



# Monthly Editorial Consolidation



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# Content

● Stocktaking Climate Finance.....	3
● India's GDP Growth: Challenges and Opportunities .....	7
● Vision India@2047: Transforming the Nation's Future .....	9
● Peacebuilding Through The United Nations .....	12
● Tackling India's Air Pollution Crisis for a Sustainable Future .....	16
● Tackling the Threat of Antimicrobial Resistance .....	18
● India's National Security Strategy.....	21
● Deepfakes: Opportunities, Threats, and Regulation .....	25
● Transforming Crop Residue into Sustainable Solutions.....	27
● Net Neutrality in India .....	29
● Chandrayaan-3 : India's Imperatives for Space Leadership .....	32
● Community Rights and Forest Conservation .....	36
● From Welfarism to Well-Being .....	39
● Regulating OTT: Draft Broadcasting Regulation Bill, 2023.....	43
● Rise of Autonomous Weapons: Challenges and Opportunities.....	47
● State Funding Debate: A Path to Transparent Elections .....	49
● Unraveling Silent Pandemic of Road Accidents.....	54
● The Governor's Role: Challenges and Reform Proposals.....	57
● Domicile Reservations: Challenges and Alternatives.....	59
● Rethinking India's Approach to China: Strategic Considerations .....	62
● Quantum Computing and AI in Symbiotic Harmony .....	68
● India's Economic Surge: Analysing the Robust Growth in FY24 .....	70
● Navigating Climate Change Through Climate-Smart Agriculture .....	72
● Electrification: India's Strategy to Decarbonise Road Transport.....	75
● Reducing Supreme Court's Case Overload .....	80
● India's Maritime Security Paradigm .....	82
<b>Drishti Mains Questions .....</b>	<b>86–87</b>

## Stocktaking Climate Finance

This editorial is based on “**Stocktaking climate finance — a case of circles in red ink**” which was published in *The Hindu* on 01/11/2023. It talks about the challenges and complexities surrounding climate finance and the urgency of addressing these issues to fulfill commitments and combat climate change effectively.

**Tag:** Biodiversity & Environment, GS Paper - 3, Environmental Pollution & Degradation, Environmental Impact Assessment (EIA), Disaster Managements, GS Paper - 2, Effect of Policies and Politics of Countries on India's interest.

**Climate finance** is crucial for maintaining trust between **developed** and **developing** countries in climate change negotiations. **Climate finance** is expected to be a prominent issue in the upcoming **Conference of the Parties (COP 28)** meeting of the **United Nations Framework Convention on Climate Change (UNFCCC)** in Dubai.

### What is Climate Finance ?

- According to the **United Nations Framework Convention on Climate Change (UNFCCC)**, climate finance is local, national or transnational funding from

public, private and alternative sources that seek to support climate change mitigation and adaptation actions.

#### ➤ Essential Components :

- **Funding Sources:** Climate finance can come from various sources, including public sources such as government funding and international aid and private sources such as investments from the financial and corporate sectors.
- **Financial Instruments:** Many financial instruments can be used to channel climate finance, including grants, loans, equity investments, and financial instruments such as carbon credits.
- **Recipients:** Climate finance can be provided to various recipients, including governments, businesses, and civil society organizations.
- **Projects and Activities:** Climate finance can support various projects and activities contributing to climate change mitigation and adaptation. These may include renewable energy projects, energy efficiency measures, and projects that help build resilience to climate change's impacts.



## What activities does climate finance fund?

According to the latest biennial report from the United Nations Framework Convention on Climate Change (UNFCCC), global climate finance reached **\$681 billion** and the categories that received the most investment include:



- **Governance and Oversight:** Several initiatives and mechanisms have been established to facilitate the flow of climate finance and ensure effective governance and oversight, such as the **Green Climate Fund** and the **Clean Development Mechanism**.

### What are the Primary Purposes of Climate Finance?

- **Mitigation:** To fund projects and initiatives that reduce greenhouse gas emissions and mitigate the impacts of climate change. This includes investments in **renewable energy, energy efficiency, sustainable agriculture**, and other activities that help combat climate change.
- **Adaptation:** To support measures that help communities and nations adapt to the adverse effects of climate change. This may include investments in infrastructure, disaster resilience, water resource management, and other strategies to reduce vulnerability to climate-related risks.
- **Technology Transfer:** To facilitate the transfer of environmentally friendly and sustainable technologies from developed to developing countries, enabling the latter to transition to low-carbon, climate-resilient development pathways.
- **Capacity Building:** To build the capacity of nations and communities to better understand and address climate change, develop and implement climate policies and strategies, and access and manage climate finance effectively.

### How much Climate Finance is Needed?

- **Adaptation Financing Gap:** The **global adaptation financing gap** is substantial and growing. Adaptation

costs in developing countries are projected to increase to around **USD 340 billion** per year by 2030 and up to **USD 565 billion** by 2050.

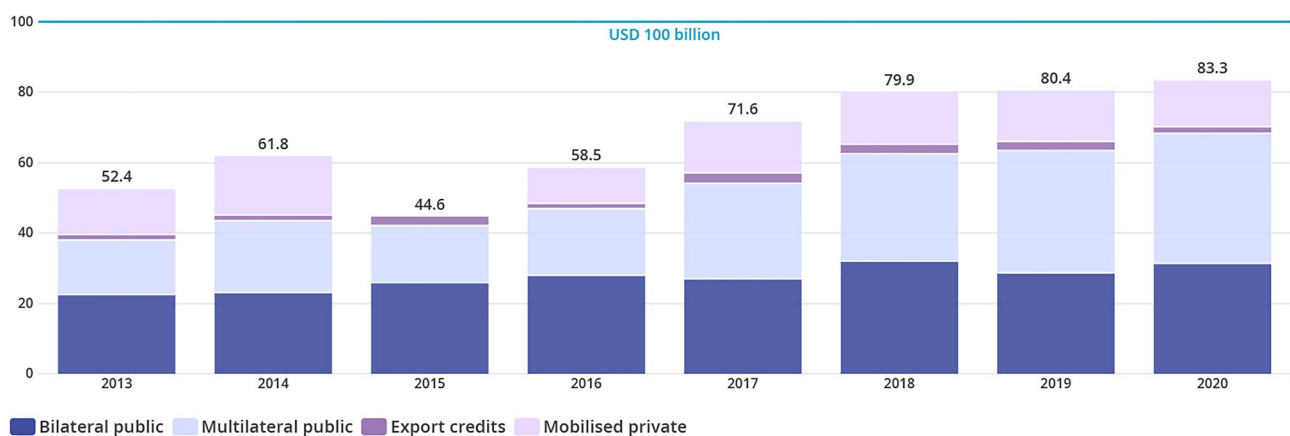
- **Mitigation Financing Gap:** The gap for **mitigation** efforts is even larger, estimated at **USD 850 billion** per year by **2030**.
- **The Trillion-Dollar Climate Finance Challenge:** The Glasgow Financial Alliance for Net Zero estimates a requirement of at least USD 125 trillion in investments by 2050, approximately USD 5 trillion per year, to achieve net-zero emissions.
- **Climate Finance for Developing Countries:** The financial needs projected by developing countries in their NDCs, especially in the Global South, are substantial, potentially reaching close to USD 6 trillion until 2030.
- **USD 100 Billion Annual Target:** In **2009**, at the **UNFCCC COP15**, developed countries jointly set a target to provide at least **USD 100 billion** annually to support mitigation and adaptation efforts to address the climate crisis effectively.

### What are the Main Sources for Climate Finance?

- **Types of Instruments:**
  - **Green bonds:** **Green Bonds** are a kind of debt issued by a public or private institution to use the funds for environmental purposes.
  - **Debt swaps:** These entail the sale of foreign currency debt by the creditor country to an investor which can then swap the debt with the debtor country for the development of mitigation and adaptation projects.
  - **Guarantees:** These are commitments whereby a guarantor promises to fulfill the obligations undertaken by a borrower to a lender in the context of climate change activities.

### Climate finance for developing countries

Climate finance provided and mobilised by developed countries, in USD billions



Note: The gap in the private finance series in 2015 is due to the implementation of enhanced measurement methodologies. As a result, private flows for 2015-18 cannot be directly compared with private flows for 2013-14.

Source: OECD (2022), *Aggregate Trends of Climate Finance Provided and Mobilised by Developed Countries in 2013-2020*.

- **Concessional loans** : These are loans for climate change mitigation and adaptation activities that differ from traditional loans in that they have longer repayment periods and lower interest rates, among other preferential conditions.
- **Grants and donations** : These are amounts granted to projects related to the fight against the climate emergency, which do not need to be repaid.
- **Major Climate Finance Funds :**
  - **Green Climate Fund (GCF)**: **GCF** was set up by the UNFCCC in 2010. It is the world's largest fund devoted to helping developing countries reduce their GHG emissions and adapt to the impact of climate change, paying particular attention to the needs of the most vulnerable countries. The GCF plays an essential role in compliance with the Paris Agreement, channeling climate finance to developing countries.
  - **Special Climate Change Fund (SCCF)**: Administered by the **Global Environment Facility (GEF)**, it offers four different finance services: adaptation to climate change; technology transfer; energy, transport, industry, agriculture, forestry and waste management; and economic diversification for countries dependent on fossil fuels.
  - **Least Developed Countries Fund (LDCF)** : Administered by the Global Environment Facility (GEF), its purpose is to support the almost 50 countries classified as least developed by the United Nations to tackle their high vulnerability to climate change and implement their national adaptation plans.
  - **UN-REDD Programme** : Created in 2008, also as part of the UN, its objective is to reduce the emissions caused by deforestation and forest degradation in developing countries, helping governments to prepare and implement national REDD+ strategies.
  - **Bilateral climate finance funds**: It includes institutions such as the United States Agency for International Development (USAID), the European Union's Global Climate Change Alliance+ (GCCA+), and the Japan International Cooperation Agency (JICA), etc.

### ***What are the Main Challenges to Climate Financing?***

- **Funding Shortages:**
  - The primary challenge in climate financing is the inadequate availability of funds for climate projects, especially in low-income countries.

- Developed countries fell short of the USD 100 billion annual target, having mobilized only USD 79.6 billion at the 26th UN Climate Change conference in Glasgow in 2021.
- **Lack in Institutional Capacity:**
  - Many impoverished countries lack the financial infrastructure necessary to effectively manage and allocate substantial foreign investments into climate projects, potentially causing concerns among investors and destabilizing fragile economies.
  - Some experts raise concerns about the capacity of Multilateral Development Banks (MDBs) to meet the world's climate finance needs, particularly their limited expertise in climate-related matters.
  - MDBs are criticized for primarily concentrating their financing on climate mitigation, with less focus on assisting businesses and communities in adapting to climate risks.
- **Accountability Mechanisms:**
  - There is currently no established mechanism to hold governments and institutions accountable for fulfilling their climate financing commitments.
  - Wealthier nations have been known to either overstate their investment estimates or fail to meet their financial responsibilities.
  - "Green funds," which allow private investors to participate in Environmental, Social, and Governance (ESG) investing, do not mandate the disclosure of their investments' carbon footprints or emissions, leading to the problem of **greenwashing**.
    - Greenwashing is when an organization spends more time and money on marketing itself as environmentally friendly than on actually minimizing its environmental impact.
- **Measuring Climate Finance:**
  - Data on climate finance flows are compiled using various methodologies and have varying interpretations.
  - Double counting of climate finance can occur when the same funds are reported by multiple parties, leading to an overestimation of the actual financial flows.
- **Missing Urgency:**
  - Unlike the rapid response to the **global financial crisis in 2009-10**, climate finance transfers currently lack the strong political will, perceived urgency, and global cooperation seen in the financial crisis response.

## What are Indian

### Initiatives for Financing Climate Action ?

#### ➤ **National Adaptation Fund:**

- The fund was established in 2014 with a corpus of Rs. 100 crores with the aim of bridging the gap between the need and the available funds.
- The fund is operated under the Ministry of Environment, Forests, and Climate Change (MoEF&CC).

#### ➤ **National Clean Energy and Environment Fund (NCEEF):**

- The NCEEF was established to promote clean energy and environmental projects in India.
- It funds initiatives that help reduce greenhouse gas emissions and improve environmental quality.
- The fund is supported by a cess on coal production and usage.

#### ➤ **Green Climate Fund (GCF) and Adaptation Fund (AF):**

- India is eligible to access financial resources from international climate funds like the GCF and AF.
- These funds support climate mitigation and adaptation projects in the country.

#### ➤ **Renewable Energy Financing:**

- India has actively promoted renewable energy projects, including solar and wind energy.
- The government offers financial incentives and subsidies to encourage investment in these sectors.

#### ➤ **National Clean Energy Fund (NCEF):**

- NCEF was created to support clean energy initiatives and research.
- It provides resources for innovative projects that contribute to low-carbon development.

#### ➤ **Emission Trading System (ETS):**

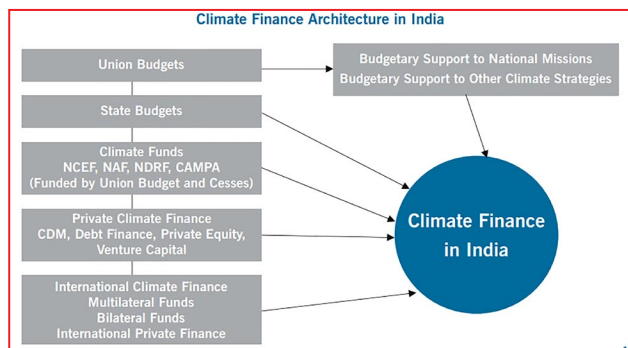
- India has explored the possibility of setting up an ETS to promote carbon trading and incentivize emissions reductions.

#### ➤ **Carbon Tax:**

- There have been discussions about the introduction of a carbon tax in India, which could provide additional revenue for climate initiatives.

#### ➤ **Bilateral and Multilateral Agreements:**

- India engages in bilateral agreements with countries for climate finance, and it participates in multilateral negotiations to secure funding for climate projects.



### What are the Next Steps for Climate Finance?

#### ➤ **Commit to Climate Finance Targets :**

- All bilateral donors must live up to their climate finance commitments and set more ambitious targets.
- The need for integrating climate finance into national development plans and policies is even greater than before

#### ➤ **Enhancing International Cooperation:**

- Strengthening collaboration among nations and international organizations is crucial.
- All countries will need to unlock opportunities for low carbon climate resilient infrastructure and other climate-related investments to support recovery and transformation.

#### ➤ **Accountability in MDBs:**

- Multilateral Development Banks must better leverage their balance sheets, improve their private sector multipliers and work better as a system.
- Multilateral Development Banks need to accelerate the alignment of their financial support and activities with the Paris Agreement, building on the common framework set out at COP25.

#### ➤ **Supporting Vulnerable Communities:**

- Tackling debt distress and excessive debt overhang, especially in poor and climate vulnerable countries, is crucial.
- Targeted efforts should be made to channel finance to the most vulnerable communities and countries, especially those at risk from the adverse impacts of climate change.

#### ➤ **Innovative Financing Mechanisms:**

- Exploring innovative financing mechanisms, such as green bonds, carbon pricing, and public-private partnerships, can attract additional funding for climate projects.
- Private capital is not flowing fast enough to finance the low-carbon and climate-resilient transition and is often not aligned to Paris Agreement targets. Moreover, most of the current stock of private sector climate investment is in advanced economies.

➤ **Transparency and Accountability:**

- Establishing transparent reporting mechanisms and holding nations accountable for their financial commitments is vital to ensuring the effective use of climate finance.

➤ **Promoting Sustainable Practices:**

- Encouraging sustainable practices and the transition to green economies is part of the long-term strategy in climate finance.

➤ **Global Stocktakes:**

- Continuously assessing and enhancing climate finance efforts through global stocktakes, as outlined in the Paris Agreement, is essential to ensure alignment with climate goals.

**Conclusion:**

Fostering increased cooperation in global climate finance is not just a necessity, it is an imperative for addressing the urgent challenges posed by climate change. The complexity of climate issues, coupled with the substantial financial requirements, calls for a united and collaborative effort among nations, organizations, and private sectors.



## India's GDP Growth: Challenges and Opportunities

*This editorial is based on "An unfolding economic tragedy" which was published in The Hindu on 30/10/2023. It argues that India is facing a severe economic downturn due to the Covid-19 pandemic, the mismanagement of the government, and the lack of structural reforms.*

**Tag:** Indian Economy, GS Paper - 3, Growth & Development, GS Paper - 2, Government policies & interventions

The **National Statistics Office (NSO)** announced in late August, 2023 that India's **Gross Domestic Product (GDP)** had surged in the April-June quarter, showing an impressive annual growth rate of 7.8%. This remarkable economic performance prompted widespread excitement and enthusiasm, as it reaffirmed India's status as the fastest-growing major economy in the world.

### What has been the Growth Trajectory in the Past?

- **Mid-2000s:** Indian GDP grew at an annual 9% rate in the mid-2000s as historically high world trade growth lifted all economies.

- A financial sector-real estate-construction bubble added froth to that growth which was unsustainable.
- Growth **slowed to 6% after the global financial crisis of 2007-08** as world trade decelerated quickly.

- **2012-15:** By 2012-13, GDP growth had fallen to about 4.5%, but growth for that year and the next three jumped courtesy of a data revision in January 2015 (The Government **started calculating GDP on market price** instead of factory price).

- This change in methodology **increased the GDP growth rate in numbers but not in real.**

- **2016-2018:** The **slowdown resumed after the demonetisation and GST rollout**. And once the finance-real estate bubble collapsed following the IL&FS bankruptcy in 2018, **GDP growth came down to 3.9%** in the year before the pandemic.

- **Pre-Covid Years:** In fact, the pre-Covid growth was **more dire than the publicized estimate implies.**

- Indian statistical authorities present income from production as their measure of GDP.

- In principle, **expenditure on Indian products (by national residents and foreigners) should equal income** because producers earn incomes only when someone buys their wares.

- But **expenditure grew at a mere 1.9%** in the pre-Covid year.

- **The Covid Years:** By that averaging method, **GDP grew by 2.9%** in the pandemic year.

- The slowdown from the heady 9% GDP growth in the mid-2000s to 3%-4% before the pandemic reflected **severe weakness in demand.**

- That **weakness manifested in the glaring drop in private corporate fixed investment** from a peak of 17% of GDP in 2007-8 to 11% in 2019-20.

- Private corporations cut back investments, recognising that domestic consumers, fearful of job and earning prospects, had constrained purchasing power, and **foreigners had only a limited appetite for Indian goods.**

- **Post-Covid Years:** In the post-**Covid-19** years, the **economy has bounced around. It fell sharply, recovered modestly, slowed severely**, and experienced a dead cat bounce from late-2022.

- The only way to assess this bouncy post-Covid phase is by determining the average growth rate over the entire period.

- Even that is not straightforward. If we consider the latest four quarters over the **four quarters before Covid**, the annual growth rate (of the income and expenditure average) is 4.2%.

- If we **compare only the latest quarter** over the quarter before Covid, **the annual growth is just above 2%**.
- The tell-tale sign of post-Covid demand weakness is the **further drop in private corporate investment to 10%** of GDP in 2021-22.
  - Analysts believe that it has remained anaemic in 2022-23.

### ***What are the Primary Reasons behind Decline in Growth Rate in Past Years?***

- **A Weak External Demand:** External demand is another important source of economic growth, as it reflects the competitiveness and integration of the economy with the world. However, India's exports to GDP ratio has been declining since 2013-14. The ratio was 25% in 2011-12 and declined to 18% by 2019-20.
  - This fall can be attributed to various reasons, such as a slowdown in global growth, **appreciation of the rupee**, loss of market share, and trade barriers.
- **Low Capital Investment:** India's **investment rate fell from 39.8% of GDP in 2010 to an estimated 29.3% in 2021**. This reflects a lack of confidence and demand in the economy, as well as structural bottlenecks such as land acquisition, environmental clearance, and credit availability.
- **Policy Uncertainty and Shocks:** The government has implemented several policy changes and reforms that have had mixed effects on the economy. Some of these include **demonetization, GST, corporate tax cuts, insolvency and bankruptcy code**.
  - While some of these may have long-term benefits, they also caused short-term disruptions and uncertainties for businesses and consumers.
- **Rising Inequality and Poverty:** India's economic **growth has not been inclusive** or equitable. The income share of the top 10% of the population has increased from 31% in 1980 to 56% in 2016, while the share of the bottom 50% has fallen from 24% to 15%. The **poverty rate has also stagnated** at around 20% since 2011.
- **Poor Performance of the Manufacturing Sector:** Manufacturing is a vital sector for economic growth, as it contributes to value addition, exports, and employment. However, India's manufacturing sector has been underperforming for the past decade, with its real **gross value added (GVA)** declining by about 3% in 2019-20.
  - This decline can be attributed to various reasons, such as demonetisation, GST implementation, global trade tensions, and lack of competitiveness.

- **A Decline in Consumption:** Consumption is another major component of GDP, as it reflects the purchasing power and living standards of the people. However, India's consumption expenditure (as a share of GDP) has also fallen from 60.5% in 2019-20 to 57.5% in 2021-22.
  - This decline can be attributed to various reasons, such as low income growth, high **inflation**, rural distress, job losses, and reduced credit availability.
- **Reduced Savings:** To maintain consumption, households have slashed their savings rates to 5.1% of GDP, from 11.9% in 2019-20. Those eligible for credit cards are racking up worrying levels of debt.

### ***What are the Positive Factors that Can Help India Recover from the Slump?***

- **A Large and Young Population:** According to reports, India has a **population of over 1.4 billion people, with more than 40% below the age of 25**. This provides a huge demographic dividend for economic growth, as it implies a large and growing workforce and consumer base.
  - However, this also **requires adequate investment in human capital development**, such as education, health, and skills.
- **A Resilient and Diversified Economy:** India has a diversified economy that spans across various sectors and regions. This provides a cushion against sector-specific or region-specific shocks and helps maintain macroeconomic stability.
  - Moreover, India has **shown resilience in coping with various crises** in the past, such as the **global financial crisis of 2007-08** and the **Covid-19 pandemic of 2020-21**.
- **A Reform-Oriented and Proactive Government:** The Indian government is committed to pursuing reforms and policies that can enhance economic growth and development.
  - Some of the recent initiatives taken by the government include the **Atmanirbhar Bharat package**, the **production-linked incentive scheme**, the **national infrastructure pipeline** and the **labour code** bills.
    - However, these initiatives also require effective implementation and coordination among various stakeholders.

### ***What more needs to be done to make India's Growth Rate more Robust?***

- **Boosting Investment and Consumption:** These are the two main drivers of domestic demand, which **accounts for about 70% of India's GDP**.

- To increase investment, the government can continue to implement reforms that reduce policy uncertainty, regulatory hurdles, interest rates, and bad loans.
- To increase consumption, the government can **support income growth, inflation control, rural development, job creation, and credit availability.**
- **Enhancing Manufacturing and Exports:** These are the key sources of value addition, employment, and external demand, which can help India diversify its economy and integrate with the global market.
  - To improve manufacturing and exports, the government can continue to implement initiatives such as the Atmanirbhar Bharat package, the production-linked incentive scheme, and the national infrastructure pipeline.
  - The government can also address issues such as **currency appreciation**, market share loss, and trade barriers.
- **Investing in human capital and social services:** These are the essential factors for improving the living standards and productivity of India's large and young population.
  - To invest in human capital and social services, the government can continue to implement programs that enhance education, health, skills, nutrition, water, sanitation, energy, housing, and healthcare.
  - The government can also ensure that these programs reach the people who actually need them and are delivered efficiently.
- **Maintaining Macroeconomic Stability and Resilience:** These are the necessary conditions for sustaining economic growth and coping with various shocks and uncertainties.
  - To maintain macroeconomic stability and resilience, the government can continue to pursue prudent fiscal and monetary policies that balance growth and inflation objectives.



## VisionIndia@2047: Transforming the Nation's Future

*This editorial is based on "Virtues of planning: On the Vision India@2047 plan" which was published in The Hindu on 02/11/2023. It discusses the government's blueprint to develop India by 2047, which is expected to be unveiled by the Prime Minister in early 2024.*

**Tag:** Indian Economy, GS Paper - 3, Growth & Development, GS Paper - 2, Government policies & interventions

In early 2024, the Prime Minister is expected to unveil a road map to transform the country into a developed nation with a **USD 30 trillion economy** by the time it completes 100 years of Independence.

The **Vision India@2047** plan, as it is officially named, has been in the works for nearly two years with officials across ministries brainstorming on how to take the country from its current level of development to where it aspires to be.

The **NITI Aayog**, in the process of giving this vision document a final shape, will soon run its central ideas and goals past top minds across sectors, including **World Bank** President Ajay Banga, Apple chief Tim Cook, as well as Indian industrialists and thought leaders, to finetune them and factor in any blind spots. Coming ahead of the **Lok Sabha** election, the plan may well be viewed as the government's policy playbook promise for prospective voters.

### What is Vision India@2047?

#### ➤ The Project:

- Vision India@2047 is a project initiated by the **NITI Aayog**, the apex policy think tank of India, to create a blueprint for India's development in the next 25 years.
- The project aims to **make India a global leader in innovation and technology**, a model of human development and social welfare, and a champion of environmental sustainability.

#### ➤ Objectives:

- Achieving a **USD 30 trillion economy** with a **per-capita income of USD 18,000-20,000** and strong public finances and a robust financial sector.
- **Building world-class infrastructure** and facilities in both rural and urban areas.
- Eliminating unnecessary interference by the government in the lives of citizens and promoting digital economy and governance.
- Developing 3-4 global champions in every sector by merger or restructuring and boosting indigenous industry and innovation.
- **Becoming self-reliant** in defence and space sectors and enhancing India's role in the world.
- **Fostering green growth** and climate action by increasing renewable energy capacity and reducing carbon emissions.
- Empowering the youth with skills and education and creating more employment opportunities.
- Partnering with foreign R&D organizations to build top 10 labs in the country and bringing at least 10 Indian institutions among the top 100 globally.

# Big Picture

Niti Aayog readies plan for India to be **\$30 trillion** economy

To consult leading industrialists, academicians, civil society members

**Vision** document to be released by PM in December



To Become a Developed Nation:

**Focus** on radical changes in government

**Institutional & structural** reforms

## What is the Current Status and Future Prospects of the Indian Economy?

### ➤ Current Status:

- India is currently estimated to be the **fifth largest economy** in Nominal terms and 3rd largest in **PPP (Purchasing Power Parity)** terms.
- By 2022, the size of Indian **GDP** had already become larger than the GDP of the UK and also France.

<b>CURRENTLY NO. 5</b>		
GDP in \$ tn	2022	2023
United States	25.5	27.9
China	17.9	17.7
Japan	4.2	4.4
Germany	4.1	4.2
<b>India</b>	<b>3.4</b>	<b>3.7</b>

### ➤ Future Prospects:

- Several estimates show that **India's GDP is expected to overtake Japan and Germany** by 2030.
  - Ratings agency S&P estimates that **India's nominal GDP will rise** from USD 3.4 trillion in 2022 to USD 7.3 trillion by 2030.
  - This rapid pace of economic expansion would result in the size of the Indian GDP **making India the second largest economy** in the Asia-Pacific region.
- The preliminary results from NITI Aayog's forecasting have predicted:
  - India's exports will be valued at USD 8.67 trillion in 2047** while its imports will be valued at USD 12.12 trillion.
  - India's average **life expectancy** will jump to 71.8 from 67.2 in 2021 and its literacy rate to 89.8% from 77.8% in 2021.

## Growth path

What does the future hold? Scenario building for macroeconomic indicators



Indicator	Units	2030	2040	2047
GDP at current prices	₹ trillion	609.04	1,759.79	3,604.94
Per capita GDP at current prices	₹	4,02,008	10,93,037	21,84,812
Exports	\$ trillion	1.58	4.56	8.67
Imports	\$ trillion	1.88	5.92	12.12
Investment	₹ trillion	195.5	591.1	1,273.40
Savings	₹ trillion	207.8	649.4	1,339.70

Source: NITI Aayog

### **What are the Factors that may Contribute to India's Economic Growth?**

- **Demographic Dividend:** India has a large and young population that can provide a skilled and productive workforce for various sectors.
  - According to reports, India has a **population of over 1.4 billion people, with more than 40% below the age of 25**. This provides a huge **demographic dividend** for economic growth.
- **Growth of the Middle Class:** India's middle class is projected to expand from about 50 million in 2023 to over 500 million by 2050, creating a huge domestic market and demand for goods and services.
- **Accelerated Digital Economy:** India has been embracing digital transformation and innovation, especially in the areas of **e-commerce, fintech, edtech**, healthtech, and **agritech**.
  - These sectors have the potential to create new jobs, improve efficiency, and increase access to services.
- **Sustainability-Focused Economy:** India has been investing in **renewable energy, green infrastructure**, and climate resilience, aiming to reduce its carbon footprint and enhance its environmental quality. These initiatives can also create new opportunities for growth and development.

### **What are the Challenges before India's 30 tn Dollar Economy Vision?**

- **Middle Income Trap:** There are apprehensions that while moving on its path to developed economy, the Indian economy will fall in **Middle Income Trap**. After reaching a per capita income of USD 5,000-6,000, it will not move fast.
  - According to the **World Bank** definition, the **middle-income trap "refers to a situation whereby a middle-income country is failing to transition to a high-income economy** due to rising costs and declining competitiveness".
- **Ageing Population:** India's current population is around 1.4 billion, and is **projected to peak at 1.64 billion in 2048**, before declining to 1.45 billion by 2100.
  - This means that **India will have to deal with the challenges of an ageing population**, such as rising health care costs, pension liabilities, and labor shortages.
- **Maintaining Higher GDP Growth Rate:** Though the Indian economy is growing at a very good rate of 8% but to achieve this goal, this growth rate might not be enough. India needs to grow at a very high and sustainable growth rate.

- Moreover, various estimates show that the Indian Economy will grow at 7% for the next 10 years.
- While the preliminary numbers provided by the Niti Aayog, estimates show that the **economy will need to post an annual average economic growth of 9.2% between 2030-2040, 8.8% between 2040-2047 and 9% between 2030 to 2047**.
- **The Rupee-Dollar Conundrum:** India's GDP in dollar terms is also a function of the rupee-dollar exchange rate, which is influenced by various factors such as inflation, trade balance, capital flows, and monetary policy.
- **Geopolitics and regional integration:** India faces a complex and dynamic geopolitical environment, with rising tensions with China, Pakistan, and other neighbors, and changing relations with the US, Russia, and other major powers.
- **Stagnated Agriculture and Manufacturing sectors:** Improving the productivity and competitiveness of the **agriculture sector, which employs more than half of the workforce but accounts for just 17% of the GDP**, and revitalizing the stagnated **manufacturing sector, which has maintained a 15% GDP share for decades**, while simultaneously generating employment opportunities for the expanding population.
- **Lower Labor Force Participation:** According to the latest **Periodic Labour Force Survey (PLFS)** Annual Report 2022-2023, India's **labor force participation rate (LFPR)** was 40.4% in 2022-2023, which is lower than the global average of 61.4%. Moreover, India's LFPR has been declining over the years, especially for women.

### **What More Needs to be Done?**

- **Aim for Greater, Faster Divestitures:** India has a large public sector that often suffers from inefficiencies, corruption, and losses. By divesting or privatizing some of these enterprises, India could raise funds, improve productivity, and attract foreign investment.
- **Boost the Middle Class:** India's middle class is a key driver of consumption and growth, but it is also burdened by high taxes and low savings. By **cutting tax rates or abolishing personal income tax** and replacing it with a consumption tax, India could increase the disposable income and spending power of its middle class, while also simplifying the tax system and reducing evasion.
- **Increase Labor Force Participation:** India needs to invest more in improving the quality and accessibility of education and skill development for its labor force.
  - Initiatives like **New Education Policy** and **Skill India Mission** are the right steps towards this.

- **Accelerate the Infrastructure Pipeline:** India needs to invest heavily in its infrastructure, such as roads, railways, ports, airports, power, water, and sanitation, to improve connectivity, efficiency, and quality of life.
  - India has announced a Rs 100 lakh crore-plus National infrastructure pipeline, but it needs to speed up its execution and financing.
- **Build on Manufacturing Momentum:** India has a huge opportunity to become a global manufacturing hub, especially in sectors such as electronics, textiles, pharmaceuticals, and defense. India has launched several initiatives, such as the **production-linked incentive (PLI)** scheme, to boost its manufacturing sector and create jobs.
  - India needs to further improve its ease of doing business, labor laws, and skill development to attract more domestic and foreign investment.
- **Boost Private Investment:** India needs to attract more foreign direct investment and encourage domestic companies to invest in the economy. The government can incentivize private investment by offering support for infrastructure projects and manufacturing.
- **Implement Structural Reforms:** India needs to undertake targeted reforms to raise productivity and competitiveness. McKinsey has identified six areas of targeted reform that can help raise productivity and competitiveness, including financial-sector reforms, urban planning, and e-commerce.
- **Increase Capital Accumulation:** Investment as a proportion of GDP **needs to increase to achieve the goal of becoming a USD 30 trillion economy.** The government can play a key role in boosting investment by offering substantial support for infrastructure projects and by incentivizing manufacturing.



## Peacebuilding Through The United Nations

*This editorial is based on "Is the United Nations toothless in ending wars?" which was published in The Hindu on 03/11/2023. It talks about the effectiveness of the United Nations (UN) in addressing the Israel-Hamas conflict and the broader security issues of contemporary international order.*

**Tag:** International Relations, GS Paper - 2, Important International Institutions, Groupings & Agreements Involving India and/or Affecting India's Interests, International Treaties & Agreements, Effect of Policies and Politics of Countries on India's Interest.

The **United Nation's** capacity to bring a ceasefire in the **Israel-Hamas conflict** is being questioned due to changing global power dynamics. Over time, the UN's effectiveness in

conflict resolution has diminished, and it has seen reduced influence in recent decades. Conflicting interests among major powers often prevent the UN from reaching a consensus on matters related to peacebuilding, security, and ceasefire agreements.

### **How Does the UN Maintain International Peace and Security?**

The **United Nations (UN)** maintains international peace and security through various mechanisms and actions, as outlined in the **UN Charter Chapter VII: Action with Respect to Threats to the Peace, Breaches of the Peace, and Acts of Aggression (Articles 39-51).**

#### **Here are the key ways in which the UN fulfils its role in this regard:**

- **Collective Security:** The UN promotes collective security through the **United Nations Security Council (UNSC)**, a principal organ responsible for maintaining international peace and security. The UNSC has the authority to take measures, including the use of force, to address threats to international peace and security.
- **Peacekeeping Operations:** The UN deploys **peacekeeping missions** to areas of conflict. These missions are composed of military, police, and civilian personnel from member states who work to monitor ceasefires, facilitate negotiations, and support the implementation of peace agreements.
- **Diplomacy and Conflict Resolution:** The UN serves as a platform for **diplomatic negotiations** and **conflict resolution**. It encourages dialogue and negotiations among parties in conflict and assists in mediating disputes to reach peaceful settlements.
- **Sanctions:** The **UNSC** can impose economic and political sanctions, such as trade restrictions and travel bans, against countries or entities that threaten international peace and security.
- **Preventive Diplomacy:** The **UN** engages in preventive diplomacy by proactively identifying potential conflicts and working to prevent their escalation.
- **Conflict Prevention:** The **UN** works to address the root causes of conflicts, such as poverty, inequality, and human rights abuses, to prevent the outbreak of conflicts.
- **Humanitarian Assistance:** The **UN** provides humanitarian aid to populations affected by conflicts.

and natural disasters. This assistance helps alleviate suffering, save lives, and address the consequences of conflicts.

- **International Law:** The UN promotes the adherence to international law, treaties, and conventions that govern behavior between states and ensure that

countries respect the principles of sovereignty, territorial integrity, and non-interference in the affairs of other states.

- **Disarmament and Non-Proliferation:** The UN works to reduce the proliferation of weapons of mass destruction and promote disarmament efforts.

# UNSC

United Nations Security Council

It is One of the six main organs of the United Nations.  
Permanent Headquarters: New York City  
Established by: **UN Charter in 1945**



## Members: 15 members (5 Permanent and 10 non-permanent)

### Permanent Members (P5)



United States



the Russian Federation



France



China



the United Kingdom



### According to the Charter, the United Nations has four purposes:

- to maintain international peace and security;
- to develop friendly relations among nations;
- to cooperate in solving international problems and in promoting respect for human rights;
- and to be a centre for harmonizing the actions of nations.

### Non-permanent Members



Albania



Japan



Brazil



Malta



Ecuador



Gabon



Ghana



Mozambique



UAE



Switzerland

### How Successful has the UN been in Maintaining International Peace and Security?

The success of the UN in maintaining international peace and security:

- **Prevention of World Wars:**
  - The UN was established after World War II with the primary goal of preventing another global conflict.

- The absence of a third world war since the UN's formation can be seen as a success in maintaining international peace at a global level.

### ➤ Preventing Nuclear Proliferation:

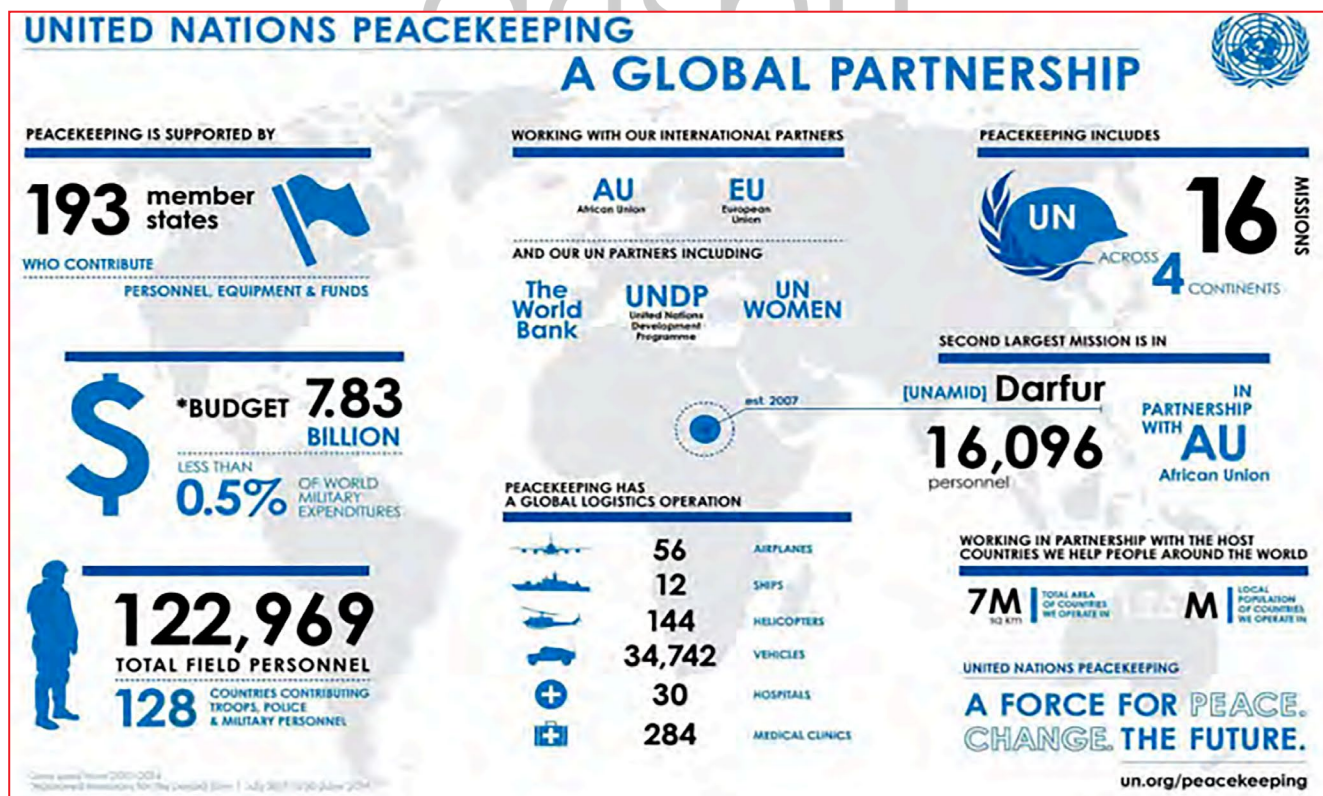
- For over five decades, the **International Atomic Energy Agency (IAEA)** has served as the world's nuclear inspector.

- IAEA experts work to verify that safeguarded nuclear material is used only for peaceful purposes. To date, the Agency has safeguards agreements with more than 180 States.
- **Supporting Disarmament:**
  - UN treaties are the legal backbone of disarmament efforts:
    - **Chemical Weapons Convention**-1997 has been ratified by 190 States
    - **Mine-Ban Convention**-1997 by 162 states
    - **Arms Trade Treaty**-2014 by 69 states
- **Peacekeeping Operations:**
  - The UN has conducted numerous peacekeeping missions to mitigate conflict and support post-conflict stability.
  - The UN has been more successful in preventing and resolving conflicts at the regional level, particularly in Africa, through peacekeeping missions and diplomatic efforts.
- **Resolution of Interstate Conflicts:**
  - The UN has successfully mediated in some interstate conflicts, preventing or resolving disputes between countries.
    - Example: **1962 Cuban Missile Crisis**.
- **Humanitarian and Relief Efforts:**
  - The UN has been involved in humanitarian and relief efforts in conflict zones, providing aid to those affected by conflicts.

- The **United Nations Development Programme (UNDP)**, **United Nations Refugee Agency (UNHCR)**, **United Nations Children's Fund (UNICEF)**, **World Food Programme (WFP)** and the **United Nations Population Fund (UNFPA)** have primary roles in the delivery of relief assistance.

### ***The limitations of the UN in maintaining international peace and security :***

- **Israeli-Palestinian conflict (1948-Now):** The UN has failed to resolve the Israeli-Palestinian conflict, with Israel maintaining control over historic Palestine and facing little accountability for its actions..
- **Cambodia Violence (1975-1979):** The UN recognized the Khmer Rouge regime, ignoring human rights violations, and failed to prevent genocide in Cambodia.
- **Civil War in Somalia and South Sudan (1991-Now):** The UN peacekeeping mission in Somalia failed due to the lack of a government to engage with and repeated attacks against UN officers, resulting in civilian deaths.
  - The civil war in South Sudan has killed hundreds of thousands despite the presence of UN peacekeeping forces.
- **Darfur Conflict in Sudan (2003-Now):** The UN intervened years after the conflict in **Darfur** began, and the situation remains dire, with millions affected.
- **Iraq Invasion (2003-2011):** The U.S.-led invasion of Iraq, based on concerns about Weapons of mass destruction (WMDs) under UN Resolution 1483,



resulted in instability and later contributed to the rise of ISIS. ISIS took control of territory in Iraq and Syria, triggering a major regional and global crisis.

- **Syrian Civil War (2011-Now)** : The UNSC limited action in the Syrian war led to a prolonged and devastating conflict in the region with millions of displaced Syrians.
- **Yemen Civil War (2014-Now)**: The UN's efforts to provide humanitarian aid have been hindered by the Saudi-led coalition's intervention in Yemen.
- **Rohingya Crisis, Myanmar (2017-Now)**: The UN failed to prevent the persecution and displacement of the **Rohingya** in Myanmar.

### ***What are the Challenges Faced by UN Peacekeeping Operations?***

#### **Strategic Challenges:**

- **Lack of Adequate Representation**: The UNSC is less effective because it is less representative, the most pertinent absence being that of Africa (a continent of 54 countries).
- **Leadership System**: The effectiveness of UN peacekeeping operations has been hampered by leadership failures, poor management, discipline issues, and inefficiencies in traditional peacekeeping approaches.
- **Legislation**: Troop and police-contributing countries often have varying interpretations of Status of Forces Agreements (SOFA), mandates, and Rules of Engagement.
- **Global Order**: Geopolitical and strategic interests of powerful nations can influence UN decision-making, leading to conflicts of interest.

#### **Operational Challenges:**

- **Nature of Armed Conflict**: The evolving threats of violent extremism, transnational terrorism, and organized crime have made it challenging for peacekeepers to protect civilians and maintain security, especially in areas where peace and stability are difficult to achieve.
- **Misuse of Veto Power**: Veto power has been always criticized by many experts as well as by most States calling it a "self-chosen club of the privileged" and non-democratic. It has been criticized for not allowing the Council to make necessary decisions whenever it displeases any one of the **P-5**.
- **Methods of Operation**: Peacekeeping operations now require a wide range of social and military activities to support or restore a host country's government and social institutions.

- **Readiness**: The UN does not have a standing army or police force, which makes it challenging to mobilize multinational member states' military and police forces for field missions.

#### **Tactical Challenges:**

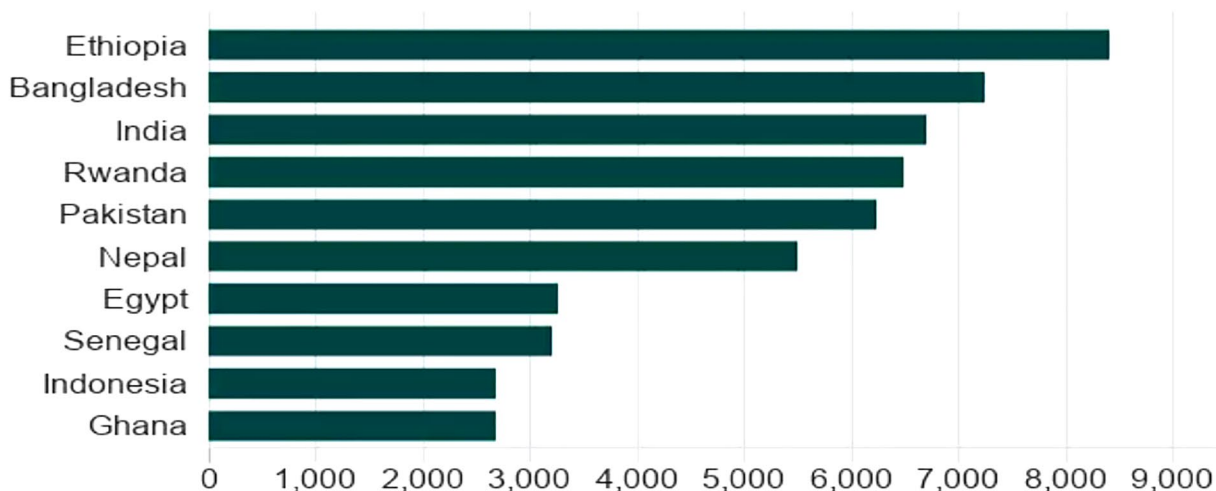
- **Geopolitical Rivalry within P5**: The geopolitical rivalry among the **permanent members of the UNSC (P5)** has prevented the UNSC from coming up with effective mechanisms to deal with global issues like **the invasion of Afghanistan**.
- **Lack of Common Understanding of Operations**: Lack of a common understanding of operations among peacekeepers can lead to ineffective deployment.
- **Multilateral Cooperation**: Finding a comprehensive and effective leadership system that integrates UN and non-UN organizations in areas of operation remains a challenge.
- **Discipline and Code of Conduct**: Peacekeepers, police, and civilian personnel may engage in misconduct and mishandling of UN properties.

#### **What is India's**

#### **Contribution in UN Peacekeeping Missions?**

- **Troop Deployment**: India has been actively involved in **UN peacekeeping** operations since its first commitment in **Korea** in 1950. Indian troops have served in **49** of the **72** UN missions, totalling over **253,000** personnel deployed worldwide.
  - **Female Peacekeepers**: India has deployed **Female Engagement Teams** in the United Nations Organization Stabilization Mission in the Democratic Republic of the Congo and the **United Nations Interim Security Force** for Abyei, which is the second largest women contingent after Liberia.
- **Medical and Engineering Units**: India deploys medical teams and engineering units to provide essential services, such as medical care and infrastructure development, in conflict-affected regions.
- **Expertise in Training**: India's **Centre for United Nations Peacekeeping (CUNPK)** provides training and expertise in peacekeeping operations.
- **Leadership Roles**: Indian officers have served in leadership roles within UN missions, including as Force Commanders, contributing to effective mission management.
- **Humanitarian Assistance**: In addition to military contributions, India has provided humanitarian assistance, including medical aid and disaster relief support, in conflict-affected regions.

## Top 10 countries contributing troops to UN missions



Source: United Nations - Includes police, military experts, staff officers and troops

### What Reforms are Necessary in the United Nations?

#### ➤ Improve UNSC Structure and Functioning:

- Expanding the number of permanent members.
- Implementing limitations on veto use in cases of mass atrocities and introducing collective veto consultation.
- Provide adequate resources to the **Department of Political and Peacebuilding Affairs (DPPA)** and the **Department of Peace Operations (DPO)**.
- Create a single political-operational Structure for streamlining and enhancing coordination

#### ➤ Strengthen Conflict Prevention Mechanisms:

- Enhance intelligence gathering and developing regional early warning centers.
- Invest in diplomatic efforts and expand the role of special envoys.

#### ➤ Enhance Peacekeeping Operations:

- Promote a coordinated approach with fostering cross-pillar coordination.
- Provide training in hybrid and unconventional warfare and equipping peacekeepers with advanced technology.
- Addressing misconduct and sexual exploitation issues while strengthening peacekeeper discipline.

#### ➤ Bolstering Partnerships:

- Strengthen connections with non-governmental organizations (NGOs) and promote grassroots participation.
- Leverage resources and expertise from the private sector, aligning business interests with peace and security goals.

- Enhance ties with regional entities such as the **African Union (AU)** and the **European Union (EU)** and participate in joint peacekeeping initiatives.

### Conclusion:

As the world grapples with conflicts, terrorism, humanitarian crises, and emerging threats, the need for a reinvigorated and more efficient UN peace and security apparatus becomes increasingly evident. However, it is important to acknowledge that implementing UN reforms will require collective commitment from member states as well as consistent monitoring and evaluation.

■ ■ ■

## Tackling India's Air Pollution Crisis for a Sustainable Future

*This editorial is based on "Giving the Urban Indian a better life" which was published in The Hindu on 06/11/2023. It argues that India needs a comprehensive urban policy framework that can address the challenges of rapid urbanization, such as housing, infrastructure, environment, governance, and social inclusion. It also suggests some possible solutions.*

**Tag:** Biodiversity & Environment, GS Paper - 2, Health, Government Policies & Interventions, GS Paper -3, Environmental Pollution & Degradation

### Why in News?

The focus of this year's World Cities Day, celebrated on 31<sup>st</sup> October, was on "Financing Sustainable Urban Future for All." The aim is to ensure that finances are

directed towards addressing the **challenges posed by flawed urbanization, ultimately creating livable and safe cities**. It is alarming to note that air pollution alone is responsible for reducing our life expectancy by more than 10%. This emphasizes the urgent need to tackle this issue and prioritize the well-being of urban populations.

### **What is the Status of Air Pollution in India?**

- According to the **World Air Quality Report by IQAir**, India was the **eighth most polluted** country in the world in 2022, and **Delhi was the most polluted capital city** for the fourth consecutive year.
- The report also found that **39 out of the 50 most polluted cities in the world were in India**, with Bhiwadi and Ghaziabad topping the list.
- The report used **PM2.5** air quality data from over 30,000 ground-based monitors in 131 countries.
  - PM 2.5 refers to fine particulate matter that can cause serious health problems when inhaled.

### **What are the Consequences of Air Pollution in India?**

- **Health Impacts:** Air pollution is a significant cause of death in India, with **about 1.67 million people dying in 2019 due to air pollution**. The pollution-related deaths **accounted for 17.8% of all deaths in the country in 2019**.
  - The health impacts of pollution include **respiratory infections**, lung diseases, **Chronic obstructive pulmonary disease (COPD)**, asthma bronchial infections, **cardiac arrest**, and gastrointestinal problems.
  - Respiratory infections are also the **third or fourth highest mortality factors in India**.
  - Fine particulate air pollution (PM2.5) **shortens an average Indian's life expectancy by 5.3 years**, relative to what it would be if the **World Health Organization (WHO)** guideline was met.
- **Economic Impacts:** According to a report by Dalberg Advisors, if India had achieved safe air quality levels in 2019, its **GDP would have increased by USD 95 billion**, or 3%.
  - This is because pollution reduces the productivity, health, and consumer demand of businesses and workers.
  - Pollution-related **economic losses in India were USD 36.8 billion** in 2019, which was **1.36% of the country's gross domestic product**.
  - The economic loss due to pollution varies across states, with the highest in Uttar Pradesh (2.2% of GDP) and Bihar (2% of GDP).

- These losses could impede India's aspiration to be a USD 5-trillion economy.

- **Inequity:** Poorer households in India are bearing a disproportionate impact from pollution caused by others. **Low-income groups**, despite not producing a lot of air pollution directly because they don't consume much, are facing a disproportionate impact of air pollution from other sources.
- **Environmental impacts:** Pollution takes many forms in India, including the use of poorly ventilated stoves and open fires for cooking inside dwellings. India is the **world's 8<sup>th</sup> most polluted country**, and fine particulate air pollution (PM2.5) is the greatest threat to human health in India. **39 of the 50 most polluted cities in the world are in India**.

*"Bad air is not limited to the Indo-Gangetic plains anymore where the argument of inversion of temperature and slowing down of wind speeds was considered as a factor for poor air quality. The situation is getting to be bad even in India's coastal cities."*

### **What are the Primary Reasons behind Air Pollution in India?**

- **Excessive Motorized Transport:** Motorized transport, such as cars and commercial vehicles, is a major contributor to urban pollution. It is estimated to be the **cause of 60% of urban pollution** due to vehicular emissions.
  - India's automobile market has **risen in value from \$100 billion and is expected to touch almost USD 160 billion by 2027**, registering a growth of 8.1%.
- **Road Expansion and Traffic Congestion:** The focus on widening roads to accommodate more vehicles while ignoring increasing traffic congestion leads to higher pollution levels. Traffic snarls and inefficient road planning contribute to pollution.
- **Construction Activities:** Construction activities are **responsible for approximately 10% of air pollution in certain regions**. The lack of monitoring and control over construction emissions, along with inadequate enforcement of standard operating procedures, contributes to pollution.
- **Burning of Paddy Straw (Parali):** While not the primary source of pollution, the seasonal **burning of paddy straw**, particularly in Haryana and Punjab, exacerbates smog and particulate matter pollution during North India's winters.
- **Inadequate Green Spaces:** The green lungs of the cities, water bodies, urban forests, green cover on urban commons, and urban agriculture have all reported shrinkage, even as **"gray" infrastructure has seen rapid expansion**.

- Gray infrastructure refers to structures such as dams, seawalls, roads, pipes or water treatment plants.
- **Lack of Public Participation:** City residents often have minimal participatory roles in urban development decisions, resulting in policies and projects that may not consider the well-being of the population or environmental concerns.

### What Measures

#### should be taken to Control Air Pollution?

- **Alternative Strategy of City Building:** There is a compelling need to have an alternative strategy of city building, where the focus is on **more public transport**, having **secure pedestrian paths and bicycle lanes** with the **creation of a post of bicycle officers**.
  - **Promote Public Transport:** There needs to be good public transport, with investment in buses for towns and cities. It is estimated that nearly **10 lakh buses would need to be added to the existing bus fleet** in cities to meet the demands of urban mobility.
    - There must be firm initiatives that emulate the **Jawaharlal Nehru National Urban Renewal Mission**.
- **Control of Private Vehicles:** Strong steps need to be taken to control private motorized vehicular movement in the cities. A **congestion tax** being levied on private car owners driving during peak hours can be thought of. Likewise, an **odd number-even number plate formula** can be another important intervention.
  - Some cities have a **no-car day** on certain days — an example that should be put into practice by those in power and with influence.
  - For Example, **World Car Free Day** is celebrated annually on 22<sup>nd</sup> September to encourage the use of alternative modes of transportation.
- **Zero Acceptance of Industrial Pollution:** There should be zero acceptance of industrial pollution and real-time monitoring must become a reality. There must be **street supervision by residents** instead of waiting for the statutory bodies to react, which urban local bodies can ensure.
- **Preservation of Urban Commons:** Urban commons (ponds, water bodies, urban forests, parks, playgrounds) are another major area that should not at all be allowed to be taken over by either public or private bodies for private gains. Urban communities must protect, nurture and expand them.
- **Incorporating Ecological Wisdom in Urban Planning:** Incorporating ecological principles into urban planning, as advocated by **Ian McHarg's "Designing with Nature,"** can help create more sustainable and environmentally

friendly cities. This involves considering the natural environment, open spaces, and afforestation within the city.

- **Promote Public Awareness and Participation:** Raise public awareness about the sources and effects of air pollution and integrate pollution guides and standard operating procedures into the daily lives of city residents.

### Conclusion

India must urgently address air pollution through measures like better public transportation, stricter industrial emission controls, sustainable urban planning, and public awareness to ensure a cleaner, healthier, and more sustainable future for all. The need for action is pressing.



## Tackling the Threat of Antimicrobial Resistance

*This editorial is based on "Don't ignore the threat of antimicrobial resistance" which was published in The Indian Express on 06/11/2023. It highlights the need for urgent action to address AMR, especially in low- and middle-income countries, where the burden of infectious diseases is high and access to quality antimicrobials is limited.*

**Tag:** Science & Technology, GS Paper - 3, GS Paper - 2, Health

The **Delhi Declaration during India's G20 presidency** saw a commitment to strengthen the global health architecture by building more resilient, equitable, sustainable and inclusive health systems to implement the **One Health approach**, enhance pandemic preparedness and strengthen existing infectious diseases surveillance systems.

Another important part of this agreement was to prioritize tackling **Antimicrobial Resistance (AMR)** through research and development (R&D), infection prevention and control, as well as antimicrobial stewardship efforts within respective **National Action Plans (NAPs)**.

### What is Antimicrobial Resistance (AMR)?

- **Definition:** **Antimicrobial Resistance (AMR)** occurs when bacteria, viruses, fungi, and parasites change over time and **no longer respond to medicines, making infections harder to treat** and increasing the risk of disease spread, severe illness, and death.
- **Causes of AMR:** Resistance in bacteria can **arise naturally by genetic mutation or by one species**

**acquiring resistance from another.** It can also appear spontaneously because of random mutations or through the spreading of resistant genes through horizontal gene transfer.

○ The main causes of AMR are:

- Misuse and overuse of antimicrobials
- Lack of clean water and sanitation
- Inadequate infection prevention and control
- Lack of awareness

➤ **Health Concerns:** A 2021 report by Lancet, documenting data from 204 countries, estimated that **4.95 million deaths were associated with bacterial AMR**, and 1.27 million deaths were directly attributed to bacterial AMR.

○ The magnitude is equal to that of diseases such as HIV and malaria.

- Sub-Saharan Africa and South Asia had the highest death rates, signifying high susceptibility to AMR.

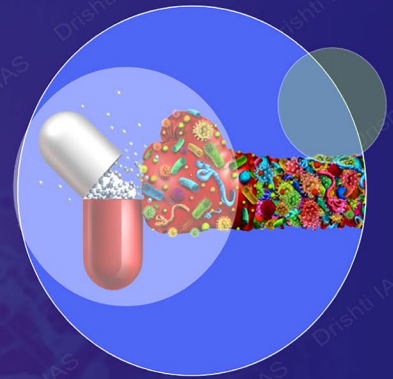
○ The rising levels of antimicrobial resistance, driven by excessive antimicrobial use threaten to compromise not only public-health gains in the field of infectious diseases but also jeopardizes cancer treatment, transplants etc.

➤ **Main drivers of AMR:** The main drivers of antimicrobial resistance include the misuse and overuse of antimicrobials, lack of access to clean **water, sanitation, and hygiene (WASH)** for both humans and animals.

# ANTIMICROBIAL RESISTANCE



*The ability of microorganisms to resist the effects of antimicrobial drugs*



## CAUSES OF ↑ AMR

- Poor infection control/sanitation
- Antibiotic overuse
- Genetic mutations of microbe
- Lack of investment in R&D of new antimicrobial drugs

*Microbes that develop AMR are called 'Superbugs'*

## IMPACTS OF AMR

- ↑ Risk of spreading infections
- Makes infections harder to treat; prolonged illness
- ↑ Healthcare costs

## EXAMPLE

- Carbapenem antibiotics stop responding due to AMR in *K. pneumoniae*
- AMR *Mycobacterium tuberculosis* causing Rifampicin-Resistant TB (RR-TB)
- Drug-resistant HIV (HIVDR) making antiretroviral (ARV) drugs ineffective

## RECOGNITION BY WHO

- Identified AMR as **one of the top 10 threats** to global health
- Launched **GLASS** (Global Antimicrobial Resistance and Use Surveillance System) in 2015

## INDIA'S INITIATIVES AGAINST AMR

- Surveillance of AMR in microbes causing **TB, Vector Borne diseases, AIDS etc.**
- **National Action Plan on AMR** (2017) with One Health approach
- **Antibiotic Stewardship Program** by ICMR

*New Delhi metallo-β-lactamase-1 (NDM-1) is a bacterial enzyme, emerged from India, that renders all current β-lactam antibiotics inactive*

### What are the Concerns related to Antimicrobial resistance in India?

- **High Rates of AMR:** India's high rates of AMR are a serious problem. **Antibiotic-resistant infections are a growing threat to public health globally.** High rates of AMR can result in antibiotics becoming ineffective in treating common infections, leading to increased morbidity and mortality.
  - India has one of the highest rates of AMR in the world, with **more than 60,000 newborns dying each year from antibiotic-resistant infections.**
  - The ICMR report showed a sustained rise in drug-resistant pathogens, resulting in difficulty to treat certain infections with available medicines.
- **High Burden of Infectious Diseases:** India faces a significant burden of infectious diseases like tuberculosis, malaria, typhoid, cholera, and pneumonia. **The emergence of AMR makes these diseases more difficult to treat effectively.** It's especially concerning because these diseases are already major public health challenges in the country.
- **Unregulated Antibiotic Market:** The existence of a large and unregulated market for antibiotics is a major contributing factor to AMR. **Overuse, misuse, and self-prescription of antibiotics can lead to the development of resistance.** This issue calls for better regulation and enforcement to control the distribution and use of antibiotics.
- **Lack of Surveillance and Monitoring:** The absence of adequate surveillance, monitoring, and reporting systems for AMR is a significant concern. Effective monitoring and reporting are essential for tracking the spread of resistant strains and implementing appropriate interventions.
- **Inadequate Infection Control Measures:** The absence of **infection prevention and control measures in healthcare settings is problematic.** Proper infection control practices are essential to prevent the transmission of resistant infections in healthcare facilities, which can contribute to the spread of AMR.
- **Limited Research and Innovation:** Research and innovation in the **development of new antibiotics, diagnostics, and vaccines to combat AMR are crucial.** The scarcity of such efforts in India is concerning, as it limits the arsenal of tools available to combat resistant infections.

### What are the Steps taken by the Government to address AMR?

- **National Action Plan (NAP) for AMR:** In April 2017, India's NAP for AMR was released by the Union Ministry of Health and Family Welfare. The objectives of the NAP include increasing awareness, strengthening surveillance, promoting research, and improving infection prevention and control.
- **Signing the Delhi Declaration on AMR:** The Delhi Declaration on Antimicrobial Resistance (AMR) is an inter-ministerial consensus that was signed by the ministers of the concerned ministries in India.
  - The declaration aims to address AMR in a mission mode by involving research institutes, civil society, industry, small- and medium-sized enterprises, and encouraging public-private partnerships.
- **Antibiotic Stewardship Program (AMSP):** The Indian Council of Medical Research (ICMR) has initiated the AMSP on a pilot project basis in 20 tertiary care hospitals across India. The program aims to control the misuse and overuse of antibiotics in hospital wards and ICUs.
- **Ban on inappropriate fixed dose combinations (FDCs):** On the recommendations of the ICMR, the Drug Controller General of India (DCGI) has banned 40 FDCs that were found to be inappropriate.
- **Ban on the use of Colistin as a growth promoter in animal feed:** The ICMR, in collaboration with the Indian Council of Agriculture Research, Department of Animal Husbandry, Dairy and Fisheries, and the DCGI, has banned the use of **Colistin** as a growth promoter in animal feed in poultry.
- **One Health approach:** The government is working on a One Health approach by encouraging interdisciplinary collaboration at the human-animal-environmental interface. The key priority areas include zoonotic diseases, food safety, and antibiotic resistance.
  - **Integrated One Health Surveillance Network for AMR:** The ICMR has undertaken a project on an "Integrated One Health Surveillance Network for Antimicrobial Resistance" in collaboration with the Indian Council of Agriculture Research to assess the preparedness of Indian Veterinary laboratories to participate in an integrated AMR surveillance network.

### What Measures can be taken to Address the AMR issue?

- **Global Efforts:**
  - **Collaborative Action Plans:** Countries, particularly **G20** nations, should **work together to develop regional action plans to combat AMR.** These

plans should include strategies for surveillance, research, and control of AMR.

- **International Funding Mechanism:** Establish an **international funding mechanism dedicated to AMR research and development**. This funding can support the creation of new antibiotics, treatment options, and technologies to combat AMR.
- **Patent Reforms:** Promote patent reforms to encourage innovation and affordability in new antibiotics. Models like the **Medicines Patent Pool** can be explored to facilitate access to necessary medications.

➤ **Local Efforts:**

- **National Action Plans (NAPs) Implementation:** Prioritize the implementation of **National Action Plans (NAPs)** related to AMR at the country level. These NAPs should include specific strategies for addressing AMR within each nation.
- **Surveillance and Research:** Focus on surveillance and research efforts to better understand the extent of AMR and develop innovative, affordable interventions. Expanding the scope of monitoring networks is essential to gather data and track the spread of AMR.
- **Utilize Government Initiatives:** Utilize government initiatives, such as **Free Diagnostic Services and Kayakalp** (or similar programs in other countries), to strengthen AMR containment efforts by improving healthcare services and maintaining strict protocols.
- **Public Awareness and Responsible Behavior:** Educate citizens about the dangers of overusing antibiotics. Encourage responsible behavior regarding antibiotic use to reduce unnecessary prescriptions and misuse.
- **Involvement of Academia and Civil Society Organizations (CSOs):** Engage academia to enhance understanding of the environmental dimensions of AMR, develop new technologies, and provide training and education to healthcare professionals.
  - CSOs can raise awareness about AMR and advocate for policy changes, increasing public engagement in the fight against AMR.
- **Benchmarking with International Examples:** Benchmark with **countries like Indonesia, Australia, Brazil, the UK, and the US that have implemented successful strategies to address AMR**. Learn from their experiences and adapt effective measures to the local context.
  - **The US:** The National Action Plan for Combating Antibiotic-Resistant Bacteria 2020-2025 outlines five strategic goals:

- Slowing the emergence of resistant bacteria and preventing the spread of resistant infections
- Strengthening national surveillance efforts
- Advancing the development and use of rapid and innovative diagnostic tests
- Accelerating basic and applied research and development
- Improving international collaboration and capacities.
  - **The UK:** The UK Five Year National Action Plan for Antimicrobial Resistance 2019-2024 sets out **three main ambitions: reducing the need for and unintentional exposure to antimicrobials, optimizing the use of antimicrobials, and investing in innovation, supply and access**. The plan also outlines specific targets and indicators to measure progress and impact.

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## India's National Security Strategy

*This editorial is based on “India to bring in a National Security Strategy: what is it, why is it important?” which was published in The Indian Express on 06/11/2023. It talks about how a National Security Strategy document outlines the security goals of a nation and the strategies to attain them.*

**Tag:** Internal Security, GS Paper - 3, Security Challenges & their Management in Border Areas, Cyber Security, Cyber Warfare, Linkages of Organized Crime with Terrorism, Various Security Forces & Agencies & Their Mandate, Linkages of Organized Crime with Terrorism.

After years of deliberations in the military and strategic community, India has started the process of bringing in a **National Security Strategy (NSS)**. The **National Security Council Secretariat (NSCS)** is in the process of collating inputs from several Central ministries and departments to stitch together the draft of the strategy before seeking the final cabinet approval for it. This is the **first** time that India will come out with a **National Security Strategy**.

### What is a National Security Strategy?

➤ **About:**

- A National Security Strategy document outlines the country's security objectives and the ways to be adopted to achieve these.
- An NSS should consider traditional (affect only the state) and non-traditional threats (affect the state, individual and the entirety of humanity). Also, It must work within the framework of **India's Constitution** and democratic principles.

- The strategy often includes assessments of potential threats, resource allocation, diplomatic and military actions, and policies related to intelligence, defense, and other security-related areas.
- **Countries with a National Security Strategy:**
  - Developed nations with advanced military and security structures, such as the **United States**, the **United Kingdom**, and **Russia**, have National Security Strategies.
- **China** also has a Comprehensive National Security strategy, and **Pakistan** has released a National Security Policy 2022-2026.
- **India's Previous Attempts to Formulate a National Security Strategy (NSS):**
  - **Kargil Review Committee Report (2000):** The Kargil Review Committee, formed in the aftermath of the Kargil conflict in 1999, submitted a comprehensive report that included recommendations on national



security. While the report itself was made public, it did not lead to the immediate formulation of a formal NSS.

- **Report of the Naresh Chandra Task Force on Security (2012):** In 2012, the **Naresh Chandra Task Force on Security** submitted a report that discussed various aspects of national security, including defense and intelligence reforms. However, the report did not result in the immediate release of a formal NSS.
- **National Security Advisory Board (NSAB):** The **NSAB**, which comprises experts and advisers on national security matters, has reportedly formulated draft national security strategy documents on multiple occasions. These drafts were presented to successive governments, but a formal NSS did not materialize.
- **Gen. D.S. Hooda's Document (2019):** In 2019, Lt. Gen. (retd) D.S. Hooda, a former Army Commander, prepared a national security strategy document which marked a significant step toward the development of an NSS for India.
- **Suggested Outline of a National Security Strategy Document:**
- A National Security Strategy document should have the following elements:
  - a working definition of national security and national security objectives;
  - an appreciation of the emerging security environment taking into account the geopolitical changes in the world;
  - an assessment of the national strengths and weaknesses of the country in dealing with the challenges;
  - identification of the military, economic, diplomatic resources needed to meet the challenges.

### ***What is the Need of the National Security Strategy in India ?***

- **Era of Strategic Uncertainty:**
  - The end of the **Cold War** has created a complex and unpredictable global landscape, with a growing number of potential adversaries and expanding missions for armed forces.
  - While some regional groupings are assuming state functions, non-state actors like warlords, ethnic chieftains, multinational corporations, and international **NGOs** are influencing global politics.
  - Key challenges include **terrorism**, ethnic diversity, small arms proliferation, narcotics trafficking, and religious extremism, which require vigilant attention.

### **Nuclear Security and Geopolitical Shifts:**

- The future of nuclear deterrence is a vital aspect of India's security. India has long been concerned about the nuclear capabilities of China and Pakistan in its neighborhood.
- India has also expressed concerns about the presence of US nuclear weapons at Diego Garcia, an island in the Indian Ocean. India's nuclear deterrent needs to adapt to technological change and geopolitical shifts.

### **Emerging Indo-Pacific Security Framework:**

- The balance of power is shifting from North America and Europe to the Indo-Pacific region, which is becoming the new strategic center of gravity.
- An emerging security framework envisions "competitive cooperation" within a matrix of "cooperative security" in the **Indo-Pacific Region**.

### **Challenges Beyond Conventional Threats:**

- Domestic stability can be threatened by economic and social issues, such as **left-wing extremism** in tribal areas.

### **Technological Advancements and Cybersecurity:**

- Technology impacts national security, by both enhancing capabilities and creating vulnerabilities.
- **Cybersecurity** is a major concern, requiring advanced technological capabilities.

### **Ecological Degradation and Climate Change:**

- Environmental changes have security implications, such as **glacier melting** and **sea-level rise**.

### **Need to Strengthen National Security Architecture:**

- The **National Security Council (NSC)** has been underutilized in its advisory role.
- There is a pressing need to empower the authority of the **National Security Adviser (NSA)**.



### ***What can be the Potential Benefits of the National Security Strategy in India?***

- **Comprehensive Approach:** An NSS provides a comprehensive framework for addressing various security challenges, both internal and external, in a holistic manner.
- **Clear Objectives:** It outlines clear security objectives, helping to define the assets and interests that need protection and the identification of potential threats.

- **Policy Guidance:** An NSS offers policy guidance, helping the government formulate and implement strategies and policies to safeguard national security.
- **Prioritization:** It helps prioritize security concerns, enabling the allocation of resources and efforts to the most critical issues.
- **Resource Allocation:** It assists in resource allocation, enabling efficient use of financial and human resources to enhance security.
- **Deterrence:** The strategy can help deter potential adversaries by demonstrating a clear and well-thought-out approach to national security.
- **Whole-of-Government Approach:** NSS promotes a “whole-of-government” approach by involving multiple government departments and agencies, ensuring coordination and cooperation in security-related matters.
- **Public Awareness:** Elements of the NSS can be shared with the public, raising awareness about national security concerns and garnering public support.
- **International Engagement:** An NSS can guide India’s engagement with other countries and international organizations on security matters.

### ***What are the Challenges for Developing a National Security Strategy?***

- **Political Hesitation:** Governments have been reluctant to put their security strategies in writing, possibly due to concerns about commitment traps, potential criticism, or rigidity in decision-making.
  - Achieving a political consensus on the content and priorities of the NSS can be challenging, as different political parties may have varying perspectives on national security.
- **Legal Framework:** Ensuring that the NSS complies with existing legal frameworks, including international agreements and domestic laws, is essential but can be complex.
- **Resource Allocation:** Allocating the necessary resources, both financial and human, to implement the NSS effectively can be a challenge, especially when there are competing demands on the budget.
- **Divergence between the military and political leadership:** The bureaucratic setup within the Ministry of Defence and other government agencies may have diverging opinions on a formal NSS.
- **Changing Threat Landscape:** Adapting the NSS to address evolving security threats, such as cyber threats, terrorism, and non-traditional security challenges, is a continuous challenge.

- **Reactive Approach:** India has often adopted a reactive approach to national security, addressing security challenges as they arise rather than having a proactive and overarching strategy in place.
- **National Security Culture:** Building a national security culture that emphasizes the importance of a NSS and systematic thinking about security has been a gradual process.

### ***What are the Recommendations of the Hooda Committee?***

The **Hooda Committee(2019)**, under the leadership of **Lieutenant General (Retd) D.S. Hooda**, crafted the following suggestions to enhance India’s National Security Strategy framework :

- **Assuming the Rightful Place in Global Affairs:**
  - India is encouraged to support international cooperation, prioritize equitable and inclusive digital development, and provide an intellectual dimension to global cooperation.
  - **Engage confidently with major powers**, including the US, Russia, and China, based on its own national interests
  - India’s engagement with the Middle East is emphasized, focusing on shared interests in energy, trade, and security.
- **Achieving a Secure Neighborhood:**
  - India must strengthen relations with neighboring countries through **soft power**, improved connectivity, and regional trade.
  - **India-Pakistan relations** are strained, with a need for a sustained strategy to pressure Pakistan to end support for terror. Diplomacy, economic isolation, and even limited military actions may be necessary. Nuclear issues must also be addressed through dialogue.
  - Future rivalry between China and India is certain, and it must be managed carefully. India desires a peaceful relationship but cannot compromise on core interests, such as border integrity and counterterrorism efforts.
- **Resolution of Internal Conflicts:**
  - In Jammu & Kashmir, countering radicalization and eliminating terrorists must go hand in hand, supported by a clearly defined political objective to mainstream the region with a campaign to replace fear with hope.
  - In the North East, there should be a greater focus on development and integration, with a simultaneous effort to resolve the Naga insurgency.

- Tackling **LWE** requires addressing the root causes like tribal deprivation and exploitation.
- Combating transnational terrorism requires restructuring and cooperation among agencies.
- **Protect People from Global and Domestic Risks:**
  - Effective national security strategy should prioritize the protection of common citizens.
  - Risks can arise from global phenomena like climate change and cyber threats and internal changes driven by demographics, urbanization, and inequalities.
- **Strengthening Capabilities:**
  - India needs to enhance capabilities for protecting its citizens and deterring adversaries by securing our Land and Maritime Borders.
  - The government must support Research and development for indigenous defense platforms.
  - India needs to create a dedicated Cyber Command.

### Conclusion:

In an ever-evolving world, an anticipatory and flexible National Security Strategy serves as the cornerstone of India's well-being and success. Through the adoption of a watchful and adaptable National Security Strategy, India can more effectively steer through the dynamic landscape of global security and protect its interests and principles in the 21<sup>st</sup> century.



## Deepfakes: Opportunities, Threats, and Regulation

*This editorial is based on “**Rashmika Mandanna’s deepfake: Regulate AI, don’t ban it**” which was published in The Indian Express on 06/11/2023. It discusses the recent viral video of actor Rashmika Mandanna, which was revealed to be a deepfake, and the need for a holistic approach to the regulation of such technologies.*

**Tag:** Science & Technology, GS Paper - 3, Artificial Intelligence

Recently, a fact-checker website posted that a viral video of an actor entering a lift was a **deepfake**. The video sparked much debate, with other actors calling for the legal regulation of deepfake videos. In response, the Minister of State for Electronics and Information Technology (IT) talked about regulations under the **IT Act, 2000**, which could tackle the spread of such videos. However, a holistic approach to the regulation of deepfakes should focus on the interplay between platform and **Artificial Intelligence (AI)** regulation, and ways to incorporate safeguards for emerging technologies more broadly.

### What is Deepfake?

- **Deepfake** is a term that refers to synthetic media that have been digitally manipulated to replace one person's likeness convincingly with that of another.
- **Deepfakes** are created using powerful techniques from machine learning and AI, such as **deep learning** and **Generative Adversarial Networks (GANs)**.
- Deepfake technology can be used for various purposes, such as entertainment, education, art, and activism.
  - However, **it can also pose serious ethical and social challenges**, such as creating fake news, spreading misinformation, violating privacy, and harming reputation.
  - It may be **used to generate fake videos**, it can also be used to impersonate friends or loved ones to trick individuals into sending money to scammers.

### What are the Uses of Deepfake Technology?

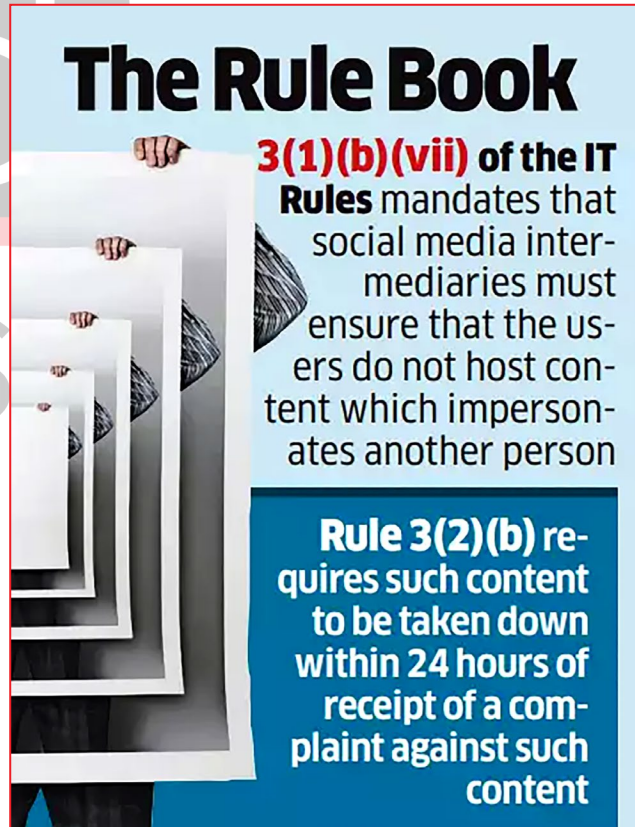
- **Film Dubbing:** Deepfake technology can be used to create realistic lip-syncing for actors who speak different languages, **making the film more accessible and immersive for global audiences**.
  - For example, a video was created to launch a petition to end malaria, where celebrities like David Beckham, Hugh Jackman, and Bill Gates spoke in different languages using deepfake technology.
- **Education:** Deepfake technology can **help teachers deliver engaging lessons by bringing historical figures to life in the classroom**, or creating interactive simulations of different scenarios.
  - For example, a deepfake video of Abraham Lincoln giving his Gettysburg Address could be used to teach students about the American Civil War.
- **Art:** Deepfake technology can be **used as a creative tool for artists to express themselves**, experiment with different styles, or collaborate with other artists.
  - For example, a deepfake video of Salvador Dali was created to promote his museum in Florida, where he interacted with visitors and commented on his artworks.
- **Autonomy and Expression:** Deepfake technology can empower people to control their own digital identity, protect their privacy, or express their identity in different ways.
  - For example, **a deepfake app called Reface** allows users to swap their faces with celebrities or characters in videos or gifs, for fun or personalization.
- **Amplification of the Message and its Reach:** Deepfake technology can help **amplify the voice and impact of people who have important messages to share**, especially those who face discrimination, censorship, or violence.

- For example, a deepfake video of a journalist who was killed by the Saudi government was created to deliver his final message and call for justice.
- **Digital Reconstruction and Public Safety:** Deepfake technology can help **reconstruct missing or damaged digital data**, such as restoring old photos or videos, or enhancing low-quality footage.
  - It can also help **improve public safety by creating realistic training materials** for emergency responders, law enforcement, or military personnel.
  - For example, a deepfake video of a school shooting was created to train teachers on how to react in such a situation.
- **Innovation:** Deepfake technology can **spur innovation in various fields and industries, such as entertainment, gaming, or marketing**. It can enable new forms of storytelling, interaction, diagnosis, or persuasion.
  - For example, a deepfake video of Mark Zuckerberg was created to demonstrate the potential of synthetic media and its implications for society.

### What are the Challenges of Deepfake Technology?

- **Spreading False information:** Deepfakes can be used to **purposefully spread false information or misinformation**, which can create confusion about important issues.
  - For example, deepfake videos of politicians or celebrities can be used to influence public opinion or sway elections.
- **Harassment and Intimidation:** Deepfakes can be **designed to harass, intimidate, demean, and undermine people**.
  - For example, deepfake technology can fuel other unethical actions like creating revenge porn, where women are disproportionately harmed.
    - Deepfake porn can also violate the privacy and consent of the victims, and cause psychological distress and trauma.
  - Deepfake technology **can be used to create blackmail or ransom materials**, such as fake videos of someone committing a crime, having an affair, or being in danger.
    - For example, a deepfake video of a politician was used to demand money in exchange for not releasing it to the public.
- **Fabricating Evidence:** Deepfakes can be **used to fabricate evidence**, which can be used to defraud the public or harm state security. Deepfake evidence can also be used to manipulate legal proceedings or investigations.

- For example, deepfake audio or video can be used to impersonate someone's identity or voice, and make false claims or accusations.
- **Reputation Tarnishing:** Deepfakes can be used to create an image of a person that does not exist, **creating a video of someone saying or doing** something they have never done, or synthesizing a person's voice in an audio file, which can be used to tarnish someone's reputation.
  - For example, deepfake media can be used to damage the credibility or trustworthiness of a person or an organisation, and cause reputational or financial losses.
- **Financial Frauds:** Deepfake technology can be used to impersonate executives, employees, or customers, and manipulate them into revealing sensitive information, transferring money, or making false decisions.
  - For example, a deepfake audio of a CEO was used to trick an employee into wiring USD 243,000 to a fraudulent account.



## The Rule Book

**3(1)(b)(vii) of the IT Rules** mandates that social media intermediaries must ensure that the users do not host content which impersonates another person

**Rule 3(2)(b)** requires such content to be taken down within 24 hours of receipt of a complaint against such content

### What are the Rules set by the Government to Curb Deepfakes?

- **IT Act, 2000 and IT Rules, 2021:** Both the IT Act and IT Rules have clear instructions which **place the onus on social media intermediaries to ensure such deepfake videos or photos are taken down as soon as possible**. In case of failure, there are provisions for imprisonment of up to three years or fine of Rs 1 lakh.

- **Section 66D of IT Act:** Section 66D of the IT Act, 2000 states that anyone **who cheats by personating using a communication device or computer resource can be punished** with Imprisonment of up to three years and a fine of up to one lakh rupees.
- **Rule 3(1)(b)(vii):** This Rules mandates that social media intermediaries must **ensure that the users of their platform do not host any content which impersonates another person.**
- **Rule 3(2)(b):** It requires such **content to be taken down within 24 hours** of receipt of a complaint against such content.

### **What Should be done to Address the Menace of Deepfakes?**

- **Learning from Other Countries:** The life cycle of deepfakes can be divided into three parts – **creation, dissemination and detection.** AI regulation can be used to mitigate the creation of unlawful or non-consensual deepfakes.
  - One of the ways in which **countries such as China** are approaching such regulation is to require providers of deepfake technologies to obtain consent of those in their videos, verify the identities of users, and offer recourse to them.
  - The **Canadian approach** to prevent harm from deepfakes includes mass public awareness campaigns and possible legislation that would make creating and distributing deepfakes with malicious intent illegal.
- **Adding Watermarks to all AI-generated Videos:** Adding watermarks to AI-generated videos is essential for effective detection and attribution. Watermarks reveal the content's origin and ownership, serving various purposes. They aid in attribution by clarifying the content's creator or source, especially when shared in different contexts.
  - **Visible watermarks also act as a deterrent against unauthorized use,** making it clear that the content can be traced back to its source.
  - Furthermore, **watermarks support accountability by providing evidence of the original creator's rights,** simplifying the enforcement of copyright and intellectual property protections for AI-generated content.
- **Deterring Users to Upload Inappropriate Content:** Online platforms should take steps to educate and inform users about their content policies, and perhaps implement measures to deter the upload of inappropriate content.

- **Developing and Improving Deepfake Detection Technologies:** This can involve using more sophisticated algorithms, as well as developing new methods that can identify deepfakes based on their context, metadata, or other factors.
- **Strengthening Digital Governance and Legislation:** This can involve creating clear and consistent laws and policies that define and prohibit the malicious use of deepfakes, as well as providing effective remedies and sanctions for the victims and perpetrators of digital harm.
- **Enhancing media Literacy and Awareness:** This can involve educating the public and the media about the existence and potential impact of deepfakes, as well as providing them with the skills and tools to verify and report suspicious content.
- **Promoting Ethical and Responsible use of Deepfake Technology:** This can involve establishing and enforcing codes of conduct and standards for the creators and users of deepfake technology, as well as encouraging its positive and beneficial applications.

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## **Transforming Crop Residue into Sustainable Solutions**

*This editorial is based on “Don’t waste crop residue” which was published in The Hindu Business Line on 07/11/2023. It argues that crop residue burning is a major source of air pollution in India, especially in the northern states. It suggests some alternative ways of using crop residues, such as converting them into biofuels, compost, or animal feed.*

**Tag:** Biodiversity & Environment, GS Paper - 2, Government Policies & Interventions, GS Paper - 3, Environmental Pollution & Degradation

For the past sixty years, **Indian agriculture** has mainly concentrated on increasing crop production without paying much attention to managing crops after harvesting. Consequently, the development of effective value chains for agricultural products has been limited while there has been almost no development of value chains for by-products and crop residue.

Additionally, **due to the growing demand for producing more crops in a year, it has become common practice to consider crop residue as waste and burn it for quick disposal.**

As a result, it has become a significant and pressing matter in current policy discussions. **Burning crop residue not only results in the loss of valuable biomass but also**

contributes significantly to the increase of **Greenhouse Gas Emissions (GHEs)** and **pollution**.

On average, India produces about 650 million tonnes of crop residue per year according to a Working Paper published by **NITI Aayog** in July 2023.

### **What are the Primary**

#### **Reasons behind Crop Residue Burning?**

- **Short Time Interval Between Rice Harvesting and Wheat Sowing:** The tight time frame between **rice harvesting** and **wheat sowing** restricts farmers from exploring alternative methods of crop residue disposal. This rush may lead them to opt for quicker, albeit environmentally harmful, solutions like burning.
- **Increased Use of Combine Harvesters:** The widespread adoption of **combine harvesters** contributes to the challenge of **stubble management**. These machines leave behind a significant amount of stubble, **which proves arduous to manually or mechanically remove**. This leftover residue adds to the incentive for farmers to resort to burning as a quick solution.
- **Lack of Adequate Alternatives for Crop Residue Management:** The absence of affordable and viable alternatives, such as **composting, mulching, incorporation, or conversion to bioenergy**, further exacerbates the problem. Without accessible options, farmers may find themselves compelled to resort to the seemingly convenient method of burning.
- **Low Nutritional Value and Palatability of Rice Straw:** The nutritional inadequacy and unpalatability of rice straw **make it an unsuitable option for animal feed**. This limitation reduces the avenues for utilizing crop residues beneficially, pushing farmers toward disposal methods like burning, despite the associated environmental consequences.
- **Economic and Social Factors:** Various economic and social factors contribute to the prevalence of crop residue burning. **Labour scarcity, resource constraints, and peer pressure create an environment where farmers may prioritize immediate, cost-effective solutions over long-term sustainable practices**. Additionally, a lack of awareness about the detrimental impacts of burning further perpetuates this cycle.

### **What are the Problems**

#### **Posed by Crop Residue Burning?**

- **Environmental Degradation:** Crop residue burning contributes to environmental degradation by releasing harmful pollutants into the air, soil, and water.
  - The burning of crop residues releases large amounts of carbon dioxide, methane, and other **greenhouse gases** into the atmosphere, contributing to global warming.

- It also leads to the loss of plant essential nutrients from the field, loss of organic carbon, and loss of plant residues on the soil surface to protect against soil erosion.

- According to the **Food and Agriculture Organization** Corporate Statistical Database (FAOSTAT), **crop residue burning in India contributed to about 23 million tonnes of CO<sub>2</sub> equivalent emissions in 2020**.

- **Biodiversity Degradation:** It reduces the biodiversity of the agricultural lands by killing beneficial microorganisms, insects, and plants. This can affect the natural balance of the ecosystem and make the crops more vulnerable to pests and diseases.
- **Soil Degradation:** Crop residue burning can lead to soil degradation by reducing soil fertility and killing beneficial microorganisms.
  - Burning crop residues **destroys essential nutrients** such as **nitrogen, phosphorus**, and potassium, which would have otherwise returned to the soil.
  - This can lead to a decrease in soil fertility and crop yields over time.
- **Contribution to Air Pollution:** CRB releases large amounts of **particulate matter (PM), carbon monoxide (CO), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), ammonia (NH<sub>3</sub>), and non-methane volatile organic compounds (NMVOC)** into the atmosphere.
  - These pollutants can cause respiratory problems, cardiovascular diseases, cancer, and premature death for people who are exposed to them.

### **What should be done**

#### **to Reduce Crop Residue Burning?**

- **Use Crop Residue for Clean Energy:** Crop residue can be efficiently **used for producing clean renewable energy** instead of wasting it by burning.
  - As per a report by the Centre for Science and Environment, about **10 kg of agricultural residue can generate 1 kg of compressed biogas**.
  - Towards this, there is an urgent need for necessary policy measures to promote circular agriculture that **may not only help in reducing emissions, but also fetch additional income to farmers** by creating a value chain for crop residues.
- **Promote Circular Agriculture:** Indian agriculture has traditionally been circular with efficient on-farm management of crop residue for restoration of soil organic nutrients and off-farm management by turning it into fodder, thatches, mulches, organic manure, etc.
  - However, with **increasing intensive crop production practices**, farmers are **not finding on-farm residue management as an economical option** and opting to burn the residue.

- Under such a scenario, circular agriculture can be promoted in two ways with appropriate incentives:
  - **On-farm management** of crop residues by incentivising individual farmers with schemes like **Green Credit Programme (GCP)**.
  - **Off-farm management**, either at farmer or village level through **cooperatives** or at commercial level by creating a value chain for crop residue as feedstock for **biogas production**.
- **Promoting Bio-CNG Production:** Globally, commercial production of **bio-CNG or compressed biogas (CBG)** is picking up as one of the clean and renewable energy sources for energy. In India, several schemes were announced to promote biogas production over the past 40 years or so but, **the progress has remained muted**.
- Nevertheless, the latest initiative of allocating ₹10,000 crore in **Budget 2023-24** to install **500 new bio-CNG plants** under **GOBARDHAN scheme** can be a potential step towards creating a viable value chain for crop residue as feedstock.
- **Effective Implementation of Waste to Energy (WTE) Programme:** **Waste to Energy (WTE) Programme** is also operational with about 90 WTE projects under implementation till March 2023. In order to be successful, **such initiatives require effective implementation**, creating widespread awareness and facilitating adequate flow of finance.
- **Biogas Plants in Rural Areas:** Emphasize the establishment of biogas plants in rural areas. This not only contributes to **renewable energy** production but also generates significant non-farm rural employment opportunities, addressing economic aspects.

## Conclusion

There is an urgent need to promote circular agriculture for efficient use of crop residues towards reducing emissions and enhancing renewable energy production, while providing economically profitable alternatives that may fetch additional income for farmers.



## Net Neutrality in India

*This editorial is based on "A telco double dip attempt that threatens Net neutrality" which was published in The Hindu on 07/11/2023. It talks about the importance of upholding net neutrality principles which lies in fostering an environment that promotes innovation, nurtures healthy competition, and prioritizes consumer welfare.*

**Tag:** Governance, GS Paper - 2, Government Policies & Interventions, GS Paper-3, Scientific Innovations & Discoveries, Artificial Intelligence, Social Media, Scientific Innovations & Discoveries, Industrial Policy, Cyber Security, Cyber Warfare.

Recently, the **Telecom Regulatory Authority of India (TRAI)** initiated a consultation on the regulation of Over-The-Top (OTT) services in response to the government's request.

- Telecom companies argue that OTT services, such as Netflix and Amazon Prime, should share the costs of bandwidth, claiming that they benefit from the telecom companies' infrastructure. In this context, Net Neutrality debate has resurfaced.

### What is Net Neutrality?

- '**Net- Neutrality**' refers to the concept of **non-discrimination** of internet traffic by intermediate networks on any criteria. The network should be neutral to all the information being transmitted through it.
- **All communication passing through a network should be treated equally** i.e. independent of its content, application, service, device, sender or recipient address.
- Net neutrality ensures that everyone has **equal access to information and services** on the internet, regardless of their financial resources or the size and power of the websites they use.
- **Origin of the Term:** The term "net neutrality" was popularized by **Tim Wu**, a professor at Columbia Law School, in his 2003 paper titled "**Network Neutrality, Broadband Discrimination.**"
- **Key principles of Net Neutrality include:**

<b>NO BLOCKING</b>	Your internet access provider (IAP) cannot block you from accessing legal content of your choice.
<b>NO THROTTLING</b>	Your IAP cannot intentionally throttle legal internet traffic to slower speeds than other traffic.
<b>NO PAID PRIORITIZATION</b>	Your IAP cannot sell 'fast lane' service to content providers who can pay more than others.

- **The stakeholders in the internet space who are impacted by net neutrality include :**
  - The consumers of any internet service
  - The **Telecom Service Providers (TSPs)** or Internet Service Providers (ISPs),
  - The **Over-the-top (OTT)** service providers (those who provide internet access services such as websites and applications),
  - The government, who may regulate and define relationships between these players

- Also, **TRAI is an independent regulator** in the telecom sector, which mainly regulates TSPs and their licensing conditions, etc.

### Why does Net Neutrality Matter?

- **Preserves an Open Internet:** Net neutrality ensures free and unrestricted access to information, ideas, and services.
  - Without net neutrality, individual ISPs can provide **higher connection speeds to certain websites** or throttle access to others. At the most extreme, an ISP could block access to some material altogether.
- **Promotes Consumer Choice:** Net neutrality allows consumers to freely choose the content, applications, and services they want to access without restrictions. They are not limited to a pre-selected set of offerings determined by ISPs.
- **Protects Freedom of Expression:** Net neutrality safeguards freedom of expression by allowing people to organize, communicate, and mobilize supporters without interference, making it a vital tool for democratic engagement.
- **Fosters Innovation:** An open internet encourages innovation and competition. Startups, small businesses, and entrepreneurs have equal opportunities to launch new services and reach users without the need to strike deals with ISPs.
- **Prevents Anti-Competitive Practices:** Without net neutrality, ISPs could engage in anti-competitive behavior by favoring their own content or services or those of their partners. Net neutrality rules prevent such discriminatory practices and maintain fair competition.

## Why Net Neutrality Must Be Protected



It won't cost websites or people extra money just to be able to go to a certain web location.



Without net neutrality, Internet Service Providers can discriminate against any website, group, or person they want.



Net neutrality allows small businesses to have a digital presence and let them compete without worrying if their ISP will cut off access to their website.



Net neutrality gives companies a fair and equal platform to compete on.



Immediately after net neutrality rules were placed, investments in companies went up by 5%.



It keeps the Internet equal and fair for everybody.

### What is the Regulatory Status of Net Neutrality in India?

The **Telecom Regulatory Authority of India (TRAI)** plays a central role in regulating and ensuring net neutrality in India. The regulation of net neutrality in India is marked by a series of following developments :

- **Airtel Zero and VoIP Controversy (2014):**
  - In 2014, Bharti Airtel introduced the "Airtel Zero" scheme, which raised concerns about zero-rating

and potential violations of net neutrality.

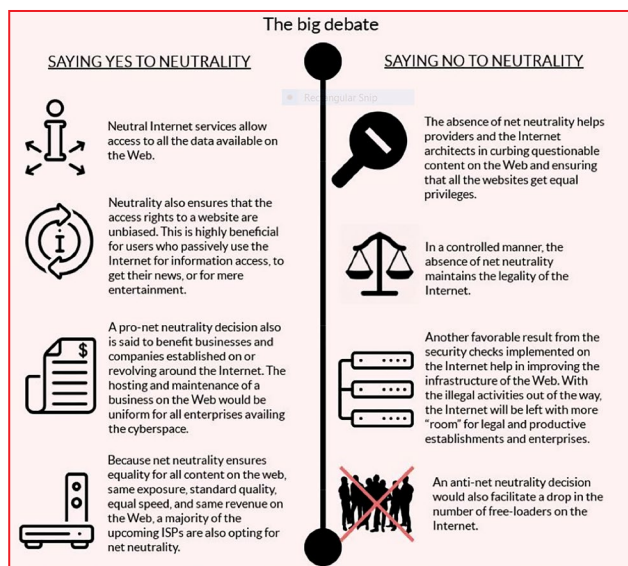
- Airtel's move to charge extra for Voice over Internet Protocol (VoIP) services like Skype and WhatsApp also sparked controversy.
- **TRAI Consultation (2015):**
  - In 2015, TRAI released a **consultation paper on over-the-top (OTT) services** and net neutrality, seeking public feedback.
- **TRAI's 2016 Regulations:**

- In 2016, TRAI ruled in favor of net neutrality by prohibiting differential rates for data services
- TRAI's "**Prohibition of Discriminatory Tariffs for Data Services Regulations, 2016**" put an end to zero-rating services like **Facebook's Free Basics**, ensuring non-discriminatory pricing.
- **TRAI's Recommendations in 2017:**
  - TRAI extended non-discriminatory principles to content treatment.
  - License agreements between the government and ISPs should be amended to prevent content discrimination.
- **TRAI's Consultation Paper on 5G Digital Transformation, 2023 :**
  - It aims to identify policy challenges and formulate an effective framework for the rapid adoption and optimal utilization of new technologies within the 5G ecosystem.

### **What are Some of the Key Debates on Net Neutrality in India?**

- **Perspective of Telecom Companies:**
  - **Revenue Decline:**
    - Over the last ten years, telecom companies have witnessed a reduction in revenue, primarily from conventional services such as voice calls and SMS.
    - The **proliferation of free competing OTT services** has been a key factor in this decline.
  - **Infrastructure Enhancement:**
    - TSPs contend that they make **substantial investments in network infrastructure and assert the need for incentives**, like differential pricing, to sustain these investments and facilitate the expansion of internet penetration.
    - Telecom companies perceive **OTT platforms as deriving benefits from the infrastructure they have established** and sustained.
      - Hence, these companies urge OTT content providers, such as Netflix, Amazon Prime, and Disney+ Hotstar, to contribute to the expenses associated with bandwidth.
  - **Disparity in Taxation :**
    - Telecom companies contend that OTT services encounter a disparity in taxation and licensing fees, resulting in an imbalanced competitive landscape.
- **Perspective of OTT Platforms:**
  - **Exclusive Role of Internet Providers :**
    - OTT providers highlight that telecom companies serve as conduits for Internet access; **they do not own** it. Consumers remunerate these companies for access through data plans.

- The use of OTT services leads to increased data consumption, contributing to telecom companies' revenue growth.
- **Demand for Net Neutrality:**
  - Net neutrality is crucial to **prevent internet fragmentation** and ensure equal access, preventing discrimination by TSPs, which could stifle innovation and restrict access to smaller-scale, innovative OTT services
  - Net neutrality supporters believe in **maintaining a free, open, and nondiscriminatory internet** for a democratic exchange of ideas and knowledge, ethical business practices, fair competition, and ongoing innovation.
- **Content Delivery Network Provision:**
  - OTT platforms already cover expenses related to content delivery networks (CDNs) to amplify the internet's capability for delivering content.
  - OTT services compete in their own market based on content variety and quality, streaming quality, ease of navigation, and device availability.
- **Telecoms' Liberty to Increase Prices:**
  - **Telecom companies can adjust their prices to cover costs**, as they capitalize on the demand created by OTT content and infrastructure investments.
- **Concerns for Consumers:**
  - **Additional Costs :**
    - Supporters of net neutrality contend that imposing **extra costs on OTT platforms might be transferred to subscribers**, leading to higher fees or diminished service quality.
    - Critics of net neutrality argue that preserving open competition in internet services is crucial for **safeguarding consumers' access and choice**.



## What is the Way Forward for an Inclusive Digital Landscape in India?

- **Regulation Clarity:** The TRAI should continue to provide **regulatory clarity** and guidance on net neutrality. This includes **defining and enforcing net neutrality principles** that prevent discriminatory practices, while also allowing for reasonable network management.
- **Multi-Stakeholder Approach:** Consider a balanced approach that acknowledges the interests of both telecom companies and OTT service providers. Finding **a middle ground that ensures fair competition and innovation** while allowing telecom companies to recover investments is crucial.
- **Transparency:** Encourage transparency in how ISPs manage their networks and how they cooperate with OTT providers. This transparency can help ensure that any network management practices are reasonable and non-discriminatory.
- **Continual Assessment:** Regularly **assess the impact of net neutrality regulations** on the telecom industry and OTT providers. This assessment should consider the evolving nature of the internet and its services.
- **Public Awareness and Education:** Increase public awareness and education about the importance of net neutrality, its principles, and how it impacts consumers. Informed consumers can play a role in formulating regulations for net neutrality.
- **Global Best Practices:** Take a look at global best practices and examples of successful net neutrality regulations in other countries. These can provide insights and lessons for India's regulatory framework.

### Conclusion:

Settling the net neutrality debate in India requires a balanced and inclusive approach that considers the interests of all stakeholders while ensuring that the principles of net neutrality are upheld to preserve a free and open internet. As technology continues to evolve, policymakers must remain vigilant to adapt regulations accordingly, ensuring a dynamic and inclusive digital landscape for all.



## Chandrayaan-3 : India's Imperatives for Space Leadership

*This editorial is based on 5 key takeaways for New Delhi | After the celebration: How Moonshot clears the way for the big & the bold which was published in The Indian*

*Express on 11/11/2023. It talks about the significance of Chandrayaan-3 mission to explore the lunar south pole, marking a pivotal moment in India's space exploration initiatives.*

Tag: Science & Technology, GS Paper - 3, Space Technology

Chandrayaan-3's exploration of the lunar south pole signifies a new era in India's space endeavors. India's successful soft landing near the Moon's south pole is a moment of national pride, establishing the country as the first to achieve this remarkable feat of landing a spacecraft in such proximity to the lunar south pole. This achievement presents an opportunity for India to lead in transforming the relationship between humanity and outer space.

### What is the Chandrayaan-3 Programme?

- **About:**
  - **Chandrayaan-3** is India's third lunar mission and second attempt at achieving a soft landing on the moon's surface.
  - On July 14, 2023, Chandrayaan-3 took off from the Satish Dhawan Space Centre in Sriharikota. The spacecraft seamlessly entered lunar orbit on August 5, 2023. The historic moment unfolded when the lander made a successful touchdown near the Lunar south pole on Aug 23, 2023.
- **Mission Objectives :**
  - To demonstrate Safe and Soft Landing on Lunar Surface
  - To demonstrate Rover roving on the moon and
  - To conduct in-situ scientific experiments.
- **Components:**
  - Chandrayaan-3 is a three-component mission consisting of a Propulsion Module, a Lander Module, and a Rover Module.
  - **The Propulsion Module :** It will carry the lander and rover configuration till 100 km lunar orbit. This propulsion module has **Spectro-polarimetry of Habitable Planet Earth (SHAPE)** payload to study the spectral and Polari metric measurements of Earth from the lunar orbit.
  - **The Lander Module:** The Lander Module (Vikram) is carrying a scientific payload that includes a suite of instruments to study the lunar surface and atmosphere **Chandra's Surface Thermophysical Experiment (ChaSTE)** to measure the thermal conductivity and temperature; **Instrument for Lunar Seismic Activity (ILSA)** for measuring the seismicity around the landing site; **Langmuir Probe (LP)** to estimate the plasma density and its variations. A passive **Laser Retroreflector Array** from NASA is accommodated for lunar laser ranging studies.

- **The Rover Module:** The Rover Module (Pragyan) is carrying a suite of instruments to study the lunar surface and subsurface which includes **Alpha Particle X-ray Spectrometer (APXS)** and **Laser Induced Breakdown Spectroscopy (LIBS)** for deriving the elemental composition in the vicinity of landing site.

➤ **Major Findings :**

- **Lunar Surface Temperature Surprise:** Chandra's Surface Thermophysical Experiment (ChaSTE)

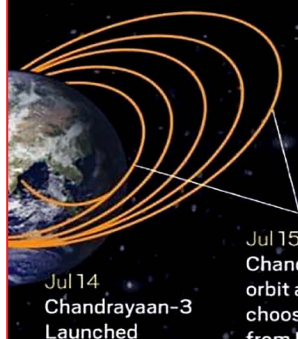
measured temperatures reaching 70 degrees Celsius, surprising scientists who expected temperatures between 20 to 30 degrees Celsius.

- **Lunar Surface Elements Confirmed:** The Laser-Induced Breakdown Spectroscopy instrument onboard 'Pragyan' rover confirmed the presence of Sulphur on the lunar surface near the south pole. Elements such as Aluminum, Calcium, Iron, Chromium, Titanium, Manganese, Silicon, and Oxygen were also detected.

## CHANDRAYAAN-3 INDIA'S SHOT TO THE MOON

The powered descent will begin on August 23, 5:45 pm, in four broad phases: Rough braking phase; Attitude Hold Phase; Fine Braking Phase; Terminal Descent Phase.

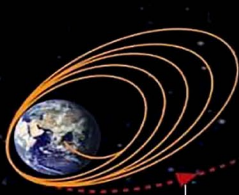
### Earth-bound manoeuvres



Jul 14  
Chandrayaan-3  
Launched

Jul 15 to Jul 25  
Chandrayaan-3 completes  
orbit around Earth. ISRO  
choose a revolving route  
from Earth to the Moon.

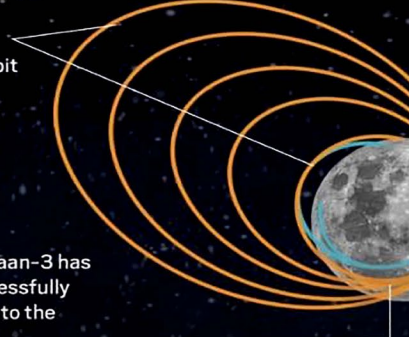
### Lunar Transfer Trajectory



Aug 1  
ISRO has injected  
the spacecraft  
into the translunar  
orbit

Aug 6-Aug 16  
Chandrayaan-3's orbit  
is reduced gradually  
from 170 km x 4313  
km around the Moon  
to 153 km x 163 km.

### Moon-bound manoeuvres



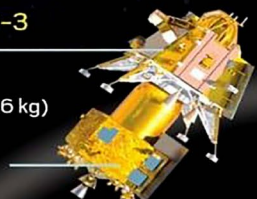
Aug 5  
Chandrayaan-3 has  
been successfully  
inserted into the  
lunar orbit.

### CHANDRAYAAN-3

Lander Module:

**1,752 kg**  
(including Rover of 26 kg)

Propulsion Module:  
**2,148 kg**



Aug 17  
Separation of the Lander Module  
from the Propulsion Module

### PROPULSION MODULE

was filled with 1,696.4 kg  
of fuel during the launch on July  
14. With more than 150kg of fuel  
left, it could remain operational  
for several years to come

CHANDRAYAAN-3  
Spacecraft  
(inside the payload fairing)

Lander has four  
payloads or scientific  
instrument (ChaSTE,  
Rambha, ILSA, LRA)

### LVM3-M4 VEHICLE

Height  
**43.5 m** | Lift-off Mass  
**642 t**

S200 Solid Rocket Boosters  
L110 Liquid Stage



Aug 23 (17.20 hrs)  
Soft-landing begins  
(Chandrayaan-3 slowly land on  
the lunar surface and to explore  
it with the help of a rover)

### ROVER (6-wheeled robotic vehicle)

Life  
**One lunar day**  
(14 Earth days)

Weight  
**26 kg**

Power  
**26 kg**



Source: ISRO Graphic: Ritesh Kumar

## Why is Chandrayaan-3

### Significant for the Indian Space Programme?

#### ➤ Leadership in Space Technology:

- It joins the elite group of nations—Russia, the US, and China—with demonstrated lunar soft landing capability
- India's indigenous cryogenic engines and efforts to declutter the orbit showcase its leadership in space technology.
- Positioning India as a global hub in the New Space economy

#### ➤ Strategic Significance of Soft Landing:

- Soft landing capability demonstrated by Chandrayaan-3 holds strategic importance for India with applications extending to Standard Refuelling and Docking technology and Smart Space Robot technology, enabling interplanetary science missions and sample retrieval.

#### ➤ Investigates Lunar Properties:

- Chandrayaan-3 carries seven science payloads across its modules. Propulsion module studies earth's atmosphere, lander module investigates lunar surface properties, and rover module analyzes lunar rocks and soil
- Confirming the presence of water ice, validating lunar molten history, and detecting subsurface water ice are its key achievements.

#### ➤ Insights for Defense and Aerospace:

- Soft landing capability contributes valuable insights to India's missile defense program.
- Reusable launch vehicle technology derived from the mission aids in cost reduction for future launches

#### ➤ Strategic Tools and Products:

- Chandrayaan-3's technologies translate into strategic tools and commercial products.
- Autonomous rovers, developed from rover module technology, find applications in disaster management and infrastructure monitoring.

#### ➤ Space Tourism and Economic Activities:

- Increasing interest in space tourism may lead to private space parks.
- Convergence with smart space robots can create in-orbit manufacturing hubs, fostering economic activities
- Over 500 space-tech startups, MSMEs, and industries fuel the NewSpace movement in India.

## READY FOR TAKEOFF

● SIZE OF INDIA'S SPACE SECTOR (\$ BILLION) ● SHARE IN GLOBAL MARKET (RHS, IN %); \*ESTIMATES; SOURCE MARKET RESEARCH, ARTHUR D. LITTLE



➤ The country's space sector could potentially be worth \$40 billion by 2040

➤ It is forecast to grow at a CAGR of 9 per cent to attain 4 per cent market share globally

## What is the Future Space Programme of ISRO ?

### ➤ Chandrayaan-4: Navigating the Path of Lunar Evolution

- Building upon past missions, Chandrayaan-4 emerges as a potential candidate for a sample return mission.
  - If successful, it could mark the next logical step after Chandrayaan-2 and 3, offering the capability to retrieve lunar surface samples.
- The mission holds promise for advancing our understanding of the Moon's composition and history.
  - **LUPEX: Lunar Polar Exploration (LUPEX) mission**, a collaborative effort between ISRO and JAXA(Japan), is poised to explore the Moon's polar regions.
- It will be specifically designed to venture into permanently shaded areas.
- Investigating the presence of water and assessing the potential for a sustainable long-term station are among LUPEX's objectives.
  - **XPoSat (X-ray Polarimeter Satellite)**: It is India's first dedicated polarimetry mission to study various dynamics of bright astronomical X-ray sources in extreme conditions.
- The spacecraft will carry two scientific payloads in a low earth orbit.
  - **NISAR: NASA-ISRO SAR (NISAR)** is a Low Earth Orbit (LEO) observatory being jointly developed by NASA and ISRO.
- NISAR will map the entire globe in 12 days and provide spatially and temporally consistent data for understanding changes in Earth's ecosystems, ice mass, vegetation biomass, sea level rise, ground water and natural hazards including earthquakes, tsunamis, volcanoes and landslides.

- **Gaganyaan:** **Gaganyaan** mission aims to send humans to space and return them safely to Earth. The mission will consist of two unmanned flights and one manned flight, using the GSLV Mk III launch vehicle and a human-rated orbital module.
- The manned flight will carry three astronauts, including a woman, for up to seven days in low Earth orbit.
- **Shukrayaan 1:** It is a planned mission to send an orbiter to Venus, the second planet from the Sun. It is expected to study Venus's geological and volcanic activity, emissions on the ground, wind speed, cloud cover, and other planetary characteristics.
- **SPADEX :** Space Docking Experiment or SPADEX is a twin spacecraft mission to mature technologies related to docking, orbital rendezvous, formation flying, in-space satellite servicing, and others.

### ***What are the Key Challenges in the Indian Space Programme Mission?***

- **Limited Budget allocation:**
  - The Indian space program operates on a relatively modest budget compared to other major space-faring nations.
  - India's space budget is only 0.05% of its GDP. In contrast, the US allocates 0.25% of its GDP to space activities.
- **Technological Challenges:**
  - India stands at No. 7 globally in terms of satellites operated. It lags behind the US and China, the top two spacefaring powers.
  - India relies on the West for critical components for launch vehicles, spacecraft, and satellites.
  - India's Human Spaceflight Program poses unique challenges in terms of astronaut training, life support systems, and ensuring the safety of crew members.
- **Commercialization and Market Access:**
  - India has limited presence in space manufacturing, human space transport, space tourism, and high-altitude platforms. India's share of the world space economy is barely 2.6%.
  - Indian investors are risk averse and prefer safe investments like 5G rather than long-term, high-risk investments in space technology
  - Start-ups in the Space sector need attention – capital, human resources, policy, support from ISRO and market

### ➤ **Space Policy and Legislation:**

- Developing comprehensive space policies and legislation that address the evolving needs of the space sector is crucial. The delay in the passing of the Space Policy is becoming a big drag.
- The Indian Space Policy, 2023 sets out an ambitious role for **InSPACe (Indian National Space Promotion and Authorisation Centre)** but provides no time frame for the necessary steps ahead

### ➤ **Space Debris Management:**

- As the number of satellites and space activities increases, managing space debris becomes crucial.
- India needs effective strategies to minimize debris generation and actively participate in international efforts for space debris mitigation.

### ➤ **Geopolitical Realignment :**

- India's participation in the Artemis Accords with the USA has been viewed as a counter to China in the changing geopolitical landscape.

### ➤ **Competitive Edge :**

- Maintaining a competitive edge in the global space market requires regular innovation, cost-effectiveness, and timely execution in the international space market.

### ➤ **Space Applications for Societal Benefits:**

- Maximizing the societal benefits of space applications, such as remote sensing and satellite communication, requires effective integration with various sectors like agriculture, disaster management, and environmental monitoring.
- Increasing public awareness about the benefits of space exploration and fostering interest in space science among students are essential for building a strong foundation for future advancements in the field.

### ***What Should be the Way Forward to Realize India's Full Potential in the Space Domain?***

- **Substantial Investment:** A shift from "frugal engineering" to more substantial investments and ambitious projects is necessary. There has been a constant urge from the science community to enhance the budgetary allocations to the department to push for bigger missions.
- **Gain Expertise in Human Spaceflight :** India must invest in human spaceflight programs, astronaut training, and the development of necessary infrastructure for crewed missions
- **Private Sector Participation:** Involving the private sector is crucial, aligning with the global trend where commerce plays a significant role in space programs.

- **Geopolitical Negotiations:** With great power rivalry extending to space, India must navigate negotiations and collaborations strategically, especially considering its relationship with China.
- **Legal Framework:** As space activities increase, India needs comprehensive domestic and international laws to regulate and promote space business. Global governance reforms are necessary to address evolving challenges.
- **Rekindling Spirit of International Collaboration:** Collaboration with other countries is essential for India's space aspirations. India needs to rekindle the spirit of cooperation and ensure that outer space remains a shared domain for all of humanity
- **Public Support :** The government will have to engage in outreach and education to build public awareness and enthusiasm for its space program.

### Conclusion:

India's space program requires strategic financial planning and active international collaborations along with public engagement initiatives to propel India's space program to new heights.



## Community Rights and Forest Conservation

*This editorial is based on "Community rights and forest conservation" which was published in The Hindu on 13/11/2023. It talks about the Forest (Conservation) Amendment Act of 2023, emphasizing its goals, related challenges, and the consequences it poses for the indigenous residents of the forests.*

**Tag:** Biodiversity & Environment, GS Paper-3, Conservation, Environmental Pollution & Degradation, Environmental Impact Assessment (EIA), GS Paper-2, Government Policies & Interventions, Issues Relating to Development, Issues Related to SCs & STs.

The recently passed Forest (Conservation) Amendment Act, 2023 brings substantial legislative changes to the Forest (Conservation) Act of 1980, a crucial environmental law in India governing forest conservation. However, it has received limited attention and little discussion about its impact on forests and their inhabitants.

### What are the Key Provisions of the Amendment?

- **Insertion of Preamble:**
  - The Amendment Act introduces a **Preamble** to the Forest (Conservation) Act.

- This **Preamble** officially acknowledges India's commitment to achieving **Net Zero Emission** by 2070, meeting the **Nationally Determined Contribution (NDC)** targets by 2030, and expanding India's forest and tree cover to one-third of its land area.
- **Land under the Purview of the Act:**
  - As per the amendment, the forest law will now apply exclusively to areas categorized under the **Forest Act, 1927** and those designated as such on or after October 25, 1980. The Act will not be applicable to forests that were converted for non-forest use on or after December 12, 1996.
  - The amendments seek to streamline the application of the Act to recorded forest lands, private forest lands, plantations, etc.
- **Exempted Categories of Land:**
  - The Bill proposes certain exemptions to encourage afforestation and plantation outside forests.
  - For instance, 0.10 ha of forest land has been proposed to provide connectivity for habitation and establishments located on the side of roads and railways, up to 10 ha of land proposed for security-related infrastructure, and up to 5 ha of forest land in **Left Wing Extremism** Affected Districts for public utility projects.
  - These exemptions include strategic projects related to national security within 100 km of the International Borders, **Line of Actual Control (LAC)**, **Line of Control (LoC)**, etc.
- **Leasing of Forest Land:**
  - Under the Act, a state government requires prior approval of the central government to assign forest land to any entity not owned or controlled by the government.
  - Under the Act, this condition is extended to all entities, including those owned and controlled by the government. It also requires that prior approval be subject to terms and conditions prescribed by the central government.
- **Permitted Activities in Forest Land:**
  - The Act restricts the de-reservation of forests or the use of forest land for non-forest purposes. Such restrictions may be lifted with the prior approval of the central government.
  - The Act specifies certain activities that will be excluded from non-forest purposes, meaning that restrictions on the use of forest land for non-forest purposes will not apply.
  - These activities include works related to the conservation, management, and development of forests and wildlife such as establishing check posts, fire lines, fencing, and wireless communication.

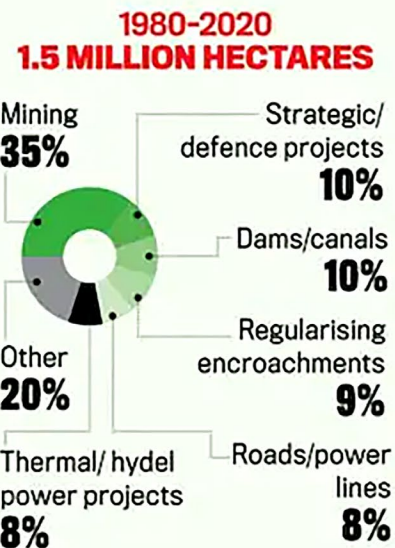
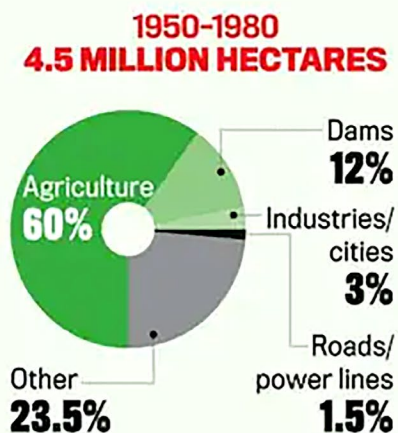
➤ **Expansion of the Central Government's Power of Delegated Legislation:**

- Prior to the amendment, the power of the Central Government to make delegated legislation was limited to making Rules only.
- In order to ensure proper implementation of the

provisions of the Act, the delegated legislation-making power of the Central Government has been expanded and it is now been bestowed with the power to issue "directions" to any central government authority, State Governments, Union territories, or to any organization, entity or body recognized by them.

## ➤ DIVERSION OF FOREST LAND

*The pace of diverting forests to 'non-forest purposes' slowed down in wake of the Forest (Conservation) Act, 1980*



SOURCE: MoEFCC

### **What are the Benefits of the Forest Conservation Amendment Act, 2023?**

➤ **Clarity on the Definition of 'Forest':**

- The Amendment clarifies the definition of Forest which addresses ambiguity around "deemed forests" and diverse interpretations.
- The Amendment clarifies FCA application to notified and recorded forests only, resolving ambiguity.
- Exemptions, already in practice, now have statutory backing, providing clarity for public utilities, national security projects, and citizen interests.

➤ **Climate Change Mitigation and Conservation:**

- It aims to achieve the country's national as well as international commitments of NDCs, and carbon neutrality, eliminate the ambiguities, and bring clarity about the applicability of the Act in various lands, promoting the plantation in non-forest land, enhancing the productivity of the forests.

➤ **Provisions for Development:**

- The amendment is contextualized within the historical backdrop of the Godavarman Thirumulkpad case and opposition from private landowners,

organizations, and individuals who argue that forest conservation laws hinder industrial progress.

- This act will facilitate economic exploitation by removing certain forest areas from legal jurisdiction, allowing for diverse uses, including linear projects and security infrastructure.

➤ **National Security:**

- The Act exempts certain linear infrastructure projects, such as roads and highways, from seeking forest clearance permissions if they are located within 100 km of the national border.
- This is expected to facilitate the development of infrastructure in border areas, which is important for national security.

➤ **Compensatory Afforestation:**

- The amendment promotes compensatory afforestation, allowing private entities to undertake afforestation or reforestation projects.

➤ **Empowering Local Communities:**

- The Bill encourages activities like the establishment of zoos, safaris, and ecotourism, which will be owned by the government and set up in approved plans outside Protected Areas.

- These activities not only raise awareness about forest conservation and wildlife protection but also create livelihood opportunities for local communities, integrating them with the overall development.

### What are the Key Issues with the Amendment?

#### ➤ Redefining Forests:

- The Act created a contradiction to the pre-existing definition of forest defined by the Supreme Court of India in a 1996 order, stating any patches of trees recorded as forest in any government records, irrespective of ownership, recognition, and classification, would automatically become a deemed forest.
- Approximately one-fifth to one-fourth of India's forests have lost their legal safeguard due to the modification of the definition under this amendment in the existing Act, according to the Punjab-based Public Action Committee (PAC).

#### ➤ Infrastructure Encroachment:

- Exempting land near border areas for national security projects may adversely impact the forest cover and wildlife in northeastern states.

- A blanket exemption for projects like zoos, eco-tourism facilities, and reconnaissance surveys may adversely affect forest land and wildlife

#### ➤ Neglect of Tribal Rights:

- The amendment removes the requirement for **prior consent** from tribal grama sabhas for alterations to forests for non-forest purposes.
- Permission for private companies to use forest land for ecotourism may promote corporate interests at the expense of tribal communities' livelihoods.
- Potential negative impacts on local cultures and traditions due to mass tourism.

#### ➤ Top-Down Authority:

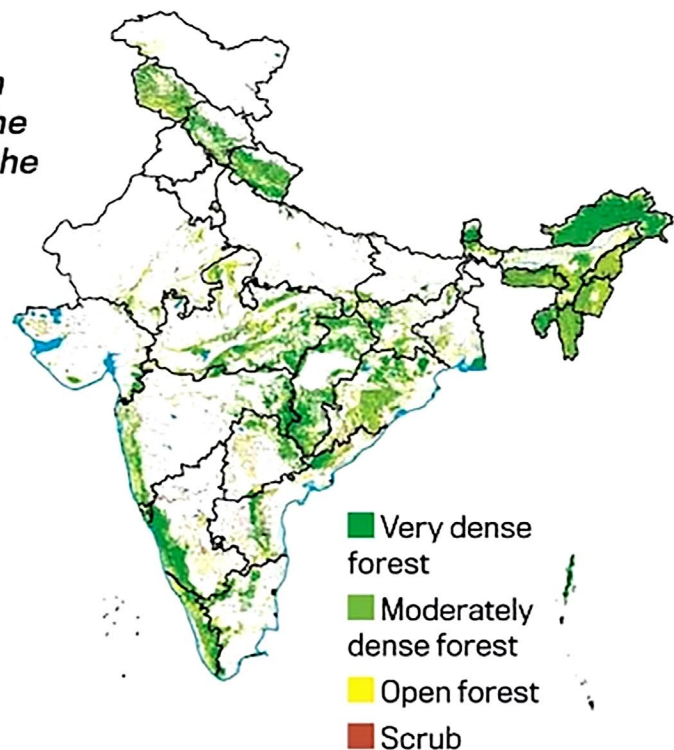
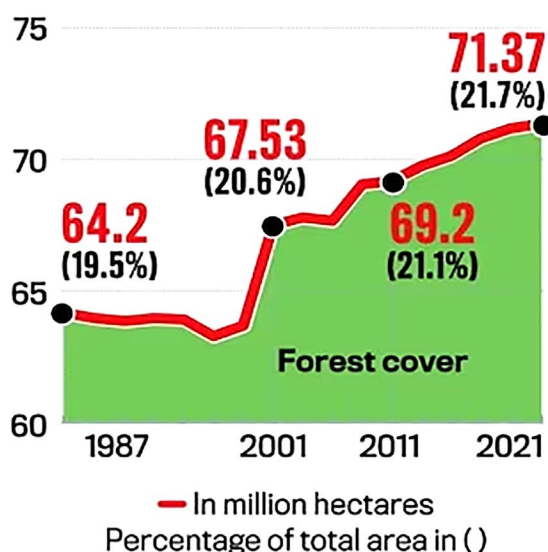
- The amendments raised concerns about potential forest exploitation by private, profit-driven companies or firms and neglect of state governments' concerns by consolidating more power in the hands of the central government.

#### ➤ Human-Animal Conflicts:

- Man-animal conflicts will increase if infrastructure development is allowed on forest land.
- The amendment does not address growing human-animal conflicts in tribal hamlets, posing threats to both livelihoods and wildlife.

## » INDIA'S FOREST COVER

*India's forest cover increased by a mere 0.6 percentage points between 2011 and 2021. The amendments to the FCA are likely to take 28 per cent of the cover out of the Act's ambit*



SOURCE: India State of the Forest Reports 1987-2021

### What Should be The Way Forward?

#### ➤ Stakeholder Consultation:

- Engage in extensive consultations with environmental experts, tribal communities, local stakeholders, and NGOs to address concerns and incorporate diverse perspectives.
- Emphasis on inclusiveness, local participation, and transparency in decision-making.

#### ➤ Transparency in Decision-Making:

- Ensure transparency in the decision-making process related to forest land use, exemptions, and infrastructure projects, fostering trust among stakeholders.

#### ➤ Periodic Review Mechanism:

- Establish a robust periodic review mechanism to assess the impact of the Act on forests, biodiversity, and local communities, making necessary adjustments based on the findings.
- Consider amendments to the Act based on feedback and evolving circumstances, ensuring inclusivity and responsiveness to emerging environmental challenges.

#### ➤ Empowerment of Local Communities:

- Empower local communities, especially tribal groups, by involving them in decision-making processes, recognizing their traditional knowledge, and ensuring equitable benefits from forest resources.
- Reinforce legal safeguards to protect the rights of indigenous communities, acknowledging their historical connection to forest lands and ensuring their participation in conservation efforts.

#### ➤ Environmental Impact Assessment (EIA):

- Strengthen the **EIA** process to comprehensively assess the environmental impact of proposed projects, ensuring sustainable development while minimizing ecological damage.

#### ➤ Conflict Resolution Mechanisms:

- Establish efficient conflict resolution mechanisms to address disputes arising from the Act, providing a fair platform for all stakeholders to voice concerns and seek resolution.
- Invest in capacity building for relevant authorities, ensuring effective implementation of the Act, adherence to guidelines, and competent decision-making.

#### ➤ Scientific Research and Monitoring:

- Promote scientific research to monitor the impact of the Act on forest ecosystems, biodiversity, and climate goals, using data-driven insights for informed policy adjustments.

- Develop adaptive management strategies that allow for flexibility in responding to unforeseen challenges and evolving environmental conditions.

### Conclusion:

The path to national development should be a collective expedition, marked by a commitment to environmental sustainability that steadfastly guides the pursuit of progress. The Forest Conservation Act serves as evidence of the potential to strike this intricate balance, paving the way for a future where a prosperous nation seamlessly coexists with a thriving environment.



## From Welfarism to Well-Being

*This editorial is based on “**The welfare programme economists loved to hate**” which was published in Hindustan Times on 14/11/2023. It talks about the success of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) which has proven to be a vital rural economic lifeline despite the initial concerns of several economists in India.*

**Tag:** Governance, GS Paper - 2, Welfare Schemes Government Policies & Interventions, Issues Relating to Development, Issues Relating to Poverty & Hunger. GS Paper - 3, Inclusive Growth, Mobilization of Resources, Fiscal Policy

Recent research has shown that the **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** operates as a reliable social safety net, addressing economic distress in rural households.

- Despite economist criticism and fears of distorting rural labor markets, MGNREGS has become an automatic stabilizer rather than a destabilizing force.
- This research prompts critics to recognize the transformative capacity of **welfare schemes** to positively impact the lives of India's most vulnerable populations.

### What are Welfare Schemes?

#### ➤ About:

- Welfare schemes refer to government programs or initiatives designed to provide financial, social, or other forms of assistance to individuals or groups facing economic, social, or health-related challenges.
- These schemes aim to improve the well-being and quality of life for citizens, often focusing on vulnerable or disadvantaged populations.

#### ➤ Public Welfare in India:

- In accordance with Part IV of the Indian Constitution, which outlines the **Directive Principles of State Policy**, underscores India is a 'welfare state'.
- For this, several legislative efforts have been made to eliminate practices like untouchability, **forced labor**, and **Zamindari**.
- Over time, the government has established fair-price shops, providing essential commodities at affordable

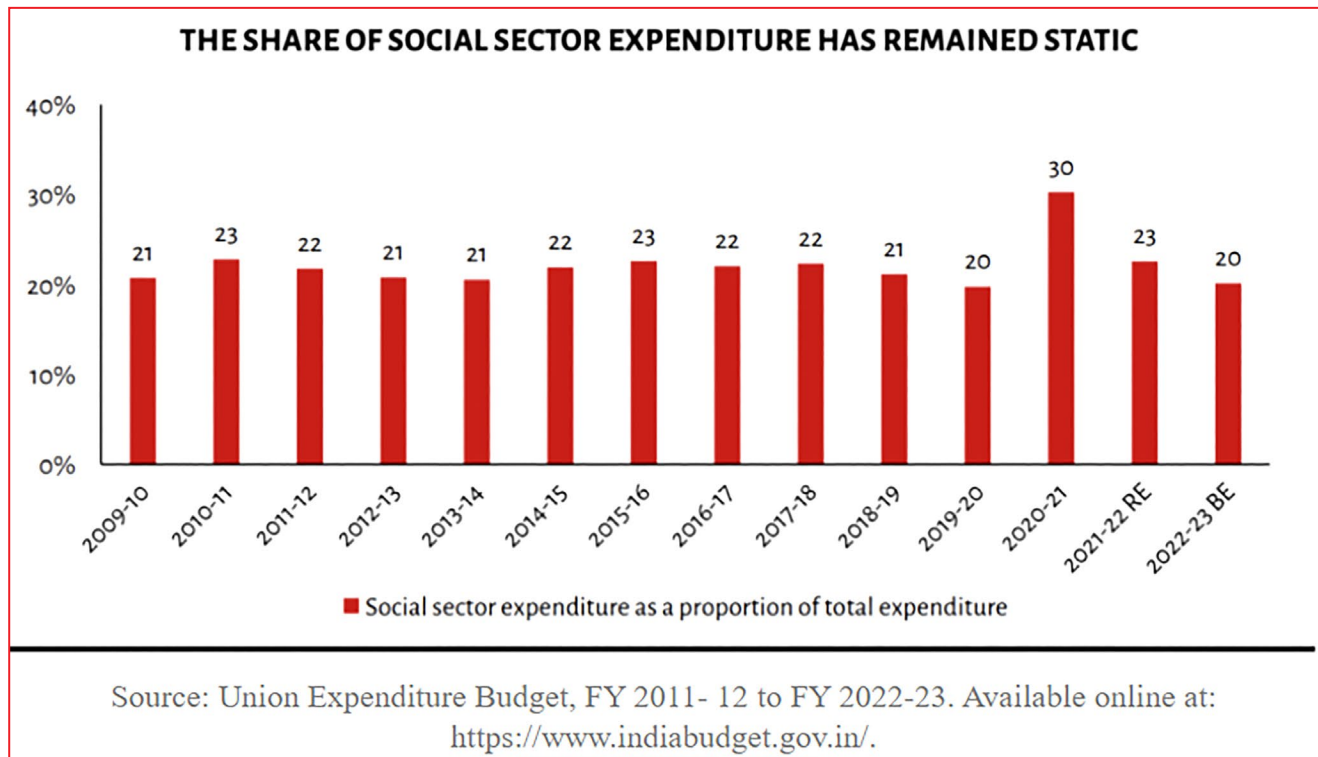
rates to benefit economically disadvantaged and marginalized sections of society.

- Measures have been implemented to reserve seats for **Scheduled Castes and Scheduled Tribes** across various domains such as government jobs, educational institutions, **Lok Sabha**, and Vidhan Sabha.

➤ **Key Welfare Schemes Introduced by Centre and States in India:**

Centre/State Scheme	Ruling Party/ Coalition	Schemes	Launch Year
State (Tamil Nadu)	Indian National Congress	Mid-day meals	1953
State (Maharashtra)	Indian National Congress	Employment Guarantee Scheme	1972
Centre	United Front Government	Targeted Public Distribution System (TPDS)	1997
Centre	NDA government	Sarva Sikshya Abhiyan	2001-2002
Centre	UPA Government	MGNREGA	2005
State (Bihar)	Janta Dal United	Mukhyamantri Balika Cycle Yojana (free bicycles for schoolgirls)	2006
Centre	UPA Government	Food Security Act 2013 (affordable food grains)	2013
State (West Bengal)	TMC	Cash incentive scheme for girls	2013
Centre	NDA Government	Swach Bharat Abhiyan (to eliminate open defecation and promote solid waste management)	2014
Centre	NDA Government	Jan Dhan Yojna (towards financial inclusion)	2014
State (Delhi)	AAP	Subsidised electricity	2015
State (Tamil Nadu)	AIADMK	Marriage Assistance Scheme	2016
State (Odisha)	BJD	KALIA (Krushak Assistance for Livelihood and Income Augmentation) for farmer's welfare.	2018
State (Andhra Pradesh)	YSR Congress Party	YSR Rythu Bharosa (farmers' welfare)	2019

### ➤ Social Sector Expenditure Trends in India:



### What are the Arguments in Favor of Welfare Schemes in India?

#### ➤ Poverty Alleviation:

- Welfare schemes **aim to reduce poverty** by providing financial assistance, employment opportunities, and essential services to those in need.
- Welfare schemes do not wipe away poverty or vulnerability but they reduce them significantly so that a person availing of these schemes can lead a life of dignity and escape from extreme hunger and poverty.

#### ➤ Social Equity:

- Welfare schemes provide **targeted assistance to disadvantaged groups**, welfare schemes work towards **reducing economic and social inequalities**.
- Reservation policies and targeted welfare initiatives **empower historically marginalized groups**, offering them opportunities for education, employment, and political participation.

#### ➤ Human Development:

- Welfare programs often focus on **education, healthcare, and skill development**, contributing to the overall human development of the population.
- Health-focused welfare schemes enhance public health outcomes by providing access to medical facilities, **immunization, and preventive healthcare** measures.

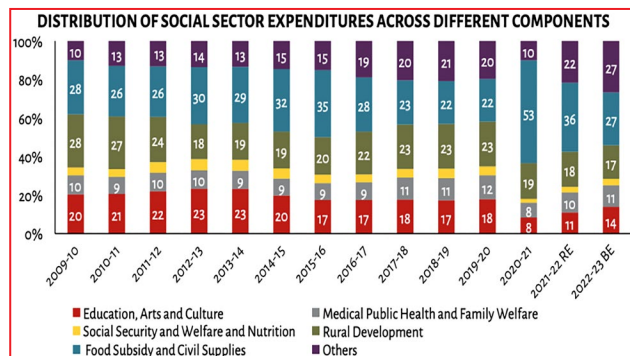
- By investing in education and skill development, welfare schemes contribute to an **increase in the productivity of the workforce**, which benefits the overall economy.

#### ➤ Political Stability:

- By addressing socio-economic challenges, welfare schemes **contribute to social stability and harmony**, reducing the likelihood of unrest and social discontent.
- Meeting the socio-economic needs of the population through welfare schemes can contribute to political stability by **addressing grievances and fostering a sense of inclusivity**.

#### ➤ Crisis Management:

- Welfare schemes act as **safety nets during economic downturns**, natural disasters, or other crises, providing relief and support to affected individuals and communities.



## What are the Arguments

### Against the Welfare Scheme in India?

#### ➤ Debate on Welfare Schemes vs. Freebies:

- The difference between **freebies** and welfare schemes is not always clear, but a general way to distinguish them is by their long-term impact on beneficiaries and society. **Welfare schemes have a positive impact, while freebies can create dependency or distortions.**
- A report by the **NITI Aayog** criticized that freebies such as laptops given by the state government diverted funds from more urgent needs such as improving school infrastructure, teacher quality, or learning outcomes.

#### ➤ Financial Burden:

- The extensive welfare programs can impose a significant financial burden on the government, potentially leading to **budgetary constraints and fiscal challenges.**
- Some argue that the **long-term sustainability of certain welfare programs is questionable**, especially if they create a perpetual need for government subsidies without encouraging self-sufficiency.

#### ➤ Dependency Culture:

- The prolonged reliance on welfare may foster a culture of dependency, **discouraging self-reliance** and individual initiative among recipients.
- Opponents argue that overly generous welfare provisions **might discourage people from actively seeking employment**, potentially eroding the work ethic within the population.

#### ➤ Corruption and Leakage:

- Concerns exist about **corruption and leakages** in the implementation of welfare schemes, with funds intended for beneficiaries being misappropriated through fraudulent practices.
- In some cases, critics argue that there is **limited accountability in the implementation and monitoring of welfare schemes**, leading to a lack of transparency and oversight.

#### ➤ Inefficiency and Bureaucratic Hurdles:

- There are concerns that welfare benefits may not always reach the intended beneficiaries, leading to **ineffective targeting and leaving out those who genuinely need assistance.**
- There are concerns that bureaucratic inefficiencies, red tape, and complex procedures can hinder the effective implementation of welfare programs, leading to delays and inequitable distribution.

#### ➤ Market Distortions:

- Some argue that certain welfare measures, such as price controls or subsidies, **may distort market mechanisms** and impede the natural functioning of the economy.
- Some argue that certain welfare measures, if not managed carefully, **can contribute to inflationary pressures** by injecting excess money into the economy.

#### ➤ Political and Social Division:

- Critics suggest that politicians **may use welfare schemes for political gain**, manipulating them to secure votes rather than implementing them based on genuine developmental needs.
- Some argue that **certain reservation policies may create social divisions and hinder meritocracy**, leading to resentment among various sections of society.
- A survey by the **Association for Democratic Reforms** showed that 41% of voters in Tamil Nadu considered **freebies as an important factor in voting.**

## FREE IS NOT FAIR

➤ SC says distribution of freebies influences all people. 'It shakes the root of free and fair elections to a large degree'

➤ Petition relates to sop war in TN. Against DMK's promise of free colour TVs in 2006, AIADMK in 2011 announced free mixers, laptops & gold mangalsutras

➤ Political parties argue they have a right to project their

policies & economic and political priorities. Say voters decide on basis of promises in manifesto

➤ Court says assemblies, Parliament should decide on legitimacy of freebies



## What Should be the Way

### Forward to Go from Welfare to Well-being?

#### ➤ Draw a Line Between Welfare and Freebies:

- Freebies must be understood from an economic perspective and **connected to taxpayers' money.**
- Welfare policies should be **based on evidence and data** to ensure that resources are directed where they are most needed.

#### ➤ Prioritize Holistic Development:

- Prioritize holistic development that goes beyond addressing immediate needs. Policies should **focus on education, healthcare, skill development, and infrastructure to create a foundation for long-term well-being.**

- Design programs that empower individuals by providing them with the necessary skills and knowledge to secure sustainable livelihoods.
- **Encourage Entrepreneurship and Employment Opportunities:**
  - Encourage entrepreneurship and create an environment that facilitates job creation.
  - This involves **supporting small and medium enterprises**, promoting innovation, and fostering a business-friendly ecosystem.
- **Empower Community Participation:**
  - Empower local communities to identify their needs, propose solutions, and actively contribute to their own development.
  - Foster collaborations between the public and private sectors. **Public-private partnerships** can bring together resources, expertise, and innovation to address complex challenges more effectively.
- **Promote Inclusivity:**
  - Ensure inclusivity by **addressing the needs of vulnerable and marginalized** populations. No one should be left behind in the pursuit of overall well-being.
  - Ensure **gender equality** in all aspects of development. Empower women economically, socially, and politically as their well-being is intricately linked to the well-being of the entire community.
  - **Strengthen social security nets** that provide a safety cushion during challenging times. Ensure these nets are efficient, transparent, and targeted to reach those who need them the most.
- **Integrate Environmental Sustainability:**
  - Integrate **environmental sustainability** into development initiatives.
  - A focus on eco-friendly practices and sustainable resource management contributes to both individual and community well-being.

### Conclusion:

Transitioning from Welfarism to Well-being requires a comprehensive and integrated approach that focuses on empowerment, sustainability, and the overall improvement of the quality of life for individuals and communities. In terms of policy, the **Capability Approach** rightly suggests a focus on expanding people's capabilities and freedoms rather than merely increasing their income.



## Regulating OTT: Draft Broadcasting Regulation Bill, 2023

*This editorial is based on "Regulating OTT: Draft Broadcasting Regulation Bill may be an attempt to control digital infrastructure" which was published in the Indian Express on 16/11/2023. It talks about the introduction of the Broadcasting Services (Regulation) Bill, 2023, and raises concerns about whether the focus is genuinely on public service or on increasing control and regulation.*

**Tag:** Governance, GS Paper - 2, Government Policies & Interventions, Right to Information Issues Relating to Development, GS Paper - 3, IT & Computers, Achievements of Indians in Science & Technology, Role of Media & Social Networking Sites in Internal Security Challenges, Challenges to Internal Security Through Communication Networks, Cyber Security.

The Cable Television Networks (Regulation) Act of 1995, governing linear broadcasting for three decades, faces challenges due to technological advancements and the emergence of new platforms like DTH, IPTV, and OTT.

Thus, the Ministry of Information and Broadcasting in India has proposed the **Broadcasting Services (Regulation) Bill, 2023**, recognizing the need for a comprehensive law to streamline the regulatory framework in the digitized broadcasting sector.

The bill, seemingly a **forward-looking and adaptable framework** for the evolving media industry, sets the tone for the future of broadcasting regulation in India.

### What are the Key Features of the Draft Broadcasting Regulation Bill, 2023?

- **Consolidation and Modernisation:**
  - It addresses a long-standing need to consolidate and update the regulatory provisions for various broadcasting services under a single legislative framework.
  - It extends its regulatory purview to encompass broadcasting **over-the-top (OTT)** content and digital news and current affairs currently regulated through the IT Act, 2000 and regulations made there under.
- **Contemporary Definitions and Future-Ready Provisions:**
  - To keep pace with the evolving technologies and services, the bill introduces comprehensive definitions for contemporary broadcasting terms and incorporates provisions for emerging broadcasting technologies.

- **Strengthens the Self-Regulation Regime:**
  - It enhances self-regulation with the introduction of 'Content Evaluation Committees' and evolves the existing Inter-Departmental Committee into a more participative and broader '**Broadcast Advisory Council**'.
- **Differentiated Programme Code and Advertisement Code:**
  - It allows for a differentiated approach to **Programme and Advertisement Codes** across various services and requires self-classification by broadcasters and robust access control measures for restricted content.
- **Accessibility for Persons with Disabilities:**
  - The bill addresses the specific needs of **persons with disabilities** by providing for enabling provisions for the issue of comprehensive accessibility guidelines.
- **Statutory Penalties and Fines:**
  - The draft Bill introduces statutory penalties such as advisory, warning, censure, or monetary penalties, for operators and broadcasters.
  - Provision for imprisonment and/or fines remains, but only for very serious offenses, ensuring a **balanced approach to regulation**.
- **Equitable Penalties:**
  - Monetary penalties and fines are linked to the financial capacity of the entity, taking into account

their investment and turnover to ensure fairness and equity.

#### ➤ **Infrastructure Sharing, Platform Services, and Right of Way:**

- The bill also includes provisions for infrastructure sharing among broadcasting network operators and carriage of platform services.
- Further, it streamlines the Right of Way section to address relocation and alterations more efficiently and establishes a **structured dispute resolution mechanism**

### **What are the Arguments in Favour of the Bill?**

#### ➤ **Updated Legal Framework:**

- The bill marks a transition from the **Cable Television Networks Regulation Act of 1995**.
  - It is described as a "**pivotal legislation**" by the Information & Broadcasting Minister as it aims to modernize the regulatory framework, adapting to the dynamic world of OTT, digital media, DTH, IPTV, and emerging technologies.
- It also provides comprehensive accessibility guidelines for the **Divyangjan** community.

#### ➤ **Empowering Broadcasters:**

- It Introduces provisions to empower broadcasters with self-regulation mechanisms.
- It aims to strike a balance between **regulatory oversight and industry autonomy**.

#### ➤ **Differentiated Approach to Codes:**

- The draft Bill also "allows for a differentiated approach" to Programme and Advertisement Codes across various services.
- By allowing a differentiated approach, regulations can be **tailored to suit the nature of linear and on-demand content**, providing more flexibility and relevance to content creators.

#### ➤ **Fairness Measures:**

- Under this bill, monetary penalties are linked to the investment and turnover of the entity for fairness. Penalties are proportionally determined based on the entity's financial standing.
- Larger corporations with higher investments and turnovers may face higher fines compared to smaller entities with limited financial capacity.

#### ➤ **Stakeholder Involvement:**

- The bill indicates the involvement of stakeholders through public consultation. The industry is welcoming the government's initiative for a unified law, anticipating it to streamline compliance and enforcement processes.

## **Key Features**

The bill covers **broadcasters, cable and satellite broadcasting networks, radio, and internet broadcasting**

It defines OTT

Proposes compliance with Advertising and Program-ming Code



**Broadcast Advisory Council** for grievance redressal



**Proposes penalties for code violations**



# THE INDIAN OTT MARKET



## 432 MN

Internet users in India; growing at a rate of **4-8%**



## 355 MN

Number of OTT video viewers in India expected by **2020**



## 35%

Growth y-o-y in number of India's OTT video viewers



## 40%

Share of **regional content** in viewership on OTT



## 30+

Number of **OTT players** in India



## 300 MN

What **Amazon Prime** is expected to invest in original content



## 2.5x

Number of **vernacular** users compared to **English** Internet user base

## ₹25,000-33,000 MN

Money set aside for original OTT content

(Source: Deloitte Technology, Media and Telecommunications Predictions, India 2018)

## SOME OTT (OVER-THE-TOP) VIDEO STATS

Despite problems with piracy, OTT video revenue has grown rapidly in recent years and according to PwC's Global Entertainment & Media Outlook 2018-2022, India will be among the top 10 largest global OTT video markets by 2022.

## ₹2019 CRORE

(revenue from **OTT video** in India in 2017)

## ₹5595 CRORE

(projected revenue from OTT video in **India by 2022**)

## 22.6%

Growth rate

## 70%

of revenue in **2017** is attributable to Subscription on Demand Video (SVOD) platforms

## 79.4%

of total market revenue is expected to be from SVOD by 2022

(Source: PwC India)

## What are the Arguments Against the Bill?

### ➤ Apprehensions of Control and Regulation:

- The bill raises concerns about whether the focus is genuinely on public service or on increasing control and regulation by the government.
- There are apprehensions that the Bill may **intensify government control over digital infrastructure and citizens' viewing choices**

### ➤ Ambiguous Provisions in the Draft:

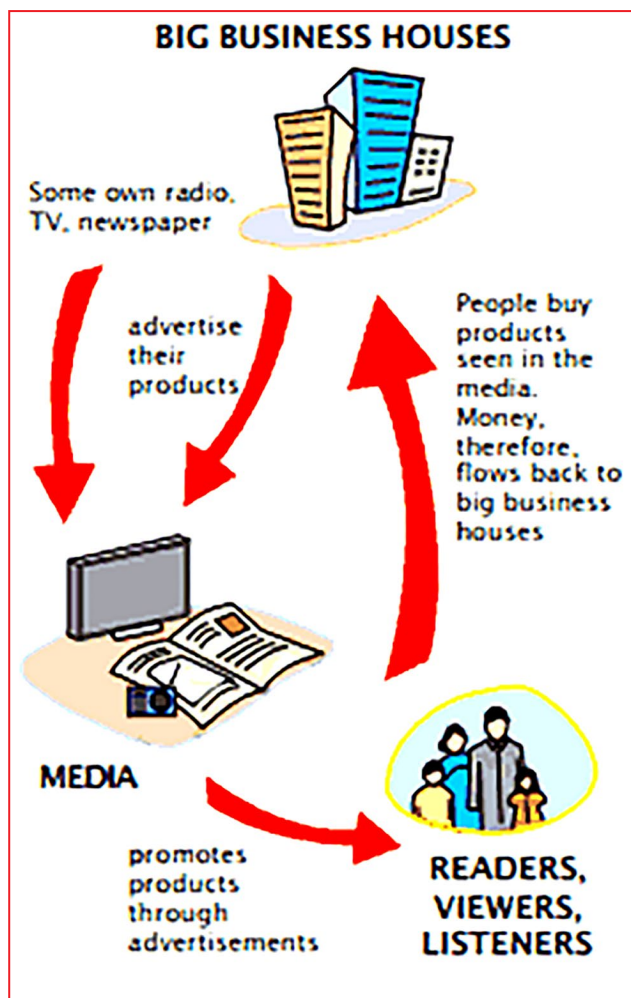
- A specific provision (point 36) in the draft, emphasizes the broad and ambiguous language that grants authorities the power to prohibit content.
- Raises questions about the **influence of "authorized officers"** working under government direction.

### ➤ Potential Impact on Minority Communities:

- The bill raises concerns that the bill might lead to the erasure or selective representation of Indian minority communities.
- The vague language in the draft could be exploited to promote a universal majority identity of India.

### ➤ Issues with Cable Regulation:

- Cable Television Networks (Regulation) Act, 1995 initially aimed at curbing illegal cable operators, lacked transparency due to the nexus involving operators, politicians, entrepreneurs, and broadcasters.
- The **new bill fails to address the loopholes** and issues in the implementation of the existing Act including **conflicts of interest and opaque practices within the Indian media industry**.
- **Government's Trust Deficit:**
  - The bill examines the recent history of the ruling government with media regulation, highlighting a pattern of unfulfilled promises and questionable outcomes.
  - The bill draws parallels with the controversial **IT Rules, 2021** introduced for national welfare.
- **Oligopolistic Media Ownership Tendencies:**
  - Amid debates on "cultural invasion" and "anti-national" programming, the nexus of government officials and media houses may promote oligopolistic media ownership.



### ***What are the Steps Ahead for Effective Broadcasting Regulation in India?***

- **Comprehensive Legislation:**
  - Develop a comprehensive and modern legislative framework that encompasses all aspects of broadcasting, including traditional television, OTT platforms, digital media, and emerging technologies.
  - Encourage competition among broadcasters and content creators to foster diversity of content. Avoid concentration of media ownership to ensure a plurality of voices and perspectives.
- **Stakeholder Consultation:**
  - Prioritize stakeholder consultation to gather insights from industry experts, content creators, broadcasters, and the public. Ensure a diverse range of perspectives to create well-informed regulations.
- **Adaptability to Technology:**
  - Design regulations that are adaptable to technological advancements. Consider the rapidly evolving nature of the media landscape and ensure that regulations remain relevant and effective over time.

- **Content Classification and Ratings:**
  - Implement a robust content classification and rating system to provide clear guidelines for audiences. This ensures that viewers can make informed choices, and it helps in regulating content based on appropriateness.
- **Independent Regulatory Body:**
  - Establish an independent regulatory body with the authority to enforce and monitor compliance. Ensure transparency, impartiality, and accountability in regulatory decisions.
- **Differentiated Approach for Platforms:**
  - Recognize the diversity of broadcasting platforms, including traditional TV, OTT, and digital media. Adopt a differentiated approach in regulation, acknowledging the unique characteristics and challenges of each platform.
- **Regular Review and Update:**
  - Establish a mechanism for regular review and update of regulations. This allows the regulatory framework to stay abreast of technological changes, societal shifts, and emerging challenges.
- **Clear Enforcement Mechanisms:**
  - Define clear enforcement mechanisms for regulatory violations. Establish a fair and efficient process for handling complaints, investigations, and sanctions to maintain the integrity of the regulatory framework.
- **Promote Media Literacy:**
  - Invest in media literacy programs to educate the public about responsible media consumption. Informed viewership contributes to a healthier media environment and reduces the need for excessive regulatory measures.
- **International Best Practices:**
  - Study and incorporate international best practices in broadcasting regulation. Learn from the experiences of other countries to adopt effective strategies while considering the unique cultural and social context of India.

### ***Conclusion***

The Broadcasting Regulation is not just about compliance but about creating an environment that encourages growth, innovation, and equitable access to communication services. By finding the optimal equilibrium between regulatory supervision and industry autonomy, India can strategically position itself for long-term success in the swiftly advancing telecommunications sector.



# Rise of Autonomous Weapons: Challenges and Opportunities

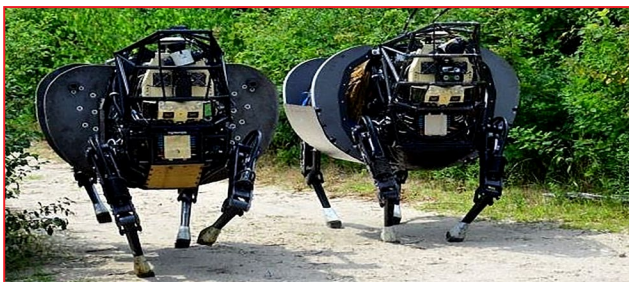
*This editorial is based on "India, 'killer robots' and the China challenge" which was published in The Indian Express on 15/11/2023. It discusses the implications of the development and deployment of Lethal Autonomous Weapons Systems (LAWS), also known as "killer robots", for India's national security and foreign policy.*

**Tag:** Science & Technology, GS Paper - 3, Robotics, Artificial Intelligence

Similar to other significant technological advancements, **artificial intelligence** presents substantial challenges globally, particularly concerning responsible utilization in both civil and military sectors. While the discourse surrounding the regulation and promotion of AI in civilian applications has made notable progress in recent years, discussions about its military uses are gaining international momentum. There is a **growing global consensus advocating for stringent limitations on the military utilization of AI**, especially concerning autonomous weapons capable of independent operation. Concurrently, major powers are heavily investing in the rapid development of increased autonomy in weapons systems through AI.

## What are Lethal Autonomous Weapons Systems (LAWS)?

- Lethal autonomous weapons systems (LAWS), also known as "killer robots", are a type of **autonomous military system that have the capability to select and engage targets without any human intervention.**
- They may operate in the air, on land, on water, underwater, or in space.
- An autonomous weapon system is **pre-programmed** to kill a specific "target profile."
  - The weapon is then deployed into an environment where it searches for that "target profile" using sensor data, such as **facial recognition**.
- LAWS are controversial and raise ethical, legal, and humanitarian concerns.



## What is the Role of Artificial Intelligence (AI) in LAWS?

- **Autonomy in Weapons Systems:** Autonomous weapons systems **require "autonomy" to perform their functions** in the absence of direction or input from a human actor. Autonomy can be achieved through two Approaches:
  - **Through Pre-defined Tasks:** This involves **programming the system with a set of instructions to perform specific actions** without real-time decision-making based on the current environment.
  - **Through AI:** This involves **using AI tools to derive behavior from data**. The system learns from the data it receives, allowing it to make decisions or adapt its behavior independently.
- **AI as an Enabler:** Artificial intelligence is **not a prerequisite for the functioning of autonomous weapons systems**, but, when incorporated, AI could further enable such systems.
  - In other words, **not all autonomous weapons systems incorporate AI** to execute particular tasks.
- **AI in an Assistance Role:** Artificial intelligence can also be used in an assistance role in systems that are directly operated by a human.
  - For example, a computer vision system operated by a **human could employ artificial intelligence to identify and draw attention to notable objects** in the field of vision, without having the capacity to respond to those objects autonomously in any way.

## What are the Benefits of Lethal Autonomous Weapons Systems (LAWS)?

- **Force Multiplier and Battlefield Expansion:**
  - LAWS can **enhance military effectiveness by acting as a force multiplier**. They can potentially carry out tasks autonomously, allowing human forces to focus on strategic planning and decision-making.
  - LAWS may **expand the battlefield by providing additional capabilities and coverage**, enabling a more comprehensive approach to military operations.
- **Resource Allocation Efficiency:**
  - LAWS have the **potential to improve resource allocation efficiency** by reducing the costs associated with training, logistics, and personnel.
  - Automated systems can **operate for extended periods** without the need for rest or extensive training.
- **Reducing Casualties and Human Suffering:**

- LAWS may contribute to **reducing casualties for one's own forces** by taking on risky tasks or engaging in dangerous situations where human involvement could lead to higher casualties.
- **Improving Information Gathering and Decision-Making:**
  - LAWS equipped with advanced artificial intelligence, sensors, and algorithms can **enhance information gathering, detection, and decision-making capabilities**.
  - They can process large amounts of data quickly and potentially provide more accurate and timely information to commanders.

### **What are the Issues with LAWS?**

- **Ethical Issues:** Delegating the decision to use lethal force to algorithms raises significant questions about **who is ultimately responsible and accountable for the use of force by autonomous weapons**, particularly given their tendency towards unpredictability.
- **Legal Issues:** LAWS pose challenges for the **compliance with international humanitarian law and human rights law**, such as the principles of distinction, proportionality, and precaution, as well as the accountability mechanisms for violations.
  - The United Nations Secretary General António Guterres agrees that "machines with the power and discretion to take lives without human involvement are politically unacceptable, morally repugnant and should be prohibited by international law."
- **Technical Issues:** LAWS are subject to **errors, failures, and vulnerabilities that could compromise their reliability, safety, and security**, such as the lack of robustness, interpretability, and adversarial resilience of artificial intelligence, sensors, and algorithms.
- **Security Issues:** LAWS could increase the risk of armed conflict, escalation, and proliferation, by lowering the threshold for the use of force, expanding the scope and scale of warfare, and enabling new forms of attacks and countermeasures.

### **What is the United Nations' stand on Autonomous Weapons?**

- The UN General Assembly recently voted on a resolution regarding lethal autonomous weapons.
- The resolution received overwhelming support, with **164 countries in favor, five against, and eight abstentions**.
  - The voting pattern among major military powers varied, with the US and its allies supporting the resolution, China abstaining, and **India voting against it**.

- The UN urged the international community to address the challenges posed by autonomous weapons through this resolution.
- The resolution specifically called for a report from the UN Secretary-General, taking into account the views of governments and civil society groups.

### **What are the Countries doing in the Field of Autonomous Weapons?**

- **United States:** The U.S. is a major player in the development of autonomous weapons. It has **deployed unmanned systems, including naval ships, and plans to expand its fleet** of uncrewed ships in the coming years.
  - The U.S. military branches, such as the Navy, Air Force, and Army, are investing in drone systems and experimenting with combined operations involving both manned and unmanned systems.
  - The Pentagon has **established institutions to integrate AI into defense management**, emphasizing the importance of human control over the use of autonomous weapons.
- **China:** China has prioritized AI in building an **"intelligentized"** People's Liberation Army (PLA). China is deploying AI across various military functions, including inventory management, maintenance, logistics, reconnaissance, surveillance, and combat.
  - China's significant industrial capacity and centralized control over resources allow it to produce autonomous weapons at a fast pace.
  - The U.S. is actively trying to stay ahead of China in AI development, recognizing the importance of maintaining an edge in this technology.
- **India:** India is also navigating the field of autonomous weapons, signaling a pragmatic approach to global issues. Despite a negative vote at the UNGA on autonomous weapons, **India recognizes the importance of AI in national defense plans**, especially given the military imbalance with China. While India has strengths in AI, it acknowledges that it lags behind the U.S. and China in the military application of this technology.

### **What should India do to Enhance its Capacities on LAWS?**

- **Invest in National AI Capabilities for Defence:**
  - Allocate substantial resources to build core AI sciences.
  - Develop a comprehensive range of technological capabilities related to AI.

- Establish operational military doctrines that effectively integrate AI into Indian defense management and armed forces.
- **Enhance Technological Partnership with the US:**
  - Leverage the blossoming technological partnership with the US, particularly in the field of AI.
  - Collaborate on joint initiatives and projects to advance AI capabilities.
- **Shape International Norms:**
  - Continue the tradition of shaping international norms, especially in the realm of emerging technologies.
  - Work with like-minded countries to develop global governance for responsible military use of AI.
- **Cooperate on Responsible AI Use:**
  - Collaborate with other nations on ensuring responsible military use of AI.
  - Advocate for the inclusion of human control and oversight in the deployment of autonomous weapons.
- **Build Institutions:**
  - Establish institutions dedicated to AI research, development, and implementation in defense.
  - Strengthen existing frameworks for international cooperation on AI-related issues.
- **Engage in Diplomacy:**
  - Actively engage in diplomatic efforts to foster collaboration with other nations on AI governance.
  - Participate in international forums to discuss and set guidelines for the ethical use of AI in defense.

## Conclusion

Given the massive military imbalance with China and the kind of challenges India confronts in both the Himalayan and maritime frontiers, AI should necessarily be an important part of India's national defence plans.



## State Funding Debate: A Path to Transparent Elections

*This editorial is based on "Should elections be state funded?" which was published in The Hindu on 17/11/2023. It talks about the absence of transparency in election funding, examining the prospect of state funding as a potential solution to augment transparency in electoral processes.*

**Tag:** Governance, GS Paper-2, Government Policies & Interventions, Right to Information, Representation of People's Act, Issues Relating to Development, Transparency & Accountability, E-Governance.

A Constitution Bench led by the **Chief Justice of India** has recently concluded its hearings that challenge the legitimacy of the electoral bonds scheme. The discussions primarily revolved around the conflicting aspects of voters' right to information and the confidentiality of donors.

The central concern in these proceedings is the need for transparency in election funding. In this context, the reconsideration of the state or public funding of elections has emerged once again.

### What is State Funding of Elections?

#### ➤ About :

- **State funding of elections** refers to a system in which the government provides financial support to political parties and candidates to facilitate their participation in the electoral process.
- This funding is typically derived from public resources and aims to reduce the reliance on private donations, minimizing the potential influence of vested interests in political campaigns.

#### ➤ Objective :

- The objective is to promote transparency, fairness, and equal opportunities for all participants in the electoral arena.

#### ➤ Types of State Funding :

- **Direct Funding:** This involves the government providing direct monetary assistance to political parties and candidates to support their election campaigns
- **Indirect Funding:** Indirect funding encompasses subsidized or free media access, tax advantages, complimentary use of public spaces for campaign materials, and provisions for utilities, travel expenses, transport, and security, among others.

#### ➤ Status of State Funding of Elections in India:

- Existing state funding measures comprise allocating free airtime on public broadcasters for national parties during general elections and for registered state parties in state legislature elections.
- National Parties receive certain benefits such as security, office space, and utility subsidies.
- Another form of indirect state funding in India is that registered political parties are exempted from paying income tax, as stipulated in Section 13A of the IT Act.

## Politics and money

In 2018, the NDA government introduced a new mode of political funding, the electoral bonds, which was tipped by it as a key reform for 'cleaning up'. But the new system has met with criticism from opposition parties as well as transparency activists.

**₹6,129 cr**

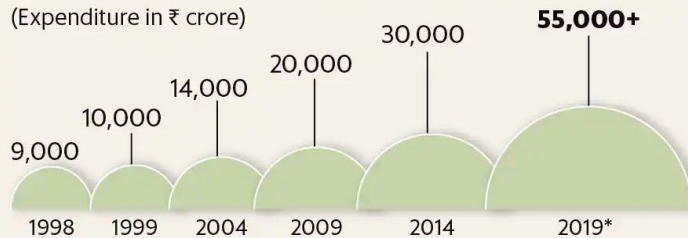
Total funds raised through electoral bonds for political parties so far since its introduction (12 tranches)



According to a report by Centre of Media Studies titled *Poll Expenditure, The 2019 Elections*, the last general elections were the 'most expensive ever, anywhere'. A look at its key findings:

### Estimates of poll spending between 1998–2019

(Expenditure in ₹ crore)



**10-12%** voters acknowledged getting cash directly

**TWO-THIRDS** of them said they are aware other voters also received cash

**NEARLY** ₹100 crore spent per Lok Sabha constituency

**₹700** spent per vote by political parties and independents

### Estimates of expenditure in 2019 (in ₹ cr)



\*Estimate includes expenditure on assembly elections held in 2019 Source: Centre for Media Studies report 'Poll Expenditure, The 2019 Elections'

### What have Various Commissions said about State Funding of Elections?

- **Indrajit Gupta Committee (1998):**
  - Endorsed state funding of elections for constitutional, legal, and public interest reasons.
  - Aimed to create a fair playing field, particularly for parties with limited financial resources.
- **Law Commission of India (1999):**
  - Concluded that total state funding is desirable, provided political parties refrain from taking funds from other sources.
  - Emphasized the need for a regulatory framework for political parties before attempting state funding.
- **Second Administrative Reforms Commission (2008):**
  - Advocated partial state funding to curb "illegitimate and unnecessary funding" of election expenses.
  - Addressed the issue of ethics in governance and recommended measures to reduce undue financial influence.
- **National Commission to Review the Working of the Constitution (2001):**

- Did not endorse state funding of elections.
- Agreed with the Law Commission report (1999) on the prerequisite of implementing a robust regulatory framework for political parties before considering state funding.

### What are the Arguments in Favor of State Funding of Elections in India?

- **Leveling the Playing Field:**
  - State funding aims to reduce the influence of money in politics, creating a more level playing field where political parties can compete based on ideas and policies rather than financial resources.
  - State funding may encourage more individuals to participate in politics by removing financial barriers for potential candidates who may not have personal wealth or access to significant private funding.
- **Reducing Corruption:**
  - By providing public funding, there is a potential to decrease the reliance on private donations, minimizing the scope for corrupt practices and reducing the influence of vested interests in politics.

- State funding can contribute to greater transparency in political financing, as public funds are subject to regulations and scrutiny, providing clearer insight into the financial aspects of political campaigns.
- **Promoting Fair Competition**
  - State funding can foster fair competition by preventing certain parties or candidates from gaining undue advantages based solely on their financial resources.
  - Reduced dependence on private donors may lead to greater independence for elected representatives,

allowing them to focus on public interests rather than catering to the interests of major donors.

➤ **Strengthening Political Parties:**

- Public funding can contribute to the financial stability of political parties, allowing them to focus on long-term goals and policy development rather than short-term fundraising for each election cycle.
- State funding has the potential to address economic disparities among political parties, ensuring that smaller or emerging parties have a fair chance to participate in the democratic process.

## POLITICAL FUNDING

### SOURCE OF INCOME

Total income from known and unknown sources of six national parties and 51 recognised regional parties for 11 years from 2004-05 to 2014-15

	Total income	Income from unknown sources	% of total income*
National parties (6)	9,278.30	6,612.42	71
Regional parties (51)	2,089.04	1,220.56	58

\* Income from unknown sources

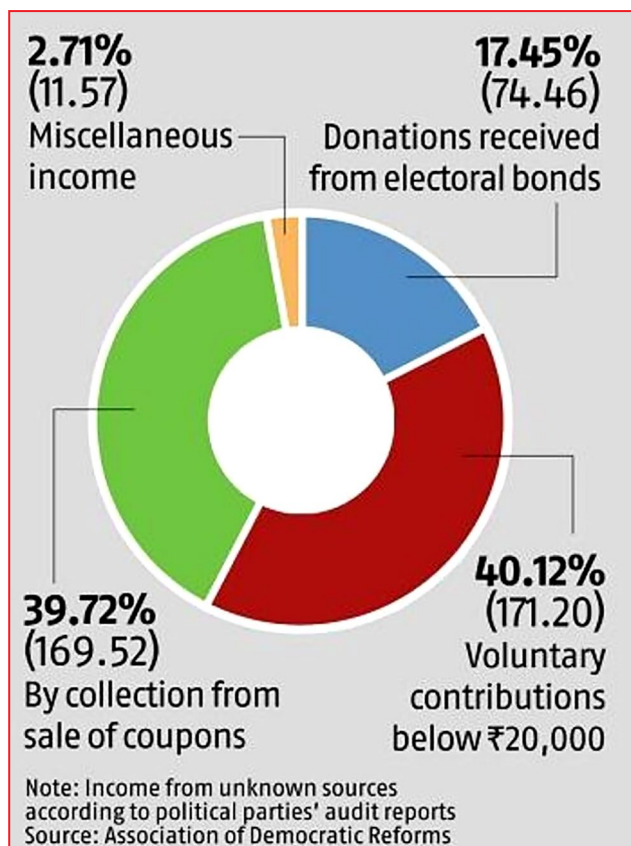
### NATIONAL VIEW

Total income of six national political parties from 2004-05 to 2014-15

National party	Total income	From known sources (above ₹20,000)	From other known sources	From unknown sources (below ₹20,000)
INC	3,982.09	400.32	258.38	3,323.39
BJP	3,272.63	917.86	228.86	2,125.91
CPM	892.99	15.04	406.79	471.15
BSP	763.95	0*	315.24	448.71
NCP	351.28	65.24**	43.02	243.03
CPI(M)	15.36	6.73	8.40	0.23
<b>Grand total</b>	<b>9,278.3</b>	<b>1,405.19</b>	<b>1,260.69</b>	<b>6,612.42</b>

\*BSP declared that it didn't receive any donations above ₹20,000; \*\*NCP didn't submit details for 2004-05, 2005-06 and 2006-07

Note: INC is Indian National Congress, BJP is Bharatiya Janata Party, CPM is Communist Party of India (Marxist), BSP is Bahujan Samaj Party, NCP is Nationalist Congress Party and CPI is Communist Party of India



### What are the Arguments

#### Against State Funding of Elections in India?

##### ➤ The Burden on Taxpayers:

- Using public funds for elections places an additional burden on taxpayers, who may not want their money allocated to political activities.

- India has limited financial resources, and allocating funds for state-funded elections may divert resources from other essential public services.

##### ➤ Potential for Misuse:

- Skeptics express concerns about the potential misuse of state funds, emphasizing the need for stringent regulations and accountability measures to prevent misuse or diversion of public resources.
- There are concerns that state funding could be manipulated for political advantage, with the ruling party having control over the allocation and distribution of funds, potentially influencing the electoral process.

##### ➤ Risk of Dependency:

- The state funding may lead to political parties becoming overly dependent on public funds, potentially stifling financial independence and innovation in fundraising.
- Opponents contend that state funding may diminish the incentives for political parties to engage in grassroots fundraising and connect with their constituencies on a local level.

##### ➤ Challenges in Implementation:

- Critics highlight the practical challenges in implementing state funding, such as determining eligibility criteria, distributing funds equitably, and establishing effective monitoring mechanisms.
- Some argue that state-funded initiatives may lack efficiency and accountability compared to private funding, as public institutions may not be as responsive or transparent.

## STEMMING THE ROT

There have been a plethora of suggestions and attempts to make political parties and the election process more transparent

### REFORMS ORDERED BY SC SINCE 2003

**Mar 2003** Says a voter has a fundamental right to know candidates' qualifications, assets, liabilities and criminal antecedents, if any

**Jul 05 2013** Rules that freebies in poll manifestos vitiate electoral process; asks EC to frame guidelines after consulting with political parties

**Jul 10 2013** Orders automatic disqualification of MPs/ MLAs convicted of crimes attracting punishment

of two years or above

Declares unconstitutional Section 8(4) of Representation of the People Act that allowed a convicted MP/MLA to continue in office

**Sep 13 2013** Says knowing about a candidate is a voter's natural right and candidates will be rejected if they refuse to disclose any information on their election affidavit

**Sep 27 2013** Gives voters right to not back any candidate by ordering the none of the above (NOTA) option to be enabled in voting machines

**Mar 10 2014** Sets one-year deadline for lower courts to complete trial in cases involving MPs, MLAs

**Feb 5 2015** Rules a candidate's election can be declared 'null and void' due to non-disclosure of criminal antecedents



**What Should be the Way Forward?**➤ **Comprehensive Legal Reforms:**

- Enact and implement comprehensive legal reforms to regulate political party finances, election expenditures, and the sources of funding.
- This may include revisiting and strengthening existing laws or introducing new legislation to address loopholes.
- Encourage cross-party consensus on the need for electoral funding reforms

➤ **Transparency in Political Party Funding:**

- Mandate political parties to disclose all sources

of funding, including details of donors and the amounts received.

- Ensure that this information is easily accessible to the public and regularly updated.
- Introduce an upper limit on the amount that can be donated to political parties to curb the influence of large corporate contributions.

➤ **Independent Electoral Oversight:**

- Strengthen the role of independent electoral oversight bodies, such as the Election Commission of India, to monitor and enforce compliance with campaign finance laws. Provide these bodies with adequate resources and autonomy.

**REFORMS PROPOSED BY LAW PANEL IN 2015****Political party reforms:**

Recommends in March 2015 that the Representation of People Act should be amended to give the EC power to regulate parties

**Internal party affairs:** Says EC should have power to look into parties' internal democracy, constitutions, organisation, elections, candidate selection, voting procedures

**Power to de-register:** EC does not have power to de-register a party. Law Commission said EC should have power to rescind recognition of a party if they violate laws

**Watch on funding:** Recommends mandatory disclosure of contributions above ₹20,000, including aggregate contributions from a single donor. Also suggested that names, addresses and PAN numbers of such donors be disclosed

**Watch on books:** Suggested parties maintain and submit to EC annual accounts duly audited by a CA approved by the Comptroller and Auditor General every financial year. It should be open to public scrutiny

**Check corporate funding:** Recommends that contribution from a company's funds to a political party should be authorised by the company's Annual General Meeting (AGM) instead of its board of directors

**Expenditure limit:** Expenses incurred or authorised by candidates or their election agents currently extends from the date of nomination to the date of declaration of results. EC wants this period to be extended to apply from the date of notification of polls to the date of results.

➤ **Auditing and Accountability:**

- Establish a robust auditing mechanism to scrutinize the financial accounts of political parties. This includes conducting regular audits of their income, expenses, and compliance with legal provisions.
- Implement strong whistleblower protections to encourage individuals with knowledge of illicit funding practices to come forward without fear of retaliation.
- Leverage technology to enhance transparency in electoral funding. Explore blockchain or other secure digital platforms to record and disclose financial transactions, ensuring an immutable and accessible record.

➤ **Learn from Best Practices:**

- Study and adopt international best practices in campaign financing and electoral transparency.
- Establish a mechanism for regular review and adaptation of electoral funding regulations to address emerging challenges and ensure continued effectiveness.
- Conduct public awareness campaigns to educate citizens about the importance of transparent electoral funding.

**Conclusion :**

By embracing transparency in electoral funding in India, the nation can fortify the foundations of its democratic institutions and empower citizens with the knowledge and confidence that their electoral choices are influenced by ideas and values rather than the undue influence of financial interests.



## Unraveling Silent Pandemic of Road Accidents

*This editorial is based on “**Steering road safety in India back onto the right lane**” which was published in The Hindu on 20/11/2023. It discusses the road safety crisis in India and the need for immediate interventions to address the issue.*

**Tag:** Governance, GS Paper-3, GS Paper-2, Infrastructure, Government Policies & Interventions

India's road network is a paradoxical situation. On one hand, it presents a significant and expanding opportunity for commuting, connecting, transporting, and traveling, which is in tandem with the country's modernization and remarkable economic growth. However, like in many other nations, India's roads also pose a silent but deadly pandemic.

**How Fatal are the Road Accidents in India?**

- As per the report on **Road Accidents in India-2022** published by the Ministry of Road Transport and Highways, a total of **4,61,312 road accidents have been reported** by States and Union Territories (UTs) during the calendar year 2022, which **claimed 1,68,491 lives** and caused injuries to 4,43,366 persons.
  - This marks an **increase of 11.9% in accidents, 9.4% in fatalities, and 15.3% in injuries** compared to the previous year (2021).
- According to another data published by the WHO, each year, a staggering **3,00,000 people are estimated to be killed on the road** in India.
  - That is equivalent to more than **34 people every hour of every day**. And that is a conservative estimate.
  - The number of people suffering life-altering injuries in road crashes is exponentially higher even than that.
- Road safety is a global problem, with 1.3 million people killed in road crashes every year. But almost **one in every four road deaths around the world takes place in India**.

**What are the Primary Reasons Behind Road Accidents in India?**

- **Overspeeding:** Drivers exceeding the prescribed speed limits pose a significant risk. Lack of awareness regarding speed limits and inadequate enforcement contribute to this problem.
  - For example, according to the Road Accidents in India-2022 report, **over-speeding continued to remain the most major cause accounting for 72.3% of all accidents** across India and over two-third of all deaths and injuries.
- **Drunk Driving:** Driving under the influence of alcohol or drugs impairs judgment and coordination.
  - According to the Road Accidents in India-2022 report, drunk driving accounted for 2.2% of road accidents in India in 2022.
- **Distracted Driving:** Using mobile phones, eating, or engaging in other activities while driving diverts attention and increases the likelihood of accidents.
  - A survey by IIT Bombay highlighted that about 60% of drivers use phones while driving among all the participants in the study.
- **Poor Infrastructure and Road Design:** The quality of infrastructure and road design plays a crucial role in road safety. In India, several factors contribute to accidents, such as **potholes, poorly marked lanes, inadequate road signs, insufficient lighting**, and lack of pedestrian facilities.

- **Extreme Weather Conditions:** Severe weather conditions also have a tendency to heighten the likelihood of accidents. **Dense fog, excessive rainfall, strong winds, and similar conditions make driving more challenging**, which can result in horrifying accidents if drivers fail to exercise extra caution.
- **Mechanical Failures:** Apart from human errors and adverse weather conditions, one of the major causes of road accidents is due to vehicle breakdowns or malfunctions. **Faulty brakes, tires, steering, lights, or other components** can compromise the safety and performance of the vehicle.
- **Non-Compliance with Traffic Rules and Regulations:** The lack of adherence to traffic rules and regulations significantly contributes to road accidents.
  - **Non-Use of Seat Belts and Helmets:** Failure to wear seat belts and helmets increases the risk of severe injuries and fatalities.
    - At least eight out of every 10 car occupants (nearly 83%) killed in accidents across India in 2021 were not wearing seatbelts, according to a report of the Union road transport ministry.
  - **Violation of Traffic Signals:** Disregarding traffic signals, overtaking at intersections, and jumping red lights pose serious risks.
    - According to a report, out of the total road accidents in 2020, 919 were caused by jumping of traffic signal which killed 476 people.
  - **Overloading of Vehicles:** Overloaded commercial vehicles **compromise stability and manoeuvrability, leading to accidents**.
    - In 2020, at least 10,000 people were killed and 25,000 were injured by overloaded trucks on National Highways in India..
- **Poor Enforcement and Governance:** The effectiveness of traffic enforcement and governance has a significant impact on road safety.
  - **Inadequate Traffic Police Presence:** Insufficient traffic police officers on the roads hinder enforcement efforts. Increasing the number of traffic police personnel and their visibility can enhance enforcement.
    - India has a little over 72,000 traffic police to manage 20 crore vehicles.
  - **Corruption and Bribery:** Corruption among traffic police personnel undermines road safety efforts.
    - According to **Transparency International**, India ranked 85th out of 180 countries in the **Corruption Perceptions Index** in 2022.
  - **Low Awareness:** According to a 2019-20 study by SaveLIFE, 37.8% people said they thought wearing

seat belts is not mandatory for passengers in the rear seat. While the law mandates the use of rear seat belts, only 27.7% of the respondents were aware of the law.

### **What are the**

### **Impacts of Road Accidents in India?**

- **Injuries and Disabilities:** Road accidents can cause serious **physical injuries and disabilities, such as fractures, burns, amputations, spinal cord injuries, and brain injuries**. These can affect the quality of life and well-being of the victims and their families.
  - According to the WHO, road traffic injuries are the leading cause of **disability-adjusted life years (DALYs)** lost among 15-29 year olds in India.
- **Psychological Trauma and Stress:** Road accidents can also cause psychological trauma and stress, such as **post-traumatic stress disorder (PTSD)**, anxiety, depression, and grief. These can affect the mental health and emotional stability of the victims and their families.
- **Death and Loss of Loved Ones:** Road accidents can result in death and loss of loved ones, which can have devastating and irreversible consequences for the victims and their families.
- **Social Inequality and Exclusion:** Road accidents can exacerbate social inequality and exclusion, as they **disproportionately affect the poor and vulnerable groups, such as pedestrians, cyclists, motorcyclists, and public transport users**. These groups often lack access to safe and affordable transportation, health care, and social protection.
  - **Vulnerable road users**, who include pedestrians, cyclists and the riders of two-wheelers, account for **almost three quarters of road deaths** in India.
- **Loss of Productivity and Income:** Road accidents can cause **loss of productivity and income**, as they affect the ability and availability of the workforce, and reduce the earning potential and savings of the victims and their families.
  - In India, road crashes are estimated to cost between **5% and 7% of national GDP**.
- **Increase in Health Care and Legal Costs:** Road accidents can also increase the health care and legal costs, as they require medical treatment, rehabilitation, compensation, and litigation. These can impose a **heavy burden on the public and private sectors**, and the victims and their families.
  - According to a study commissioned by the road transport and highways ministry, the average socio-economic cost of a road accident in India in 2018 was:

- Death: Rs 91 lakh
- Grievous injuries: Rs 3.6 lakh

### ***What should be done to Address the Silent Pandemic of Road Accidents?***

#### ➤ **Enforcement of Seatbelt and Helmet Use:**

- A WHO report estimated: "Wearing a seat-belt reduces the risk of death among drivers and front seat occupants by 45-50%, and the risk of death and serious injuries among rear seat occupants by 25%."

#### ➤ **Awareness Campaigns:**

- Launch large-scale public awareness campaigns, such as the UN's #MakeASafetyStatement, to educate the public about the importance of road safety.

#### ➤ **Speed Limit Enforcement and Anti-Drink Driving Measures:**

- Implement measures to reduce speeding, including enhanced traffic management systems and monitoring.
- Zero tolerance for drink-driving, with strict penalties for offenders.

#### ➤ **Infrastructure Improvement:**

- Enhance road infrastructure to ensure safe conditions, addressing issues that contribute to accidents.
- Invest in ongoing government programs for rapid improvements in road safety.

#### ➤ **Focus on Vulnerable Road Users:**

- Prioritize the safety of vulnerable road users, including pedestrians, cyclists, and two-wheeler riders, who account for a significant portion of road deaths.
- Develop infrastructure and awareness programs specifically tailored to protect these users.

#### ➤ **International Best Practices:**

- Study and adapt successful international road safety practices to the specific needs and circumstances of India.
  - The **Netherlands' Sustainable Safety vision** focuses on preventing crashes and reducing crash severity by creating a safe road system.
    - It is based on **five principles**: functionality, homogeneity, predictability, forgivingness, and state awareness.
    - Some of the measures implemented under this vision are road classification, roundabouts, bicycle paths, and traffic calming.
  - Japan has achieved a remarkable reduction in road traffic deaths, from 16,765 in 1990 to 3,215 in 2019.

- It has implemented various measures, such as **strict enforcement of traffic laws, improvement of road infrastructure, promotion of seat belt and helmet use**, and introduction of advanced safety technologies in vehicles.

- Japan also has a comprehensive **road safety education system**, which covers all stages of life, from preschool to senior citizens.

#### ➤ **Implementation of Motor Vehicles (Amendment) Act, 2019:**

- Ensure full implementation of the **Motor Vehicles (Amendment) Act, 2019**, which includes measures to enhance road safety.

#### ➤ **Emergency Care Services:**

- Improve **access to high-quality emergency care services** and proper after-care for road crash victims.
- Address regional disparities in emergency care to ensure uniform survival chances across different states.

#### ➤ **Public-Private Collaboration:**

- Encourage collaboration between the public and private sectors to develop and implement innovative solutions for road safety.
- Support initiatives by private sector companies that contribute to improving road safety. Some of the initiatives are:
  - Drive Safe India campaign by Maruti Suzuki
  - Drive Safe, Drive Smart campaign by Mahindra & Mahindra

#### ➤ **Align with Global Initiatives:**

- Align with global initiatives, such as the **UN's Second Decade of Action for Road Safety 2021-2030**, to adopt a comprehensive safe-system approach.

#### **Sundar Committee Recommendations on Road Safety**

- Creation of the **National Road Safety & Traffic Management Board**, an apex body at the national level to promote road safety and traffic management in the country, to be constituted through an Act of the Parliament with members and experts drawn from various fields including road engineering, automobile engineering, traffic laws, medical care, etc.
- Establishment of **State Road Safety & Traffic Management Boards** in each state and union territory, with similar functions and powers as the national board, to coordinate with the state governments and local authorities on road safety and traffic management issues.

- Development of a **National Road Safety Plan with specific targets, strategies, and action plans for reducing road accidents and fatalities**, and enhancing road safety and traffic management.
- Improvement of post-accident care and trauma management, and **establishment of a national road accident database and information system**, with standardized formats and protocols for data collection, analysis, and dissemination.
- To provide flow of funds, the Committee has suggested **earmarking of 1% of total proceeds of cess on diesel and petrol** for Road Safety Fund.
- The Committee has also dwelt upon other various issues like decriminalization of road accidents, insurance and **dedicated highway police**, etc.

Based on the recommendations of the Sundar Committee, the Union Cabinet approved the **National Road Safety Policy** in 2010.



## The Governor's Role: Challenges and Reform Proposals

*This editorial is based on "It is high time the colonial institution of the governor is reined in" which was published in The Indian Express on 21/11/2023. It criticizes the role of Tamil Nadu Governor, who has returned several pending Bills to the state government, after the Supreme Court expressed serious concern about Governors not acting on Bills.*

**Tag:** Indian Polity, GS Paper-2, Role of Governor, Indian Constitution.

The **Governor** of Tamil Nadu, has once again brought to light the **issue of retaining the colonial institution of Governor**. The **Supreme Court** reminded him that he is **not an elected authority and should not presume to sit in judgement of the elected government**, following which he returned all 10 bills sent to him for assent by the Tamil Nadu state legislature.

To ensure that these bills receive assent, a special session was called by the speaker of the Tamil Nadu Assembly to pass these bills again.

Additionally, decisions of the state government regarding sanction for prosecution of AIADMK ministers, appointment to the Tamil Nadu Public Service Commission, and premature release of prisoners have been held up by the governor for no apparent reason.

### What are the

### Governor's Powers w. r. to Passage of Bills?

- The governor's powers with respect to the passage of bills are defined by **Article 200** and **Article 201** of the Constitution. According to these articles, the governor has the following options when a bill is presented to him/her by the state legislature:
  - He/she may give assent to the bill, which means the bill becomes an act.
  - He/she may withhold assent to the bill, which means the bill is rejected.
  - He/she may **return the bill (if it is not a money bill)** to the state legislature with a message requesting reconsideration of the bill or some of its provisions.
    - If the bill is passed again by the state legislature with or without amendments, the governor cannot withhold assent to it.
  - He/she may **reserve the bill for the consideration of the president**, who may either assent to or withhold assent from the bill, or direct the governor to return the bill to the state legislature for reconsideration.
    - The reservation of the bill by the governor is mandatory if the bill **endangers the position of the state high court**.
    - It is also discretionary if the bill is against the provisions of the Constitution, the **Directive Principles of State Policy**, the larger interest of the country, or of grave national importance, or deals with compulsory acquisition of property under **Article 31A** of the Constitution.

### What are the Challenges

### associated with Governor's Office?

- **The Appointment of Governors:** The governor is **appointed by the president on the advice of the central government**. This raises questions about the political neutrality and impartiality of the governor.
  - There have been instances where governors have been appointed from the ruling party at the centre or have been removed or transferred for political reasons.
  - This undermines the dignity and stability of the office of the governor.
- **The Role and Powers of Governors:** The governor has various roles and powers under the constitution, such as giving assent to bills passed by the state legislature, appointing the chief minister and other ministers, sending reports to the president on the state of affairs, and exercising special responsibilities in some states.

- However, these roles and powers are often **subject to the discretion** of the governor, which can lead to conflicts with the elected state government.
- There have been cases such as Tamil Nadu's where **governors have delayed or withheld assent to bills**, dismissed or dissolved state governments, recommended president's rule, or interfered in the functioning of state universities.
- These actions have been criticized as arbitrary, partisan, or unconstitutional by the state governments or the opposition parties.
- **The Accountability and Immunity of Governors:** Although the governor is **supposed to be the President's analogue** at the state government, the reality is that they have been, and continue to be, the **agents of the Union government**, sent to keep a check on popularly elected state governments.
  - The governor can be **removed from office at the pleasure** of the Union government.
  - The governor is secure in the knowledge that as long as they do as they are told by the Union government, they will continue to hold their positions. As **heads of state, they are not even answerable to the courts** for their actions while in office (**Art 361**).

#### What were the Constitutional Makers' views on Office of Governor?

- Some members of the Constituent Assembly, such as Dakshayani Velayudhan, Biswanath Das and H V Kamath, were highly critical of the provisions relating to governors.
  - They argued that the draft constitution was a replica of the **Government of India Act, 1935**, which gave too much power to the Centre and undermined the autonomy of the states.
  - They also feared that the governors would act as agents of the Centre and interfere with the state governments.
- On the other hand, **B R Ambedkar**, the chief architect of the constitution, defended the existing provisions relating to governors.
  - He said that there was very little time to make changes to the **Government of India Act, 1935**, and that the governors were only supposed to work with and not overrule the state governments.
  - He did not address the possibility of a governor simply doing what the Centre wishes, as other members pointed out.
  - He also did not explain why the provisions relating to the governor were retained as they were, while other provisions of the Government of India Act, 1935, were modified where needed.

#### Should the Office of Governor be abolished?

- The immediate response to such conduct by governors is often to advocate for the abolition of the institution altogether.
- However, **this approach is both imprudent and unnecessary**.
  - Imprudent because **Westminster parliamentary democracy** necessitates the presence of a head of state and head of government, and eliminating the governor would entail dismantling the entire system.
  - Unnecessary because there are **viable alternatives**, such as judicial intervention or constitutional reform.

#### What Reform Measures can be taken?

- **Judicial Intervention:** The Supreme Court can continue to monitor the conduct of the governors and issue directions or observations to ensure that they act in accordance with the Constitution and the law.
  - This can help to prevent arbitrary or partisan actions by the governors and uphold the federal principle of Indian polity.
- **Reform the Current Appointment and Removal Process:** The Constitution can be amended to change the process of appointment and removal of the governors, as suggested by the authors of "Heads Held High".
  - This can involve a **more transparent and consultative mechanism, such as a collegium or a parliamentary committee**, that can select the candidates based on merit and suitability.
  - The removal of the governors **can also be made more difficult by requiring a resolution of the state legislature** or a judicial inquiry.
- **Grant him/her a President-like status:** Make the governor accountable to the state legislature in the same manner that the president is accountable to the Union Parliament — through election and impeachment.
  - **Make him/her an Elected Representative:** The governor **can be made an elected representative of the state**, rather than a nominee of the Union government.
    - This can enhance the accountability and legitimacy of the office and reduce the scope for interference or influence by the Centre.
    - The election of the governor can be done by the state legislature or by the people of the state, as in the case of the president.
  - **Make him/her Impeachable:** The governor can be made impeachable by the state legislature on

the grounds of violation of the Constitution or misconduct.

- This can provide a check and balance on the power and authority of the governor and deter any abuse or misuse of the office.
- The **impeachment process can be similar to that of the president**, requiring a majority of the total membership and a two-thirds majority of the members present and voting in both houses of the state legislature.

### **What are the Constitutional Reforms suggested by Various Committees and Supreme Court?**

#### ➤ **The Sarkaria Commission (1988):**

- The governor should be appointed by the president **after consultation with the Chief Minister** of the concerned state.
- The governor should be a **person of eminence in some field of public life and not belong to the state** where he is appointed.
- The governor **should not be removed before the completion of his term** except in rare and compelling circumstances.
- The governor **should act as a bridge between the centre and the state** and not as an agent of the centre.
- The governor should **exercise his discretionary powers sparingly and judiciously** and not use them to undermine the democratic process.

#### ➤ **Venkatachaliah Commission (2002):**

- The **appointment of Governors should be entrusted to a committee** comprising the prime minister, the home minister, the speaker of the Lok Sabha and the chief minister of the concerned state.
- The governors **should be allowed to complete their five-year term**, unless they resign or are removed by the President on the ground of proven misbehaviour or incapacity.
- The central government **should consult the Chief Minister** before taking any action to remove the governor.
- The Governor should not interfere in the day-to-day administration of the state. He should **act as a friend, philosopher and guide to the state government** and use his discretionary powers sparingly.

#### ➤ **Punchhi Commission (2010):**

- The Commission recommended deleting the phrase **"during the pleasure of the President"** from the Constitution, which implies that a governor can be removed at the will of the central government.

- Instead, the commission suggested that a **governor should be removed only by a resolution of the state legislature**, which would ensure more stability and autonomy for the states.

#### ➤ **BP Singhal vs Union of India (2010):**

- The Supreme Court held that the **President can remove a Governor at any time** and without assigning any reason. This is because the Governor holds office **"during the pleasure of the President"** under Article 156(1) of the Constitution of India. However, the Court also held that the **removal cannot be based on arbitrary, capricious or unreasonable grounds**.

### **Conclusion**

The discussion on the role of Governors in India underscores the need for nuanced reforms. While outright abolition is deemed imprudent, proposals for transparent appointments, increased accountability, and limited discretionary powers have been put forth. **Striking a balance between state and central interests is crucial** for ensuring the effective functioning of the Governor's office without undermining democratic principles.



## **Domicile Reservations: Challenges and Alternatives**

*This editorial is based on "Parochial law: On Haryana's 75% quota to locals in private sector" which was published in The Hindu on 22/11/2023. It criticises the Haryana State Employment of Local Candidates Act, 2020, which mandates 75% reservation for local candidates in private sector jobs.*

**Tag:** Indian Polity, GS Paper - 2, Indian Constitution, Fundamental Rights

The Punjab and Haryana High Court has done the right thing by quashing the **Haryana State Employment of Local Candidates Act, 2020** that provides for **75% reservation to State domiciles in the private sector in jobs**. The court stated that it was beyond the purview of the State to legislate on the issue and restrict private employers from recruiting people from the open market.

The court said that by allotting 75% reservation for "locals", the **Act militates against the rights of citizens of the rest of the country**, and that such acts could lead to other States coming up with similar enactments, in effect putting up "artificial walls" throughout India.

### **What was the Law and Why it was Challenged?**

- **The Law:** The Bill passed by the Haryana Assembly in November 2020 **reserved 75% of jobs in the private sector that offered a monthly salary of less than Rs 30,000** (originally Rs 50,000) for residents of Haryana.
  - The Bill received the Governor's assent on March 2, 2021, and came into effect on January 15, 2022.
  - All companies, societies, trusts, limited liability partnership firms, partnership firms, and large individual employers were covered under the Act. Any person employing 10 or more people on salary, wages, or other remuneration for manufacturing or providing any service, as well as any entity that may be notified by the government, were included.
- **The Challenge:** The Faridabad Industries Association and other Haryana-based associations went to court, contending that Haryana wanted to create reservations in the private sector by introducing a **policy of "sons of the soil", which was an infringement of the constitutional rights** of employers.
  - The petitioners argued that **private sector jobs are purely based on skills and an analytical bent of mind**, and employees have a fundamental right to work in any part of India.
  - They also argued, "The act of the government forcing the employers to employ local candidates in the private sector is the **violation of the federal structure framed by the Constitution** of India, whereby the government cannot act contrary to public interest and cannot benefit one class".
- **The Government's Response:** The Haryana government argued that it had the **power to create such reservations under Article 16(4) of the Constitution**, which says that the right to equality in public employment does not prevent the State from "making any provision for the reservation of appointments or posts in favour of any backward class of citizens which, in the opinion of the State, is not adequately represented in the services under the State".

### **Is Haryana the Only One to Implement such a Law?**

Haryana is not the first state to adopt a nativist stance to address the unemployment crisis. States such as Maharashtra (up to 80% reservation), Karnataka (75%), Andhra Pradesh (75%) and Madhya Pradesh (70%) have similar laws for local residents and most of these have been challenged in courts.

### **Can the Governments discriminate on the basis of Domicile?**

- On one hand the **Art 16(2) of the Constitution** says, "No citizen shall, **on grounds only of religion, race, caste, sex, descent, place of birth, residence or any of them, be ineligible for, or discriminated** against in respect of, any employment or office under the State."
  - On the other hand the **clause 4 of the same article says that nothing in this article shall prevent the State** from making any provision for the reservation of appointments or posts in favour of any backward class of citizens which, in the opinion of the State, is not adequately represented in the services under the State.
  - But these provisions are applicable in government jobs.
- **Art 19(1)(g)** provides all citizens the **right to practise any profession**, or to carry on any occupation, trade or business.
  - Thus imposing such limitations by State Governments infringe upon an individual's constitutional right to engage in their chosen profession, trade, or business, as stated in **Article 19(1)(g)**.
- Furthermore, the High Court in its decision stated that "The concept of **constitutional morality** has **been openly violated** by introducing a secondary status to a set of citizens not belonging to the state of Haryana and curtailing their fundamental rights to earn their livelihood."
  - The Andhra Pradesh High Court observed that the Andhra Pradesh's Bill for providing reservation on the basis of domicile, passed in 2019, "may be unconstitutional", but it is yet to hear the case on merits.

### **What are the Arguments in favor of States' laws providing Reservation on the basis of Domicile?**

- It is a way of **ensuring that the local people of a state get adequate representation** and opportunities in the public and private sectors. This can **encourage employment opportunities for local candidates** in the state and to secure their livelihoods.
  - Haryana has the **fourth highest rate of unemployment** (9% as per **Periodic Labour Force Survey**, 2021-22) in the country.
    - It is higher than the national average (4.1%) and that of its neighbouring states of Uttar Pradesh, Himachal Pradesh, Rajasthan and Punjab.

- It can also be seen as a **measure of affirmative action for the disadvantaged sections of the society** who may face discrimination or lack of access to education and employment in other states.
  - By providing reservation for the natives, the state governments **can empower them and enhance** their social and economic status.
- It can also be justified on the grounds of preserving the cultural and linguistic identity of the local people. **By giving preference to the natives, the state governments can protect their interests** and promote their culture and language.
  - This can also **foster a sense of belonging and loyalty** among the local people towards their state.

### ***What are the Arguments against such Laws?***

- These laws may **violate the fundamental rights** of citizens to move freely and work anywhere in India, as guaranteed by **Article 19(1)(d) and (e)** of the Constitution.
  - **Labour migrates as per demand and wages** and industry seeks to hire the best talent irrespective of their domicile status.
  - Migrant labour has contributed to building and sustaining the economies of industrialised states such as Haryana, Maharashtra and Andhra Pradesh.
  - In fact, that is how successful economies manage the world over.
- These laws **may strangle the private sector, which depends on the availability of skilled, qualified and efficient workforce**, by imposing arbitrary and unreasonable restrictions on their hiring and recruitment policies.
  - They **may discourage investment and development in the state**, as the private sector may prefer to relocate or expand in other states that offer more favourable and flexible conditions for doing business.
- These laws are an **intrusion into the freedom and autonomy of private employers** to recruit based on their requirements and suitability for the job, which affects their right to carry out business and trade under Article 19(1)(g) of the Constitution .
- These laws are **counterproductive and detrimental to the economic growth and competitiveness of the state**, as they hinder the access to a diverse and skilled workforce from different parts of the country, which is essential for the operations and innovation of various sectors .

- These laws are **not a feasible or effective solution to address the problem of unemployment** among local youth, as they **do not address the root causes** of the issue, such as lack of education, training, and opportunities, and instead infringes upon the rights of others .
- These laws are a **populist and protectionist measure that could trigger a backlash from other states** and lead to **balkanisation of the labour market**, which is opposed to the vision of having an integrated and mobile labour market in the country to achieve the objective of 'One nation, One market'.

### ***What could be the Alternative to Such Laws?***

- **Adopt pro-market policies** that create a conducive environment for the private sector to grow and flourish, by reducing the regulatory and bureaucratic hurdles, providing incentives and subsidies, ensuring fair competition and transparency, etc.
- **Focus on human development** that enhances the skills, education and employability of the local candidates, by investing in quality education, vocational training, skill development, entrepreneurship, etc.
- **Provide stimulus packages** that provide financial and social support to the local candidates, who are affected by unemployment, by offering schemes such as unemployment allowance, job guarantee, **social security**, etc.
- **Provide incentives and subsidies** to private sector entities that employ local candidates, instead of imposing a mandatory quota. This could encourage voluntary compliance and reduce the burden on employers.
- **Promote the development of local industries** and sectors that have a high demand for local candidates, instead of restricting the employment of non-local candidates. This could create more job opportunities and economic growth for the state and its people.

### ***Conclusion***

The debate on state-imposed domicile reservations in private employment in India involves balancing local interests and constitutional freedoms. Proponents emphasize representation and cultural preservation, while critics highlight constitutional concerns and economic drawbacks. Exploring alternatives like pro-market policies and targeted incentives is crucial for a constructive path forward, as the resolution will shape the trajectory of employment policies.



## Rethinking India's Approach to China: Strategic Considerations

*This editorial is based on “India should not talk to China — even if Biden talks to Xi” which was published in The Indian Express on 22/11/2023. It talks about the recent development in QUAD partner's engagement with China and calls for a reassessment of its approach to engaging with China.*

**Tag:** International Relations, GS Paper-2, India and its Neighbourhood, Important International Institutions, Groupings & Agreements Involving India and/or Affecting India's Interests, International Treaties & Agreements, Effect of Policies and Politics of Countries on India's Interest.

In recent weeks, India's **QUAD** partners—Australia, Japan, and the US—have rekindled

high-level political interactions with China. However, India is unwilling to resume political and economic discussions with China until the Ladakh military standoff, which started in spring 2020, is satisfactorily resolved.

This has reignited discussions on whether India should reassess its existing approach to engaging China in order to address a range of complex disputes.

### What are the Key

### Disputes between India- China Relations?

#### ➤ Border Disputes:

##### ○ Western Sector (Ladakh):

- The Johnson Line proposed by the British placed **Aksai Chin** in the princely state of Jammu and Kashmir.
- China rejected the Johnson Line and favored the **McDonald Line**, asserting control over Aksai Chin.
- Though Aksai Chin is administered by China, India's official position on the issue is that, by virtue of it being a part of Jammu and Kashmir (Ladakh), the region remains an integral part of India.

##### ○ Middle Sector (Himachal Pradesh and Uttarakhand):

- The Middle Sector has a relatively minor dispute, with India and China exchanging maps where they broadly agree on the LAC.

##### ○ Eastern Sector (Arunachal Pradesh and Sikkim):

- China considers the **McMahon Line** illegal and unacceptable claiming that Tibetan

representatives who had signed the 1914 Convention held in Shimla which delineated the McMahon Line on the map did not have the right to do so.

#### ➤ Border Incursions:

- The border between India and China is not clearly demarcated throughout and there is no mutually agreed **Line of Actual Control (LAC)** along certain stretches.
- Border confrontations have occurred in different instances, including **Demchok** in 2014, **Depsang** in 2015, **Doklam** in 2017, and the **Galwan** incident in 2020.

#### ➤ Water Sharing:

- China's advantageous geographical positioning creates an asymmetry that allows it to capitalize on the reliance of downstream nations, such as India, on hydrological data.
- There are concerns over China's dam-building activities on transboundary rivers, including the Brahmaputra, which have led to tensions over water-sharing issues.

#### ➤ Tibet Issue:

- India hosts the Tibetan government-in-exile and spiritual leader the Dalai Lama, which has been a point of contention with China.
- China accuses India of supporting Tibetan separatism, while India maintains that it respects the “**One China**” policy but allows the Tibetan community to reside in India.

#### ➤ Trade Imbalance:

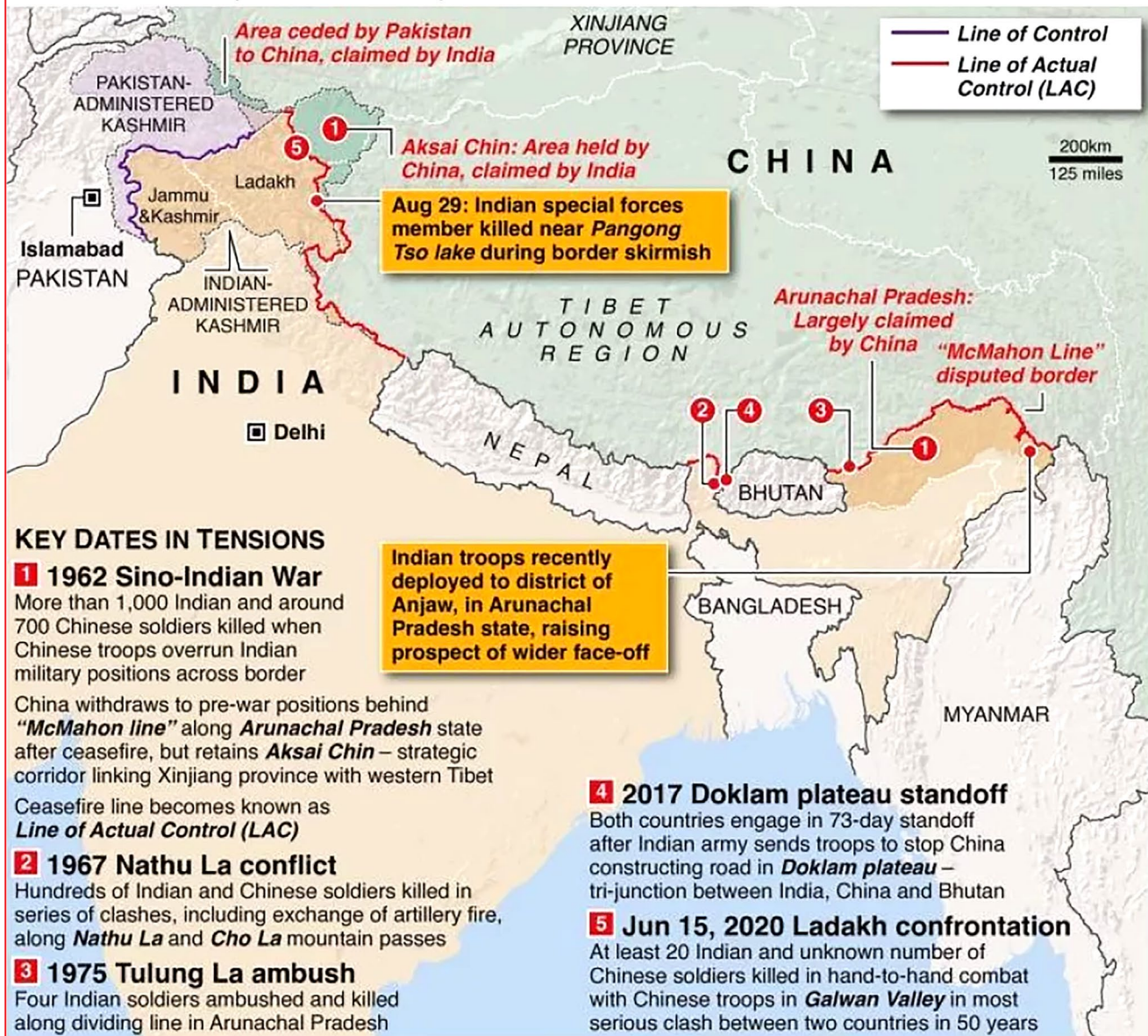
- India's trade deficit with China reached the historically high level of **USD 87 billion** in 2022.
- Complex regulatory requirements, intellectual property rights violations, and a lack of transparency in business dealings present challenges for Indian businesses seeking access to the Chinese market.

#### ➤ Concerns over Belt and Road Initiative (BRI):

- India's main objection to the BRI is that it includes the **China-Pakistan Economic Corridor (CPEC)**, which passes through the Pakistan-occupied Kashmir (PoK), a territory that India claims as its own.
- India also argues that the BRI projects should respect the international norms, rule of law, and financial sustainability, and should not create debt traps or environmental and social risks for the host countries.

# India and China face off again at border

Indian and Chinese troops have clashed again along their disputed border, in a sign that the deadly tensions that erupted in June between the nuclear-armed rivals remain



## What are the Geopolitics Behind China's Assertion?

### ➤ China's Salami Slicing Strategy:

- In military terms, Salami Slicing refers to a **divide-and-conquer strategy involving incremental threats and alliances** to overcome opposition and acquire new territories.
- In the case of China, Salami Slicing is evident in its approach to territorial expansion in both the South China Sea and the Himalayan regions, with the Doklam standoff often seen as a manifestation of China's salami-slicing tactics in the Himalayas.

### ➤ Chinese Debt Trap Diplomacy:

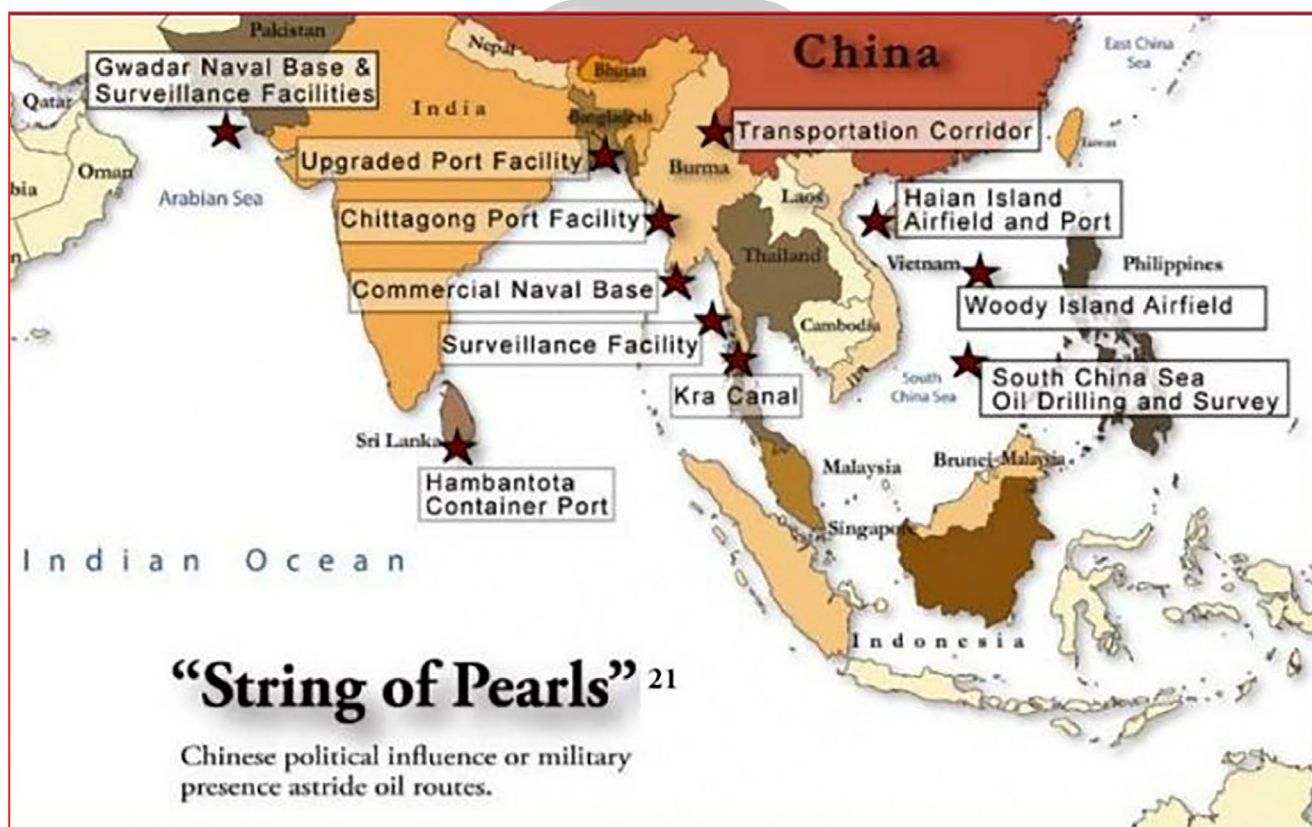
- **China's debt trap diplomacy** refers to a strategy in which China extends loans to developing countries, often for infrastructure projects, with the intention of creating economic dependence
- As a result, China may gain strategic leverage or control over key assets if the debtor is unable to fulfill its financial obligations. Critics argue that this approach allows China to expand its influence globally by exploiting the economic vulnerabilities of borrowing nations.
- **China's Five Fingers of Tibet Strategy:**
  - The "Five Fingers of Tibet" is a term used to describe China's territorial claims and strategic approach in relation to Tibet.

- The metaphorical term describes **Tibet** as the palm, with China aspiring to control or influence the five surrounding regions, referred to as fingers.
- The metaphorical “**fingers**” represent the following areas:
  - **Ladakh:** Gaining control over Ladakh would provide China with unimpeded access to Pakistan.
  - **Nepal:** Exerting influence over Nepal would grant China strategic access to the heartland of India.
  - **Sikkim:** Asserting control over Sikkim would offer China a tactical advantage in severing India’s “Chicken Neck” (Siliguri Corridor), effectively isolating the northeastern states from the Indian mainland.
  - **Bhutan:** Gaining control over Bhutan would bring China in proximity to Bangladesh, providing a potential route to the Bay of Bengal and enhancing China’s regional influence.

- **Arunachal Pradesh:** Securing control over Arunachal Pradesh would enable China to dominate the entire northeastern region of India, extending its military reach and strategic influence in the area.

➤ **Strategic Encirclement of India by China’s “String of Pearls”:**

- China’s “**String of Pearls**” refers to a geopolitical and strategic initiative that involves building a network of Chinese-funded, owned, or controlled ports and other maritime infrastructure facilities in strategic locations across the Indian Ocean.
- Some of the notable locations associated with China’s String of Pearls include Gwadar Port in Pakistan, Hambantota Port in Sri Lanka, Chittagong Port in Bangladesh, and Djibouti in the Horn of Africa.



**How is India Responding to China's Aggressive Measures?**

➤ **Global Strategic Alliances:**

- India actively engages with like-minded nations to collectively address China’s influence in the Indian Ocean Region
- **QUAD:** It is the grouping of four democracies—**India, Australia, the US, and Japan**. All four nations find a common ground of being democratic nations and

also support the common interest of unhindered maritime trade and security.

- **I2U2:** It is a new grouping of India, Israel, the USA, and the UAE. Forming alliances with these countries strengthens India’s geopolitical standing in the region.

➤ **India-Middle East-Europe Economic Corridor (IMEC):**

- Launched as an alternative trade and connectivity corridor, IMEC aims to strengthen India’s presence in the Arabian Sea and the Middle East.

- Funded by the **Partnership for Global Infrastructure Investment (PGII)**, it serves as a counter-initiative to **China's Belt and Road Initiative (BRI)** with the support of **G7** nations.
- **International North-South Transport Corridor (INSTC):**
  - INSTC, established through an agreement between India, Iran, and Russia, creates a comprehensive 7,200-km multi-mode transportation network connecting the Indian Ocean, Persian Gulf, and Caspian Sea.
  - The key node, **Chahbahar Port** in Iran, strategically monitors China's activities in the Arabian Sea and the Strait of Hormuz, providing an alternative to the **China-Pakistan Economic Corridor's (CPEC)** Gwadar port.
- **Indian Ocean Rim Association (IORA) :**
  - It is an intergovernmental organization established to promote economic cooperation and regional integration among countries bordering the **Indian Ocean**.
  - IORA member states work on various initiatives related to trade, investment, and sustainable development in the Indian Ocean region (IOR).
- **India's Necklace of Diamonds Strategy:**
  - In response to China's String of Pearls strategy, India adopted the **Necklace of Diamonds strategy**, emphasizing the encirclement of China by enhancing its naval presence, expanding military bases, and strengthening diplomatic ties with regional nations.
    - This strategy aims to counter China's military network and influence in the Indo-Pacific and Indian Ocean regions.



### ***How Shifting International Politics is Affecting India-China Relations?***

- **USA:**
  - India has signed four foundational agreements as **General Security of Military Information Agreement (GSOMIA)**, **Logistics Support Agreement (LSA)**,

**Communications Interoperability and Security Memorandum of Agreement (CISMOA)**, and **Basic Exchange and Cooperation Agreement for Geo-spatial Cooperation (BECA)** with USA that cover areas of military information, logistics exchange, compatibility.

- By virtue of these agreements, India and the USA may collaborate and jointly counter Chinese strategies.
- **Japan:**
  - India, in collaboration with Japan and Australia, has initiated the Supply Chain Resilience Initiative to reduce reliance on China.
- **QUAD:**
  - In the global power dynamics, India is actively engaging through QUAD to counter Chinese unilateralism, while China collaborates with Russia, Pakistan, Iran, and Turkey to challenge the US-led liberal world order.
  - Recently India's Quad Partners Australia, Japan, and the US engaged in renewed high-level political discussions with China.
- **Himalayan QUAD:**
  - This project involves China, Nepal, Pakistan, and Afghanistan as a counterweight to the QUAD.
- **Pakistan:**
  - Pakistan signed a memorandum in 2013, a landmark agreement for long-term planning and development of CPEC, the BRI's flagship project.
  - To China, Pakistan serves not only as a client state but also as a significant tool to restrain India.
- **Sri Lanka:**
  - Sri Lanka has also received massive funding under the BRI. Sri Lanka provides China with various naval capabilities to function in the Indian Ocean.
  - China has acquired the strategic **Hambantota Port** from Sri Lanka bolstering Beijing's String of Pearls
  - The Colombo port city being built by China is being termed a 'Chinese Colony' by strategic experts in India and Sri Lanka.
- **Bangladesh:**
  - Bangladesh joined the BRI in 2016, and bilateral relations with China have been growing since, much to India's dismay.
  - Bangladesh is being aided by China, but India–Bangladesh's cultural and geographical proximity will dominate. India and Bangladesh have mutual issues and interests that can be used by India to strengthen relations at any point.
- **Nepal:**
  - Nepal joined the BRI agreement with China in 2017.
  - China aims to build political links, but India's influence remains strong due to its dominant cultural influence.
- **Maldives:**

- Under President Yameen's leadership, there was a notable pivot toward China marked by substantial Chinese investments. Despite the election of Mohammad Muizzu as president, a trend of increasingly anti-India positions is becoming evident.
- The India-Maldives relationship suffered a setback when Maldives entered into a **Free-Trade Agreement (FTA)** with China in 2017.
- India has provided renewed economic assistance, undertaken infrastructure projects, and expanded defense cooperation to strengthen its influence in the region.
- **Bhutan:**
  - Bhutan declines BRI partnership, fostering strong political and economic relations with India.
  - India aids Bhutan in hydropower projects and proposes regional initiatives.
- **Afghanistan:**
  - Following the Taliban takeover in Afghanistan, the Taliban has referred to China as the "most crucial partner" in the nation's reconstruction endeavors.

### ***What Should be the Way Forward?***

- **To secure Peace, Prepare for War:**
  - India needs to prepare for the possibility of conflict with China which involves bolstering India's military capabilities.
  - The Parliamentary Standing Committee on Defence has recommended that allocation for defense should be 3% of GDP to maintain India's deterrent posture.
  - Development of infrastructure along the border, such as roads and bridges, can help both countries access remote areas and reduce the possibility of any misunderstandings or conflicts.
- **Diplomatic Dialogue from a position of Strength:**
  - **Compartmentalization of Issues:** By isolating individual challenges, negotiators can develop solutions tailored to each particular aspect
  - **Address Border Disputes:** Prioritize resolving ongoing border disputes through diplomatic means and negotiations.
  - **Engage in High-Level Talks:** Both countries should engage in high-level diplomatic talks to discuss and resolve existing issues.
    - The Foreign Ministers of India and China signed a '**Five Points**' agreement to reduce the tension on the Ladakh border at Moscow in 2020.
  - **Implement Confidence-Building Measures (CBMs):** Improve communication channels between the military forces of both countries to prevent misunderstandings and accidental escalations.

➤ **Strategic Autonomy in Foreign Affairs:**

- The geopolitical considerations of India's China policy have an independent logic
- India should not be the only QUAD nation or a significant power not engaged in a dialogue with China.
- Rather than expressing apprehension about potential shifts in US-China relations, India should prioritize leveraging current opportunities with the US and the West.
- The strategic focus should seek to hasten India's rise in the global power hierarchy, diminish the strategic gap with China, and strengthen military deterrence.

➤ **Economic Cooperation:**

- **Diversify Imports:** India needs to reduce its dependence on Chinese imports by diversifying its imports from other countries such as Vietnam, South Korea, Japan, Taiwan, and Indonesia.
- **Boost Exports:** India can focus on increasing its exports to China. India should focus on exporting high-value products like engineering goods, electronics, pharmaceuticals, and chemicals.
- **Develop Domestic Industries:** India needs to develop its domestic industries to reduce its reliance on imports. This will not only help reduce the trade imbalance but also create employment opportunities in India.

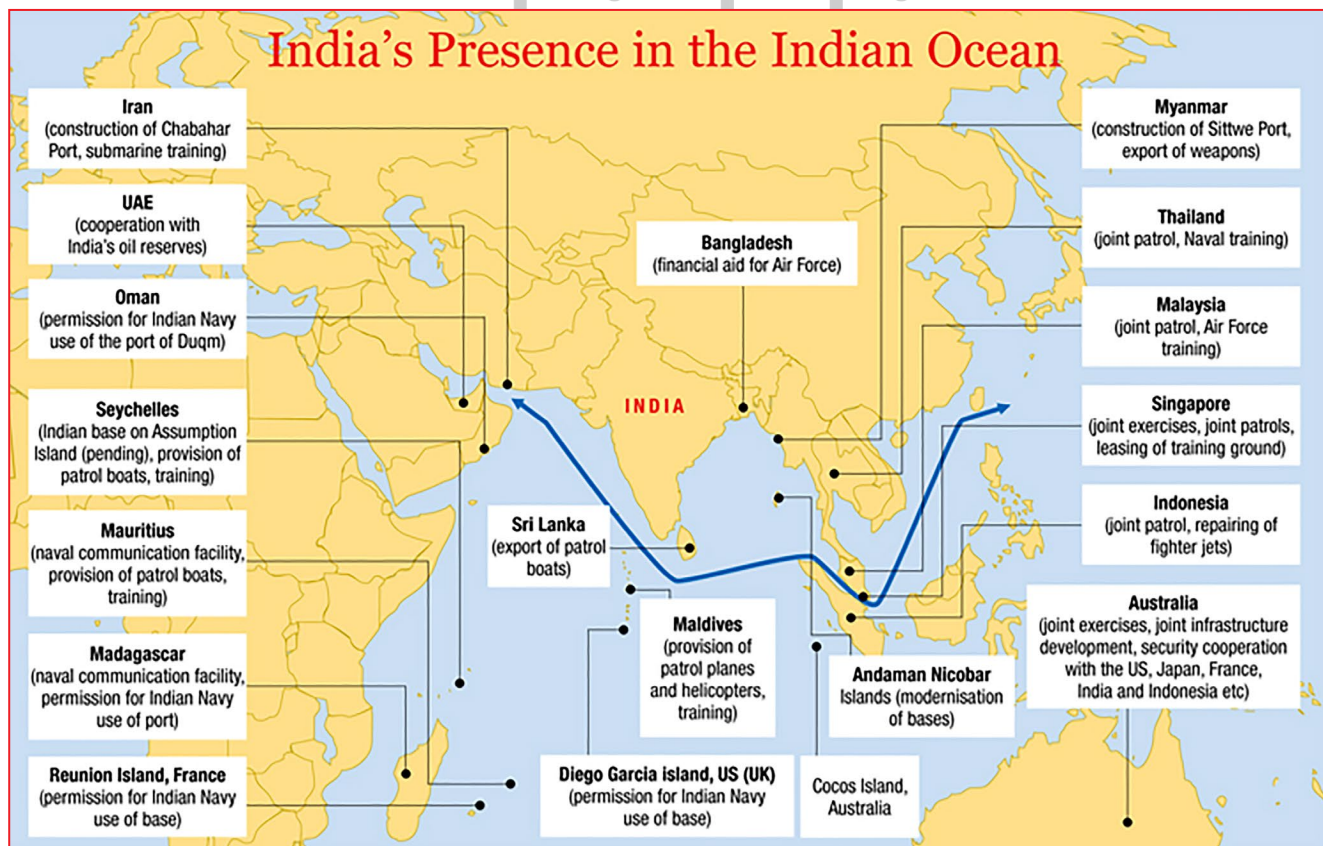
- **Review FTAs:** India should also consider signing an FTA with China to increase exports and reduce the trade deficit.

➤ **Encourage Cultural Exchanges:**

- **Encourage People-to-People Contacts:** Promote cultural exchanges, educational programs, and tourism to enhance understanding between the people of India and China.
- **Promote Track II Dialogues:** Encourage non-governmental exchanges, involving scholars, think tanks, and civil society, to contribute fresh perspectives and ideas.

➤ **Collaborate in International Cooperation:**

- **Collaborate on Global Issues:** Work together on global challenges such as climate change, public health, and counter-terrorism, showcasing joint leadership on the world stage.
- **Joining Multilateral Platforms:** Engage in multilateral platforms to address shared concerns and foster cooperation on regional and global issues.
- **High Tech is the new Foreign Policy:**
  - **Joint Research and Innovation:** Encourage collaboration in technology, research, and innovation to benefit both nations economically and technologically.



- **Joint Efforts on Environmental Issues:** Collaborate on environmental initiatives, such as addressing air pollution and water management, to highlight shared interests.
- **Emerge as a Net Security provider in the Indo-Pacific Region:**
  - **Maritime Security:** India should participate in efforts to ensure the safety and freedom of navigation in critical sea lanes, contributing to the overall security architecture in the Indo-Pacific.
  - **Humanitarian Assistance:** India should keep its commitment to regional security by actively participating in humanitarian assistance and disaster relief operations.

### Conclusion:

Assessing changes in great power dynamics and formulating responses constitute a fundamental aspect of any nation's foreign policy. For India, the key focus should be on capitalizing on emerging opportunities to enhance its alliances with the US and adeptly navigate complex relations with China. India's ascension in the international system positions it well to effectively manage any abrupt shifts in great power relations.



## Quantum Computing and AI in Symbiotic Harmony

*This editorial is based on "When AI meets Quantum Computing" which was published in The Hindu Business Line on 22/11/2023. It discusses the potential applications and challenges of combining artificial intelligence (AI) and quantum computing, two of the most promising technologies of the 21<sup>st</sup> century.*

**Tag:** Science & Technology, GS Paper - 3, IT & Computers

**Quantum Computing (QC)** and **Artificial Intelligence (AI)** are two of the most transformative technologies in our era, pushing the boundaries of computation and cognition. Although they may seem to follow separate paths at first, **QC redefines the limits of speed and parallelism while AI reshapes our understanding of intelligence and automation.** However, when these paths intersect, the potential outcomes become extraordinary and formidable.

The **convergence of Quantum Computing and Artificial Intelligence** amplifies the strengths of each, offering a symbiotic relationship that transcends the limitations of traditional computing.

### What is Quantum Computing?

- Quantum computing is a **process that uses the laws of quantum mechanics to solve problems too large or complex** for traditional computers. Quantum computers rely on **qubits** to run and solve multidimensional quantum algorithms.
  - A qubit is a **basic unit of quantum information** that can be in a coherent superposition of both states.
    - Qubits are the **quantum analog of classical bits**, which can only be either 0 or 1 but unlike a normal bit, which can only be 0 or 1, a **qubit can also be in a state where it is both at the same time.**
    - Qubits can be implemented using various physical systems, such as trapped ions, photons, or superconducting circuits.
- Quantum computers can **perform some calculations exponentially faster than any modern "classical" computer**, by taking advantage of quantum phenomena such as **superposition** and **entanglement**.
  - In particular, a large-scale quantum computer could break widely used encryption schemes and aid physicists in performing physical simulations.

### How might Quantum-AI

#### Convergence Reshape Technology and Society?

- **Quantum Networking:** Leveraging quantum teleportation for transferring quantum states without the physical transfer of individual particles, redefining secure communication and potentially paving the way for a 'quantum internet.'
- **Increased Computational Power:** Quantum computers have the potential to solve certain types of problems much faster than classical computers. When integrated with AI algorithms, this enhanced computational power could lead to breakthroughs in complex problem-solving, optimization, and machine learning tasks.
  - In 2019, **Google's Sycamore quantum processor** achieved '**quantum supremacy**', solving complex problems in about 200 seconds that would take classical supercomputers millennia.
- **Improved Optimization Algorithms:** Quantum algorithms excel at solving optimization problems. By combining quantum computing with AI, **industries such as logistics, finance, and manufacturing could benefit from more efficient resource allocation, supply chain management, and financial modeling.**
- **Enhanced Cryptography and Security:** Quantum algorithms like Shor's have the potential to break widely used encryption methods. While this poses a

threat to existing security systems, it also opens the door for the development of new, quantum-resistant encryption techniques. The **intersection of quantum computing and AI could be instrumental in creating advanced cryptographic methods** that are secure against both classical and quantum threats.

- **Energy Optimization:** Quantum-AI convergence may lead to improved energy efficiency in various applications. By optimizing algorithms and processes through quantum computing, energy consumption in data centers and other computing-intensive operations could be reduced.
- **Advancements in Climate Modeling:** Quantum computing can enhance the accuracy and speed of climate modeling simulations. This could contribute to better understanding and addressing climate change-related challenges by providing more precise predictions and insights.
- **Scientific Discovery:** Quantum-AI convergence has the **potential to accelerate scientific discovery by handling and analyzing large datasets more efficiently**. This could lead to breakthroughs in fields such as physics, chemistry, and biology.
- **Drug Discovery and Healthcare:** Combining AI's pattern recognition with quantum computing's simulation abilities for advancements in drug discovery and personalised medicine.
- **Climate Modelling:** Quantum-enhanced AI may lead to more accurate climate models, offering improved solutions to the climate crisis.

### ***What Potential does Quantum Computing have to Address Data related Challenges of Quantum-AI Convergence?***

- **Data Quantity and Quality:**
  - **Challenge:** Quantum-AI convergence requires substantial datasets to train models effectively. **Obtaining large, high-quality datasets remains a challenge**, especially for quantum applications in areas like chemistry, material science, and drug discovery.
  - **Quantum Potential:** Quantum algorithms **can enhance data processing efficiency**, but leveraging their full potential depends on the availability of sizable, well-curated datasets.
- **High-Dimensional Data Processing:**
  - **Challenge:** **Machine Learning (ML)** often **deals with high-dimensional data**, demanding exponential increases in computational resources for classical computing. Quantum solutions are theorized to handle high-dimensional vectors more efficiently

through the principles of quantum entanglement and superposition.

- **Quantum Potential:** Quantum Machine Learning (QML) and algorithms **can process high-dimensional data more efficiently**, offering advantages in tasks like pattern recognition and dataset classification.
- **Algorithmic Practicality:**
  - **Challenge:** Quantum versions of ML algorithms, such as **Quantum Support Vector Machines**, **show promise in theory but face practical implementation challenges** due to current limitations in quantum hardware.
  - **Quantum Potential:** Quantum algorithms, when practical, could significantly **enhance tasks like neural network training**, system optimization, and real-time analytics.
- **Optimization Problems:**
  - **Challenge:** Classical optimization problems in AI and ML, such as escaping local minima, can be time-consuming.
  - **Quantum Potential:** Quantum annealing **actively addresses optimization problems by leveraging quantum tunnelling**, showcasing real-world applications like real-time route optimization.
- **Exploration of Quantum Neural Networks (QNNs):**
  - **Challenge:** Transitioning from classical neural networks to QNNs remains theoretical, with practical implementations yet to be realized.
  - **Quantum Potential:** QNNs have the potential to surpass classical neural networks in capabilities, offering improved performance in tasks like decision-making and pattern recognition.

### ***What could be the Ethical Considerations of Quantum-AI Convergence?***

- **Misinformation and Biased Decision-Making:** The integration of Quantum Computing and AI introduces the risk of misinformation and biased decision-making. AI algorithms, when powered by quantum capabilities, may inadvertently amplify biases present in training data, leading to unfair outcomes.
- **Privacy Infringement:** The combination of Quantum Computing and AI can potentially lead to more sophisticated and intrusive data analysis. There is a need for robust privacy protection measures to prevent unauthorized access to sensitive information.
- **Autonomous Weaponry:** The prospect of combining quantum capabilities with AI raises concerns about the development of autonomous weaponry. Ethical considerations must guide the responsible use of these technologies to prevent the creation of weapons that could act independently and make life-or-death decisions.

- **Unforeseen Societal Repercussions:** The convergence of Quantum Computing and AI may have unforeseen societal repercussions. The rapid advancement of these technologies could lead to disruptions in various sectors, affecting employment, economic structures, and social dynamics.
- **Technical Challenges and Security Implications:** The current state of quantum computing faces significant technical challenges, such as decoherence and error-correction. Ethical considerations extend to the potential security implications of these challenges.

### ***What can be Done to Overcome the Challenges?***

- **Quantum-Resistant Encryption:**
  - Quantum computers have the potential to break currently used encryption methods, such as Rivest–Shamir–Adleman (RSA) and Elliptic curve cryptography (ECC), through algorithms like Shor’s algorithm.
  - Developing quantum-resistant encryption methods is crucial to maintaining the security and privacy of sensitive data in a future where quantum computers become more prevalent.
- **Ethical Guidelines and International Regulations for Autonomous Systems:**
  - The development and deployment of autonomous systems, including AI, require **clear ethical guidelines and international regulations** to prevent unintended consequences and ethical breaches.
  - These guidelines should address issues like bias, transparency, accountability, and the potential impact on employment.
- **Ethical Frameworks for Converging Technologies:**
  - As various technologies, such as quantum computing and AI, converge, it is **important to establish ethical frameworks** to anticipate and mitigate potential negative impacts.
  - **Equitable distribution of benefits across society** should be a central consideration to avoid exacerbating existing societal inequalities.
- **Transparent Communication and Collaboration in Quantum-Powered AI:**
  - Quantum-powered AI systems present unique security risks, and as they advance, **transparent communication and collaboration** are essential.
  - **Sharing information about potential vulnerabilities and collaborating on security measures can help** ensure the responsible development and deployment of quantum-powered AI.

### **Conclusion**

The intersection of quantum computing and artificial intelligence represents more than just a technological advancement; it marks a profound leap forward. This convergence fundamentally alters the landscape of computation, scientific exploration, and ethical governance. The interdependence between these fields holds the promise to redefine our digital future, providing answers to challenges that were once considered insurmountable.



## **India's Economic Surge: Analysing the Robust Growth in FY24**

*This editorial is based on “How India can sustain its economic momentum in an uncertain world” which was published in The Indian Express on 24/11/2023. It discusses the factors that have contributed to a sustained growth this year and what are the areas of concerns that India need to be cautious of.*

**Tag:** Indian Economy, GS Paper - 3, Growth & Development, GS Paper - 2, Government Policies & Interventions.

From a macroeconomic perspective, the month of November 2023 has so far been rather cheerful, and may well end on a positive note when the **Gross Domestic Product (GDP)** numbers for India are released for the second quarter.

The **Indian economy** is seen to have maintained its growth momentum in the second quarter of Financial Year 2023-24 (Q2 FY24) and is estimated to have grown about 7% with robust factory expansion and higher consumption.

### ***How has the Indian Economy Grown in the Fiscal Year 2024?***

- India’s GDP **grew by 7.8%** in the first quarter of the 2023-2024 fiscal year.
- The growth **estimates for the second quarter can touch the 7% mark** because of the factors such as **e-way bills, Goods and Services Tax (GST) collections, credit growth, electricity consumption**, and other mobility indicators suggest that healthy private consumption and factory output, robust services activity, and front-loading of government **capital expenditure** (Official estimates will be released by the end of November 2023).

- The central government has **spent around 49% of its FY24 budgeted capex** in the first half of the year, which is 43% higher than the expenditure in the same period in 2022.

### ***What are the Factors that have contributed to the Robust Growth?***

#### ➤ **Geopolitical Factors:**

- In global geopolitics, positive signs have emerged from West Asia, where **Israel and Hamas are reported to have agreed to a short ceasefire**.
- Another positive development has been US and Chinese President holding a summit and discussing various global and bilateral issues including the West Asia situation, Iran, Taiwan, **climate change** and military communication.
  - Despite there being no joint statement or formal cooperation declaration, the **summit still managed to send a positive and important signal** that cooperation can bring benefits to a nervous world.

#### ➤ **Economical Factors:**

- **External:**
  - **Inflation Easing:** A positive surprise has come from the recent **inflation** prints in the developed world.
    - The US **Consumer Price Index (CPI)** based inflation stood at 3.2% in October, down from 3.7% in September.
    - Alongside, inflation in the European Union also dropped sharply to 2.9% from 4.3% the month before.
  - **Bond Yield Easing:** **Bond yields** have eased globally and equities have soared as these price readings have raised hopes that the fight against inflation may have finally reached an end.
- **Internal:**
  - **Decline in Inflation:** **Retail inflation** eased by 10 basis points to 4.9% — a four-month low.
    - **Core inflation** eased to 4.2%.
    - The **Wholesale Price Index** declined 0.52% compared to the same period in 2022, marking the seventh consecutive month in negative territory, imparting relief to producers via softer input prices.
  - **Stability in Crude Oil Prices:** Global **crude oil prices have continued to soften** and are seemingly staring at a bear market. The **West**

**Texas Intermediate** is down around 20% from a high in September.

- **Festivals:** The festive season also ended on a positive note. According to the Confederation of All India Traders (CAIT), retail markets in **India saw record trading of Rs 3.75 lakh crore** during this festive season.
  - Add to this an additional trade of Rs 50,000 crore during the remaining festivals and the signals are encouraging.

### ***What are the Factors that India Should Keep a Watch upon?***

- **Oil Prices:** Oil prices **need to be carefully watched with the Organization of the Petroleum Exporting Countries (OPEC) and its allies (OPEC+)** leaders set to review production targets later this month. The grouping will want to defend the prices going forward and they could do that by leveraging their pricing power and making sure that the supply deficit is maintained via extension of supply cuts. Following steps can help India reduce its dependence on the OPEC+.
  - **Diversify the Sources of Oil Imports:** India has increased the number of its crude oil suppliers from 27 countries in 2006-07 to 39 in 2021-22, adding new suppliers like Columbia, Libya, Gabon, Equatorial Guinea etc., while strengthening its relationship with countries like US and Russia.
  - **Accelerate Bio-fuel Economy:** India has been developing its **bio-fuel** economy by increasing the **ethanol blending** in petrol from 1.53% in 2013-14 to 20% by 2025-26.
    - The government has also launched the **National Green Hydrogen Mission** to develop green hydrogen production capacity of at least 5 MMT per annum.
  - **Shift to Renewable Energy Sources:** India has been **promoting the use of natural gas and renewable energy** sources to reduce its oil consumption and carbon footprint.
    - The government has set a **target of increasing the share of natural gas** in the energy mix from 6% to 15% by 2030.
    - The government has also announced its **aim of achieving 500 GW installed capacity** from non-fossil fuel based sources by 2030.
- **External Demand:** The external demand environment still remains very feeble and world trade growth remains at historic lows, with few signs of improvement. In fact, it is projected to decline from 5% in 2022 to 1% in 2023.

- **Boost Domestic Demand:** The government has announced a series of measures to boost the investment climate, such as **easing the Foreign Direct Investment (FDI) norms**, **reducing the corporate tax rate**, and launching a **production-linked incentive scheme** for various sectors.
  - These initiatives can help attract more domestic and foreign investment and create more jobs and income opportunities for the people.
- **Enhance Export Competitiveness:** India can boost export competitiveness through improved quality, **increased productivity**, **diversified export markets**, and **streamlined trade facilitation**. The government has taken steps to improve the **ease of doing business**, simplify the GST regime, implement the **National Logistics Policy**, and **reform the labour laws**.
  - These measures can help reduce the regulatory and logistical barriers for exporters and make them more efficient and competitive in the global market.
- **Pursue Regional and Bilateral Trade Agreements:** India can pursue **regional and bilateral trade agreements with its strategic partners** and potential markets, which can help expand its market access, reduce tariff and non-tariff barriers, and promote trade and investment flows.
  - The government has expressed its interest in joining the **Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)**, which is a mega-regional trade pact among 11 countries.
  - India is also negotiating **free trade agreements** with the European Union, the UK, Australia, and the **Gulf Cooperation Council**.
  - These agreements can help India diversify its trade relations and benefit from the regional value chains.
- **Monetary and Fiscal Policies:** India should align its **monetary** and **fiscal** policies, considering both local and global influences. Experts praise India for effectively coordinating these policies, unlike the US and elsewhere.
  - The **Reserve Bank of India (RBI)** and the finance ministry have adeptly handled global risks and ongoing inflation concerns.
  - The government is progressing towards its 5.9% GDP **fiscal deficit** target and should emphasize its commitment to this goal.

## Conclusion

India's Q2 FY23-24 macroeconomic outlook is optimistic, projecting a 7% GDP growth. Factors include geopolitical stability, favorable economic conditions, and controlled inflation with stable oil prices. Challenges like fluctuating oil prices require strategic measures, such as diversifying sources and prioritizing green initiatives. Domestically, sustaining demand and boosting export competitiveness are key focuses. India demonstrates commitment to global economic stability through effective policy coordination, including monetary and fiscal measures.



## Navigating Climate Change Through Climate-Smart Agriculture

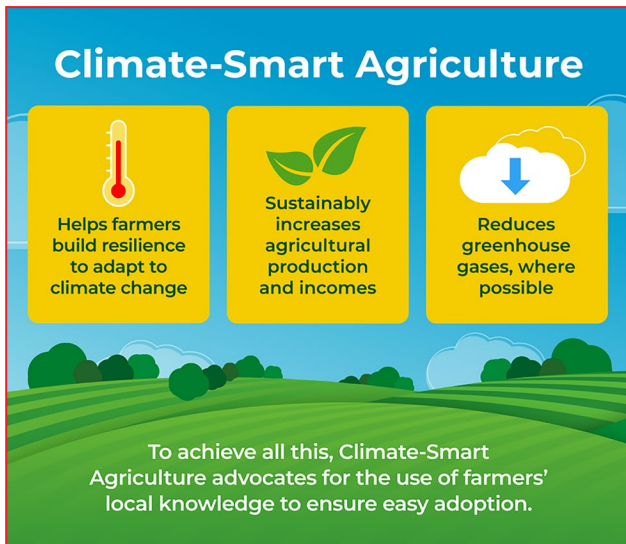
*This editorial is based on "Need for climate-smart agriculture in India" which was published in The Hindu on 25/11/2023. It discusses the challenges of climate change and food insecurity, and how climate-smart agriculture (CSA) can be a viable option to address them.*

**Tag:** Agriculture, GS Paper - 3, Agricultural Resources, Irrigation

The **two most important issues** facing humanity in the 21<sup>st</sup> century are **climate change** and **food insecurity**. Some of the ongoing effects of climate change, such as **heat waves**, **flash floods**, **droughts**, and **cyclones**, are negatively influencing lives and livelihoods.

The world's **southern continents** are reportedly **experiencing severe drought** due to climate change, which negatively impacts agricultural production and farmers' livelihoods. Both **population expansion** and **dietary changes** are contributing to an increase in the demand for food. The effects of the environment on farm output only add to the difficulty.

As a result of climate change, **traditional farming practices** are becoming less productive. **Climate change** is increasing the dangers faced by farmers, prompting them to re-evaluate their practices. Farmers are taking a variety of adaptation measures to reduce the negative effects of climate change. The need for a holistic strategy is driven by climate change's dual challenges of adaptation and mitigation, and the pressing **need for agricultural production to rise by 60% by 2050** in order to fulfill food demand.



### What is Climate-Smart Agriculture?

- **Climate-smart agriculture** is an approach that helps guide actions to transform agri-food systems towards green and climate resilient practices. It supports reaching internationally agreed goals such as the **SDGs** and the **Paris Agreement**.
- It aims to tackle **three main objectives**:
  - Sustainably **increasing agricultural productivity** and incomes
  - Adapting and **building resilience** to climate change
  - **Reducing and/or removing** greenhouse gas emissions
- **Some examples of climate-smart agriculture practices are**:
  - **Cultivating Climate-Resilient Crop Varieties**: Growing crops that are more resistant to temperature and precipitation changes, pests, diseases, and salinity can help farmers cope with the adverse effects of climate change on crop production.
    - For instance, **drought-tolerant maize** varieties have been developed and disseminated in sub-Saharan Africa, benefiting millions of smallholder farmers.
  - **Conservation Agriculture**: No-till and reduced-tillage cultivation, employing crop residues and cover crops to keep the soil covered, and rotating crops to enhance soil fertility and biodiversity are some of the practices that fall under **conservation agriculture**.
    - These practices can **reduce soil erosion, improve water retention, increase carbon sequestration**, and lower greenhouse gas emissions.
  - **Agroforestry**: Integrating trees and shrubs with crops and livestock can create more diverse and productive agricultural systems that provide multiple benefits for farmers and the environment.

- Agroforestry can **enhance soil quality, conserve water, diversify income sources**, provide fuelwood and fodder, and sequester carbon.
- **Precision Irrigation**: Drip irrigation, sprinkler irrigation, and collecting rainwater are all examples of effective climate-smart agriculture strategies that can be used to maximize water use efficiency and reduce negative impacts on the environment.
  - Precision irrigation can also be combined with sensors, drones, and satellite imagery to monitor soil moisture and crop water needs in real time.
- **Variable Rate Fertilization**: Applying the **right amount of fertilizer at the right time and place** can optimize crop yields and minimize nutrient losses and greenhouse gas emissions.
  - Variable rate fertilization can be **achieved by using soil testing, remote sensing, and precision agriculture technologies** to tailor fertilizer application to the specific needs of each crop and field.

### What are the Benefits of Climate Smart Agriculture?

- **Increased Agricultural Productivity**: Production resources are diminishing, and **demand for agricultural products is increasing**; thus, there is a need for resource-efficient farming to cope with climate variability.
  - In India, crop yield decline owing to climate change (between 2010 and 2039) **could be as high as 9%**.
  - CSA substantially contributes to climate adaptation, mitigation, and **food security**.
    - Studies from different climate-smart techniques used in India show that they improve agricultural production, make agriculture sustainable and reliable, and reduce GHG emissions.
    - One study from the **northwest Indo-Gangetic Plain for wheat production shows that site-specific no-tillage is advantageous for fertilizer management and can boost yield**, nutrient usage efficiency, and profitability while lowering GHG emissions.
  - Furthermore, The importance of CSA lies in its ability to increase agricultural output while maintaining ecological stability.
    - This correlation is not only a desired consequence but rather **essential for long-term food security** and sustainable resource usage in a warming planet.
- **GHG Emission Reduction**: The agricultural sector produces a large amount of GHGs. The **sector's share in GHG's emissions in 2018 was 17%**. Therefore, CSA

implementation is crucial for lowering GHG emissions and protecting biodiversity.

- Furthermore, it aids in enhancing **farmland carbon storage**.
- The Paris Agreement goal of limiting global warming by reducing GHG emissions is tied directly to the success of the CSA.
- **Agroforestry and carbon sequestration** are two examples of CSA measures that could help India meet its international obligations and contribute to the global fight against climate change.
- **Support for Small and Marginal Farmers:** The majority of Indian farmers are small or marginal. Therefore, CSA can **play a significant role in helping them increase their profits**. The intersection of climate vulnerability and agricultural importance places India at a unique juncture where CSA adoption is not merely desirable but essential.
- **Biodiversity Conservation:** CSA's ecosystem-based approach and different crop varieties help cropland and wild regions coexist together. This collaborative effort **helps to safeguard native plant species, keep pollinator populations stable**, and mitigate the effects of habitat degradation.
- **Reduced impact of Climate Change:** CSA promotes crop diversification, increases water efficiency, and integrates drought-resistant crop types, all of which help lessen the disruptive effects of climate change.
  - By reducing exposure to climate-related dangers and shocks, CSA increases resilience in the face of longer-term stressors like shorter seasons and erratic weather patterns.

### ***What are the Challenges before Climate Smart Agriculture in India?***

- **Lack of Awareness and Knowledge:** This is a common challenge in the adoption of new agricultural practices. Farmers and extension workers may not be aware of the benefits of CSA or how to implement these practices effectively.
- **Limited Access to Finance, Insurance, and Markets:** Financing is crucial for farmers to invest in new technologies and practices associated with CSA. Lack of access to finance, insurance, and markets can hinder the adoption of CSA.
- **Inadequate Infrastructure and Institutional Support:** The success of CSA relies on supportive infrastructure and institutions. This includes irrigation systems, storage facilities, and organizations that can provide assistance and guidance.

- **High Costs and Risks:** The initial costs associated with adopting new technologies and practices can be a significant barrier for farmers. Additionally, the perceived risks may discourage adoption.
- **Policy and Regulatory Barriers:** Policies that do not support or incentivize CSA can be a major hindrance. Regulatory barriers might also slow down the scaling up of CSA practices.

### ***What Measures should be taken for Better Adoption of Climate Smart Agriculture?***

- **Capacity Building and Awareness:** Enhancing the capacity and awareness of farmers and extension workers on the principles and practices of CSA through training, demonstration, farmer-to-farmer exchange and mass media.
- **Financial and Technical Support:** Providing financial and technical support to farmers for adopting CSA technologies and innovations, such as subsidies, credit, insurance, market linkages and digital platforms.
- **Policy and Institutional Strengthening:** Strengthening the policy and institutional framework for promoting and scaling up CSA, such as integrating CSA into national and state action plans on climate change, creating a dedicated CSA fund and establishing a CSA coordination committee.
- **Encourage the Marginalised Groups to Participate:** Encouraging the participation and empowerment of women and marginalized groups in CSA planning and implementation, such as ensuring their representation in CSA committees, providing them with equal access to resources and opportunities and addressing their specific needs and preferences.
- **Foster Innovation and Collaboration:** Fostering innovation and collaboration among different actors and sectors for developing and disseminating context-specific and demand-driven CSA solutions, such as involving farmers in participatory research, creating public-private partnerships and facilitating multi-stakeholder platforms.

#### **Initiatives for Climate Smart Agriculture**

- **The National Adaptation Fund for Climate Change, National Innovation on Climate Resilient Agriculture, Soil Health Mission, Pradhan Mantri Kishi Sinchayee Yojana, Paramparagat Kishi Vikas Yojana, Biotech-KISAN**, and Climate Smart Village are a few examples of government initiatives in India focusing on CSA.
- Various public and private sector entities such as farmer-producer organisations and NGOs are also working towards the adoption of CSA.

- The CGIAR Research Program on **Climate Change, Agriculture and Food Security (CCAFS)**, which is a global partnership of research organizations that aims to address the interlinked challenges of food security, poverty, and climate change.
- The World Bank Group, which provides loans, grants, and technical assistance to support CSA projects and programs in developing countries.
- The **Global Alliance for Climate-Smart Agriculture (GACSA)**, which is a voluntary platform that brings together governments, civil society, farmers, research institutions, and private sector to facilitate knowledge sharing, policy dialogue, and investment in CSA.
- The **Climate-Smart Agriculture Youth Network (CSAYN)**, which is a group of young people from different countries who are promoting CSA awareness and action among youth and other stakeholders.

### Conclusion

Climate Smart Agriculture (CSA) has the potential to assure food security, empower farmers, and protect our delicate ecosystems by merging innovation, resilience, and sustainability. In the face of a changing climate, the path of CSA stands out as a source of inspiration and transformation for a world working to ensure a sustainable future.



## Electrification: India's Strategy to Decarbonise Road Transport

*This editorial is based on "Fleet Electrification to tackle urban pollution" which was published in The Hindu on 27/11/2023. It talks about the issue of air pollution, mainly originating from vehicle emissions, and endorses the electrification of road transport as a crucial strategy for reducing carbon emissions in the transportation sector.*

**Tag:** Biodiversity & Environment , GS Paper - 3, Environmental Pollution & Degradation, Industrial Policy, Industrial Growth, Infrastructure, GS Paper - 2, Government Policies & Interventions, Issues Relating to Development.

Many cities in India have experienced poor air quality many times this year, making the air unhealthy for millions of people. Two important studies about **Delhi pollution**, one from **2015** called **Urban Emission** and another from **2018** by **TERI**, show that a big reason for the **smog** in cities is pollution from **tiny particles** called **PM2.5** and **PM10**. These particles mostly come from vehicles and construction activities.

In this situation, the adoption of **electric vehicles** in road transportation has the potential to effectively combat the problem of **air pollution** in the country.

### What Prompts the Necessity for Electrification of Road Transport in India?

#### ➤ Air Quality Improvement:

- Globally, the **transport sector** contributes about **25% of CO<sub>2</sub> emissions** from **fuel combustion** and **15% of Greenhouse Gas (GHG) emissions**.
- According to the latest **International Transport Forum Report**, by **2050** global CO<sub>2</sub> emissions from transport will increase by **16%**, even if today's political commitments are fully implemented.
- Out of the **50** most polluted cities in the world, **35** are in India.
- Electrification of road transport can reduce criterion air pollutants, specifically **NO<sub>x</sub>** and **PM<sub>2.5</sub>**, which is important for improving ambient air quality, particularly in densely populated cities.

#### ➤ Reduced Dependence on Fossil Fuels:

- Transport is heavily reliant on oil, with **95%** of demand met by petroleum products. Just under half of India's oil demand is accounted for by transport.
  - Electrification decreases this dependence, promoting cleaner and more sustainable energy sources. By diversifying the energy sources for transportation, electrification enhances **energy security**.

#### ➤ Global Climate Change Mitigation:

- Electrifying road transport aligns with global efforts to combat climate change.
- Electric vehicles generally have lower carbon emissions, supporting India's commitment to reducing greenhouse gas emissions.
- In **2021**, various researchers claimed that electrical vehicles in India produced approximately 19-34% fewer **GHG emissions** than gasoline cars.

#### ➤ Potential Source of Economic Growth:

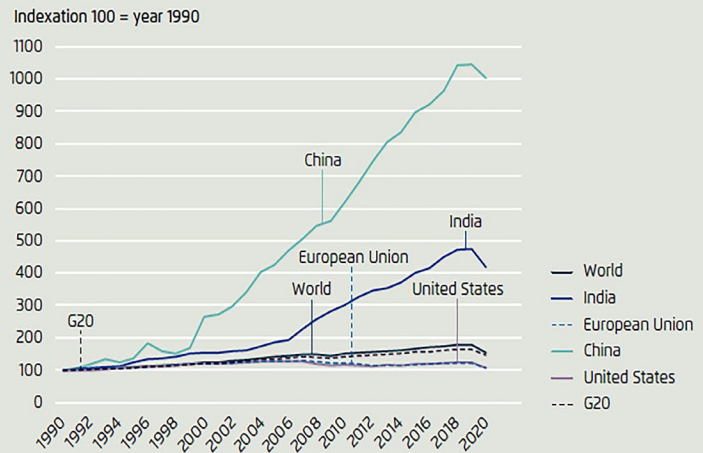
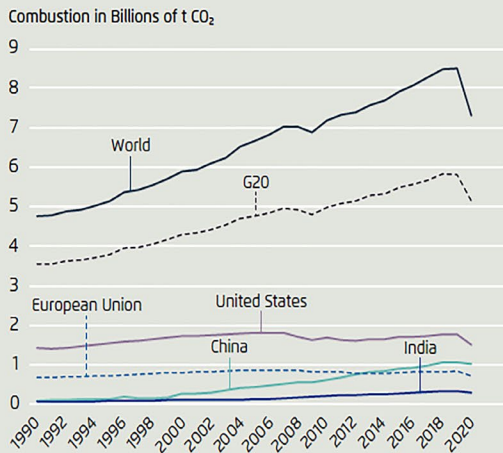
- India is the world's fourth largest car manufacturer, making **EVs** a potential source of economic growth and exports. The Indian government is committed to achieving **30%** electrification of total mobility by **2030**.
- Electric mobility creates jobs and innovation in battery manufacturing, renewable energy, and charging infrastructure.

#### ➤ Urban Planning and Livability:

- Electric vehicles can help decongesting cities by promoting shared mobility and compact design.
- It may open avenues for pedestrian-friendly spaces, cycling infrastructure, and efficient public transportation, contributing to overall urban livability.

Transport CO<sub>2</sub> Emissions from fuel combustion

Figure 2.1



Agora Verkehrswende (2023) | Source: IEA 2022g

## TRAVEL EMISSIONS: WHERE, HOW MUCH

### ROAD: Passenger

(Includes cars, motorcycles, buses and taxis)

**45.1%**

### ROAD: Freight

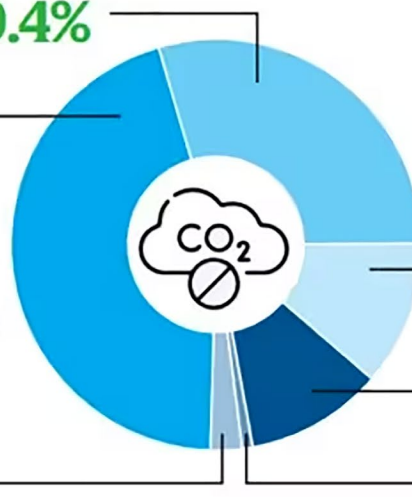
(Includes trucks and lorries)

**29.4%**

### OTHER

(Mainly transport of oil, gas, water, steam, and other materials via pipelines)

**2.2%**



### AVIATION

(81% passenger\*, 19% freight)

**11.6%**

### SHIPPING

**10.6%**

### RAIL

**1%**

\*Of passenger emissions, 60% are from international flights, 40% from domestic.

Source: Our World In Data, based on International Energy Agency (IEA) and International Council on Clean Transportation (ICCT)

### What are the Key Challenges in Electrification of Road Transport in India?

#### ➤ Decarbonization of Power Generation:

- Policies for decarbonization of road transport through electrification without decarbonization of power generation will merely shift pollution from the tailpipes of vehicles to smokestacks of thermal power generators.

- Without any pollution control measures in place, heavy reliance on **coal power** plants to generate electricity for electrical vehicles can result in up to multiple times higher emissions of **SO<sub>2</sub>**.

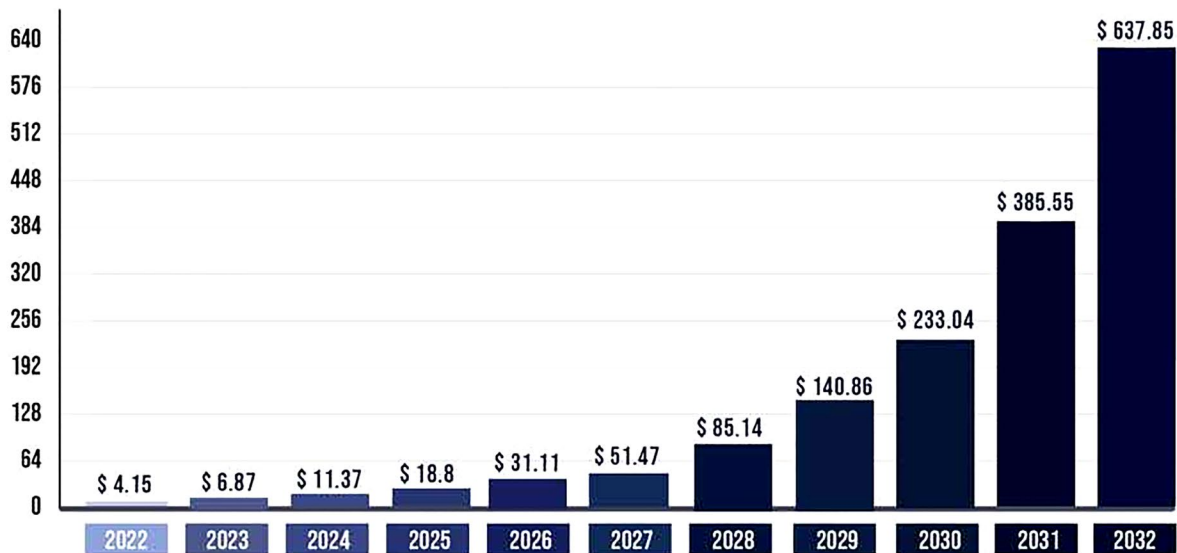
#### ➤ Lifecycle Carbon Emissions of EVs:

- Recent research concluded that **EVs** must be driven **200,000 km** before their “**whole of life**” carbon emissions equal that of an internal combustion engine vehicle.

- **“Whole of Life”** carbon missions is the total carbon emissions produced over the entire life cycle of a product, process, or system, including manufacturing, use, and disposal.
- The large quantity of energy needed to manufacture a lithium-ion battery and the typical weight of an EV which is on average 50% higher than a similar ICE (Internal Combustion Engine) vehicle that requires more steel and aluminium in the frame are among the reasons.
- **Technology Barriers to Electrification :**
  - The production of **lithium-ion batteries**, which are a key component of EVs, requires specific minerals and rare earth elements.
  - India currently relies heavily on imports for battery manufacturing, leading to supply chain challenges.
- **Financing Challenges Faced by the EV Sector:**
  - The upfront cost of purchasing an electric vehicle is relatively higher compared to conventional vehicles.
  - The high initial cost makes it less affordable for many potential buyers, limiting the demand for EVs.
- **Need for better infrastructure:**
  - EVs require different charging and maintenance infrastructure than traditional ICE vehicles because of the differences in engine and other working parts.
  - However, India’s current charging infrastructure may not be enough to handle the increased demand for EVs.
  - Given **NITI Aayog’s** projection of eight crore EVs on the road by 2030, India needs to have at least 39 lakh cumulative charging stations between FY 2022 and FY 2030.
- **Low Market Penetration:**
  - The global EV market grew 43% annually on average over the last five years, and the worldwide automobile market penetration rate of EVs stood at about 2.6% in 2019.
  - India, which is the fourth largest car market globally, still has EV penetration at only around 1%, and that too is dominated by electric two-wheelers. The market data indicates that the sales of electric buses and cars amounted to just 4000 units in the fiscal year 2020.

PRECEDENCE  
RESEARCH

## INDIA ELECTRIC VEHICLE MARKET SIZE, 2022 TO 2032 (USD BILLION)



Source: www.precedenceresearch.com

## What are the Major Government Initiatives for Transport Electrification in India?

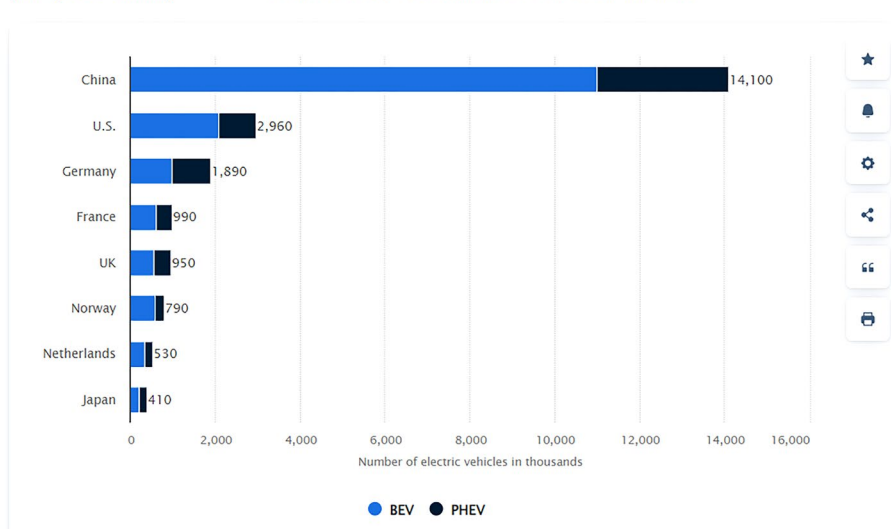
- **Faster Adoption and Manufacturing of Electric Vehicles (FAME) Scheme II**
- **National Electric Mobility Mission Plan (NEMMP)**
- **Production Linked Incentive (PLI) scheme**
- **National Mission on Transformative Mobility and Battery Storage**
- **Vehicle Scrappage Policy**

- **Ministry of Power:** In its revised guidelines on charging infrastructure prescribed that at least one charging station should be present in a grid of 3 km and at every 25 kms on both sides of the highways.
- **Ministry of Housing and Urban Affairs:** It has amended the **Model Building Bye-laws, 2016 (MBBL)** to mandate setting aside 20% of the parking space for EV charging facilities in residential and commercial buildings.
- **Department of Science and Technology:** It has launched a grand challenge for developing the Indian Standards for Electric Vehicle Charging Infrastructure.
- **High Taxes on Petrol and Diesel:** High taxes on Petrol and Diesel (about 60 % of retail prices), lowering of Goods and Services Tax (GST) from 12 % to 5 % on EVs along with tax and other incentives offered to EV purchasers are expected to drive the growth of EVs.

### What Can India Learn from Other Countries' Success?

- **Setting up a Well-defined Electric Mobility Roadmap:**
  - **United Kingdom:** It has released a **Transport Decarbonization Plan** with commitments and actions to decarbonize the UK's transport to zero-emission cars and vans by 2030.
  - **Chile Energy Roadmap 2018-2022:** Aims to increase the existing number of electric cars tenfold by 2022. Electrify 100% of public transport by 2040. Achieve a 40% penetration rate of electric cars in the private stock by 2050.
- **Setting Clear Targets for Implementation of Electric Mobility:**
  - **Norway:** 100 % electric vehicle sales in light-duty vehicles (LDVs) and public bus segments by 2025.
- **Easily Accessible incentives:**
  - **South Korea:** One-time purchase subsidy for electric cars, Planned reduction in purchase tax surcharges of electric cars.
- **Administrating the Implementation at the Subnational Level:**
  - **California:** Financial and non-financial incentives in addition to those at the federal government level. Clear and specific adoption targets are set for the region.
- **Countries Switching to EVs at Impressive Rates:**
  - The top 5 countries with the highest share of EV sales are **Norway** (all-electric vehicles made up 80% of passenger vehicle sales in 2022), **Iceland** (41%), **Sweden** (32%), the **Netherlands** (24%) and **China** (22%).
  - China boasts the largest electric car fleet in the world.

Estimated number of plug-in electric vehicles in use in selected countries as of 2022  
(in 1,000 units)



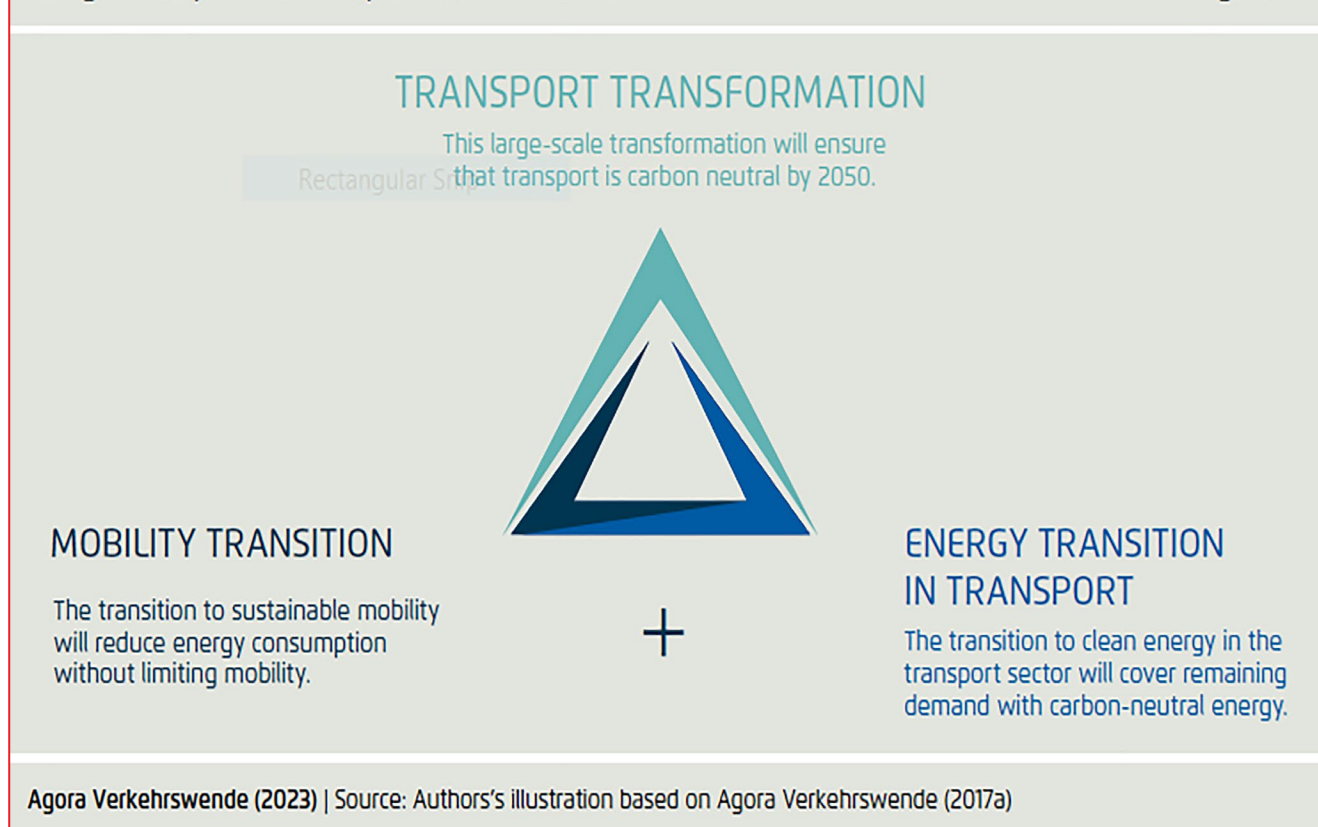
### What Should be the Way Forward?

- **Government Fleet:**
  - All the government-used vehicles should be 100% electric only.
    - There is a recent demand for 7,750 e-trucks in India by 2030, if it materializes, will result in the country saving over 800 billion liters of diesel by 2050.
  - There is a need for all states to announce clear targets and plans to transition government-owned fleets to electric and to lead by example.
    - Some states have already set targets for the transition of vehicles owned by government agencies to 100% EVs, such as Andhra Pradesh, Assam, Madhya Pradesh, Maharashtra, Uttar Pradesh, and Haryana.
- **Creation of Funds For Charging Infrastructure:**
  - Instruments like **Viability Gap Funding** are capable of reducing the overall cost of setting up charging station operations of the business.
- **Inclusion of EVs under Priority Sector Lending:**
  - In order to push the retail financing of EVs, the sector should be brought under the umbrella of the Reserve Bank of India's priority-sector lending (PSL) guidelines.

- The PSL mandate, which has a proven track record of improving the supply of formal credit towards areas of national priority, is capable of offering a strong regulatory incentive for banks and NBFCs to scale their financing to EVs.
- **Innovation through Financial Models:**
  - NITI Aayog suggests the recognition of EVs as an infrastructure sub-sector and the incorporation of EVs as a separate reporting category under the RBI.
  - New financing models like green bonds are pivotal for increasing the adoption of electric buses further.
- **Innovation through Products:**
  - India has introduced its first electric double-decker bus, marking a significant innovation in public mass transportation.
  - This distinctive bus stands out as an optimal solution for city travel, reducing road space and boasting a higher passenger capacity per footprint.
- **Innovative Solutions through Technology:**
  - The integration of IT-enabled solutions, such as data monitoring and analytics, is crucial for enhancing operational performance, retaining commuters, and boosting passenger trips.
- **Facilitate Private Sector Participation:**
  - The private sector is actively interested in the development of electric vehicle charging infrastructure, addressing a critical aspect of EV adoption and encouraging more individuals and businesses to embrace electric mobility.
- **Transitioning to Sustainable Mobility:**
  - **NITI Aayog** in a report titled '**Decarbonising Transport 2023**' suggests that achieving a successful "transport transformation" requires a "mobility transition" and an "energy transition in transport."

The geometry of the Transport Transformation

Figure 5.1



### Conclusion:

However, solely emphasizing the electrification of road transport will fall short of achieving effective decarbonization in the transportation sector. To address this challenge comprehensively, a holistic approach is required that not only promotes efficient, less carbon-intensive modes of transportation but encompasses addressing grid emission factors, investing in alternative fuel generation, and eliminating fossil-fuel subsidies, all of which are crucial steps toward advancing the energy transition and achieving decarbonization within the transport sector in India.

## Reducing Supreme Court's Case Overload

*This editorial is based on "It's time to revamp the structure of the Supreme Court" which was published in The Hindu on 28/11/2023. It argues that it is time to revamp the structure of the Supreme Court of India, which is currently a single apex court.*

**Tag:** Indian Polity, GS Paper - 2, Judiciary, Indian Constitution

Currently, there is a considerable backlog in the judicial system, with a staggering 80,000 cases awaiting resolution before the 34 judges of the Supreme Court. This backlog reflects a significant challenge that has prompted a recurrent call for structural reforms within the apex court. The sheer volume of pending cases not only highlights the strain on the existing judicial infrastructure but also underscores the need for a more efficient and streamlined legal process.

### What do we Know

#### About the Supreme Court?

- The **Supreme Court**, established under **Article 124** of the Constitution, is the **highest judicial authority** in the country.
- It has the power to hear and decide cases involving the interpretation of the Constitution, the validity of laws, and the protection of fundamental rights.
- It also acts as the **final court of appeal** for all civil and criminal matters.
- It consists of the **Chief Justice of India** and up to 34 other judges, who are **appointed by the President of India**.
- The Supreme Court has its own rules and procedures, and it can issue various types of orders and judgments.

#### How has the Indian Supreme Court Evolved?

- During colonial times, **there were three Supreme Courts**: in Bombay, Calcutta, and Madras.
- The Indian High Courts Act of 1861 **replaced the Supreme Courts with High Courts** for separate regions.
- The **Government of India Act, 1935**, created the **Federal Court of India** as an appellate body for the Privy Council and High Courts.
- India adopted the Constitution in 1949. The **Supreme Court**, as we know it now, was **founded on 28<sup>th</sup> January 1950**, under **Article 124** of the Constitution, two

days after India became an independent, democratic republic.

- It came into being in Delhi (current seat) as a result of **Article 130**.
- The first Supreme Court after independence included eight judges, including the **CJI**.
  - As the workload rose year after year and arrears of cases began to accumulate, Parliament increased the number of judges from eight in 1950 to 11 in 1956, 14 in 1960, 18 in 1978, 26 in 1986, 31 in 2009 and 34 in 2019.
  - The Constitution under **Art 124 confers the power to increase the strength of the Supreme Court** on Parliament.

### How Many Jurisdictions

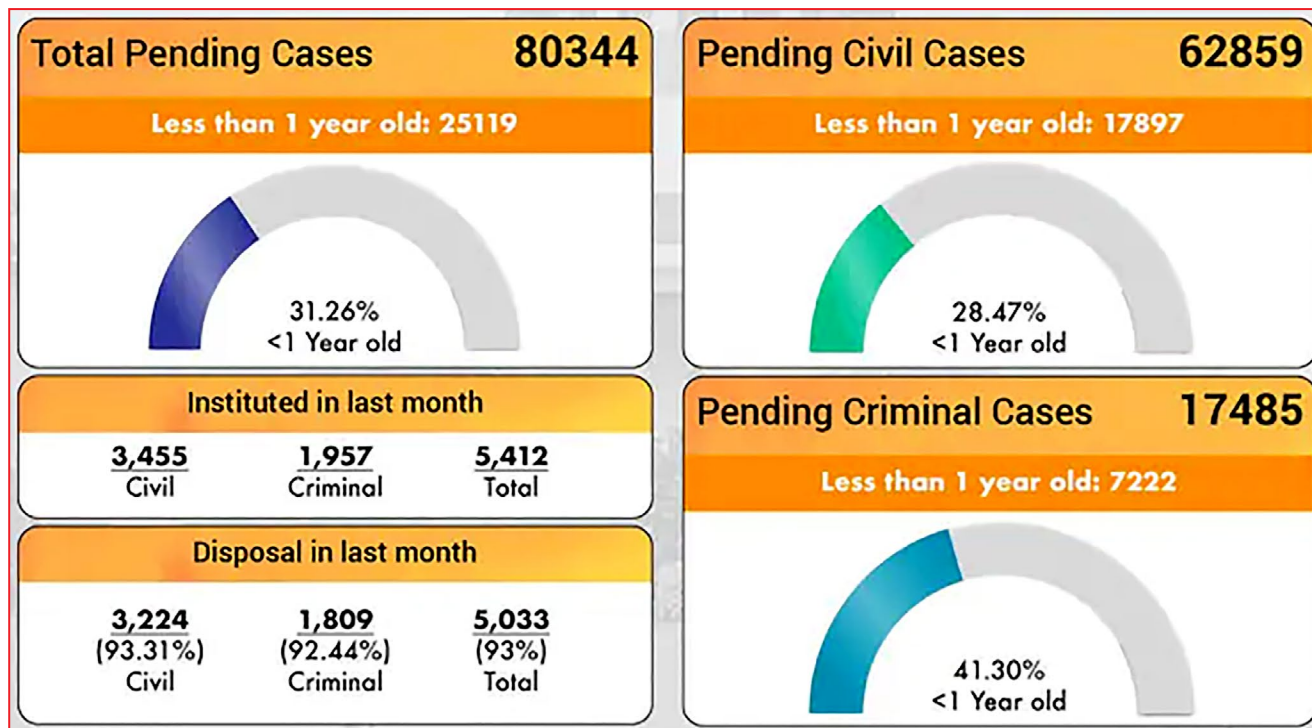
#### Does the Supreme Court Have?

- The Supreme Court of India has **three jurisdictions** under the Constitution: original, appellate, and advisory.
- The Supreme Court serves as a **Constitutional Court as well as a Court of Appeal**. The Court sits in benches of varying sizes, as determined by the Registry on the directions of the **Chief Justice of India (CJI)**, who is the **Master of the Roster**.
- Constitution Benches of the Supreme Court typically **comprise five, seven, or nine judges** who deliberate on a specific issue related to constitutional law.
  - **Article 145(3)** of the Constitution provides for the setting up of a Constitution Bench.
  - It says a minimum of five judges need to sit for deciding a case involving a "substantial question of law as to the interpretation of the Constitution", or for hearing any reference under **Article 143**, which deals with the power of the President to consult the Court.

### How Many Cases are

#### Pending Before the Supreme Court?

- Till September 2023, as per data provided by National Judicial Datagrid:
  - The number of cases pending before the top court of the country is: **80,344**.
    - Of this, **78% are civil matters, 22% criminal**.
  - Interestingly, the Supreme Court has till date disposed of 36,164 of the total 37,777 cases filed so far in 2023.



- More than 4,000 cases pending before the Supreme Court are over a decade old.

### What are the Reasons Behind this Staggering Number of Pending Cases?

- **Low Strength of Judges:** The Supreme Court has a sanctioned strength of 34 judges, but as of August 2023, there were only 32 judges in office. This means that there are two vacancies that need to be filled urgently.
  - The judge-to-population ratio in India is also very low compared to other countries.
  - According to a response provided by the law minister in **Rajya Sabha**, India has approximately **21 judges per million population**.
    - This is far below the global average of 50 judges per million people.
  - Moreover, the recommendations made by the collegium for the appointment of judges are often delayed by the government.
- **Absence of Judges:** The Supreme Court judges often have to attend various official and non-official functions, such as conferences, seminars, inaugurations, etc., which take up their valuable time and affect their availability for hearing cases.
  - Moreover, the judges also have to take leave for various reasons, such as health, personal, or vacation.
    - The Supreme Court breaks for its **annual summer vacation, which is typically for seven weeks** starting at the end of May.

- According to a report by the **Law Commission of India**, The Supreme Court has **193 working days a year** for its judicial functioning.

- **Lack of Infrastructure:** The Supreme Court faces a shortage of adequate infrastructure, such as courtrooms, staff, technology, etc., which hampers its efficiency and productivity.
  - For instance, the Supreme Court has only **17 courtrooms**, which are not enough to accommodate all the benches and cases.
  - The court staff also face problems such as **low salaries, poor training, and high workload**.
  - Though the Supreme Court has introduced modern technologies, such as **video conferencing, e-filing, digital libraries, etc.**, to facilitate faster and smoother disposal of cases but they aren't very popular amongst the common public.
- **Appeals from High Courts:** It was reported that appeals in the top court mostly comprised matters **from High Courts that are closer to the Supreme Court**.
  - That is, appeals from the Punjab and Haryana High Court, Allahabad High Court, and Delhi High Court formed the major chunk of matters, whereas courts far away from the apex court had fewer appeals filed, due to both difficulties in accessibility and costs.
- **Filling of Frivolous Cases:** The Supreme Court is the **highest court of appeal in India**, and it has the power to hear appeals from any judgment or order of any court or tribunal in the country. However, this power is often misused by litigants who file frivolous or vexatious appeals in the Supreme Court.

- Under its very broad jurisdiction, the Supreme Court has entertained frivolous **public interest litigations**, such as demands that passages be deleted from the Quran or secularism be removed from the **Preamble to the Constitution**.
- According to a report by the PRS Legislative Research, the Supreme Court admitted 86% of the **Special Leave Petitions (SLPs)** filed in 2016.
  - This is significantly higher than the 25% admission rate recommended by the Law Commission of India in its 2009 report on access to justice.

### **What Reform Measures Should be Taken to Reduce the Pendency of Cases?**

- **Split the Supreme Court into Two Divisions:** The **Tenth Law Commission of India** proposed that the Supreme Court be **split into two divisions: the Constitutional Division and the Legal Division**. The proposal stated that only issues pertaining to constitutional law would be brought to the proposed Constitutional Division.
  - Reiterating this, the **Eleventh Law Commission stated in 1988** that dividing the Supreme Court into parts would make justice more widely available and would significantly decrease the fees that litigants have to pay.
- **Establish a National Court of Appeal for SLPs:** In **Bihar Legal Support Society v. Chief Justice of India, 1986**, the Supreme Court stated that it was “**desirable**” to **establish a National Court of Appeal** that would be able to entertain special leave petitions. This would allow the Supreme Court to only entertain constitutional and public law-related questions.
- **Establish the Regional Benches of Supreme Court:** As a step towards making the Court more accessible, the **229<sup>th</sup> Law Commission Report, 2009 recommended four regional benches to be located in Delhi, Chennai or Hyderabad, Kolkata, and Mumbai** to hear non-constitutional issues.
  - It recommended six judges from each region at four regional benches take up appellate responsibility, with a Constitution Bench in New Delhi working on a regular basis.
  - By dividing the heavy backlog of non-constitutional cases among regional benches, the Supreme Court, it said, could “deal with constitutional issues and other cases of national importance on a day-to-day basis.”
- **Increase the number of Work Days:** The **Malimath Committee** suggested that the **Supreme Court should work for 206 days** and it also recommended that the period of **vacation should be reduced by 21 days**, keeping in mind the long pendency of cases.

- The **2009 Law Commission, in its 230th report** suggested that **court vacations be cut down by 10-15 days at all levels** of the judiciary to help cut the backlog of cases.
- **Establish a Final Court of Appeal and a Permanent Constitution Bench:** The work of the Supreme Court **could be split so that there is a Final Court of Appeal and a permanent Constitution Bench**.
  - This would ensure greater judicial stability and consistency by explicitly distinguishing cases filed under constitutional authority from those filed under appellate and review jurisdiction.
- **Establish a Dedicated Authority for Infrastructure:** Former CJI NV Ramanna proposed to set up the National Judicial Infrastructure Authority of India (NJIAI) which will help improve judicial infrastructure which currently needs urgent attention.

### **Conclusion**

The Supreme Court’s overwhelming case backlog highlights the need for urgent reforms. Addressing issues like a shortage of judges, inadequate infrastructure, and frivolous appeals is crucial. Measures such as increasing workdays, establishing regional benches, and exploring specialized courts can enhance efficiency and accessibility. Embracing these reforms can create a more responsive and effective judiciary in India.

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## **India’s Maritime Security Paradigm**

*This editorial is based on “**The challenge of maritime security in the Global South**” which was published in The Hindu on 29/11/2023. It argues that the Global South faces a complex and evolving maritime security environment, with threats ranging from piracy, terrorism, illegal fishing, drug trafficking, and environmental degradation, to great power rivalry.*

**Tag:** Internal Security, GS Paper - 3, Security Challenges & their Management in Border Areas

According to Charles Darwin, the ability to adapt and adjust to the changing environment is the key to human survival and progress. He believed that it is not the strongest or most intelligent species that survives, but the one with the capacity to be resilient and adaptable. This notion of resilient adaptability has been proven true over time, and it is particularly relevant in the maritime domain where dealing with emerging challenges requires a flexible approach.

### **What is the Significance of Maritime Security for India?**

- India has a long **coastline of over 7,000 km**, which makes it vulnerable to various threats such as piracy,

terrorism, smuggling, illegal fishing, and environmental degradation. India **needs to protect its coastal and offshore assets**, such as oil and gas installations, fishing grounds, and ports, from these threats.



- India's economy depends largely on the sea, as **over 70% of its trade value and nearly 95% of its trade volume is carried by sea**. India also imports most of its energy needs from the sea, especially from the **Gulf region**.
  - Therefore, India needs to ensure the security and freedom of navigation of the **Sea Lanes of Communication (SLOCs)** in the Indian Ocean and beyond, which are vital for its economic growth and energy security.
- India has a **strategic interest in the Indian Ocean Region (IOR)**, which is home to many friendly and cooperative countries, as well as some potential adversaries.
  - India has historical, cultural, and diasporic ties with many countries in the IOR, and also invests in their development and security.

### **What are the Challenges in the Maritime Domain?**

- **Hard Security Challenges:**

- **Asymmetrical Tactics:** The use of asymmetrical tactics, as observed in **Ukraine's actions against Russia in the Black Sea** or **China's deployment of maritime militias in the South China Sea**, introduces a new dimension to maritime security. This involves unconventional and unexpected methods that may not follow traditional military strategies.
- **Grey-Zone Warfare:** The use of **grey-zone tactics, which fall between conventional and unconventional methods**, presents challenges in responding effectively as these tactics often exploit legal and policy ambiguities.
  - Such tactics can **include covert operations and actions below the threshold** of open conflict. E.g. **Violation of the SEZ by countries like USA.**
- **Combat Drones:** The utilization of combat drones adds a new dimension to maritime operations, enabling states and non-state actors to conduct reconnaissance, surveillance, and potentially carry out attacks.

- **Land Attack Missiles:** The deployment of land attack missiles at sea poses a direct threat to maritime security. This includes the use of missiles that can target land-based facilities from maritime platforms, challenging traditional notions of sea-based threats.
- **Unconventional Security Threats:**
  - **Illegal Fishing:** Maritime security is threatened by illegal fishing activities, which can deplete marine resources and undermine the livelihoods of coastal communities. E.g. **Fishing in Indian Waters by Sri Lankan fishermen.**
  - **Natural Disasters:** The increasing frequency and intensity of natural disasters in the maritime domain, such as **cyclones** and **tsunamis**, pose significant challenges to maritime security and emergency response efforts.
  - **Marine Pollution:** Pollution, including **oil spills** and **plastic waste**, poses environmental and economic threats to the maritime domain.
  - **Human and Drug Trafficking:** Illicit activities like human and **drug trafficking**, often carried out through maritime routes, contribute to insecurity in the maritime domain.
  - **Climate Change Impact:** Rising sea levels, **climate change**, and related impacts disproportionately affect less developed states, making them more vulnerable to environmental changes and extreme weather events.
- **Zero-Sum Competition in the Indo-Pacific:** The perceived **zero-sum competition** among powerful nations in the **Indo-Pacific** is identified as a threat, particularly for the developing world. The competition may divert attention and resources away from addressing the security concerns of littoral states in Asia, Africa, and the Southern Pacific.
  - Zero-sum competition in the Indo-Pacific is **a term that refers to the idea that the interests and actions of the US and China in the region are mutually exclusive and incompatible** and that any gain for one side is a loss for the other.
    - This perspective assumes that the Indo-Pacific is a zero-sum game, where the two powers are locked in a rivalry for influence, resources, and security.
- **Challenges in Maritime Governance:**
  - **Lack of Coordination:** Littoral states in Asia and Africa face challenges in coordinating their efforts to combat maritime threats. Unequal law-enforcement capabilities and varying security priorities hinder effective collaboration. E.g. **ASEAN countries often show reluctance to call out China's hegemonial actions in the South China Sea.**

- **Reluctance to Cooperate:** Some littoral states resist maritime cooperation with foreign agencies, aiming to reduce reliance on external assistance. This reluctance can impede the development of comprehensive and coordinated security measures.
- **Information Sharing Challenges:** While there is a willingness to share information, there are limitations in the extent of collaboration, with states often sharing only the minimum required for common security goals. E.g. **Even though India and the USA have signed several agreements on Information sharing but still there are reluctance to information sharing due to some security and sovereignty concerns.**

### *What are the Initiatives*

#### *Taken by India to Enhance Maritime Security?*

- **Capacity Augmentation of Maritime Security Agencies:** This includes the **modernization and expansion of the Indian Navy, Coast Guard, and Marine Police** to enhance their capabilities for surveillance and patrol of the nation's maritime zones.
  - It also involves the acquisition of advanced platforms, systems, and equipment such as aircraft carriers, submarines, frigates, helicopters, radars, and satellites.
- **Enhanced Technical Surveillance of Coastal and Offshore Areas:** This includes the implementation of various projects and schemes such as the **Coastal Surveillance Network**, the **National Command Control Communication and Intelligence Network**, the **National Automatic Identification System**, and the **National Maritime Domain Awareness Project**.
  - These aim to provide a comprehensive and integrated picture of the maritime domain and enable timely detection and response to any threats or incidents.
- **Establishment of Mechanisms for Inter-Agency Coordination:** This includes the creation of various bodies and committees such as the **National Committee for Strengthening Maritime and Coastal Security**, the National Maritime Security Coordinator, the Joint Operations Centres, and the Coastal Security Operations Centres.
  - These aim to **facilitate effective coordination and information sharing among various stakeholders involved in maritime security such as the Navy, Coast Guard, Customs, Intelligence, Fisheries, and Ports.**
- **Integration of the Fishing and Coastal Communities:** This includes the implementation of various measures such as the **issuance of biometric identity cards**,

the installation of transponders and distress alert transmitters, the conduct of community awareness and education programs, and the provision of livelihood and welfare schemes.

- These aim to involve the fishing and coastal communities in the maritime security framework and enhance their security and well-being.

- **Security and Growth for All in the Region (SAGAR)**
- **Indian Ocean Naval Symposium (IONS)**
- **Indian Ocean Rim Association (IORA)**

#### ***What Measures can be Taken to Overcome the Challenges?***

- **Enhancing maritime security cooperation among like-minded countries**, through bilateral, trilateral, or multilateral mechanisms, such as the **Quadrilateral Security Dialogue (Quad)**, the **Indian Ocean Rim Association (IORA)**, and the **ASEAN Regional Forum (ARF)**.
  - Such cooperation can include information-sharing, joint exercises, capacity-building, interoperability, and coordination of responses to common threats.
- **Developing a common code of conduct** or a set of norms and rules for the maritime domain, based on the principles of international law, especially the **United Nations Convention on the Law of the Sea (UNCLOS)**.
  - Such a code of conduct can help to prevent or manage disputes, reduce tensions, and promote

confidence-building measures among the maritime actors.

- **Strengthening the role and capabilities of the coast guards** and other maritime law enforcement agencies, as they are often the first responders to non-conventional threats, such as piracy, smuggling, trafficking, and pollution.
  - They can also play a vital role in enhancing maritime domain awareness, safeguarding the sovereignty and rights of coastal states, and providing humanitarian assistance and disaster relief.
- **Addressing the root causes and drivers of non-conventional threats**, such as poverty, inequality, corruption, governance, and climate change, through sustainable development, regional integration, and multilateral cooperation. These can help to improve the livelihoods, resilience, and security of the coastal communities, and reduce the incentives and opportunities for criminal activities.

#### ***Conclusion***

India is committed to maritime security and has initiatives like SAGAR and IONS to navigate the evolving landscape. India's capacity building and international cooperation not only protect its coastline but also contribute to global maritime stability. The vision for secure seas propels India towards a future of resilience, adaptability, and collaboration.

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## Drishti Mains Questions

1. What are the key challenges in mobilizing, measuring and monitoring climate finance ?  
Suggest measures to ensure accurate and transparent financial contributions for climate mitigation and adaptation projects on a global scale.
2. India's economic growth has witnessed significant fluctuations in recent years. Analyze the key factors responsible for the decline in GDP growth rates and the measures that the Indian government should undertake to rejuvenate the economy.
3. India aims to become a USD 30 trillion economy by its 100th year of independence. Discuss the key objectives and challenges associated with this vision, and propose policy measures that can help India overcome the obstacles in achieving its economic aspirations.
4. Discuss the role of the United Nations in maintaining international peace and global order in the face of contemporary challenges. What reforms are necessary to enhance its effectiveness in this critical mission?
5. Discuss the multifaceted challenges posed by air pollution in India and outline the key strategies required to ensure a cleaner, healthier, and more sustainable future for its citizens.
6. Antimicrobial Resistance (AMR) threatens public health in India. Examine AMR concerns, government efforts, and suggest more actions to combat it.
7. Discuss the key elements and priorities that India should consider in the National Security Strategy to effectively address current and future security challenges of the country.
8. Discuss the potential uses and threats of deepfake technology. In light of this, examine the measures governments and technology companies can take to mitigate the negative consequences of deepfakes.
9. Discuss the challenges associated with crop residue burning in Indian agriculture and propose comprehensive strategies to address the issue, emphasizing the role of circular agriculture, bio-CNG production, and sustainable rural development.
10. Examine the historical development and importance of Net Neutrality in India. Discuss the fundamental principles and obstacles related to net neutrality regulations and propose suggestions for a well-balanced regulatory framework within the country.
11. Discuss the key challenges in the Indian space programme mission. How can India strategically enhance its space program to achieve unprecedented success in the field of space exploration?
12. Discuss the advantages and significant challenges associated with the Forest (Conservation) Amendment Act, 2023. How can this amendment play a pivotal role in steering a course where development and environmental sustainability can actively support each other toward national progress?
13. What are the key challenges and debates surrounding the formulation and implementation of welfare policies in India? Suggest policy strategies that can empower the holistic development of individuals and communities in the country.
14. What are the primary concerns in crafting the Broadcasting Services (Regulation) Bill, 2023, in India? Suggest policy strategies aimed at instituting and sustaining robust regulations for the telecommunications sector in the country.
15. Evaluate the benefits and challenges associated with Lethal Autonomous Weapons Systems (LAWS). Propose actionable steps that India could take to enhance its capacities on LAWS.
16. Discuss the potential benefits and challenges associated with implementing state funding of elections in India. What policy measures do you suggest to create a more equitable and accountable electoral process in India?

## Drishti Mains Questions

17. Examine the multifaceted challenges associated with road accidents in India and suggest comprehensive strategies that the government should adopt to address the silent pandemic of road accidents.
18. Evaluate the challenges associated with the office of Governor and propose reforms to the current appointment and removal process, drawing insights from recommendations made by committees.
19. Assess the arguments for and against state-imposed domicile reservations in private employment in India. What are the key considerations that policymakers should take into account when addressing these issues?
20. What are the key points of contention between India and China, and what strategies is China employing to establish influence in the Indo-Pacific region? In the face of changing power dynamics, what diplomatic approaches would you suggest for India's foreign policy?
21. Analyze the ethical considerations associated with the integration of quantum computing and AI. How can these concerns be mitigated?
22. Examine the role of both domestic and global factors contributing to India's positive GDP growth. Additionally, analyze the challenges posed by external factors and suggest policy measures that India should consider to sustain its economic resilience in the current global scenario.
23. What do you understand by Climate-smart Agriculture (CSA)? Discuss the significance of CSA in addressing the twin challenges of climate change and food insecurity and evaluate the measures necessary for enhancing the adoption of CSA.
24. Examine the necessity for electrifying road transport in India. Discuss the challenges involved and propose solutions for successful implementation of electrification in the country's transportation sector.
25. Discuss the factors contributing to the staggering backlog of cases in the Indian Supreme Court. Discuss key reforms needed to address the challenges faced by the Supreme Court.
26. Discuss the challenges observed in maritime security and how can India enhance its resilience in the face of these challenges.