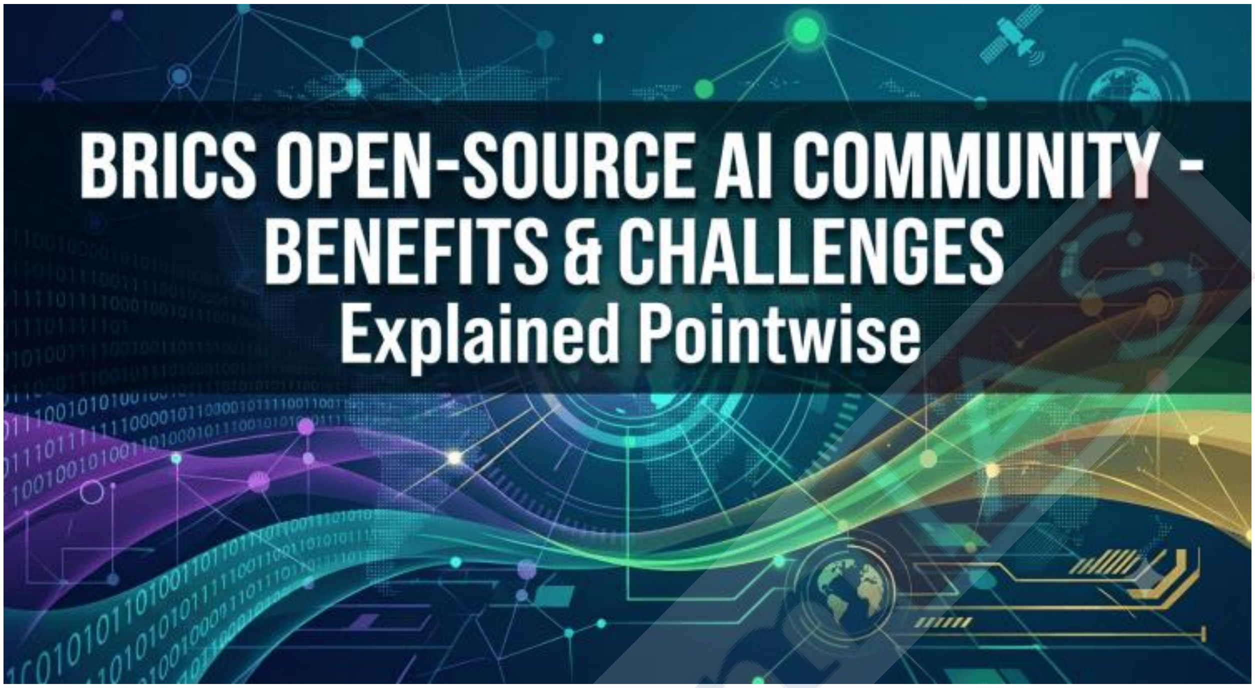
## BRICS Open-Source AI Community – Benefits & Challenges – Explained Pointwise




Recently, Chinese President Xi Jinping proposed a **BRICS open-source AI community** to promote technological cooperation and wider access to artificial intelligence. While the initiative offers benefits such as shared innovation and reduced technological dependence, it also presents challenges for India, particularly concerning strategic autonomy, cybersecurity and technological dependence.

**What is the proposed BRICS Open-Source AI Community?**

- The **BRICS Open-Source AI Community** is a proposal put forward by Chinese President Xi Jinping during the 18th BRICS Summit in New Delhi.
- It is a proposed framework for collaboration among BRICS countries in developing and sharing open-source Artificial Intelligence (AI) technologies.
- China envisions this initiative as an open, shared ecosystem for developing countries to collaborate on artificial intelligence without relying on proprietary, closed-source models controlled by Western tech companies (such as OpenAI, Google, or Anthropic).
- Although the **New Delhi Declaration** issued after the summit does not mention the proposed open-source AI community, China's assumption of the BRICS chairship in 2027 could provide an opportunity to bring these proposals before the grouping again.

**What are its major objectives?**

1. **Promote Open-Source AI:** Encourage development and sharing of AI models, algorithms, tools and technologies among BRICS countries.
2. **Technology sharing:** Facilitate exchange of AI technologies, expertise and best practices among BRICS members.

3. **Capacity building:** Strengthen AI-related skills, research capabilities and technical talent in developing countries.
4. **Affordable AI access:** Reduce the cost and technological barriers to adopting advanced AI, particularly for developing economies.
5. **AI infrastructure cooperation:** Encourage collaboration in areas such as computing power, data infrastructure and AI training.
6. **Inclusive AI ecosystem:** Promote AI applications suited to the developmental needs of the Global South, including healthcare, agriculture, education and public services.
7. **AI governance:** Facilitate dialogue on responsible, safe and ethical development and use of AI.
8. **Strengthen BRICS Technological Cooperation:** Use AI cooperation to deepen digital and technological partnerships among BRICS members.

**What are the potential benefits of the BRICS Open-Source AI initiative for developing countries?**

1. **Affordable Access to AI**: Open-source AI models can reduce licensing fees, proprietary software costs and entry barriers, enabling developing countries, startups and public institutions with limited resources to access and customise advanced AI technologies for local needs.
2. **Reduce Technological Dependence**: Open-source AI can reduce developing countries' reliance on a few advanced economies and global technology companies for access to **AI models, algorithms and digital infrastructure**. By sharing technologies, expertise and computing resources, BRICS countries can strengthen **technological sovereignty**, develop indigenous capabilities and reduce risks arising from external technological restrictions.
3. **Bridge the Digital Divide**: Open-source AI can make advanced AI tools more affordable and accessible to developing countries, reducing the technological gap with developed economies. Shared models, knowledge and infrastructure can enable countries to build locally relevant AI solutions in healthcare, education, agriculture and governance, thereby promoting inclusive digital development.
4. **Boost Local Innovation**: Open-source AI allows start-ups, researchers and developers to modify existing AI models according to local needs, languages and socio-economic conditions, reducing development costs and encouraging indigenous AI solutions.
5. **Strengthen South-South Cooperation**: The BRICS Open-Source AI initiative can deepen South-South technological cooperation by enabling developing countries to share AI models, expertise, computing infrastructure and best practices, reducing dependence on technology transfers from developed economies.
6. **Promote Inclusive Development**: Open-source AI can make advanced technologies affordable and accessible to developing countries, enabling their use in healthcare, education, agriculture, financial inclusion and public service delivery. **For e.g.** AI-powered tools can support early disease detection, personalised learning, crop advisory and multilingual government services, helping extend the benefits of technology to underserved and rural populations.

**What are the major challenges in developing a common AI ecosystem among BRICS countries?**

1. **Divergent Technological Capabilities**: BRICS countries have unequal AI capabilities, digital infrastructure, computing power and research ecosystems. Countries such as China and India have relatively advanced AI sectors, while several newer BRICS members face shortages of skilled professionals, advanced semiconductors and AI research infrastructure. This technological gap can make it difficult to establish common standards and ensure meaningful participation by all members.
2. **Geopolitical Differences**: BRICS countries have diverging strategic interests, foreign-policy priorities and security concerns, which can hinder deep technological cooperation. For instance, India-China strategic tensions may limit the sharing of sensitive AI technologies, data and infrastructure..

3. **Data Privacy & Sovereignty**: BRICS countries have different data-protection laws, data-localisation requirements and approaches to crossborder data sharing. This can make it difficult to create common datasets and train AI models collaboratively. Countries may also be reluctant to share sensitive personal, financial, health or strategic data due to privacy and national-security concerns.
4. **Cybersecurity Risks**: Open sharing of AI models, datasets and algorithms can create cybersecurity vulnerabilities, as malicious actors may exploit them for cyberattacks, deepfakes, misinformation, automated hacking and fraud.
5. **Strategic Autonomy vs. Hegemony:** BRICS members may be concerned that reducing dependence on Western technology could inadvertently create new technological dependence on a dominant member, particularly China, undermining their strategic autonomy.
6. **Compute & Semiconductor Dependency:** Advanced AI development requires high-end chips (GPUs) and substantial computing infrastructure, much of which remains concentrated in a few countries. US export controls and limited access to cutting-edge semiconductor manufacturing, including for Chinese firms, may constrain BRICS' ability to build a fully self-reliant AI ecosystem.

**What should be the way forward?**

1. **Build an Inclusive & Decentralised Ecosystem**: BRICS should ensure that the AI ecosystem is not dominated by any single country or technology provider. This can be achieved through shared governance, distributed computing infrastructure, and equitable access to AI models and datasets, allowing all members to contribute according to their capabilities while preserving strategic autonomy.
2. **Develop Common AI Standards**: BRICS countries should establish common standards for AI safety, transparency, data protection, interoperability and accountability. Harmonised standards can facilitate cross-border AI cooperation while preventing regulatory fragmentation.
3. **Ensure Data Sovereignty with Responsible Data Sharing**: BRICS countries should establish common protocols for secure and responsible data sharing, while respecting national data-protection and localisation laws.
4. **Establish Strong Cybersecurity Safeguards**: BRICS should establish common cybersecurity protocols for AI models, datasets and computing infrastructure, including vulnerability assessments, secure data-sharing mechanisms, model testing and incident-response systems.
5. **Maintain Strategic Autonomy through Diversification**: To avoid dependence on any single member country, particularly in AI models, semiconductors, cloud infrastructure and critical technologies – BRICS member countries should focus on diversifying technology partnerships, supply chains and sources of computing capacity. This can help in strengtheing the strategic autonomy and technological sovereignty while ensuring that BRICS AI cooperation remains genuinely collaborative.

**Conclusion**: BRICS should pursue building a secure, interoperable and decentralised AI ecosystem that promotes innovation while safeguarding the strategic autonomy of individual members.

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