



# Monthly Editorial Consolidation



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## India's Care Economy

*This editorial is based on “Mom, baby and us: Who takes care of the children?” which was published in The Indian Express on 30/04/2024. The article examines multidimensional aspects of unpaid care work in India and the need for a more valued, inclusive and just care economy.*

**Tag:** GS Paper-2, Salient Features of Indian Society, Role of Women

A recent Supreme Court ruling declared denial of **Childcare Leave (CCL)** to a government employee in Himachal Pradesh as a violation of **working women's constitutional rights**.

This ruling brings into focus the often overlooked issue of **unpaid care work performed disproportionately by women**. In India, women shoulder a staggering **84%** of the total time devoted to **unpaid care work**. This colossal burden of invisible, uncompensated, undervalued and unrecognised labor is the backbone of the **nation's care economy**.

This editorial delves into the multidimensional aspects of the care economy in India, with a special focus on childcare and the need for a more equitable distribution of responsibility.

### What are the Constitutional Provisions Related to Working Women in India?

- **Article 14:** This enshrines the **Right to Equality**, stating that everyone is equal before the law and entitled to equal protection.
  - This applies to working women as well, prohibiting discrimination based on gender in the workplace.
- **Article 15:** This prohibits discrimination on grounds of sex (among others) in various aspects, including public employment.
  - This ensures women have equal opportunities to access government jobs.
- **Article 16:** This guarantees equality of opportunity in matters of public employment. This protects women from being denied employment or facing disadvantages due to their gender.
- **Article 39:** This article under **Directive Principles of State Policy**, have several provisions:
  - (a) states that the citizens, men and women equally, have the right to an adequate means of livelihood
  - (b) states that there should be equal pay for equal work for both men and women
  - (c) ensure workers' health, prevent child labor, and avoid economic coercion into unsuitable jobs.

- **Article 42:** This, also under Directive Principles, directs the state to make provisions for securing just and humane conditions of work and maternity relief.
  - This translates to ensuring safe working environments and maternity benefits for women.

➤ **Central Government's CCL Policy:** It allows **730 days of paid leave for female employees** to care for up to two children under 18, over and above maternity leave.

- The explicit mention of female employees as beneficiaries could be viewed as a valid recognition of the fact that it is **primarily mothers who do the heavy lifting of raising children** that extends beyond the first six months after birth (the period considered under maternity leave).
- Men are eligible for CCL only if they are single fathers.

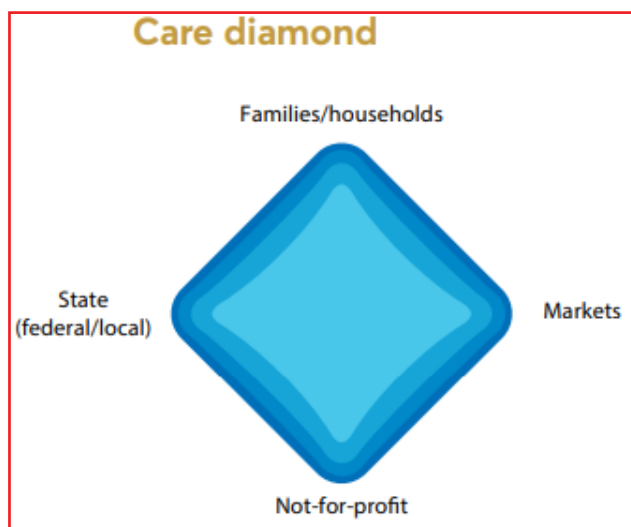
➤ **Sustainable Development Goal for Women:** **SDG 5** talks about Achieving Gender Equality and Empowerment of Women and Girls

- **5.1** End all forms of discrimination against all women and girls everywhere
- **5.4 Recognize and value unpaid care and domestic work** through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate
- **5.5** Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life
- **5.c** Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

### What is a Care Economy?

- **About:** The care economy refers to the sector of economic activity that encompasses the provision of care and support services, particularly those related to health, education, childcare, eldercare, and other forms of social care.
  - It encompasses **paid and unpaid care work** crucial for human survival, welfare, and labor force reproduction.
  - It contributes to meeting **material, emotional, and developmental needs** but is often unrecognised or undervalued, leading to a **“hidden care economy”**.

- It is different from the Monetized Economy, which is the **formal market-based system** where goods and services are bought and sold using money.
  - It encompasses industries like **manufacturing, technology, healthcare (formal sector), and retail.**
  - The value of work in the monetized economy is directly tied to its market price.
- **History:** Historically, feminist economists have critiqued the conventional definition of “**work**” for excluding **unpaid labor**, particularly the significant contributions made by women within households.
  - This challenge led to the **Beijing Platform for Action in 1995**, which advocated for recognising and valuing women’s roles in caregiving, domestic work, and volunteerism.
- Related Terminologies:
  - **Paid Care Work:** It refers to care jobs in sectors like **health, education, personal care, and domestic work** that are compensated.
    - Women are overrepresented in care roles like **nurses, domestic workers, personal carers, teachers, and childcare assistants.**
  - **Unpaid Care and Domestic Work:** It includes **domestic services** (cooking, cleaning), **care-giving** (children, elderly, sick), and community/voluntary services.
    - Under this, direct care involves dependents, while indirect care includes domestic tasks and multitasking blurs these boundaries.
  - **Care Diamond:** It represents the four main actors in care provision - State, markets, households, and communities.



**What are the Key Issues Related to the Care Economy in India?**

- **Limited Policy Coverage:** Existing policies related to the care economy, such as **maternity benefits and childcare leave**, often have limited coverage and applicability, particularly in small-scale enterprises and the informal sector.
  - The **Maternity Benefit Act, 1961** is applicable only to establishments with **10+ employees**.
    - **98%** of Indian enterprises are “micro” with less than 10 workers, as per the Economic Census data.
    - Even in registered manufacturing, 30% of establishments have under 10 employees.
  - This leaves many women without adequate support or protection in balancing work and caregiving responsibilities.
- **Limited Workforce Participation:** The unequal burden of care work often **hinders women’s workforce participation** and career advancement opportunities.
  - The **Female Labour Force Participation Rate** in India was **37% in 2023**, according to PLFS 2022-23. Despite this improvement, it remains below the desired level.
  - Many women are forced to prioritize caregiving over paid employment, leading to a lower representation of women in **formal sectors and decision-making roles**.
- **Lack of Accessibility of Care Services:** Access to affordable and quality care services, such as **childcare facilities and eldercare support**, remains a challenge in many parts of India.
  - Limited availability and high costs of care services further exacerbate the caregiving burden on families, especially for low-income households.
  - It estimates that women’s unpaid care and domestic work represents almost **15%-17% of India’s GDP**.
- **Social Stigma and Cultural Norms:** Societal expectations and cultural norms often reinforce the perception that caregiving is primarily a woman’s responsibility.
  - This stigma prevents men from actively participating in caregiving duties and **perpetuates the cycle of unequal distribution of care work** within households.

### Way Forward

- The 3R Framework:
  - **Recognize** the extensive childcare responsibilities currently borne by mothers.
  - **Reduce** the load on mothers through redistribution

of childcare:

- Within households by greater involvement of fathers
- Outside households through affordable, quality neighborhood childcare options
- **Redistribute** childcare as a social responsibility, not just an individual burden on mothers.
- **Skill Recognition and Micro-credentials:** Create a national framework to **recognize the skills gained through unpaid care work**.
  - This could involve issuing micro-credentials that validate competencies in childcare, eldercare, or household management. These credentials could enhance employability for caregivers who re-enter the paid workforce.
  - Offer training programs to help caregivers further develop their skills and potentially transition into paid caregiving roles.
- **Increasing Investment in Care Economy:** The **International Labour Organisation (ILO)** suggests that increasing investments in the care services sector have the potential to generate **475 million jobs globally by 2030**.
  - Presently, India's public spending on the care economy is **less than 1% of GDP**, relatively low in comparison with other nations.
  - For India, **direct public investment equivalent to 2% of GDP** can potentially generate 11 million jobs, nearly 70% of which will go to women.
  - India can also learn from **Japan's 'womenomics' reforms**.
- **Technology and Innovation:** Leveraging technology to create online platforms that connect caregivers with resources and support services. These platforms could offer information on childcare options, eldercare facilities, or training programs.
- **Public-Private Partnerships:** Encouraging partnerships between the **government, private sector, and NGOs** to develop innovative solutions for affordable and accessible care services.
  - This could **involve tax breaks for companies that offer childcare facilities** for employees or support for social enterprises working in the care sector.
  - Promote **corporate social responsibility initiatives** that support the care economy. This could involve companies sponsoring childcare centers in low-income communities or offering flexible work arrangements for employees with caregiving responsibilities.

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## India's Tech Trajectory

*This editorial is based on "**Beyond the manifestos, technology challenges for India's next government**" which was published in The Indian Express on 01/05/2024. The article examines the global race for technological supremacy, urging India to revamp its technology strategy for global competitiveness.*

Tag: GS Paper - 3, IT & Computers, Government Budgeting

The world is witnessing an unprecedented **race for technological supremacy**, with 5.44 billion people around the world using the internet as of April 2024, equivalent to **67.1%** of the world's total population.

Major economies recognise the pivotal role of **advanced technologies** in shaping their future. China has made significant strides in prioritising technology and innovation as a strategic objective as seen in its **Made in China 2025 plan**, aiming to reduce reliance on foreign technologies. Meanwhile, the **United States** and **Europe** have also intensified their efforts to regain and maintain their leadership in critical technology sectors.

India, with its **rich scientific heritage** and **aspirations for a technology-driven economy**, finds itself at a crossroads, facing both challenges and opportunities in this global technological race.

### What is the Status of India's Technology Sector?

- **Current Scenario:** The Indian Technology Industry is expected to touch the **USD 300-USD 350 billion** revenue mark over the next 5 years (currently surpassed **USD 250 billion mark**).
  - The **Telecom industry** in India is the second largest in the world with a subscriber base of **1.1 Billion** as of February 2024.
  - India has also emerged as the **second largest manufacturer of mobile** handsets in the world.
  - India has emerged as the **world's third largest startup ecosystem** with over 1.25 lakh startups and 110 unicorns.
- **Key Sub Sectors Driving India's Tech Growth:**
  - **IT and Business Process Outsourcing (BPO) Services:** India's services exports have been driving the overall export growth.
    - IT and BPO services are the largest component and comprise over **60% of India's service exports**.
  - **E-Commerce:** India's **e-commerce market**, encompassing various sectors like online travel, food delivery, health-tech, and more, is rapidly growing.



- It is expected to reach **USD 1 trillion by 2030**, driven by factors such as a large consumer base, diverse demographics, cost-effective digital infrastructure, and a robust supply chain ecosystem.
- **FinTech and Digital Finance:** India has one of the world's fastest-growing financial technologies markets.
  - Digital payments especially throughout **Unified Payment Interface (UPI)** are the primary driver of growth in this sector.
  - According to Invest India, the Indian FinTech market is expected to grow to **USD 150 billion by 2025**.
  - According to the **Reserve Bank of India (RBI)**, total digital payments were recorded as **USD 2.4 trillion** in value in June 2023.
- **Edtech:** The edtech sector has gained significant traction, especially during the **Covid-19 pandemic**, with companies offering online learning platforms, virtual classrooms, and innovative educational solutions.
  - India is the second largest market for e-learning after the US with a market size of **USD 6 billion**, and is expected to grow to **USD 10 billion by 2025**.
- **Cleantech and Renewable Energy:** India's focus on **renewable energy** sources like solar and wind has spurred growth in the cleantech subsector.
  - Companies are developing innovative solutions in areas such as **energy storage, smart grids, and energy efficiency technologies**, contributing to the country's sustainability goals.
  - India ranks **4th globally** for total renewable power capacity additions. India has already achieved its target of **40% installed electric capacity** from non-fossil fuels in **November 2021** itself.
- **Space Sector:** Indian **Space Sector** contributes **2%-3% of the global space economy**.
  - By 2030 India further aims to capture a larger share of close to **10% of the global economy**.
  - With the recent successful missions like **Chandrayaan-3 and Aditya L1**, India is leading the beacon of Space technology aiming for its own **Space Station** by 2035.

### What are the Government Initiatives Driving Technological Growth?

- **India's Semiconductor Mission:** Launched in **2021**, It is part of the comprehensive program for the development of sustainable semiconductor and display ecosystems in the country.

- **IndiaAI Mission:** The IndiaAI Mission, with an allocation of over Rs 10,300 crore, aims to strengthen India's AI ecosystem through initiatives like **AI computing infrastructure, innovation centers, datasets platforms, application development, FutureSkills programs**, and startup financing, fostering AI leadership, ethical deployment, and democratizing AI benefits.
- **DigiLocker:** DigiLocker is a free, secure, online platform that allows users to store, share, and verify documents and certificates in the cloud. It's a flagship initiative of the Indian government's **Digital India program**, which aims to make India a digitally empowered society
- **Unified Payment Interface:** It is a real-time payment system developed by the **National Payments Corporation of India (NPCI)**.
  - It enables individuals to transfer money instantly between bank accounts using their smartphones.
- **Mission on Advanced and High-Impact Research (MAHIR):** Launched in 2023, this initiative focuses on the power sector.
  - It aims to accelerate research, development, and demonstration of cutting-edge technologies like clean energy solutions and smart grids.
- **PLI Schemes (Production Linked Incentive):** The government has introduced PLI schemes for various sectors like **semiconductors and electronics manufacturing**.
- **National Supercomputing Mission:** It is a first of its kind attempt to boost the country's computing power.
  - It is steered jointly by the **Department of Science and Technology (DST)** and **Ministry of Electronics and IT (MeitY)** and implemented by the **Centre for Development of Advanced Computing (C-DAC)**, Pune and the **Indian Institute of Science (IISc)**, Bengaluru.

### What are the Major Technology Related Challenges in India?

- **Digital Divide:** While India has a large and growing internet user base, there's a significant gap between urban and rural areas.
  - **Oxfam's India Inequality Report 2022** shed light on digital divide's impact on inequality, revealing that about **70% of India lacks proper Information and Communication Technology (ICT) access**.
  - Despite efforts like **BharatNet**, rural connectivity remains poor, with only **2.7% of the poorest households having computers** and **8.9% internet access**.

- **Lack of Relevant Skilling:** The Indian IT sector is known for IT services, but there's a growing demand for specialised skills in areas like **AI, cybersecurity, and data science**.
  - India's education system currently lacks specialised skills leading to shortage of skilled professionals equipped with relevant technological expertise.
- **Lack of Adequate Focus on R&D:** Compared to developed nations, India invests relatively little in research and development (**0.64% of GDP**).
  - This hinders innovation and domestic production of cutting-edge technologies.
- **Cybersecurity Threats:** As India integrates more technology, cybersecurity threats are on the rise. With advancing technology, **cyber frauds, online financial frauds, and deep fakes** pose significant challenges, raising ethical and security concerns impacting decision-making processes.
  - In the year 2022, the **Indian Computer Emergency Response Team (CERT-In)** handled over 1.3 million security incidents reported across India.
  - Events like **AIIMS Delhi Ransomware Attack in 2023** highlights the sensitivity of the issue.
- **Lack of Comprehensive Regulation on AI:** India currently **does not have a single, comprehensive law** for regulating AI.
  - There are various initiatives and guidelines, but they are not legally binding. This creates uncertainty for businesses and raises concerns about potential risks.

### Way Forward

- **Quantum Leap Alliances:** To stay ahead in the race for emerging technologies like quantum computing, India could forge strategic **"Quantum Leap Alliances"** with leading nations and research institutions.
  - These alliances could facilitate joint research projects, knowledge sharing, and collaborative efforts to develop next-generation quantum technologies.
- **AI-powered Rural Entrepreneurship Hubs:** India can set up **AI-powered kiosks in rural areas**. These kiosks, equipped with local language interfaces and AI assistants, can provide training, resources, and mentorship to aspiring rural entrepreneurs. They can connect them with online marketplaces, logistics providers, and financing options.
- **Moonshot Innovation Labs:** India can establish a network of "Moonshot Labs" modelled after **DARPA (Defense Advanced Research Projects Agency)** in the US.

- These labs would focus on **high-risk, high-reward research** in areas like next-generation materials, and brain-computer interfaces.
- **TechnoSkilling for Future:** India needs to foster **"TechnoSkills Alliances"** between industry, academia, and government to collaboratively design and implement curricula aligned with emerging technology trends and market demands.
  - There is a need to introduce **"Immersive Learning Environments"** that combine virtual and augmented reality simulations with hands-on practical training, enabling experiential learning of cutting-edge technologies.
  - Also, promoting **"Skill Mobility"** by creating **flexible and modular learning pathways** that allow individuals to acquire new skills and transition across different technological domains throughout their careers.
- **Enhancing Cybersecurity:** India needs to implement more stringent Cyber Resilience Framework that integrates proactive threat intelligence, advanced security measures, and incident response capabilities across critical infrastructure and key sectors.
  - Also, promote **"Secure-by-Design"** principles by integrating cybersecurity considerations from the early stages of technology development and deployment.



## India's Trade Dynamics

*This editorial is based on **"In an uncertain world, India's trade push"** which was published in The Indian Express on 02/05/2024. The article examines the global trade dynamics and India's trade push and its potential as a major exporting nation.*

**Tag:** GS Paper - 3, Growth & Development, Mobilization of Resources, Effect of Policies & Politics of Countries on India's Interests

India's trade landscape is evolving amidst global challenges and opportunities. While lower international commodity prices have impacted traditional sectors like **petroleum exports**, emerging sectors such as **electronics, pharmaceuticals, and agriculture** are showing promise. India's recent free trade agreements with the **UAE and EFTA** signify its commitment to deepening economic ties and gaining greater market access.

India's trade push is not merely an economic imperative but a litmus test of its ability to navigate the complexities of the global trade landscape and unlock its true potential as a major exporting nation.

### What is India's Trade Dynamics Post Independence?

- **Post-independence (1947-1990s):** India adopted a **protectionist trade stance**, characterized by high import barriers, strict industrial regulations, and a focus on import substitution.
  - This period saw limited trade openness and a heavily regulated economy, known for the '**license raj**' system.
- **Liberalization Reforms (1991 onwards):** Triggered by a severe balance of payments crisis in 1991, India embarked on a path of economic liberalization.
  - This included dismantling the 'license raj', **liberalizing trade, opening up to foreign investment**, and adopting market-oriented policies.
- **Gradual Opening to Global Markets (1990s-2000s):** In the following decades, India continued to liberalize its trade policies, gradually opening up to global markets.
  - It signed several regional and bilateral trade agreements, including agreements with **ASEAN**, **Japan**, **South Korea**, and others.

- **Focus on Global Economic Integration (2010s-present):** In recent years, India has renewed its focus on global economic integration.
  - India's **Foreign Trade Policy 2023** is encouraging recognition of new towns through "Towns of Export Excellence Scheme".
  - It has been negotiating comprehensive trade agreements with the **European Union**, and the **United Kingdom**, aiming to diversify trade relations and enhance market access.
- **Embracing Rupee Trade and Digital Infrastructure (present and future):** India is increasingly leveraging digital infrastructure and technology, such as the **Unified Payments Interface (UPI)** to transform its international trade prospects.
  - Overseas markets accepting UPI payments include **UAE, France, Mauritius, Sri Lanka**.
  - India is also focusing on **Internationalisation of Rupees**.
    - **Reserve Bank of India (RBI)** has allowed banks from **18 countries** to open **Special Vostro Rupee Accounts (SVRAs)** to settle payments in Indian rupees.



### Which Sectors are Propelling India's Trade Growth?

- **Services Sector:** This is a major driver, with exports surging over 11% in 2023 according to a recent **United Nations Conference on Trade and Development** report. Key sub sectors include:
  - **IT & IT-enabled Services (ITES):** This is the powerhouse, attracting global companies for software development, back-office operations, and call centres.



- India's large talent pool and competitive pricing are major advantages.
- **Tourism & Hospitality:** With its rich cultural heritage and diverse landscapes, India is a growing tourist destination.
  - Government initiatives like **Dekho Apna Desh**, promoting small cities in events like **G20** are further propelling this sector.
- **Medical & Wellness Tourism:** India's skilled medical professionals, coupled with affordable costs, are attracting patients from abroad. This medical tourism segment is witnessing significant growth.
  - Government stated that over 1.4 million medical tourists visited India in 2022.
- **Goods Sector:** While services are strong, there's also significant growth in goods exports. Key sub sectors include:
  - **Engineering Goods:** This sector is witnessing a surge in exports of machinery, vehicles, and capital goods like generators and transformers.
    - Government's **"Make in India"** initiative and **PLI Scheme** promoting domestic manufacturing is a key factor.
    - The share of electronic goods in India's merchandise exports is increased from around 2% in 2017-18 to **6.5% in 2023-24**
  - **Pharmaceuticals:** India is a leading **generic drug manufacturer**, supplying affordable medicines globally.
    - This sector is expected to see continued growth with rising global demand for affordable healthcare solutions.
    - The Commerce Ministry reports a **10% increase in India's pharmaceutical exports**, reaching USD 28 billion in FY24.
  - **Textiles & Apparel:** A traditional strength, India's textile industry is undergoing modernization to cater to international markets.
    - Skilled labor and a strong cotton production base contribute to its success.
    - India exported textiles worth **USD 30.96 billion** during April 2023-February 2024
  - **Agriculture & Processed Foods:** India is a major producer of agricultural products like **rice, wheat, and spices**.
    - Despite bans on export of non-basmati rice, wheat, and other restrictions, overall agriculture and allied exports grew healthily.

- The recent growth was driven by categories like **meat, poultry products, spices, fruits, vegetables, oil meals, oil seeds**, and unmanufactured tobacco.

#### ➤ **Additional Factors Driving Growth:**

- **Free Trade Agreements (FTAs):** India's FTAs with **European Free Trade Association (EFTA)**, Mauritius and UAE reduce tariffs and trade barriers, making Indian exports more competitive.
  - A step in this direction is India's **recently inaugurated 'Bharat Mart'** in Dubai, which is a warehousing facility for Indian MSMEs.
- **Startup Ecosystem:** A thriving startup ecosystem is fostering innovation and creating new products and services for global markets.
  - India remains the **third largest tech start-up ecosystem globally**, with over 950 tech startups founded in 2023.
- **Demographic Dividend:** India's young population provides a large workforce and a growing domestic market, further fueling trade.
  - **65%** of the Indian population is currently under the 35 years age bracket.
- **India's Infrastructure Push:** The government's significant investment in infrastructure development through initiatives like **Bharatmala** and **Sagarmala** is significantly reducing transportation costs and transit times.
  - This improved connectivity is making it easier and faster to move goods across the country and to international ports, enhancing India's competitiveness in global trade.

#### **What are the Main Roadblocks Hindering India's Trade Growth?**

- **Decline in International Commodity Prices:** One of the most significant hurdles India has faced is the sharp decline in international commodity prices, particularly in the **energy sector**.
  - The plunge in crude oil prices has dealt a substantial blow to India's export bill, with petroleum exports plummeting by a staggering USD 13.3 billion in the 2023-24 fiscal year.
  - This downturn underscores India's vulnerability to fluctuations in global commodity markets, given the **substantial share of oil in its export basket**.
- **Labour-intensive Sectors:** Exports from labour-intensive sectors like **textiles, gems and jewelry, and leather** products have declined. This trend, observed over a decade, needs to be reversed to create more jobs.

- **Rejection of Food and Pharma Products:** Stricter quality control measures in developed countries lead to rejections of Indian food and pharmaceutical exports due to concerns about safety standards or compliance with regulations.
  - Over 50 companies in India that manufacture **cough syrups** have failed quality tests.
  - In the past 6 months, US customs officials have rejected **31% of spice shipments from Mahashian Di Hatti (MDH)** due to salmonella contamination.
- **Geographical Concentration of Exports:** India's exports have traditionally been concentrated in a few major markets, such as the **United States and the Europe region**.
  - While efforts are being made to diversify export destinations, overreliance on a limited number of markets can make India's trade vulnerable to economic conditions in those regions.

### Way Forward

- **Reviving Labour-Intensive Sectors:** Establishing dedicated '**Artisan Zones**' with state-of-the-art infrastructure, skill development centres, and financial incentives to attract and retain skilled labour in these sectors.
  - Collaborate with **international fashion houses and luxury brands** to co-create unique product lines that showcase Indian craftsmanship.
  - Implement a '**Craft Tourism**' initiative to promote these sectors and create sustainable livelihoods for artisans.
- **Farm to Fork Traceability:** Implement a 'Farm-to-Fork' traceability system using blockchain technology to ensure transparency and compliance throughout the supply chain.
  - Establish a '**Quality Compliance Accelerator**' program to help Small and Medium Enterprises (SMEs) adopt international quality standards and best practices.
  - Partner with international regulatory bodies to develop harmonised standards and mutual recognition agreements for faster clearance of exports.
- **'Brand India' Global Marketing Campaign:** Launch a comprehensive 'Brand India' global marketing campaign to promote Indian products and services, highlighting their quality, craftsmanship, and unique value propositions.
  - Leverage **social media, influencer marketing, and targeted advertising campaigns** to reach new markets and change perceptions about Indian exports.

- Collaborate with renowned international brands and celebrities to endorse and promote Indian products, enhancing their global appeal and recognition.
- **Focus on Regional Trade Agreements:** Pursue free trade agreements with new and emerging markets in **Asia, Africa, and Latin America**. This can help diversify export destinations and reduce reliance on traditional markets.

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## Street Vendors: Assessing their Significance and Struggles

*This editorial is based on "**Implementing the Street Vendors Act**" which was published in The Hindu newspaper on 1/05/2024. The article examines multidimensional aspects of the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014 and numerous challenges in its implementation.*

**Tag:** GS Paper - 2, Salient Features of Indian Society.

It has been a decade since the enactment of the **Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act on 1st May, 2014**. It was hailed as a forward-looking legislation that aimed to uplift street vendors by legalising their vending rights. However, the legislation has been encountering significant hurdles in its practical execution.

Street vendors constitute a **vital component of the urban economy** due to their substantial presence in major cities, offering essential **day-to-day utility items**. They serve as indispensable nodes in the urban economic ecosystem, providing access to fundamental necessities for residents.

### Who are Street Vendors and What are their Associated Rights?

- **Definition:**
  - A street vendor is an individual who sells goods to the public **without a permanent built-up structure** for vending.
  - They may operate from **stationary positions on pavements** or other public/private spaces; they may be mobile, carrying their merchandise on push carts or in baskets.
- **Population:**
  - The number of street vendors has significantly

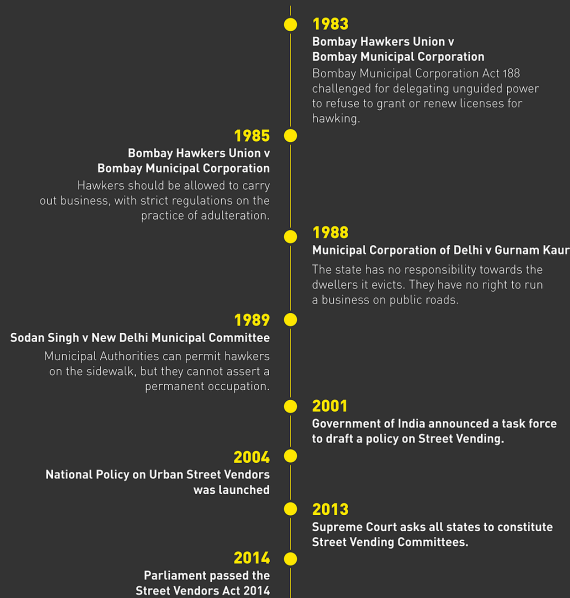
increased in major cities worldwide, particularly in developing regions like Asia, Latin America, and Africa.

- In India, approximately **49.48 lakh street vendors** have been identified, with **Uttar Pradesh** having the **highest count at 8.49 lakh**, followed by Madhya Pradesh at 7.04 lakh. Conversely, Delhi has about 72,457 identified street vendors, while **none** have been identified in Sikkim.

- **Constitutional Provision - Right to Trade:** **Article 19(1)(g)** of the Indian Constitution grants citizens the fundamental right to practise any profession, trade, or business.

### Landmark Judgements and Policies on Street Vending

Source: Progress Report 2020: Implementing the Street Vendors Act, Centre for Civil Society



### What is the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014?

- **Legalisation:**
  - It was implemented to **legalise the vending rights** of street vendors (SVs).
  - Its objective was to safeguard and regulate street vending in urban areas, with **State-level regulations** and programs overseen by **Urban Local Bodies (ULBs)** through the formulation of by-laws, planning, and enforcement.
- **Roles and Responsibilities:**
  - It outlines the **roles and responsibilities** of both vendors and various levels of government.

- It envisages to accommodate all **'existing' vendors** in designated vending zones and issue **Vending Certificates (VCs)**.
- It establishes a **participatory governance framework** through the creation of Town Vending Committees (TVCs), where street vendor representatives must constitute **40%** of the members, with a sub-representation of **33%** for women SVs.
  - These committees are responsible for ensuring the inclusion of all existing vendors in vending zones and it includes mechanisms for addressing grievances and disputes, proposing the establishment of a **Grievance Redressal Committee** chaired by a civil judge or judicial magistrate.

#### ➤ **Conducting Survey:**

- It mandates that States/ULBs conduct surveys to identify SVs at least once **every five years**.

### What is the Significance of Street Vendors in India?

#### ➤ **Livelihood Generation:**

- They serve as a vital source of **income for millions** of people, particularly migrants and the urban poor. It offers them opportunities for **self-employment** and sustenance amidst challenging economic conditions.
- Beyond the vendors themselves, street vending creates **indirect employment opportunities** in supply chains, logistics, and support services.

#### ➤ **Accessibility of Goods and Services:**

- Street vendors play a crucial role in providing **affordable and accessible** goods and services to urban residents.
- From fresh produce to ready-to-eat snacks, their offerings fulfil daily needs and contribute to food security in cities.

#### ➤ **Cultural Heritage Preservation:**

- Street vendors are often custodians of culinary traditions and cultural practices. Their offerings, such as **Mumbai's vada pav** and **Chennai's roadside dosai** embody their significance,
- Artisanal crafts reflect the diverse cultural heritage of India's regions and communities.

### What are the Government Initiatives for Street Vendors?

#### ➤ **PM SVANidhi Scheme:**

- **PM SVANidhi Scheme** launched by the **Ministry of Housing and Urban Affairs**, aims to provide



affordable working capital loans to street vendors to restart their businesses or expand their existing ones. It also offers incentives for timely repayment.

➤ **National Urban Livelihood Mission (NULM):**

- **NULM** is a centrally sponsored scheme that aims to reduce poverty and vulnerability of urban poor households by enabling them to access gainful self-employment and skilled wage employment opportunities.

- It includes provisions for **skill training, capacity building**, and access to credit for street vendors.

➤ **Urban Street Vendors (USV) Component under DAY-NULM:**

- This component of the **Deendayal Antyodaya Yojana-National Urban Livelihoods Mission (DAY-NULM)** focuses on street vendors.
- It provides support for setting up and upgrading vending infrastructure, organising vendors into **Self-Help Groups (SHGs)**, and facilitating access to credit and social security schemes.

➤ **Skill Development Initiatives:**

- Various skill development programs and vocational training initiatives are implemented to enhance the capabilities of street vendors, enabling them to diversify their livelihood options and improve their earning potential.

➤ **Town Vending Committees (TVCs):**

- Under the **Street Vendors Act**, **Town Vending Committees** are formed at the municipal level to facilitate the implementation of the Act's provisions.
- These committees are responsible for identifying

vending zones, issuing vending certificates, and addressing grievances of street vendors.

➤ **State Specific Provisions:**

- **Maharashtra, Rajasthan, Karnataka and West Bengal** have framed state-specific provisions for street vendors under the **Street Vendors Act 2014**.

**What are the Challenges Faced by Street Vendors in India?**

➤ **Administrative Challenges:**

- **Heightened Harassment and Evictions:** Despite the Street Vendors Act which focuses on protection, street vendors endure increased harassment and eviction, often stemming from **outdated bureaucratic attitudes** to treat them as illegal migrants.
- **Lack of Awareness and Sensitization:** There is a dearth of understanding among state authorities, the public, and vendors regarding the Act's provisions, resulting in gaps in implementation.
- **Limited Representation in TVCs:** Street vendor representatives in Town Vending Committees (TVCs) often lack influence, and the inclusion of women vendors remains superficial.

➤ **Governance Challenges:**

- **Inadequate Urban Governance Mechanisms:** The Act's alignment with urban governance frameworks is deficient, and Urban Local Bodies (ULBs) lack the necessary authority and capacity.
- **Neglect in Urban Development Initiatives:** Programs like the Smart Cities Mission prioritise infrastructure development over the integration of street vendors, undermining the Act's objectives.
- **Exclusionary Urban Development:** Conventional perceptions of '**world-class cities**' marginalise street vendors, impeding their acknowledgement as legitimate contributors to urban life.

➤ **Societal Challenges:**

- **Impact of Climate Change and Tech Advancements:** Street vendors confront new challenges from climate change, competition from e-commerce, and declining incomes, necessitating innovative responses.
- **Stigma on Urban Image:** The societal view of the high-tech urban sphere perpetuates the condition of street vendors, depicting them as hindrances to development instead of recognising their importance as integral members of urban communities.

➤ **Extortion Racket:**

- Cases of '**rangdari tax**' and '**hafta**' are common. In many cities, vendors have to part with substantial money in order to ply their trade.

**28 TOWN VENDING COMMITTEES NOTIFIED BY GOVT**

- Corporations to start identifying hawkers soon
- Hawkers to be given vending certificates to prevent any harassment against them
- Government mulling to give them kiosks

- with garbage disposal and solar light system
- Hawkers displaced in last few years can also apply for space for shops
- 5% of city's pollution is estimated to be caused by street vendors



## What More can be done to Improve the Condition of Street Vendors?

- **Strengthen Implementation:**
  - This includes identification processes, increasing awareness (through educational workshops, collaboration with NGOs, peer-to-peer community learning, collaboration with local authorities about available benefits), and ensuring accessibility of support programs.
- **Expand Benefits:**
  - Street vendors should be provided with a broader range of benefits, including accident relief, compensation for natural death, educational support for children's higher studies, and pensions during times of crisis.
- **Prevent Harassment:**
  - Ensuring that street vendors are not subjected to arbitrary evictions, **confiscation of goods, or unfair fines is crucial to protecting their right to earn a livelihood.**
- **Enhance Representation:**
  - Street vendors should have meaningful representation in decision-making bodies such as **Town Vending Committees (TVCs) to ensure their voices are heard in matters affecting their livelihoods.**
  - Increasing the representation of street vendors, particularly women vendors, can lead to more inclusive policies and better outcomes for this marginalised group.
- **Promote Financial Inclusion:**
  - Facilitating access to formal financial services such as **credit, savings, and insurance can help street vendors manage their finances** more effectively and invest in their businesses.
  - Microfinance institutions, self-help groups, and digital banking solutions can play a crucial role in promoting financial inclusion among street vendors.



## India's Global Rise and Regional Retreat

*This editorial is based on "[The paradox of India's global rise, its regional decline](#)" which was published in The Hindu on 04/05/2024. The article brings into picture that while India's influence on the global stage is growing, its clout in South Asia is waning, presenting a significant challenge to its aspirations as a pivotal power in international politics.*

**Tag:** GS Paper - 2, India and its Neighbourhood, Groupings & Agreements Involving India and/or Affecting India's Interests

India's global stature has undoubtedly grown in recent decades, propelled by its **economic might, military prowess, and demographic advantages**. From being a prominent voice in global forums like the **G-20** and participating in multilateral groups like the **I2U2**, India has established itself as a significant player on the world stage.

However, this global ascent is paradoxically accompanied by a concerning **decline in its regional influence**, particularly in **South Asia**, where it once held sway.

### What are the Factors Leading to India's Global Rise?

- **Economic Boom:** The **World Bank** forecasts India's output growth to reach **7.5% in FY24**, driven by resilient activity in services and industry
  - This economic strength translates to global influence. For instance, Indian companies like Tata Consultancy Services are holding significant global presence.
  - Strong economy also attracts higher investments as well.
- **Strategic Partnerships and Alliances:** India has actively pursued strategic partnerships and alliances with major powers, such as the **Quadrilateral Security Dialogue (Quad)** with the United States, Japan, and Australia.
  - These partnerships have helped India counter China's growing influence in the Indo-Pacific region and enhance its global standing.
  - Additionally, India's participation in multilateral forums like **BRICS** and the **Shanghai Cooperation Organization** has strengthened its global presence.
  - India's emergence as a **Voice of the Global South** has propelled it into a leadership position on the global stage.
    - It is showcased through inclusion of the **African Union** in **India's G20 presidency**, and swift passage of **G20 New Delhi Leaders' Declaration** which was considered hard to achieve.
- **Rising Military Capabilities:** India has steadily **modernized, indigenised and strengthened** its military capabilities, making it a formidable force in the region and beyond.
  - **INS Sahyadri, LCA Tejas and INS Vikrant** are prime examples of India's recently built military capabilities.



- India recently delivered the first batch of **BrahMos Missile** to the Philippines, giving a push to defense diplomacy.
- **Strategic Autonomy:** India's strategy of non-alignment and reformed multilateralism, such as **abstaining from voting against Russia in the UNGA** and **providing humanitarian support to Israel while maintaining a clear diplomatic stance with Palestine**, reflects its commitment to strategic autonomy and being globally applauded.
- India also subscribed to **India First Policy** that is visible in its purchase of Russian crude oil despite western apprehensions, keeping strategic interest on top.
- **Technological Prowess:** India's advancements in various fields of technology, particularly in information technology (IT), space exploration, and renewable energy, have played a crucial role in its global ascent.
  - India's recent achievements with **Chandrayaan-3** and the **Aditya-L1 Mission** highlight its capabilities in the space sector.
  - Additionally, India's leadership in the **International Solar Alliance** and **Global Biofuel Alliance** demonstrates its commitment to promoting renewable energy.
- **Soft Power and Cultural Influence:** India's rich cultural heritage, vibrant democracy, and thriving diaspora have contributed to its soft power globally.
  - **Indian cinema, cuisine, yoga**, and spirituality have found widespread appeal across the world.

### ***What Factors are Leading to Regional Decline of India in South Asia?***

- **Rise of China:** China's extensive economic investments, infrastructure projects through **Belt and Road Initiative**, and diplomatic initiatives in South Asia have eroded India's traditional sphere of influence in the region, leading to a relative decline in India's power and sway.
- **Low Regional Trade:** Intra-regional trade in South Asia is already among the lowest in the world. India's trade with the South Asian countries has remained roughly between **1.7% and 3.8%** of its global trade.
- **Perception of Indian Hegemony:** Some smaller nations in South Asia perceive India's actions as an attempt to assert its hegemony in the region.
  - This perception has led to a sense of mistrust and a desire to counterbalance India's influence through **Balancing, Bargaining, Hedging and Bandwagoning strategies**.

- **Strained Relations with Neighbors:** India's relations with some of its neighbors have been strained due to various factors, including **border disputes, cross-border terrorism, and water-sharing issues**.
- **Internal Challenges:** India's own internal challenges, including domestic political issues, and resource constraints, have diverted attention and resources away from proactive regional engagement, contributing to its **decline in influence within South Asia**.

**Note:** South Asia encompasses the southern part of Asia, delineated by geography and ethno-cultural factors, and includes **Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka**.

### ***What are the Main Challenges India faces with its Neighboring Countries?***

- **Pakistan:** **Kashmir dispute** and cross-border terrorism remain the primary sources of tension between India and Pakistan.
  - The **Indus Water Treaty of 1960** allocates water rights from the Indus River system. However, disagreements over water sharing and infrastructure projects on the rivers remain a source of tension.
- **China:** While not strictly a South Asian nation, China's growing influence in the region impacts India. A long-standing unresolved border dispute exists between India and China, particularly over the **Line of Actual Control (LAC)**.
  - This has led to several military standoffs and tensions including the recent **Galwan Valley Standoff**.
  - China's String of Pearls Strategy and **China-Pakistan Economic Corridor** is heavily contested by India.
  - Also, China's recently released "standard map" that includes the state of **Arunachal Pradesh and the Aksai Chin region** as part of its territory has generated significant tensions.
- **Maldives:** Recent Maldivian politics has seen a campaign called "**India Out**," labeling Indian presence as a threat to sovereignty.
  - This campaign, coupled with a **tourism strain stemming from a diplomatic dispute** and **China's rising influence in the Maldives**, has sparked concerns about India-Maldives Relations.
- **Bangladesh:** India and Bangladesh have signed only **2 treaties out of 54 common rivers they share**, including the Ganga Waters Treaty and The Kushiya River Treaty.

- Negotiations are ongoing for major rivers like the **Teesta and Feni**.
- Also, illegal migration from Bangladesh to India, involving refugees and economic migrants, remains a significant issue, straining Indian border states and raising security concerns.
- **Sri Lanka:** The India-Sri Lanka relationship faces challenges such as tensions regarding ownership of **Katchatheevu** Island, concerns about border security and smuggling.
  - It also includes sensitivity surrounding the **Tamil minority issue in Sri Lanka**, and India's apprehensions about China's growing influence in Sri Lanka (especially through **Hambantota Port**).
- **Nepal:** Although relations have improved recently, some lingering issues persist.
  - It includes Boundary disputes, especially regarding the **Kalapani-Limpiyadhura-Lipulekh trijunction area** in western Nepal and the Susta area in southern Nepal.
    - Nepal recently announced the printing of a new **Rs 100 currency note** featuring a map that includes the Indian territories of **Lipulekh, Limpiyadhura, and Kalapani**, a move that has been contested by India.
  - Gorkhas are increasingly deviated to China from India forces due to the new **Agniveer Scheme**.

### **What Steps can India Take to Enhance its Regional Relationships?**

- **Development-Centric Diplomacy:** It is high time for India to move beyond just offering loans and **focus on collaborative development projects** that address specific needs in neighboring countries.
  - This could involve joint research in areas like **agriculture, renewable energy, or disaster management**.
- **Cooperative Security:** India needs to shift towards a purely military-centric approach to security and promote cooperative security measures.
  - This could involve joint counter-terrorism exercises, regional disaster response teams, or a **South Asian hotline for managing border tensions**.
- **Focusing on Regional Blocs:** Instead of trying to dominate the entire region, India can focus on building stronger relationships with sub-regional blocs like **BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical Cooperation)** or **SAARC (South Asian Association for Regional Cooperation)**.
  - Success in these smaller groups can translate to wider regional influence.

- **Revitalising Neighbourhood First Policy:** India must relook through its **Neighbourhood First policy** and **prioritize inclusive development projects** fostering mutual trust through transparent communication, and **leveraging digital connectivity** for collaborative initiatives within the region.
- **South Asia at Heart of Global South:** India can enhance its regional diplomatic ties by showcasing the South Asian region as a pivotal player in the Voice of Global South Summits.
  - This approach can bolster India's influence and cooperation within the region.

■■■

## **India's MSME Sector**

*This editorial is based on **"MSMEs are not paid on time. They need to be"** which was published in The Hindu on 07/05/2024. The article brings into picture the issues of delayed payments in MSME Sector and need for subsequent reforms.*

**Tag:** GS Paper-2, Government Policies & Interventions, GS Paper-3, Mobilization of Resources

The **MSME sector** has become a key driver of India's economy, fostering **entrepreneurship** and creating significant employment opportunities with **low capital investment**. It plays a vital role in the country's inclusive industrial development, complementing large industries as ancillary units.

Despite its contributions, the MSME sector grapples with significant challenges, including access to finance, technology adoption, and global market competitiveness.

### **What are MSMEs?**

- **About:** MSME stands for **Micro, Small and Medium Enterprises**. MSMEs are businesses that produce, process, and preserve goods and commodities.
  - These are broadly classified based on their investment in plant and machinery for manufacturing or equipment for service enterprises, as well as their annual turnover.
- **MSME Regulation in India:** In 2007, the **Ministry of Small Scale Industries** and the **Ministry of Agro and Rural Industries** merged to form the **Ministry of Micro, Small, and Medium Enterprises**.
  - This ministry develops policies, facilitates programs, and monitors implementation to support MSMEs and aid in their growth.

- The **Micro, Small, and Medium Enterprises Development Act of 2006** addresses various issues affecting MSMEs, establishes a **National Board for MSMEs**, defines the concept of “enterprise,” and empowers the Central Government to enhance MSME competitiveness.

CLASSIFICATION	MICRO	SMALL	MEDIUM
<b>Manufacturing Enterprises and Enterprises rendering Services</b>	Investment in Plant and Machinery or Equipment: Not more than Rs.1 crore and Annual Turnover ; not more than Rs. 5 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.10 crore and Annual Turnover ; not more than Rs. 50 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.50 crore and Annual Turnover ; not more than Rs. 250 crore

### ***What is the Significance of MSMEs in India's Growth Trajectory?***

- **GDP Contribution and Employment Generation:** MSMEs currently contribute approximately **30% to India's Gross Domestic Product (GDP)**, playing a crucial role in driving economic growth.
  - Als, MSMEs are labor-intensive and play a vital role in creating employment opportunities across various sectors. They currently provide employment to over **11 crore** people in India.
  - For instance, the **textile industry**, which is dominated by small-scale units, employs a significant number of workers in activities like **spinning, weaving, and apparel manufacturing**.
- **Contribution to Manufacturing Output:** MSMEs contribute significantly to the country's manufacturing output, particularly in sectors like **food processing, engineering, and chemicals**.
  - For example, the **Agra footwear industry**, which is primarily composed of MSMEs, accounts for **28%** of India's footwear exports.
- **Export Promotion:** Currently MSMEs contribute nearly **45% of India's total exports**. Their diverse product range, often catering to niche markets, strengthens India's presence in the global trade arena.
  - The **Indian handicraft sector**, which is dominated by small-scale artisans and enterprises, has a global market and generates significant export revenue for the country.
- **Rural Industrialization:** MSMEs play a pivotal role in driving rural industrialization and promoting inclusive growth.
  - The **Khadi and Village industries sector**, consisting of small-scale units, has been instrumental in providing employment opportunities in rural areas and empowering local communities.
- **Innovation and Entrepreneurship:** The MSME sector fosters innovation and entrepreneurship, as it is often easier for small businesses to **adapt to changing market conditions** and introduce new products or services.

- For instance, the **startup ecosystem** in India (third largest in the world), which is largely driven by MSMEs, has given rise to numerous innovative solutions across various sectors, such as **e-commerce and fintech**.

### ***What are the Key Indian Government Initiatives Related to MSMEs?***

- **Pradhan Mantri MUDRA Yojana:** It provides loans up to 10 lakh to the non-corporate, non-farm small/ micro enterprises. These loans are classified as **MUDRA loans**.
- **Credit Guarantee Schemes:** It is offered by the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) to mitigate the risk for banks and financial institutions, making it easier for MSMEs to access credit.
- **MSME SAMADHAAN:** It is an online **Delayed Payment Monitoring System**, governed by the Micro and Small Enterprise Facilitation Council for settlement of disputes on getting references/filing on Delayed payments by aggrieved MSMEs (Micro, Small and Medium Enterprises), who can do the filing of cases and tracking of status online
- **Government e-Marketplace (GeM):** This online platform facilitates public procurement from MSMEs, providing them with access to a wider market.
- **Udyam Registration:** A simplified online registration process for MSMEs to avail government benefits and schemes.
- **CHAMPIONS Portal:** It is an ICT-driven Control Room and Management Information System focused on enhancing output and national strength through modern processes.
  - It aims to help Indian MSMEs become National and Global CHAMPIONS by addressing their issues and providing guidance, support, and assistance along the way.

### ***What are the Major Challenges Related to MSME?***

- **Lack of Adequate Access to Finance:** Despite government schemes like Mudra loans, obtaining credit remains a major challenge for MSMEs.

- Traditional banks often perceive them as **high-risk borrowers** due to limited credit history and collateral.
- This restricts their ability to invest in expansion, innovation, and working capital.
- **Delayed Payments:** One of the major challenges faced by MSMEs is the issue of delayed payments from larger enterprises or government agencies.
  - This can severely **strain their working capital and cash flow**, hampering their ability to operate smoothly.
  - A small supplier or contractor may face significant financial difficulties due to delays in receiving payments for goods or services rendered, **jeopardizing their business continuity**.
- **Limited Skilled Workforce:** Many MSMEs struggle to find workers with the necessary skills to operate advanced machinery or implement new technologies. This can lead to **inefficiencies, production delays, and reduced product quality**.
- **Limited Branding and Outreach:** MSMEs often **lack the resources and expertise** to effectively market their products and build brand awareness. This makes it difficult to compete with larger companies or established brands, especially in the online marketplace.
- **Infrastructure Constraints:** Inadequate infrastructure, such as **poor road connectivity, unreliable power supply**, and lack of access to modern facilities, can significantly hinder the operations and growth of MSMEs.
  - A small food processing unit in a rural area may face challenges in transporting its products to markets due to poor road conditions or **may experience frequent disruptions** in production due to erratic power supply.

### Way Forward

- **MSME Innovation Hubs:** Establishing physical or virtual MSME innovation hubs. These hubs could connect MSMEs with industry experts, researchers, and mentors.
  - They would facilitate knowledge sharing, co-creation of innovative products, and access to advanced technologies or design expertise.
  - An **MSME apparel manufacturer** can collaborate with a design expert at the hub to develop a new clothing line, fostering innovation and market differentiation.
- **Blockchain-Powered Smart Contracts:** Leveraging blockchain technology and smart contracts can revolutionize the payment cycle for MSMEs.

- A **blockchain-based platform** could be developed to facilitate secure and transparent transactions between MSMEs and their clients (larger enterprises or government agencies).
- **AI-powered Mentorship Programs:** Developing AI-powered mentorship program that provides MSMEs with personalized guidance and advice based on their specific needs and industry data.
  - This can **bridge the gap in mentorship access**, especially for MSMEs in remote locations.
- **Embracing Digital Transformation:** In the digital age, MSMEs must embrace technology to remain competitive.
  - This includes leveraging **e-commerce platforms, adopting digital marketing strategies**, and implementing automation and digitization in their operations.
  - Initiatives like upskilling programs, digital literacy campaigns, and incentives for technology adoption can drive this transformation.
- **Fostering Sustainable Entrepreneurship:** Encouraging **sustainable and socially responsible business practices** among MSMEs can create a positive impact on the environment and society.
  - This can include promoting **eco-friendly production methods**, supporting green entrepreneurship, and incentivizing the use of renewable energy sources.
- **Navigating the Global Market:** With the rise of globalization, MSMEs should be equipped to tap into international markets.
  - Initiatives like **export promotion programs, international trade facilitation centers**, and mentorship from successful exporters can help MSMEs navigate the complexities of global trade.



## India's Flourishing Gaming Industry

*This editorial is based on "[Getting to a new level in India's online gaming sector](#)" which was published in The Hindu on 07/05/2024. The article brings into picture the rise of India's gaming sector and challenges associated with it.*




**Tag:** GS Paper-2, GS Paper-3, Government Policies & Interventions, Issues Arising Out of Design & Implementation of Policies, IT & Computers, Cyber Security



India's vibrant **online gaming** industry is rapidly gaining traction, fueled by a burgeoning **digital economy** and a tech-savvy population. With a burgeoning youth population, widespread **accessibility to smartphones** and **high-speed internet**, India's gaming sector is poised to leave an indelible mark on the global gaming landscape.

India is currently the largest gaming market in the world, boasting a user base of 568 million gamers and over 9.5 billion gaming app downloads in 2023. The sector in India has experienced an impressive growth trajectory, with a staggering **28% Compound Annual Growth Rate (CAGR)** between FY20 and FY23. This remarkable growth is not only attracting significant foreign and domestic investments but also generating substantial direct and indirect employment opportunities.

### Gaming expected to reach \$7billion+ by 2028

	 India	 US	 China
CAGR FY 20-23	28%	9%	7%
Gaming market size in the country as % of global gaming market (FY23)	1.1%	24%	25%
Mobile gaming as % share of gaming market (2023)	90%	37%	62%

#### What are the Factors Leading to the Rise of the Gaming Industry in India?

- **Improved Internet Infrastructure and Connectivity:** Development of broadband connectivity in **Tier-II and Tier-III cities** has expanded the reach of online gaming beyond just metro areas.
  - Initiatives like **BharatNet** and the **National Broadband Mission** have aimed to provide high-speed internet access across rural and remote regions.
  - The **proliferation of 4G** and the rollout of **5G networks** have enhanced internet speeds and reduced latency, essential for seamless online gaming experiences.
- **Affordable Access to Data and Smartphones:** The decreasing costs of mobile data plans, driven by **intense competition among telecom operators**, have made data more accessible and affordable for online gaming.
  - This **democratization of technology** has been a significant driving force behind the surge in online gaming adoption across socio-economic strata.
  - India's current smartphone base is around **680 million**, with over 80% of those being **4G smartphones** (as per Counterpoint Research).
    - Mobile phones contribute to **90%** of the gaming market in India as compared to about **37% and 62%** in the US and China, respectively.
- **Cultural Shift and Changing Perceptions:** The **Covid-19** lockdown period accelerated the adoption of online gaming as a form of **virtual entertainment and social connection**.
  - According to a June 2021 KPMG report, Indians' average time spent on online games increased from **2.1 hours per week** (11% of total smartphone time) before the lockdown to **4.5 hours** (15% of total smartphone time) within a month of the lockdown.
  - This led to the gradual shift in perception, with online gaming transitioning from being viewed as a mere pastime to a **viable career option**.
- **Government Support and Regulatory Clarity:** Initiatives like the **IT (Intermediary Guidelines and Digital Media Ethics Code) Rules 2021** have provided a regulatory framework for online gaming, addressing concerns about harmful content and addiction.
  - The establishment of self-regulatory bodies and the **Animation, Visual Effects, Gaming, and Comics (AVGC) Promotion Task Force** have aimed to promote the industry's growth and development.
  - The government's decision to allow **100% Foreign Direct Investment (FDI)** in the gaming sector has opened up avenues for securing funding from international investors.
  - Also, the government's recent recognition of gamers in the **Content Creators Award 2024** is a significant step in enhancing the overall gaming sector.
- **Rise of E-sports and Competitive Gaming:** The inclusion of **e-sports** as a medal event at prestigious competitions like the **Commonwealth Games 2022** and **Asian Games 2023** has elevated its status and recognition as a legitimate sporting activity.





- The success of Indian teams and players on global esports platforms has further boosted the industry's profile and inspired aspiring gamers.
- India's online gaming segment currently accounts for a mere **1.1% of global online gaming revenue**.
- **Integration of Cutting-Edge Technologies:** The incorporation of technologies like **Augmented Reality (AR)**, **Virtual Reality (VR)**, **cloud gaming**, and **blockchain** has enhanced the gaming experience and opened up new avenues for innovation.
  - AR and VR offer immersive and interactive gameplay mechanics, while cloud gaming eliminates the need for high-end hardware, making gaming accessible across devices.
  - Blockchain integration enables **ownership of digital assets, tokenized economies, and interoperability** across games and platforms, fostering increased engagement.
- **Thriving Start-up Ecosystem and Investment Inflow:** India's vibrant start-up ecosystem has given rise to numerous gaming companies and platforms, driving innovation and catering to the diverse gaming preferences of Indian consumers.
  - India has produced 3 gaming unicorns: **Game 24X7, Dream11 and Mobile Premier League**.

### **What are the Major Challenges Related to India's Gaming Sector?**

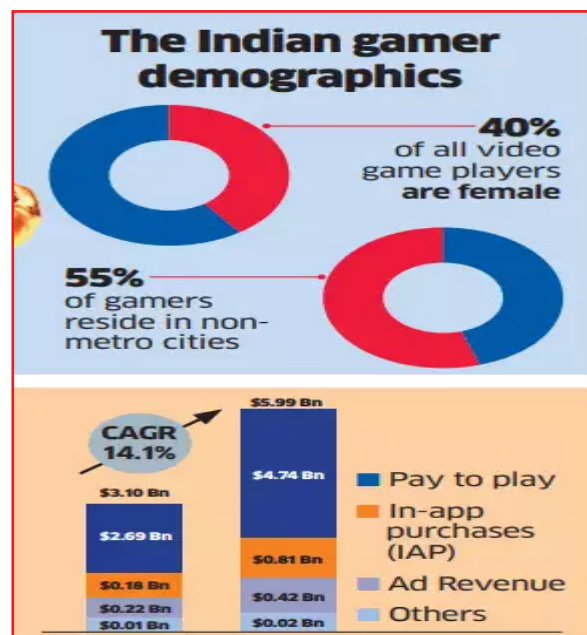
- **Regulatory Ambiguity and Fragmented Policies:** The lack of a **cohesive and comprehensive regulatory framework** for the gaming industry in India has created ambiguity and uncertainty for players in the sector.
  - Different states have different laws and regulations governing online gaming, leading to a fragmented policy landscape.

- For example, while some states like **Telangana and Andhra Pradesh** have banned certain types of online games, others like **Karnataka** have adopted a more liberal approach.
- **Taxation Concerns and Sustainability Challenges:** The recent imposition of a **28% Goods and Services Tax (GST)** on the total face value of bets has raised concerns about the long-term sustainability of the industry, particularly for smaller startups and players.
  - Critics argue that this high tax rate could force many smaller gaming companies out of business, stifling innovation and hampering the industry's growth.
- **Infrastructure and Connectivity Challenges:** While significant improvements have been made, reliable and high-speed internet connectivity remains a challenge in many parts of the country, particularly in rural and remote areas.
  - Only **31% of the rural population uses the Internet** compared to 67% of their urban counterparts (**India Inequality Report 2022**).
- **Content Localization and Cultural Relevance:** Developing games and content that resonate with the diverse cultural and linguistic landscapes of India can be a challenge for game developers.
  - For example, while some games like **Ludo King** have successfully adapted to local tastes, many international games struggle to find the same level of cultural resonance among Indian audiences.
- **Responsible Gaming and Addiction Concerns:** As the gaming industry grows, there are legitimate concerns about the potential risks of gaming addiction, particularly among younger populations.

- The prevalence of **internet gaming disorder** in the Indian population among school, undergraduate, and postgraduate students ranged from **1.3 to 19.9%** for the adolescent group
- Recently, Installation of ‘**Beware of Smartphone Zombies**,’ signboards was seen in Bengaluru, a stark reminder of the growing epidemic of digital distraction.

### What Measures can be Adopted to Enhance the Gaming Industry in India?

- **Regulatory Clarity:** Enhancing regulatory clarity is critical in the gaming sector, especially regarding the effective implementation of **self-regulatory bodies mandated by the IT Rules of 2021**.
  - This is currently pending, undermining their intended impact, making it a pressing need of the hour.
- **Dedicated Gaming Hubs and Incubators:** Set up specialized gaming hubs and incubators in major cities to foster **innovation, collaboration, and talent development**.
  - These hubs can provide state-of-the-art infrastructure, mentorship, and resources for game developers, startups, and aspiring professionals.
- **Promote Game Development based on Indian Culture and Mythology:** Encourage and incentivize game developers to create games based on India's rich cultural heritage, mythology, and folklore.
  - This can help in building a unique identity for Indian games, catering to both domestic and international audiences.
  - **Example:** Games like “**Raji: An Ancient Epic**” have successfully blended Indian cultural elements with engaging gameplay.
- **Innovative Funding and Investment Models:** Encourage alternative funding models like crowdfunding, venture capital investments, and public-private partnerships to support game development and startups.
  - **Example:** Global gaming companies like **Ubisoft** have experimented with blockchain-based assets and in-game economies.
- **Women- Trailblazers of India's Gaming Revolution:** With women constituting a significant **40% of India's gaming populace**, they are well-positioned to lead the country's gaming revolution.
  - By empowering and supporting women in the gaming industry, India can unlock a wealth of talent, diverse perspectives, and innovative ideas that can drive the sector's growth and success.



- **Promote Cross-Industry Collaborations:** Foster collaborations between the gaming industry and other sectors like **tourism, education, and hospitality** to explore the potential of gamification and serious games.
  - These cross-industry collaborations can lead to innovative applications of gaming technology in various domains.

## Empowering Women, Elevating India

This editorial is based on “**India can unlock growth by boosting nari shakti**” which was published in *The Indian Express* on 09/05/2024. The article discusses the challenges of achieving gender parity in India's socio-economic outcomes, highlighting the need for policies that address issues such as low labor force participation among women

Tag: GS Paper-2, Issues Related to Women, Inclusive Growth

As India sets its sights on becoming a ‘**developed nation by 2047**, empowering women lies at the heart of this challenge. **Women empowerment** and socio-economic development go hand in hand, as development alone cannot address gender inequalities. **Amartya Sen** coined the term “**missing women**” to highlight ongoing gender disparities globally.

With women lagging behind on several parameters of well-being, India must adopt key policies to propel the country towards **gender parity** in socio-economic outcomes.

## What are the Key Provisions in Place for Women's Socio-economic Empowerment?

### ➤ Constitutional Measures:

- **Article 14:** Guarantees equality before the law and equal protection of the laws, prohibiting discrimination on the basis of sex.
- **Article 15(3):** Allows the State to make special provisions for women and children.
- **Article 16:** Provides equal opportunities in matters of public employment.
- **Article 39(d):** Calls for equal pay for equal work for both men and women.
- **Article 42:** Directs the State to make provisions for ensuring just and humane conditions of work and maternity relief.

### ➤ Government Initiatives:

- **Pradhan Mantri Mudra Yojana:** Provides access to affordable credit for women entrepreneurs and self-help groups.
- **Beti Bachao Beti Padhao:** Focuses on generating awareness and improving women's welfare through education.
- **Mahila E-Haat:** An online marketing platform to support women entrepreneurs and self-help groups.
- **Mahila Shakti Kendra:** Facilitates empowerment programs and resources at the village level for skill development and entrepreneurship.
- **Working Women Hostel:** Supports safe and affordable accommodation for working women in urban areas.
- **Pradhan Mantri Awas Yojana:** It ensures housing under women's names.
- **Maternity Benefit (Amendment) Act 2017:** Increased paid maternity leave to **26 weeks** and mandated **crèche facilities**.

### ➤ International Conventions/Agreements:

- **Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW):** Adopted by the UN in 1979, calls for ending discrimination and ensuring equal rights for women.
  - It was signed by India in 1980 and was ratified in 1993.
- **Beijing Declaration and Platform for Action:** Adopted at the **1995 UN World Conference on Women**, it laid out agenda areas for women's empowerment including economic participation (India is a part of it).

- **UN Sustainable Development Goals (SDGs):** Goal 5 aims to **achieve gender equality** and empower all women and girls, including through economic empowerment measures by **2030**.

## What are the Key Factors Hindering Women's Socio-economic Growth in India?

### ➤ Entrenched Social Norms and Patriarchal Mindsets:

Deeply ingrained social norms and patriarchal attitudes often restrict **women's mobility, education, and economic opportunities**.

- The preference for sons and discrimination against daughters persists in many parts of the country.
- **Example: Son meta-preference** leading to gender-biased sex selection has resulted in skewed sex ratios in states like **Haryana, Punjab**, etc.

### ➤ Low Labor Force Participation:

India's female labor force participation rate is quite low at around 37% as compared to the global average of **47%** (**Periodic Labour Force Survey 2022-23**).

- Also, India has a lower proportion of employed individuals in salaried work compared to China and Bangladesh.
- The shift away from agriculture and the **prevalence of informal labor have disproportionately impacted women**, with many rural women working in the informal sector.

### ➤ Disproportionate Share of Unpaid Care Work:

Indian women bear a disproportionately higher burden of **unpaid domestic and care work** relative to men. This restricts their time available for education, skills development, and paid economic activities.

- Women spend nearly **three times (2.8)** as much of their day on unpaid care work as men (UN Women).

### ➤ Gender Pay Gaps:

There exist significant gender pay gaps across various sectors and occupations in India.

- Women often experience discrimination in **hiring, promotions** (glass ceiling and glass clip), and **wages** compared to their male counterparts.
- In **World Economic Forum's Global Gender Gap Index 2023**, India ranks **127** out of 146 countries and has closed 64.3% of the overall gender gap.
  - However, in economic participation and opportunity, the country has only achieved **36.7%** parity.

### ➤ Lack of Property Ownership and Financial Inclusion:

Despite laws granting equal inheritance rights, only about 20% of women own land or property in India. Limited asset ownership restricts women's economic bargaining power and access to credit.



- **National Family Health Survey 2019-21** data shows a higher percentage of men owning property compared to women.
  - Specifically, **42.3% of women and 62.5% of men own a house**, while ownership of land, either solely or jointly, stands at **31.7% for women and 43.9% for men**.
- **Exposure to Violence:** The high prevalence of different forms of violence against women, including **domestic violence, sexual harassment, etc.** impedes their freedom of movement and ability to participate safely in economic spheres.
  - Over 28,000 complaints of crimes against women received in 2023 (**National Commission for Women (NCW)**).
  - 50% of women suicide deaths were of housewives in 2021 (**National Crime Records Bureau**)
- **Limited Education:** As per the **National Family Health Survey 2019-21**, the overall female literacy rate is **71.5%**, significantly lower than the male literacy rate of **84.7%**.
  - At the elementary school level, the gender parity index is close to 1, meaning equal enrollment of girls and boys. However, it **declines at higher education levels**.
- **Limited Political Participation:** Women's representation in Parliament is low - only 14.4% in the Lok Sabha and 13% in the Rajya Sabha.
  - While the **Nari Shakti Vandana Adhiniyam 2023** has been passed providing 33% reservation to women in Lok Sabha and State Assemblies, its implementation is still pending.

### ***What Measures can be Adopted to Promote Socio-economic Empowerment Among Women?***

- **Increasing Women's Labor Force Participation:** Raising women's labor force participation (LFP) rate from the current around 25% to **50%** could bring India closer to an **8% GDP growth rate**, according to **World Bank** estimates.
  - The government should focus on **expanding manufacturing capacity**, particularly in labor-intensive sectors such as **readymade garments, footwear, and light manufacturing**, where women form a large proportion of workers.
  - These labor-intensive sectors could be brought under the ambit of the **Production Linked Incentive (PLI) scheme** to address cost disadvantages.

- India can also learn from **Iceland's Equal Pay Certification** that mandates companies prove they don't discriminate
- **Improving Access to Skilling:** There is tremendous scope to raise the number of training institutes that cater exclusively to women from the current **17% of Industrial Training Institutes (ITIs)**.
  - Career counseling, job placement cells embedded in training institutes, and harnessing alumni networks to activate women "**role models**" and mentors for female trainees may be effective tools to improve employment outcomes.
- **Enabling Women's Mobility in Urban Areas:** As India urbanizes at a rapid pace, cities must be planned with a gender lens to **welcome, accommodate, and enable women's mobility**.
  - With rapid demographic shifts and population aging, a high-quality, subsidized urban care infrastructure will not only release women from care work but also create new jobs for them in this sector.
- **Clean Energy to Fuel Dream Energy :** The government could provide **cash rebates to consumers at the point of purchase of clean technology** along with production incentives that create new jobs in the clean energy sector.
  - Adopting such measures could help reduce the significant time burden women face in activities like cooking with inefficient, polluting fuels and make them more focused towards their goals.
- **Developing Micro-credentialing Platforms:** Develop online platforms offering stackable micro-credentials focused on in-demand skills .
  - These bite-sized courses with the help of **Generated AI** can be completed flexibly, allowing **women to gain relevant skills** without disrupting childcare or work schedules.
- **Women-led Supply Chain Networks:** Create government-backed initiatives that connect **women-led self-help groups (SHGs) directly to large corporations** and government procurement programs.
  - This provides women with a stable market for their products and services, bypassing middlemen and increasing profit margins.
  - Women-led startups should also be encouraged. For example, **Falguni Nayar**, a self-made entrepreneur, who has transformed the Indian beauty market with the founding of **Nykaa**, the **country's first online beauty e-marketplace**.

## Advancing Air Pollution Control in India

This editorial is based on "Roti, kapda, makaan: Why not good air?" which was published in The Indian Express on 10/05/2024. The article brings into picture the rise of India's gaming sector and challenges associated with it.

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

**Air pollution** has become an "obvious environmental status" in India, often perceived as a manifestation of economic progress. However, this issue has severe consequences, including economic losses and health impacts, making it crucial to address it urgently.


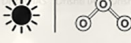


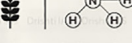

In 2023, India stood as the **third most polluted nation globally**, recording an average population-weighted fine particulate matter (PM) 2.5 concentration of **54.4 micrograms per cubic metre ( $\mu\text{g}/\text{m}^3$ )**, found a new global report by IQAir. The economic impact of air pollution is staggering. Annual deaths attributable to air pollution translate to an economic loss of **Rs 2.7 lakh crore**, which accounts for **1.36% of India's GDP**. Furthermore, a recent survey revealed that **India's GDP could have been 4.5% higher** if air pollution had grown 50% slower each year.

### What is Air Pollution?


- **About:** Air pollution encompasses the presence of **solids, liquids, gases, noise, and radioactive radiation** in the atmosphere, at concentrations harmful to humans, living organisms, property, or environmental processes.
  - These substances, known as pollutants, can be either **natural or human-made** and can originate from various sources such as **industrial processes, vehicle emissions, agricultural activities**, and natural events like wildfires and volcanic eruptions.

### ➤ Air Pollutants:

## Air Pollutants


<p><b>Sulphur Dioxide (<math>\text{SO}_2</math>)</b></p>  <p>It comes from the consumption of fossil fuels (oil, coal and natural gas). Reacts with water to form acid rain.</p> <p><b>Impact:</b> Causes respiratory problems.</p>	<p><b>Ozone (<math>\text{O}_3</math>)</b></p>  <p>Secondary pollutant formed from other pollutants (<math>\text{NO}_x</math> and <math>\text{VOC}</math>) under the action of the sun.</p> <p><b>Impact:</b> Irritation of the eye and respiratory mucous membranes, asthma attacks.</p>
<p><b>Nitrogen Dioxide (<math>\text{NO}_2</math>)</b></p>  <p>Emissions from road transport, industry and energy production sectors. Contributes to Ozone and PM formation.</p> <p><b>Impact:</b> Chronic lung disease.</p>	<p><b>Carbon Monoxide (<math>\text{CO}</math>)</b></p>  <p>It is a product of the incomplete combustion of carbon-containing compounds.</p> <p><b>Impact:</b> Fatigue, confusion, and dizziness due to inadequate oxygen delivery to the brain.</p>
<p><b>Ammonia (<math>\text{NH}_3</math>)</b></p>  <p>Produced by the metabolism of amino acids and other compounds which contain nitrogen.</p> <p><b>Impact:</b> Immediate burning of the eyes, nose, throat and respiratory tract and can result in blindness, lung damage.</p>	<p><b>Lead (<math>\text{Pb}</math>)</b></p>  <p>Released as a waste product from extraction of metals such as silver, platinum, and iron from their respective ores.</p> <p><b>Impact:</b> Anemia, weakness, and kidney and brain damage.</p>

**Particulate Matter (PM)**



**PM10:** Inhalable particles, with diameters that are generally 10 micrometers and smaller.  
**PM2.5:** Fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.  
**Source:** Emitted from construction sites, unpaved roads, fields, fires.  
**Impact:** Irregular heartbeat, aggravated asthma, decreased lung function.

*Note: These major air pollutants are included in the Air quality index for which short-term National Ambient Air Quality Standards are prescribed.*



**Drishiti IAS**

### ➤ Major Driving Factors of Air Pollution:

- **Vehicular and Industrial Emissions:** Carbon monoxide ( $\text{CO}$ ), nitrogen oxides ( $\text{NO}_x$ ), and non-methane volatile organic compounds (NMVOCs) are the primary pollutants from vehicles (>80%).
  - Industries like **iron and steel, sugar, paper, cement, fertiliser, copper, and aluminum** contribute to suspended particulate matter (SPM), sulfur oxides ( $\text{SO}_x$ ), nitrogen oxides ( $\text{NO}_x$ ), and carbon dioxide ( $\text{CO}_2$ ).
  - Road transport presently accounts for **12% of India's energy-related  $\text{CO}_2$  emissions** and is a key contributor to urban air pollution (**International Energy Agency**)



- **Solid Waste Burning:** According to a report by The Energy and Resources Institute (TERI), India generates over 62 million tons (MT) of waste in a year, a significant portion of which is burned openly or in informal dump sites.
  - **Open burning of solid waste** contributes to the release of various pollutants, including PM, dioxins, and furans.
- **Stubble Burning and Other Agricultural Activities:** Intentional **burning of straw stubble** after harvesting grains like **paddy and wheat**, particularly in **Punjab, Haryana, and UP**, contributes significantly to air pollution, especially in the NCR region during winter.
  - The Supreme Court in 2023 proposed excluding stubble-burning farmers from **minimum support price (MSP)** as part of efforts to discourage this practice in Punjab and neighboring states near Delhi.
  - In addition to crop residue burning, other agricultural activities like **tilling, fertilizer and pesticide application**, and improper livestock farming contribute to air pollution.
- These activities release ammonia, methane, and particulate matter into the air.
- **Domestic Cooking and Heating:** Around 62-65% of India's rural households rely on solid fuels, such as **biomass, coal, and kerosene**, for cooking and heating purposes.
  - The incomplete combustion of these fuels releases harmful pollutants, including PM, carbon monoxide (CO), and volatile organic compounds (VOCs).
- **Coal Based Power Plants:** Coal-based thermal power stations with no pollution control technology are responsible for over half sulfur dioxide (SO<sub>2</sub>), 30% oxides of nitrogen (NOx), about 20% particulate matter (PM), among other man-made emissions in India (**International Energy Agency**).
- **Improper Use of Pyrolysis:** Pyrolysis, a technique to break down synthetic material, leaves fine carbon matter and residue like pyro gas and oil, contributing to pollution.
  - The **National Green Tribunal**, in 2014, prohibited used tyres from being burnt in the open or used as fuel in brick kilns.

#### What are the Key Government Initiatives for Controlling Air Pollution?

- **National Clean Air Programme**
- **System of Air Quality and Weather Forecasting and Research (SAFAR) Portal.**
- **New Commission for Air Quality Management**
- **Graded Response Action Plan** (for Delhi).
- For Reducing Vehicular Pollution:
  - **BS-VI Vehicles,**
  - **National Electric Mobility Mission Plan**

**Note:** In *M.C. Mehta vs. Union of India*, the Supreme Court treated the right to live in pollution free environment as a part of **fundamental right** to life under **Article 21 of the Constitution**.

#### Why is India not able to Contain Air Pollution Despite Significant Initiatives?

- **Rapid Vehicular Growth Outpacing Infrastructure Development:** India's economic boom has led to a surge in vehicle ownership, particularly **two-wheelers and budget cars**, which often have lax emission standards.
  - According to the Society of Indian Automobile Manufacturers (SIAM), passenger vehicles sales in India grew by **26.7%** in the fiscal year 2022-23.
  - Public transportation infrastructure like **metro networks and electric buses** have not kept pace with this growth, leading to increased traffic congestion and higher emissions.
  - Also, while policies like the **Bharat Stage VI emission** standards are aimed at reducing vehicular emissions, the impact of such policies takes time as the vehicle fleet does not change overnight.
- **Inadequate Infrastructure for Monitoring and Data Collection:** Many cities in India, particularly smaller towns and rural areas, lack adequate air quality monitoring stations or reliable data collection mechanisms.
  - For instance, **Bihar**, which is 63 times the size of Delhi in square kilometers, has just **35 continuous ambient air quality monitoring stations**.
- **Inconsistent Implementation of NCAP:** The **National Clean Air Programme (NCAP)**, launched in 2019, aimed to reduce particulate matter (PM) levels by **20-30% by 2024**. It was later revised to 40% by 2026.
  - However, According to the Ministry of Environment, Forest, and Climate Change, on average, only **60% of the allocated funds have been used thus far**, with 27% of cities spending less than 30% of their designated budgets.

- **Visakhapatnam and Bengaluru** have spent **0% and 1%** of their NCAP funds, respectively.

➤ **Failure to Address Regional and Cross-Border Pollution:** The NCAP's design flaw is that it requires cities to reduce pollution within their boundaries, **but cities cannot control emissions coming from outside their borders.**

- For example, in Delhi, only about **one-third of the city's pollution** is generated within its borders, while the rest comes from neighboring states due to industrial emissions or stubble burning.

### ***What Measures can be Adopted to Expedite Air Pollution Control in India?***

- **Introduce Air Quality Bonds:** Mandate industries and other major polluters to purchase **Air Quality Bonds**, where the bond amount is proportional to their emissions.
  - The funds collected can be used for **remediation efforts, public awareness campaigns**, and subsidies for clean technologies.
  - Non-compliance would lead to penalties or loss of the bond amount.
- **Biochar Brigade:** Empowering rural communities, particularly **women's self-help groups**, to create and distribute **biochar**, a charcoal-like substance produced by burning organic waste in a controlled environment.
  - Biochar can be mixed with soil to improve fertility and sequester carbon. It can also be used as a **fuel source**, reducing dependence on polluting firewood.
  - The **Pradhan Mantri Ujjwala Yojana** distributes LPG cylinders to rural households, reducing firewood use. A similar program could promote biochar production and utilization.
- **Increasing Urban Forest Canopy Cover:** Launching a national competition among cities to increase their **urban forest canopy cover.**
  - Cities with the most significant increase in green spaces within a set timeframe win grants for further greening initiatives.
  - **Curitiba, Brazil**, is known for its innovative urban planning with a focus on green spaces. India could adapt similar strategies specific to its climate and urban environments.
- **Air Quality-Based Tolling:** Implementing dynamic toll pricing on highways and bridges based on real-time air quality data.

- This strategy can regulate traffic flow and reduce emissions during high-pollution days. Revenue generated can be used for public transport improvement or clean air initiatives.

- **Stockholm, Sweden**, has implemented a similar system to manage traffic congestion. India can adapt this concept with a focus on air quality management.

➤ **National Air Quality Awareness Corps:** Create a dedicated National Air Quality Awareness Corps comprising trained volunteers and professionals who can conduct **grassroots awareness campaigns, educate communities, and promote citizen engagement** in air pollution mitigation efforts.

➤ **Building with Biomimicry:** Building construction can be revolutionized through **biomimicry**. For instance, incorporating **natural ventilation systems** modeled after **termite mounds** or **developing facades with microstructures** inspired by leaves can enhance airflow naturally.

- Integrating greenery such as **vertical gardens and rooftop plantings** not only adds aesthetic value but also acts as natural air purifiers, absorbing harmful gases and particulate matter.

- **Green City Solutions from Europe** that has introduced tree benches across major city landmarks is a significant example.

- These **benches, coated with moss**, effectively absorb pollutants from the air, offering a unique solution to combat pollution.

■■■

## **Carbon Farming: A Pathway to Sustainable Agriculture**

*This editorial is based on "**What is carbon farming?**" which was published in The Hindu on 07/05/2024. The article brings into the picture some techniques within carbon farming that can reduce greenhouse gas emissions and the challenges in implementing such techniques, especially in developing countries such as India.*

**Tag:** GS Paper-3, Land Reforms, Cropping Patterns, Agricultural Marketing, Economics of Animal-Rearing, Modes of Irrigation, Irrigation.

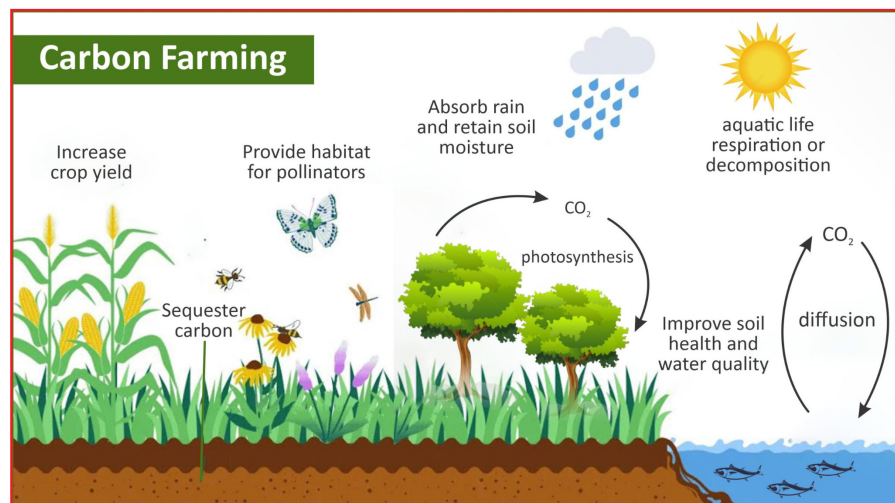
In light of escalating environmental concerns and the pressing need for **climate-resilient agricultural practices**, **carbon farming** has emerged as a crucial mechanism within the agriculture sector globally.

**Carbon**, present in all living organisms and numerous minerals, serves as a cornerstone of life on earth, exerting significant influence over diverse processes such as **photosynthesis** and respiration; **farming** involves caring for the land, growing crops, and raising animals for food.

### What is Carbon Farming?

#### ➤ About:

- Carbon farming represents a strategic approach aimed at maximising **carbon sequestration** and employing agricultural practices designed to enhance the absorption of carbon dioxide ( $\text{CO}_2$ ) from the atmosphere while facilitating its retention in both **plant biomass** and **soil organic matter**.
- This process requires **careful planning, monitoring, and adaptation to local conditions** to maximise its effectiveness in mitigating climate change.



### What is the Significance of Carbon Farming?

- **Climate Change Mitigation:** Carbon farming is pivotal in the fight against **climate change** by sequestering carbon in soil and curbing greenhouse gas emissions.
- **Soil Health Enhancement:** By nurturing healthy soil, carbon farming bolsters water retention, diminishes erosion, and boosts nutrient availability, resulting in amplified crop yields and agricultural productivity.
  - Converting **organic waste into compost**, which can be used as a soil amendment to improve soil structure, fertility, and carbon content.
- **Biodiversity Enrichment:** Carbon farming fosters biodiversity by fostering intricate ecosystems in agricultural settings, attracting beneficial insects and pollinators that fortify crop health and lessen dependence on pesticides.
- **Economic Opportunities:** Implementation of carbon farming practices opens avenues for farmers to tap into **carbon credit markets**, alongside potentially augmented yields from enriched soil, thus diversifying income streams and bolstering financial resilience.

### What are the Techniques Involved in Carbon Farming?

#### ➤ Forest Management

- Healthy forests absorb and hold **carbon dioxide emissions** produced from other sources and are an important source of **greenhouse gas (GHG)** sequestration. Carbon offsets can be created through a variety of strategies

including, **avoiding deforestation and permanent land conservation**, reforestation and replanting activities, and improved forest management.

- Agroforestry not only sequesters carbon but also provides additional **sources of income** for farmers and deforestation contributes to **15-20% of the rise in greenhouse gas levels** globally, activities to address this include managing forests by thinning them out, selectively harvesting trees, encouraging regrowth, planting new trees, and using fertilisers to help forests grow in a productive and sustainable way.

#### ➤ Grasslands Conservation

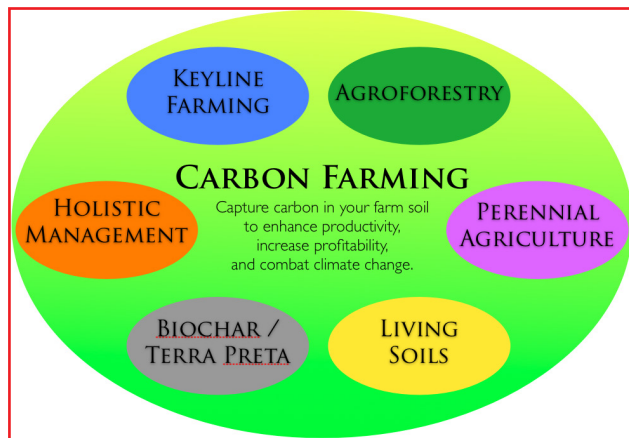
- Native grasses and other vegetation provide a natural source of greenhouse gas (GHG) absorption and sequestration.
- Carbon offsets from this category focus on maintaining native plant life through permanent land conservation and avoiding conversion for commercial development or intensive agriculture.

#### ➤ Renewable Energy Production

- **Renewable energy facilities** such as **wind or solar**, generate carbon offsets by displacing fossil fuel-based electricity production sources within the power grid.
- The carbon offsets derived from a certified third-party project generates the carbon credit, which is owned by the entity that develops the project.



- **Conservation Agriculture Techniques**
  - Methods like **zero tillage**, **crop rotation**, **cover cropping**, and **crop residue** management minimise soil disruption while fostering organic matter accumulation.
  - Planting cover crops during fallow periods to protect and enrich the soil, enhance biodiversity, and sequester carbon.
- **Rotational Grazing**
  - It entails periodically relocating livestock to new pastures, this practice allows previously grazed areas to rejuvenate, minimising erosion and fostering robust regrowth.
  - The flourishing vegetation, in return, absorbs carbon dioxide from the atmosphere and sequesters it in the soil through photosynthesis.



#### What is the Role of Mangrove in Carbon Sequestration?

- **Carbon Storage:**
  - Mangroves store large amounts of carbon in their above-ground biomass, below-ground roots, and organic-rich sediments.
  - The dense vegetation and slow decomposition rates of organic matter in mangrove soils result in substantial carbon accumulation over time.
- **Blue Carbon Ecosystem:**
  - Mangroves are part of the “**blue carbon**” ecosystem, which refers to the carbon stored in coastal and marine habitats like mangroves, seagrasses, and salt marshes.
  - Despite covering less than **0.1% of the Earth's surface**, mangroves sequester and store a disproportionately high amount of carbon compared to other ecosystems.

#### What are the Potential Opportunities for Carbon Farming in India?

- **Economic Opportunity:** India's extensive agricultural base presents significant economic opportunities

through the adoption of carbon farming practices with an estimated potential of **\$63 billion** from approximately **170 million hectares** of arable land.

- **Carbon Credit Systems:** Implementation of carbon credit systems can offer additional income streams to Indian farmers by recognising their contributions to environmental services.
  - Agricultural soils in India have the potential to **sequester 3-8 billion tonnes of CO<sub>2</sub> equivalent annually over 20-30 years**, thus providing opportunities for farmers to participate in carbon trading markets.
- **Regional Suitability:** Different regions of India offer varying degrees of suitability for carbon farming initiatives.
  - The fertile plains of the Indo-Gangetic region and the **expansive Deccan Plateau** are particularly favourable for implementing carbon farming practices.
  - However, regions such as the **Himalayan foothills and coastal areas** face specific challenges, including mountainous terrain and salinisation, which may require tailored approaches to carbon farming implementation.

#### What are Global Carbon Farming Initiatives:

- **Carbon Trading:** In certain nations such as the US, Australia, New Zealand, and Canada, voluntary carbon markets are emerging.
  - These platforms enable farmers to earn extra income by engaging in verified carbon sequestration endeavours, thereby encouraging the uptake of carbon farming techniques.
- **Other Global Efforts:** Initiatives like the ‘4 per 1000’ initiative.
  - Kenya's Agricultural Carbon Project (backed by the World Bank) was introduced at the **2015 United Nations Climate Change Conference (COP21)** in Paris.
  - Australia's Carbon Farming Initiative, advocate for carbon farming on a global scale.
- **India's Legal Framework:** The Government of India passed an **amendment** in 2022 to the **Energy Conservation Act 2001**, which lays the foundation for the Indian Carbon Market. Following this, the **Council On Energy, Environment And Water (CEEW)** conducted an industry stakeholder discussion to understand their concerns and perspectives.

- This issue briefly deconstructs the two key typologies of carbon markets – project-based/offset and **Emission Trading Scheme (ETS)** markets and outlines their key features that determine their environmental integrity and functional boundaries.

### **What are the Challenges Associated to Carbon Farming?**

- **Soil Composition:** Soils with **poor structure or low organic matter** may have limited capacity for carbon storage and may require amendments or management practices to enhance fertility and carbon sequestration potential.
- **Geographic Location:** Geographic factors like **elevation, slope, and proximity to water bodies** also impact land use options and agricultural productivity.
  - **For example**, high-altitude regions may have limited crop options due to colder temperatures, while coastal areas may face challenges related to saltwater intrusion and soil salinity.
- **Varieties of Crops:** The selection of crop varieties suitable for specific soil types, climates, and growing seasons is critical for optimising agricultural productivity and carbon sequestration potential, varieties that are well-adapted to local conditions and **resilient to pests, diseases, and extreme weather events** can enhance crop yields and contribute to soil health and carbon storage.
  - However, limited availability of diverse crop varieties or lack of access to improved seeds may constrain farmers' ability to maximise carbon farming benefits.
- **Water Scarcity:** Adequate water is essential for **plant growth and photosynthesis**, which are fundamental processes for carbon sequestration.
  - Arid regions face challenges in carbon farming due to inadequate water availability, which impedes plant growth and reduces the capacity for carbon sequestration.
- **Financial Constraints:** **Small-scale farmers** in developing nations like India often encounter financial barriers, struggling to afford the initial costs associated with implementing sustainable practices essential for carbon farming.
- **Limited Policy Support:** The absence of robust policy frameworks and insufficient community engagement hinder the widespread adoption of carbon farming practices, impeding its potential impact on mitigating climate change.

### **What Strategies can be adopted to Encourage Carbon Farming?**

- **Legal Framework for Carbon Farming:** Enacting comprehensive carbon farming legislation can showcase the concept of **creating carbon sinks** on agricultural lands and this approach can address climate crises, improve agricultural sustainability, and promote equitable development.
- **Direct Incentives for Farmers:** Recognising the pivotal role of the agriculture and forestry sectors in **carbon capture**, it is imperative to provide direct incentives in form of tools and credit support for adopting climate-friendly practices, existing policies lack targeted tools to significantly incentivise the expansion and preservation of carbon sinks.
- **Utilising Carbon Credits and Banks:** Rewarding farmers with globally tradable carbon credits and establishing carbon banks can incentivise carbon sequestration efforts. These mechanisms can facilitate the **sale of credits to corporations** seeking emission offsets, thus promoting sustainable land management.
- **Collective Engagement:** A successful framework for carbon farming necessitates cohesive policies, public-private collaborations, precise quantification methods, and supportive financing mechanisms. Implementation at a scalable level is crucial for achieving measurable carbon capture while ensuring soil health and resilience.
- **Unlocking Soil Potential:** Soil, an overlooked climate defence, serves as a potent carbon sink. India must harness its potential to meet **Net Zero goals** and pursue decarbonisation.



## **Migration: Trends, Challenges, and Solutions**

*This editorial is based on "**Migration matters**" which was published in Business Standard newspaper on 13/05/2024. The article examines multidimensional aspects of Mobility, Both migration within the country and migration to other countries and the challenges lie within it.*

**Tag:** GS Paper - 1, Salient Features of Indian Society, Population and Associated Issues, Social Empowerment, Diversity of India, Types of Resources.

The latest **World Migration Report**, released by the **International Organization for Migration**, confirms that

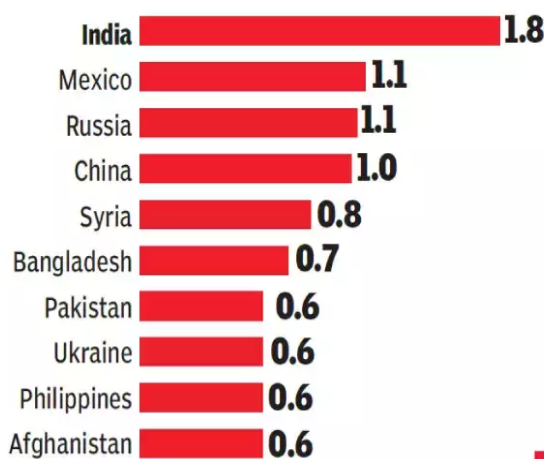


migration from India to the UAE, the US, and Saudi Arabia ranks among the top 10 country-to-country migration corridors and **male** emigration from India constitutes nearly **65% of total external migration**, indicating that men often migrate for work while women tend to stay behind.

In 2020, approximately **18 million** people from India were living outside their country of birth, the United Arab Emirates (UAE), the United States (US), and Saudi Arabia host the largest Indian diaspora, both **internal migration** within the country and **migration to other countries** are typically driven by the pursuit of improved livelihoods.

### MORE INDIAN EXPATS THAN PAK, B'DESH COMBINED

(Immigrant popn, 2020, crore)



Source: TOI

ET

### What is Migration?

#### ➤ About:

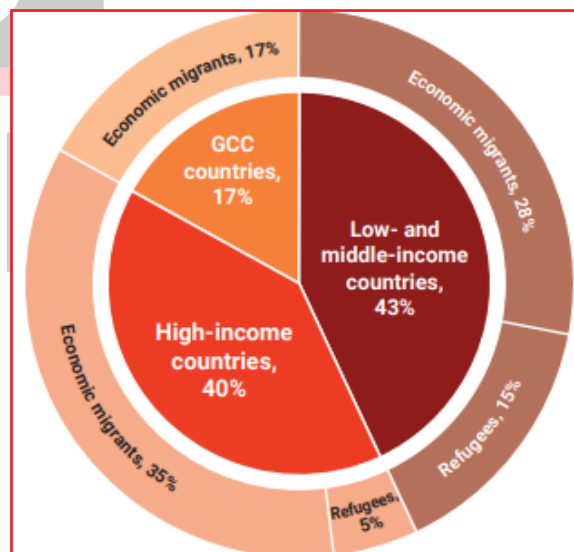
- As per the **International Organization for Migration's** definition, a migrant is an individual who is relocating or has relocated across an international boundary or within a state, departing from their usual place of residence.
- Analysing changes in migration regarding scale, direction, demographics, and frequency can inform the development of impactful policies, programs, and practical interventions.

#### ➤ Forms and Patterns of Migration:

- **Internal migration:** It occurs within a country, and can be categorised based on origin and destination, encompassing **rural-urban migration, intra-state, and inter-state migration**.
- **External Migration:** It also known as international migration, involves individuals or families moving from one country to another and can be driven

by various factors, including **economic opportunities** ( Indian IT professionals in the US or construction workers in GCC nations), education, family reunification, or seeking **asylum** from persecution or conflict (**Rohingya in Bangladesh**)

- **Emigration** from India to various parts of the world.
- **Immigration** of people from different countries to India.
- **Forced migration:** It occurs when individuals or families are compelled to move due to factors like **war, persecution, or natural disasters**.
- **Voluntary migration:** It involves individuals or families choosing to relocate, often driven by better economic prospects or a desire for an improved quality of life.
- **Temporary migration:** It is intended to be of short duration, such as **seasonal or temporary work**, whereas permanent migration involves settling permanently in a new location.
- **Reverse migration:** It refers to individuals or families returning to their **country of origin** or original place of residence after previously migrating elsewhere.



### What are the Various Reasons for Migration?

#### ➤ Economic Factors:

- **Push Factors:** Economic difficulties like **poverty, low productivity, and joblessness** serve as push factors and make people want to leave where they are currently living, **for example**, farmers in Maharashtra facing low yields due to recurring droughts might migrate to cities like Pune or Mumbai for construction or service sector jobs.
- **Pull Factors:** On the other hand, prospects for better jobs, higher pay, and a better quality of life

act as pull factors and attract people to move to a different place, **for example**, A young graduate from a village in Uttar Pradesh might migrate to Noida/Gurugram for a software development job due to the higher salary and the opportunity for a better life in the city.

➤ **Socio-cultural Factors:**

- Migration can be influenced by social factors such as **marriage, family reunification**, or the desire to be closer to one's community or social network.
- Examples include migration due to marriage or to escape **caste-based discrimination** and violence.

➤ **Cultural factors Preservation:**

- People may migrate to areas where their cultural practices, traditions, and beliefs are respected and preserved.
- For example, a community might move to a region where there is a strong presence of their **ethnic or religious group**, allowing them to maintain their cultural identity.

➤ **Political Factors:**

- Political instability, conflicts, and persecution can force individuals to migrate in search of **safety and security**.
- Factors such as government policies, administrative actions, and **separatist movements** can also influence migration patterns.

➤ **Environmental Factors:**

- Natural disasters, **climate change impacts, deforestation, water scarcity**, etc. can lead to migration by causing loss of homes, livelihoods, and resources.

- As a result, affected populations may be compelled to migrate in search of safety, sustainability, and improved living conditions.
  - Some estimates suggest that India could experience significant migration of around **45 million** people by **2050** due to the impacts of climate. Change.

➤ **Developmental Projects:** Projects like the **Narmada Dam Project and the Ken Betwa River Linking Project** lead to migration.

- For Example, Sardar Sarovar Project, a large multipurpose river project on river Narmada has displaced more than 40,000 families, primarily tribals from the 245 villages spread over three states of Gujarat, Madhya Pradesh and Maharashtra.

Push-factors Countries of origin	Migrants	Pull-factors Countries of destination
⇒ Population growth, young age structure ⇒ Inadequate educational institutions, medicare and social security	<b>Demographic factors and social infrastructure</b>	⇒ Stable population, population decline, demographic ageing ⇒ Welfare state benefits, educational institutions, medicare, social security
⇒ Unemployment, low wages ⇒ Poverty, low consumption and living standard	<b>Economic factors</b>	⇒ Labour demand, high wages ⇒ Welfare, high consumption and living standard
⇒ Dictatorships, shadow democracy, bad governance, political upheaval ⇒ Conflict, (civil) war, terrorism, human rights violation, oppression of minorities	<b>Political factors</b>	⇒ Democracy, rule of law, pluralism, political stability ⇒ Peace, security, protection of human and civil rights, protection of minorities
⇒ Ecologic disaster, desertification, lack of natural resources, water shortage, soil erosion, lack of environmental policy	<b>Ecological factors</b>	⇒ Better environment, environmental policy, protection of natural resources and environmental protection
⇒ Decisions of the family or the clan ⇒ Information flows, media,	<b>Migrant flows and migrant stocks</b>	⇒ Diaspora, ethnic community ⇒ Information flows, media, transferred picture of

**What are the Various Impacts Associated With Migration?**

➤ **Positive Impacts:**

○ **Economic Growth:**

- Migration can contribute to economic growth by filling labour gaps, boosting productivity, and increasing consumer spending.
- Migration results in **remittances** from migrants, which serve as a significant source of **foreign exchange** for the source region.
- In 2022, India was the largest recipient of remittances, receiving over **\$111 billion**, which helped narrow the country's **current account deficit**.

○ **Social Impact:**

- Migrants act as agents of social change, facilitating the spread of **new ideas and technologies**, such as **family planning** and education, from urban to rural areas.

○ **cultural diversity:**

- Migration also fosters **cultural diversity** and contributes to the evolution of composite cultures, broadening people's perspectives.
- Migration enriches societies by bringing multiple languages, and traditions, fostering creativity and tolerance.

- **Improving Quality of Life:**
  - Migration increases employment opportunities and economic well-being, thereby enhancing the overall **quality of life** for migrants.
- **Innovation:**
  - Migrants often bring **new ideas, skills, and technologies**, driving innovation and entrepreneurship in host countries.
- **Labor Market Flexibility:**
  - Migration can help balance labor supply and demand, particularly in sectors facing shortages of skilled workers.
- **Negative Impacts:**
  - **Demographic Impact:**
    - Migration causes population redistribution within a country, particularly contributing to urban population growth, however, selective **out-migration** from rural areas can negatively affect and leads to **feminization of agriculture**, particularly in terms of **age and skill distribution**.
  - **Environmental Impact:**
    - Rural-urban migration leads to overcrowding in urban areas, straining existing infrastructure and resulting in unplanned urban growth and the emergence of slums. **For example**, Mumbai's massive slum population, estimated at over half the city's residents, is a direct result of rural-urban migration.
    - Increased traffic congestion and dependence on **informal waste disposal** due to unplanned settlements contribute significantly to **air and soil pollution** in Indian cities.
  - **Social Tensions:**
    - Migration may exacerbate social tensions, including competition for **jobs, housing, and social services**, as well as cultural clashes and discrimination.
    - Migration can lead to **family separation, emotional distress, and disruption of social networks**, particularly when family members are left behind in sending countries.

#### What are the Different Statistics on Migration in India?

- **Migration in India Report 2020-21:**
  - The **Ministry of Statistics and Program Implementation's** report in June 2022 compiled data for temporary visitors and migrants, around **0.7%** of the population was recorded as temporary visitors from July 2020 to June 2021.
  - The all-India migration rate was **28.9%** for the same period, with rates of **26.5% in rural and 34.9% in urban areas**.

- The female migration rate stood at 47.9%, with 48% in rural and 47.8% in urban areas and the male migration rate was **10.7%, with 5.9%** in rural and 22.5% in urban areas.
- **86.8% of female** migrants migrated for marriage, while 49.6% of male migrants moved in search of employment.
- **2011 Census:**
  - India had approximately **45.36 crore internal migrants**, accounting for 37% of the population.
  - Annual net migrant flows represented about **1%** of the working-age population and the country's workforce was estimated to be 48.2 crores, surpassing 50 crores by 2016.
- **Report of the Working Group on Migration, 2017:**
  - 17 districts accounted for the top **25% of India's total male out-migration**, with ten in Uttar Pradesh, six in Bihar, and one in Odisha.

#### What are the Various Challenges Associated with the Migration in India?

- **Inadequate Social Security and Health Benefits:** Migrant workers often lack access to essential social security and healthcare benefits and the enforcement of minimum safety standards laws in workplaces, exposing them to unsafe working conditions. For example, migrant construction workers in urban areas might lack access to proper safety equipment, increasing their vulnerability to accidents and injuries.
  - Based on the **2021-2022 Periodic Labour Force Survey**, over half (**53%**) of regularly employed non-agricultural workers in India lack social security benefits, encompassing migrant workers, self-employed individuals, and those working from home.
- **Limited Portability of State-provided Benefits:** Migrant workers face difficulties in accessing state-provided benefits, particularly essential food supplies distributed through the **public distribution system (PDS)**. For example, migrant agricultural labourers may struggle to access **subsidised food grains in their destination states due to residency requirements**.
- **Scarcity of Affordable Housing and Basic Amenities:** Migrant workers migrating to urban areas often confront challenges in securing affordable housing and accessing basic amenities such as **clean water, sanitation facilities, and electricity**. This lack of access to adequate housing and infrastructure contributes to their vulnerability and perpetuates cycles of poverty.



- **Impacts of the COVID-19 Pandemic:** The **COVID-19** pandemic has compounded the challenges faced by migrant workers. For example, migrant daily wage labourers stranded in urban centres during lockdowns faced acute hardships due to loss of income and lack of access to essential services.
- **Exploitation and Discrimination:** Migrant workers are often subject to exploitation and discrimination in the labour market and they may endure wage theft, hazardous working conditions, and discrimination based on their migrant **status, ethnicity, or language**.
  - There have been instances of migrant workers facing violence and discrimination in Maharashtra, including those from Bihar.
    - The 2008 attacks on Uttar Pradesh and Bihari migrants in Maharashtra is a horrific example.

#### What are the Government Initiatives Regarding Migration?

- Initiatives like the **draft National Migrant Labour policy prepared by NITI Aayog in 2021** discuss the importance of collective action to help migrants bargain for better conditions.
- Additionally, the **One Nation One Ration Card (ONORC) project** has been expanded, along with the introduction of the **Affordable Rental Housing Complexes (ARHC)** and the **PM Garib Kalyan Yojna scheme**.
- The launch of the **e-Shram portal** also brings promise to the migrant's status.
- **The code on Social Security** provides certain benefits for inter-state migrant workers such as Insurance and provident fund.
- International Migration and Global Action:
  - In 2016 the United Nations General Assembly convened a high-level plenary meeting on addressing large movements of refugees and prepared the report **"Safety and Dignity: Addressing Large Movements of Refugees and Migrants"**.
  - United Nations member states adopted the **New York Declaration** for Refugees and Migrants, which commits to protect the safety, dignity, human rights and fundamental freedoms of all migrants, regardless of their migratory status.
  - As a result of the New York Declaration, UN Member States agreed to cooperate in the elaboration of a **Global Compact for Safe, Orderly and Regular Migration**, adopted at an intergovernmental conference on international migration in December 2018 in Morocco.
  - Every year, **8th December** is celebrated as **International Migrants Day**.

#### What Needs to be Done to Tackle the Challenges of Migration?

- **Incorporating comprehensive social security measures:**
  - **Providing Basic Amenities:** Ensure the protection of migrants' rights, including access to housing, healthcare, education, and employment, regardless of their migration status. Schemes like **Pradhan Mantri Awas Yojana (Urban) Mission for providing housing facilities in urban areas, and One Nation One Ration Card** to fulfil the integrated food requirements of migrants.
  - **Integration and Inclusion:** Promote integration and inclusion of migrants into society, fostering social cohesion and **minimising discrimination and xenophobia**.
- **Skill Development & Job Creation:** Investing in rural skilling initiatives to enhance employability and create job opportunities in villages can reduce the need for migration for work. Schemes like **Skill India Mission, and Pradhan Mantri Kaushal Vikash Yojana** can help to empower migrants.
- **Counter Magnet Cities:** By investing in infrastructure, amenities, and economic opportunities in regional cities, governments should aim to promote **balanced regional development** and reduce pressure on major urban hubs by offering employment opportunities, affordable housing, quality education, healthcare facilities, and a better standard of living.
  - By dispersing population growth across multiple cities, rather than concentrating it in a few, counter-magnet cities help alleviate congestion, reduce strain on resources, and ease the burden on infrastructure in overpopulated areas.
- **Labour Market Policies:** Develop labour market policies that safeguard the rights of migrant workers, including fair wages, safe working conditions, and access to social security benefits.
- **Regulation and Worker Protection:** Strictly enforce labor laws to protect migrant workers from exploitation. This includes ensuring fair wages, safe working conditions, and proper grievance redressal mechanisms.



#### Deepfakes in Elections: Challenges and Mitigation

*This editorial is based on "**Deepfakes in elections: They have shaken our faith in our own judgment**" which was published in Indian Express on 14/05/2024. The article discusses the introduction of deep fakes in our ongoing*



*election cycle and its associated threat to the fair election process, the challenges of deep fakes in verifying various authentic information and our own judgment.*

**Tag:** GS Paper-3, IT & Computers, Achievements of Indians in Science & Technology Government Budgeting

The emergence of **deepfakes** in our electoral process raises significant concerns. Unlike traditional forms of misinformation, **deepfakes undermine our ability to distinguish reality from fabrication**, we can no longer rely solely on interventions or technological solutions to verify information and the real challenge lies in our **diminished trust** in our analysis.

While we were accustomed to encountering manipulated information, we once had confidence in our ability to **discern** the truth, and we relied on alternative sources and trusted media institutions to verify information. However, deepfakes challenge this confidence by casting doubt on our judgment.

### What are Deepfakes?

#### ➤ About:

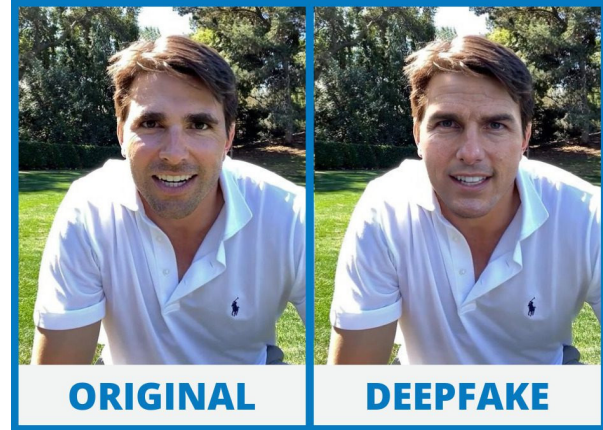
- Deepfakes refer to **synthetic media** created through **AI technology**, aiming to manipulate or generate visual and audio content to **deceive or mislead individuals**.

#### ➤ Origin:

- The term **deepfake** was coined in **2017** by an anonymous **Reddit** user who identified as "Deepfakes."
- This individual utilized Google's open-source **deep-learning technology** to produce and share pornographic videos.

#### ➤ Creation:

- The creation of deepfakes involves a technique known as **generative adversarial networks (GANs)**, comprising two competing neural networks: A generator and A discriminator.
  - **The generator:** Its objective is to produce fake images or videos that closely resemble reality, while
  - **The discriminator:** Its role is to differentiate between authentic and fake content.
- **Data Synthesis:** Its creation necessitates a substantial amount of data, often sourced from the internet or social media without consent, including photos or videos of both the source and target individuals.
- **Deep Synthesis:** It constitutes a component of Deep Synthesis, an umbrella term encompassing technologies such as deep learning and augmented reality, utilized to generate text, images, audio, and video to construct virtual scenarios.



### What are the Various Advantages of Deepfake in Elections?

#### ➤ Segmentation and targeting:

- Deep learning algorithms enable political parties and candidates to analyse extensive **voter data**, encompassing **demographics**, social media engagement, and voting history.
- **Natural language processing (NLP)** algorithms enable campaigns to analyse and interpret vast amounts of textual data, including social media posts, news articles, and public forums and targeting the voters for personal benefits.

#### ➤ Real-time monitoring and adaptation:

- Utilising deep-powered **predictive analytics such as AI cloud**, parties can forecast election outcomes by scrutinizing diverse factors such as **polling data**, **economic indicators**, and sentiment analysis from social media.
- AI algorithms continuously scan various data sources, including social media, **news outlets**, and **opinion polls**, to gauge public sentiment and identify emerging trends.

#### ➤ Enhanced communication strategies:

- **Deepfake-empowered AI chatbots** and virtual assistants engage with voters on social media platforms, addressing inquiries, disseminating information about candidates and policies, and even encouraging voter participation.

#### ➤ Security and Integrity:

- AI-driven deepfake tools play a crucial role in **detecting and preventing electoral fraud**, including voter suppression, manipulation of electronic voting systems, and dissemination of disinformation.
- By analyzing data patterns and anomalies, AI algorithms contribute to upholding the integrity of elections.

### ➤ Regulation and Oversight:

- Governments and electoral authorities leverage AI and deep technologies to monitor and regulate political advertising, identify breaches of campaign finance laws, and ensure adherence to electoral regulations.
- AI-powered tools facilitate **transparency and accountability** in the electoral process.
- For example, In 2021, the Bihar Election Commission collaborated with AI firm **Staqu** to **deploy** video analytics with **Optical character recognition (OCR)** for analyzing CCTV footage from counting booths during the panchayat elections, this system ensured complete transparency and eradicated any potential for manipulation.

### *What are the Various Challenges related to Deepfakes in Elections?*

#### ➤ Electoral Behavior Manipulation:

- **Creating deepfake content**, and bombarding voters with highly personalized propaganda, leading to confusion and manipulation.
- Deepfake videos of opponents can be generated using AI, tarnishing their image and influencing voter perceptions and giving birth to the **Deep Fake Election concept**.
  - The term **"Deep Fake Elections"** refers to the use of AI software to fabricate convincing fake videos, audio, and other content, posing a serious threat to the integrity of elections and undermining public trust.

#### ➤ Spreading Misinformation:

- Deepfake models, particularly **Generative Artificial Intelligence(AI)**, can manipulate democratic processes by spreading disinformation
- Examples like in the **2024 Lok Sabha election** where a **cloned voice** of Mahatma Gandhi has been created and shown that Gandhiji is campaigning for a particular political party.
- **Few more examples like**, a deepfake video of the ruling party's Member of Parliament(MP), went viral on WhatsApp in the country, where he is criticizing his political opponent and encouraging voters to vote for the ruling party.
- This risk is exacerbated by social media platforms reducing their **fact-checking** and election integrity efforts.

#### ➤ Inaccuracies and Unreliability:

- Deepfakes AI models, including AGI, are susceptible to inaccuracies and inconsistencies, raising concerns about their reliability.

- Instances of **Google AI models** misrepresenting individuals have highlighted the potential dangers of unchecked AI.
- Inconsistencies in AI models pose inherent risks to society as their usage expands.

#### ➤ Ethical Concerns:

- The use of deepfake in elections raises ethical questions regarding **privacy, transparency, and fairness**.
- AI algorithms may perpetuate biases present in training data, leading to unfair treatment or **discrimination** against certain voter groups.
- Lack of transparency in AI decision-making processes can erode public trust in electoral outcomes.
- Unequal access to AI resources may disrupt the level playing field in elections, favouring parties with greater resources.

#### ➤ Regulatory Challenges:

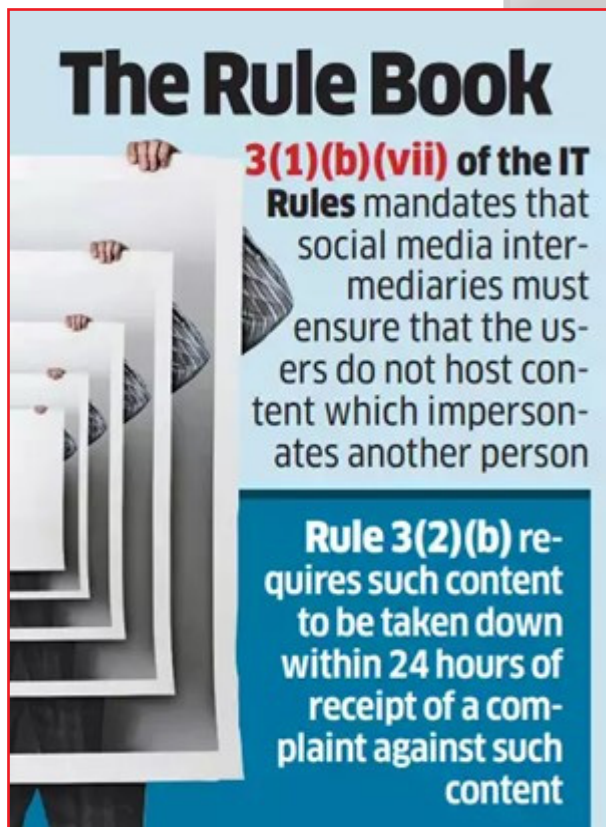
- Regulating deepfakes in electoral campaigns is challenging due to rapid technological advancements and the global nature of online platforms.
- Governments and election authorities struggle to keep pace with evolving AI techniques and may lack expertise in regulating AI-driven electoral activities.
- Existing laws such as the **India Penal Code, of 1860, and the Information Technology Act, of 2000**, address aspects of fake news and digital media ethics but lack specific provisions targeting AI and deepfake technology creators.

### What are the Government Initiatives related to Deepfakes?

- **IT Act, 2000 and IT Rules, 2021: The IT Act and IT Rules** stipulate that social media intermediaries are responsible for promptly removing deepfake videos or photos and failure to do so can result in imprisonment for up to three years or a fine of Rs 1 lakh.
- **Section 66D of IT Act:** According to **Section 66D of the IT Act, 2000**, individuals who deceive others by impersonating using a communication device or computer resource can face imprisonment for up to three years and a fine of up to one lakh rupees.
- **Rule 3(1)(b)(vii):** This rule mandates social media intermediaries to ensure that users do not host any content impersonating another person.

- **Rule 3(2)(b):** It requires such content to be removed within 24 hours of receiving a complaint against it.
- The **Fact Check Unit under PIB** was established under **IT rules 2021**, in November 2019 with a stated objective of acting as a deterrent to creators and disseminators of fake news and misinformation.
  - It also provides people with an easy avenue to report suspicious and questionable information pertaining to the Government of India.

- [INDIAai.](#)
- [Global Partnership on Artificial Intelligence \(GPAI\).](#)
- [US India Artificial Intelligence Initiative.](#)
- [Responsible Artificial Intelligence \(AI\) for Youth.](#)
- [Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform.](#)
- [Artificial Intelligence Mission.](#)



### ***What Can be Done to Combat the Misuse of Deepfakes in Elections?***

- **Regulatory Measures:**
  - Implement strict laws and regulations that specifically address the creation, dissemination, and use of deepfake content for electoral manipulation.

- **Example:** Amendments to the **Information Technology Act, India Penal Code, of 1860**, or enact new legislation to **criminalize the creation and dissemination of deepfake** content during election periods.

#### ➤ **Election Commission Guidelines:**

- In the context of the **Lok Sabha elections 2024**, one possible solution to **deepfaked and AI-fueled misinformation** would be guidelines issued by the [Election Commission of India](#).
- There is a need to implement regulations that require transparency in the use of AI algorithms for political purposes.
  - This includes **disclosing sources of funding** for political advertisements and requiring platforms to disclose how algorithms determine the content users see.

#### ➤ **Technology-Based Solutions:**

- Develop **advanced AI** algorithms and tools to detect and authenticate deep fake content in real-time.
- **For example** likes **DeepTrust Alliance**, a coalition of tech companies and research institutions, developed DeepTrust Analyzer, a tool that uses machine learning to identify deepfake videos and images.
- Indian tech companies could collaborate with research institutions to develop **deep fake detection algorithms** tailored to Indian languages and cultural contexts.

#### ➤ **Awareness and Education Campaigns:**

- **Launch public awareness campaigns** to educate voters about the existence and potential impact of deepfake technology on elections.
- **Example** such as the Government of India could partner with **media organizations** and celebrities to **create public service** announcements raising awareness about deepfakes and **urging vigilance** during elections.

#### ➤ **Enhanced Fact-Checking:**

- Establishing a **Rapid Response Team** to address the dissemination of fake news, deep fakes, and other forms of misinformation during elections is crucial.
- While it's inevitable that fake videos and misinformation will arise, the key lies in **swiftly addressing** them before they escalate and spread widely.

#### ➤ **Collaborative Efforts:**

- Foster collaboration among governments, tech companies, and civil society organizations to develop coordinated responses to deepfake threats.



## How to Recognize Deepfake Content



- A few examples like, **The Deepfake Detection Challenge**, organized by Facebook, Microsoft, and several universities, invites researchers to develop tools to detect and combat deepfake videos.
- **Drawing Insights from International Practices:**
  - **China's Regulatory Strategy:** China emphasizes **obtaining consent** and verifying identities in the use of deepfake technologies, providers of such technologies are mandated to secure consent from depicted individuals and **authenticate user identity** and moreover, measures are in place to facilitate recourse for individuals adversely affected by deepfake content.
  - **Canada's Preventative Approach:** Canada focuses on preemptively addressing the harms of deepfakes through **widespread public awareness campaigns** and prospective legislation and these campaigns aim to educate the populace about the risks associated with deepfake technology.

### ➤ Promoting Ethical AI:

- Foster the advancement of AI technologies with ethical principles at the forefront, prioritizing objectives like **mitigating bias**, **safeguarding privacy**, and **fostering transparency**.
- Institutional norms and protocols delineating the judicious application of AI within **political domains**.

■ ■ ■

## Food Inflation: Trends, Factors and Control Measures

*This editorial is based on "**Little respite: On food price gain**" which was published in The Hindu on 15/05/2024. The article examines the retail inflation data which showed a marginal slowdown in overall inflation,*



**masking a concerning acceleration in food prices, which reached a four-month high of 8.7%.**

**Tag:** GS Paper-3, Fiscal Policy, Monetary Policy, Food Processing, Growth & Development, Mobilization of Resources

### **What are the Recent Trends in Overall Inflation and Food Prices?**

#### ➤ **Food prices:**

- **Food Price gains** were **8.75%** for rural consumers, 19 basis points higher than for urban consumers.
- **Cereals**, the heaviest category in food, increased to **8.63%**.
- **Department of Consumer Affairs data** showed significant year-on-year increases in the average prices of **rice and wheat**.
- **Vegetables** remained in double-digit inflation for the sixth consecutive month, reaching **27.8%** due to **soaring temperatures**.
- **Pulses** also saw prolonged double-digit inflation, extending to the eleventh month.

#### ➤ **Rural consumers:**

- Rural **CPI** stood at **5.43%**, significantly higher than the urban rate of **4.11%**.
- The disparity reflects the impact of factors like a **normal monsoon** and high temperatures, particularly challenging for rural households.

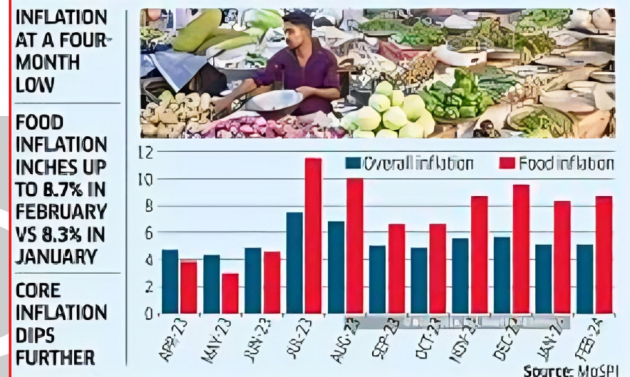
### **What are the factors that contribute to India's elevated food inflation despite Falling overall Inflation?**

- **Temperature and Weather Challenges:** Issues like adverse weather conditions, such as the prediction of a **weak monsoon and heatwave** for this year affecting crop yields, particularly for cereals, pulses, and sugar, (as these items require ample amounts of water to grow), contributed to supply shortages and higher prices domestically.
  - **For example**, cereal and pulse inflation showed double-digit inflation in April 2024.
- **Fuel Prices:** The price of fuel, another key input in agriculture, has witnessed a considerable increase in recent years.
  - **For example**, An increase in fuel inflation by **1%** leads to a **0.13%** rise in food inflation, and the effect slowly declines through the next 12 months.
- **Supply Chain Disruptions:** Disruptions in the supply chain due to factors like **transportation constraints, labour shortages, and logistical challenges** can lead to a decrease in the availability of food products, causing prices to rise.

- Moreover, **vegetables** continued to experience **double-digit inflation** for the sixth consecutive month, reaching **27.8%** as the absence of an efficient **storage facility** led to the wastage of perishable items.

- **Global Effect:** While global food prices decreased, India's food prices remained high because of the limited transmission of international prices to domestic markets, The **Russia-Ukraine war** acted as a deterrent, and India heavily depends on imports for edible oils (**60% of consumption**) and pulses, but for most other agricultural commodities like cereals, sugar, dairy, fruits, and vegetables, it is an exporter.

### **Inflation Remains in Line**



### **What is Inflation?**

#### ➤ **About**

- Inflation refers to the **overall increase** in the prices of goods and services, coupled with a **decrease in people's purchasing power**.
- This means that when **inflation rises** (without an equivalent rise in your income), you are able to buy fewer things than you could buy previously, or you have to pay more money for the same stuff now.
- A "**rising**" inflation rate implies that the rate (at which the prices rise) itself is increasing.
- **For example**, if the inflation rate was **1% in March, 2% in April, 4% in May**, and 7% in June, it shows a **continuous acceleration** in the rate of price increases.

#### ➤ **Causes of Inflation**

##### ○ **Demand-Pull Inflation:**

- It occurs when the demand for goods and services surpasses the supply. When there is high overall demand in the economy, consumers are willing to pay more for available goods and services, causing a general increase in prices.

- **Cost-Push Inflation:**
  - **Cost-push inflation** is fueled by a rise in the production costs of goods and services, this can result from factors such as increased incomes, elevated costs of raw materials, or disruptions in the supply chain.
- **Wage-Price Inflation:**
  - This form of inflation is often characterised as a **feedback loop** between wages and prices, when workers demand higher wages, businesses may raise prices to offset the increased labour costs and consequently, workers seek higher wages in response, perpetuating the cycle.

### ***What are the Different Indices through Which Food Inflation is Measured in India?***

- **Consumer Price Index (CPI):**
  - CPI inflation, also known as **retail inflation**, is the rate at which the prices of goods and services that consumers buy for personal use increase over time.
  - It measures the change in the cost of a basket of goods and services that are typically purchased by households, including food, clothing, housing, transportation, and medical care, and are of four types:
    - CPI for Industrial Workers (IW).
    - CPI for Agricultural Labourer (AL).
    - CPI for Rural Labourer (RL).
    - CPI for Urban Non-Manual Employees (UNME).
- **Consumer Food Price Inflation (CFPI):**
  - **CFPI** is a component of the broader **Consumer Price Index (CPI)**, where the Reserve Bank of India (RBI) utilises the **CPI-Combined (CPI-C)** for this purpose.
  - cCFPI monitors the price **fluctuations** of a particular selection of food items commonly consumed by households, including cereals, vegetables, fruits, dairy products, meat, and other essential food staples.
  - CFPI is a component of the broader **Consumer Price Index (CPI)**, where the Reserve Bank of India (RBI) utilises the **CPI-Combined (CPI-C)** for this purpose.
- **The Wholesale Price Index (WPI):**
  - It tracks changes in the **prices of goods sold and traded in bulk** by wholesale businesses to other businesses and it specifically focuses on goods, services are not part of it.

- The **WPI** is utilized to monitor supply and demand dynamics in industries, manufacturing, and construction sectors.
- Released monthly by the **Economic Advisor in the Ministry of Commerce and Industry**, the index measures the level of wholesale inflation in the economy based on the month-to-month increase in WPI, and it comprises various **component**
- **Primary articles**, constituting 22.62% of the Wholesale Price Index (WPI), are divided into Food Articles and Non-Food Articles.
  - **Food Articles** encompass items like Cereals, Paddy, Wheat, Pulses, Vegetables, Fruits, Milk, Eggs, Meat, and Fish.
  - **Non-Food Articles** include Oil Seeds, Minerals, and Crude Petroleum.

### ***What are Various Government Initiatives to Control Food Inflation?***

- **Subsidized Commodities:** The government is increasing the distribution of subsidized vegetables like onions and tomatoes through its network and **releasing stocks of wheat** and sugar to stabilize prices.
- **Reduction in Import Duty:** To enhance domestic production, the government is incentivizing pulse cultivation among farmers and reducing import duties on certain pulses to boost local availability.
- **Export Bans:** Bans on wheat exports since **May 2022** and on broken rice exports since September 2022 aim to maintain ample domestic supply and lower prices.
- **Ban on Stockpiling:** Regulations limit wheat stocks to 3,000 tonnes for traders, millers, wholesalers, and retail chains, and 10 tonnes for smaller retailers and shops to prevent excessive stockpiling.
- **Operation Greens:** This initiative aims to stabilize **Tomato, Onion, and Potato (TOP)** crop supplies throughout the year across the country to minimize price fluctuations.
- **Floor Prices:** To ensure sufficient domestic onion availability, the government imposed a **minimum export price (MEP)** of \$800 per tonne (₹67 per kg) on onion exports from October 29 to December 31, 2023, amid rising onion prices due to delayed kharif onion arrivals.

### ***What are the Strategies that Need to be Adopted to Tackle Food Inflation in India?***

- **Improved Supply Chain Management:**
  - Strengthening logistics, storage facilities, and distribution networks can minimize wastage and ensure a consistent food supply, mitigating price fluctuations.

- For example, the use of refrigerated trucks for transporting perishable goods ensures that they reach markets in optimal condition, reducing spoilage and increasing the availability of fresh produce.

➤ **Agricultural Productivity Enhancement:**

- Investments in agricultural infrastructure, technology, and research can boost crop yields, reducing production costs and stabilizing prices.
- For example, implementing **drip irrigation** techniques has shown significant water savings and increased crop productivity in regions facing water scarcity.

➤ **Price Monitoring and Regulation:**

- Implementing mechanisms for regular monitoring of food prices and enforcing fair pricing practices can protect consumers from exploitation.
  - Examples like, **setting maximum retail prices** for essential food items can prevent retailers from overcharging consumers during times of scarcity or high demand.

➤ **Agricultural Diversification:**

- Encouraging farmers to cultivate a variety of crops can reduce the country's dependence on specific commodities.
- **Initiatives** like promoting the cultivation of pulses alongside traditional crops like rice and wheat can **enhance soil fertility, reduce pest infestations**, and provide farmers with alternative income sources.

➤ **Climate Resilience:**

- Adopting climate-smart agricultural practices, such as rainwater harvesting and crop rotation, can help mitigate the impact of climate change on food production.
  - For example, promoting the cultivation of **drought-resistant crop** varieties can safeguard against crop failures during periods of water scarcity or extreme weather events.

➤ **Utilizing technology:**

- Devices like **AmbiTag** can prove advantageous in mitigating food wastage during transit.
  - It continuously records the temperature of its immediate surroundings from **-40 to +80 degrees** in any time zone for a full 90 days on a single charge.
  - It generates an alert when the temperature goes beyond a pre-set limit.



## India's Economic Trajectory: Challenges & Opportunities

*This editorial is based on **"Five things the next government needs to focus on"** which was published in The Indian Express on 16/05/2024. The article examines the Indian economic performance in recent years and the key five areas that need to be focused on, for the upcoming government.*

**Tag:** GS Paper-3, Planning, Land Reforms, Cropping Patterns, Agricultural Marketing, Economics of Animal-Rearing, Modes of Irrigation, Irrigation.

In the wake of India's sustained **economic growth** above **7%** for three consecutive years, there's a need for a nuanced analysis of the Indian economy, over the past five years **until 2018-19**, the economy witnessed substantial real GDP growth, however, the subsequent five years until 2023-24 saw a **significant slowdown** due to **pandemic-induced disruptions**, this should serve as a pivotal starting point for the incoming government's policy agenda.

### What is the Current State of the Indian Economy in Different Sectors?

- **Robust growth:** India's economy has demonstrated robust and **resilient growth** over the past decade, catapulting from the 10th to the **5th** largest globally and positioning India as the fastest-growing economy among **G20 nations**.

- The International Monetary Fund (IMF) forecasts India's GDP growth to be **6.8%** for the fiscal year 2024/25 and **6.5%** for **2025/26**.

- **Current Account Deficit:** As per the **Economic Survey 2024**, India's **current account deficit** has been significantly reduced to **1% of GDP** in the first half of FY24, attributed to resilient service exports and decreased oil import costs.

- **Foreign Investment:** Robust **foreign institutional investor (FII)** inflows have bolstered **forex reserves** to approximately **\$643 billion**, FII inflows stood at \$41 billion in 2023-24, contrasting with net outflows of \$5.5 billion in the preceding year.

- **Infrastructural Development:** The nation's **infrastructural development** has also been remarkable, with **74 airports** constructed in the last 9 years.

- The government has significantly boosted its **capital expenditure (Capex)**, The **Capex-to-GDP** ratio surged to **3.3% for FY24** and is projected to reach **3.4%** in the upcoming financial year.



- **Manufacturing Sector:** Manufacturing sector capacity utilisation is reaching **74%**, nearing the long-term average, there are signs of a potential acceleration in the **private capital expenditure cycle** in the upcoming quarters.
- **Inflation:** **Consumer Price Index (CPI)** inflation has dipped below the **Reserve Bank of India's** upper target band of **6%**, core inflation has remained below **4%** in **april 2024**, primarily due to disinflation in the services sector
- **Decline in Urban unemployment:** In **2023-24**, the economy expanded by an estimated **7.3%**, building upon the growth rates of **9.1%** in FY22 and **7.2%** in FY23 and concurrently, the **urban unemployment** rate saw a decline to **6.6%**.
- **Rural demand:** It is displaying positive trends, evident in the **Fast Moving Consumer Goods (FMCG)** volume growth in rural areas surging from **2.2%** to **6.2%** in the latter half of 2023, as per a **Nielsen report**.

### ***What are the Various Challenges Faced by the Indian Economy in the Past Five Years?***

- **Slowdown in Economic Growth:**
  - The COVID-19 pandemic led to a substantial **economic decline** in India in 2020, causing a **negative growth rate**.
  - However, the economy witnessed a strong rebound in 2021, recording a growth rate of approximately **9%**, subsequently, the growth rate has stabilized to around **7%**.
- **Unemployment and Underemployment:**
  - The COVID-19 pandemic worsened the situation, as many businesses shut down or reduced their operations, leading to job losses.
  - According to the **Centre for Monitoring Indian Economy (CMIE)**, over **1.8 crore** salaried jobs were lost between April and July 2020.
    - The unemployment rate was **7.4% in August 2020**, compared to **5.4%** in August 2019.
    - According to the **National Statistical Office's (NSO) Periodic Labour Force Survey (PLFS)** report for the year 2021-22, the unemployment rate for 2021-22 was **4.1%**.
- **Challenges in Agriculture and Allied Sectors:**
  - Despite the recent growth in India's GDP, the agricultural sector has not shown equivalent progress.
  - As per the **Economic Survey 2022-23**, the agriculture and allied sectors in India have experienced an average **annual growth rate of 4.6%** over the past six years, however, this falls short of the desired growth rate necessary for substantial improvements in farmer incomes.h.

- The agriculture sector's contribution to India's GDP has shrunk over time, from **35%** in 1990-91, it dipped to **15%** in **FY23**.
- **Slowing Household Consumption and Income Inequality:**
  - High levels of income inequality lead to **deterioration in consumption demand**, especially for the bottom income classes, which result in lower investment demand and further feed into low growth.
  - **India's Gini coefficient**, a measure of income inequality, was **0.38** in **2019-20**, indicating significant income disparities.
- **Infrastructure Deficit and Private Investment:**
  - According to the **World Bank**, India's infrastructure gap is estimated to be around **\$1.5 trillion**.
  - Private investment continued to decrease, hitting a low of **19.6% of GDP** in 2020-21.
  - India's infrastructure deficit is estimated at over **\$1.4 trillion**, with key areas of concern including transportation, energy, and healthcare infrastructure
  - Private investment remains subdued, with Gross Fixed Capital Formation (GFCF) by private corporations declining by **-14.5%** in FY 2020-21
    - GFCF comprises **fixed asset acquisitions minus disposals** by resident producers.
    - Fixed assets are tangible or intangible assets from production processes that are used repeatedly and continuously in other production processes for at least one year.
- **Export Challenges Amid Geopolitical Tensions:**
  - Geopolitical tensions, such as border disputes and trade conflicts like **Russia-Ukraine war**, can disrupt global trade patterns.
  - Industries like **textile exports** have witnessed a decrease and In the footwear sector the global trade expanded by **5 per cent**, but India's exports have contracted.
  - Moreover, India's endeavor to become a leading force in the **global pharmaceutical industry** encounters hurdles, despite its aspirations, India's growth has failed to keep pace with demand, falling behind at **9 percent**, whereas the global market expanded by **12 percent** over the past four years.e.

### ***What are the Multiple Initiatives Taken for the Growth of the Different Sector in India Economy?***

- **New Economic Policy, 2020:**
  - **NEP 2020**, encompasses a substantial stimulus package amounting to Rs 20 lakh crore, **equivalent to 10% of GDP**, aimed at bolstering different sectors and segments of the economy.



- Additionally, the policy entails a range of reforms spanning agriculture, labor, education, health, defense, mining, power, and taxation and objective of this policy is to foster self-reliance in India's economic landscape in the aftermath of the Covid-19 crisis.
- **Strategic Disinvestment :**
  - India has also embarked on the privatization of public sector enterprises (PSEs), which are entities **owned or managed by the government**.
  - The goals of privatization include enhancing the efficiency, profitability, and competitiveness of PSEs, easing the fiscal burden, and mobilizing resources for developmental purposes.
    - Privatization can manifest in various forms, including **disinvestment** (selling shares to private investors), strategic sale (transferring management control to private buyers), or closure (shutting down unprofitable units).
    - Since 1991, India has privatized more than **60 PSEs, raising over Rs 3 lakh crore in the process**.
- **Comprehensive Labour Codes:**
  - Four codes have been introduced to streamline and consolidate central labor laws into four main categories: **wages, industrial relations, social security, and occupational safety and health**.
  - These codes aim to offer employers flexibility in workforce management, simplify registration and compliance procedures for businesses, expand social security coverage for informal workers, and strengthen the influence of trade unions and collective bargaining.
- **Production-Linked Incentive (PLI) :** **Production-Linked Incentive (PLI)** is to scale up domestic manufacturing capability.
- **PM Gati Shakti- National Master Plan :** **PM Gati Shakti- National Master Plan** formulated to Multimodal connectivity infrastructure project.
- **Bharatmala Project , Bharatmala Project :** **Bharatmala Project , Bharatmala Project** is to Improve Connectivity in North East India
- **Start-up India :** **Start-up India** has been formed to catalyze Startup culture in India
- **Make in India 2.0 :** **Make in India 2.0** is to transform India into a global design and manufacturing hub.

### ***What are the Potential Areas of the Indian Economy that Need to be focused on?***

- **Creating Employment Opportunities:**
  - **Employment generation**, primarily driven by the private sector, requires a conducive environment.

- While the government can fill vacant positions to some extent, **sustainable job creation** hinges on **consumption-led growth**.
- Therefore, policies aimed at boosting consumption will indirectly contribute to employment generation.
- **Reviving Private Investment:**
  - While the government has been proactive in capital expenditure, particularly in infrastructure development, the private sector's participation is crucial.
  - Although investments in sectors like **roads and railways have driven growth, private companies, driven by profit motives, need conducive conditions**.
  - The Production-Linked Incentive (PLI) scheme has shown limited success and should be expanded, particularly to support small and medium enterprises (SMEs).
  - Introducing incentives like **investment allowances** could also stimulate private investment.
- **Agricultural Reform:**
  - Addressing the agricultural sector's challenges, particularly in the context of **contentious farm laws**, is crucial.
  - Government participation in farming through **state cooperatives and clarifying agricultural trade policies** can provide certainty to farmers.
  - Moreover, **standardising procurement and distribution procedures** is essential to minimise market disruptions.
  - Revisiting bans on futures trading in agricultural products can enhance market efficiency and overall productivity.
- **Boosting Household Consumption:**
  - Household consumption, though volatile, has shown **signs of recovery** post-pandemic.
  - However, demand for consumer goods remains subdued, partly due to surplus capacity and high inflation.
  - To stimulate consumption, fiscal measures such as **revisiting tax rates and rationalising GST slabs are essential**.
  - Additionally, addressing declining household savings through revamped tax structures is imperative.
- **Integration into Global Supply Chains:**
  - India's participation in global supply chains, particularly in merchandise exports, requires a strategic approach.

- This entails forging more **free trade agreements** with major trading partners to boost exports.
- While the **IT sector has excelled in services exports**, emphasis on **merchandise exports** is necessary for balanced economic growth.



## Advancing Defense Integration in India

*This editorial is based on “**Has the Chief of Defence Staff post improved India’s combat efficiency?**” which was published in The Indian Express on 16/05/2024. The article examines the vital role of the Chief of Defence Staff (CDS) in India’s defense integration efforts, highlighting challenges, solutions, and the imperative for enhanced jointmanship and strategic preparedness.*

**Tag:** GS Paper-3, Various Security Forces & Agencies & Their Mandate, Security Challenges & their Management in Border Areas

India consistently navigates enduring and significant challenges to its **national security** and sovereignty. The creation of the **Chief of Defence Staff (CDS)** in 2019 was intended to enhance overall combat efficiency and prepare for new emergencies shaped by the **techno-strategic churn**, but its trajectory so far has been mixed.

Recent reports suggest consideration of new posts like **Vice CDS and Deputy CDS** to support the CDS’s multiple roles. Along with this, the current imperative is increased integration among India’s three armed forces, ensuring **seamless collaboration, unified strategies, and enhanced operational effectiveness**.

### What is the Rationale Behind Appointing the CDS?

- **Promoting Jointmanship:** For decades, the lack of integrated planning and resource optimization among the **Army, Navy, and Air Force** had been identified as a major structural deficiency, undermining India’s overall combat effectiveness.
  - **Example:** India’s joint operations during the **1999 Kargil War** to an extent lacked planning and coordination, highlighting the need for better integration.
- **Establishing a Single Military Adviser:** The CDS was envisioned as an empowered, single-point military adviser to the government, bridging the civil-military gap and providing coherent strategic guidance.

- Prior to the CDS, the government received **separate and sometimes conflicting advice** from the three service chiefs, making it difficult to obtain a cohesive military perspective.
- **Enhancing Operational Synergy:** The CDS is tasked with spearheading the transition towards integrated theater commands, **fostering greater synergy and interoperability** among the services during operations.
  - During the **2004 Indian Ocean tsunami relief efforts**, better coordination among the services could have improved the effectiveness of the response.
- **Optimizing Resource Allocation:** By promoting jointmanship, the CDS is expected to rationalize defense expenditure and ensure optimal utilization of resources across the services.
- **Strategic Force Management:** The CDS is mandated to oversee long-term defense planning, force structuring, and capability development, aligning military preparedness with evolving security threats.

### What is the Timeline for the Creation of the Post of Chief of Defence Staff in India?

- **1999:** The **Kargil Review Committee**, headed by **K. Subrahmanyam**, recommended a comprehensive review of the national security framework for improved decision-making in defense matters.
  - The committee also recommended a holistic study and reorganization of the mechanisms and interface between the **Defense Ministry and Service Headquarters**.
- **2001:** Based on the Kargil Review Committee’s report, a Group of Ministers (GoM) recommended the creation of the post of the **Chief of Defence Staff**.
- **2001-2019:** Despite the GoM’s recommendation, no government implemented this significant defense reform due to a **lack of political will and general consensus**.
  - Many major countries, including **Italy, France, China, UK, USA, Canada, and Japan**, had already created the post of the Chief of Defense Staff to bring more jointness and integration in their armed forces.
- **2019:** On 24th December 2019, the Cabinet Committee on Security took the historic decision to create the post of the **Chief of Defence Staff** to enhance the quality of military advice to political leadership through the integration of service inputs.

- This step aimed to develop and foster expertise in defense matters for better and more informed decision-making.
- The CDS was designated as the **Permanent Chairman of the Chiefs of Staff Committee** and the Principal Military Adviser to the Defense Minister on all tri-services matters.
- On 31st December 2019, former Chief of the Army Staff, **General Bipin Rawat**, was appointed as the country's first Chief of Defense Staff.
- The Cabinet Committee on Security also approved the creation of the **Department of Military Affairs**.
  - This new department handles all military-related matters, while the Department of Defence focuses on national defense and policy.
- **2022:** Lt General Anil Chauhan (retired) was appointed the Chief of Defence Staff on **28th September, 2022**.

### ***What Factors have Contributed to the Mixed Trajectory of the Office of CDS in India?***

- **Tragic Interruption and Policy Discontinuity:** The first CDS, General Bipin Rawat, passed away in an unfortunate air accident in **December 2021**, just about a year after taking charge.
  - The Indian government took an inexplicable **nine months** to appoint the next CDS that impacted the continuity and effectiveness of defense leadership and strategic planning
- **Overload of Responsibilities:** The current array of responsibilities assigned to the Chief of Defence Staff (CDS) appears to be unnecessarily burdensome.
  - Critics argue that this confluence of roles, requiring a blend of military proficiency, administrative finesse, and strategic political advisory, may have detracted from the CDS's capacity to concentrate on the core objective of fostering joint operational synergy.
- **Lack of Adequate Consensus Among the Services:** The functionality of CDS may be hindered by divergent priorities, conflicting interests, and differing perspectives among the **Army, Navy, and Air Force**.
  - The **Defence Minister of India** recently acknowledged that many viewpoints have to be taken on board on the creation of integrated theater commands, referring to the differing perspectives among the services, particularly the **Indian Air Force**.

- Achieving consensus among the three services, each with their own traditions, cultures, and priorities, has proven to be a significant challenge.

### ***What Emerging Defense Challenges Necessitate a More Unified and Integrated Approach from India?***

- **Two-Front Threat Scenario:** India faces the prospect of potential simultaneous conflicts with China and Pakistan, given the ongoing border tensions and unresolved territorial disputes.
  - The **Galwan Valley clash with China in 2020** and the frequent ceasefire violations by Pakistan along the **Line of Control (LoC)** most recently in **November 2023** underscore the need for coordinated military preparedness on both fronts.
- **Hybrid Warfare and Cross-Border Terrorism:** The challenge of hybrid warfare, which combines conventional and unconventional means, including **cross-border terrorism**, requires a comprehensive and multi-dimensional response.
  - In 2020, the Indian government banned several mobile applications, including **TikTok**, citing **national security concerns** and their potential use for hybrid warfare tactics.
- **Maritime Security and Blue-Water Ambitions:** As India seeks to establish itself as a maritime power with global reach, it requires a strong, integrated maritime strategy involving the **Navy, Coast Guard, and other agencies**.
  - The **Indian Ocean Region**, with its critical sea lines of communication and energy supply routes, demands a robust and coordinated naval presence and maritime domain awareness.
  - China's growing naval presence and influence in the IOR, including acquisition of the **Hambantota port** in **Sri Lanka** and the establishment of a naval base in **Djibouti**, poses a strategic challenge to India's maritime interests.
- **Force Modernization and Capability Development:** Effective force modernization and capability development require a holistic approach that considers the requirements of all three services, avoiding duplication and ensuring interoperability.
  - The acquisition of new platforms, such as the **Rafale fighter jets** or the **Indigenous Aircraft Carrier (IAC)**, necessitates joint training and integration with other service components.
- **Space Security and Counter-Space Capabilities:** With India's increasing reliance on **space-based assets for various military and civilian applications**, ensuring

space security and developing counter-space capabilities has become crucial, necessitating a coordinated effort from the **Armed Forces**.

- In 2019, the **Defence Research and Development Organisation (DRDO)** conducted '**Mission Shakti**', neutralizing a satellite in space with an **anti-satellite (ASAT) missile** as part of the **Indian Ballistic Missile Defence Programme**.
- **Arctic and Antarctic Operations:** As global climate change opens up new opportunities and challenges in the Arctic and Antarctic regions, India has recognized the need to develop **joint defense capabilities** for operations in these hostile environments.

### **What Measures can be Taken to Enhance Integration of Indian Armed Forces?**

- **Enhancing Role Clarity:** There is a need to streamline the existing distribution of roles between the **CDS and the three service chiefs**, ensuring a clear delineation of command and control channels.
  - Also, the potential creation of the positions of **Vice Chief of Defence Staff (VCDS) and Deputy Chief of Defence Staff (Dy CDS)** presents an opportunity to streamline and enhance the effectiveness of the Chief of Defence Staff institution.
- **Integrated Theatre Commands:** The long-pending implementation of integrated theatre commands, aimed at promoting jointmanship and resource optimization, must be prioritized.
  - The government has recently announced the **Inter-Services Organisations (Command, Control, and Discipline) Act**, signaling the initiation of creating unified theatre commands is a significant step in this direction.
- **Cross-Service Rotational Assignments:** Implementing cross-service rotational assignments for officers and personnel across the Army, Navy, and Air Force.
  - This initiative exposes individuals to different operational environments, fosters mutual understanding, and promotes collaboration between the services.
  - It also helps in **breaking down cultural barriers and promotes a unified perspective** on defense operations.
- **Open Source Intelligence (OSINT) Fusion Centers:** Establish OSINT fusion centers that aggregate and analyze publicly available information from diverse sources, including **social media, news outlets, academic research, and satellite imagery**.

- Applying **advanced data analytics, natural language processing (NLP), and geospatial intelligence** to generate actionable insights, early warning indicators, and threat assessments for defense planning and operations.

- **Quantum-Secure Communications Network:** Develop a quantum-secure communications network that leverages **quantum cryptography** and **quantum key distribution (QKD) protocols**.
  - This network ensures highly secure and unbreakable communication channels for **joint military operations, intelligence sharing, and critical infrastructure protection**, safeguarding against cyber threats and data breaches and reintegrating India's defense forces.

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## **SC Verdict on Newsclick: Adherence to Due Process**

*This editorial is based on the article "**SC verdict on Newsclick shows adherence to due process is much more than a procedural requirement**" which was published in The Indian Express on 17/5/2024. The article discusses the Supreme Court's verdict in the case of Newsclick founder-editor Prabir Purkayastha, emphasizing the critical importance of due process of law as a time-tested yardstick for judging the maturity of a civilization.*

**Tag:** GS Paper-2, Fundamental Rights, Indian Constitution, Government Policies & Interventions

Last year, the Special Cell of Delhi Police arrested NewsClick founder Prabir Purkayastha, alleging his attempt to "disrupt the sovereignty of India" through his news portal, purportedly funded by China.

In a recent development, the Supreme Court ordered the release of Purkayastha from custody after concluding that his arrest and remand under the **Unlawful Activities Prevention Act, 1967 (UAPA)** by the Delhi Police are "invalid in the eyes of law".

The **Supreme Court** affirmed that the requirement to communicate the grounds in writing applies equally to detentions. It emphasized that the communication of grounds of arrest or detention by the investigating agency or police in writing is "sacrosanct and cannot be violated under any circumstances."

The ruling emphasizes the need for law enforcement agencies to adhere to proper procedure and due process, especially, in stringent UAPA cases where there is a reverse burden of proof on the accused.



## Why was Purkayastha's Arrest Invalidated by the Supreme Court?

### ➤ Grounds of Arrest were Not Provided :

- The court said that the **grounds of arrest were not provided**, which vitiates the arrest and the appellant is entitled to release from custody after the **Pankaj Bansal case(2023)** in which the top court had held that grounds of arrest must be provided in writing to the accused.
- The court also said that the "right to be informed about the grounds of arrest flows from **Article 22(1)** of the Constitution of India and any infringement of this fundamental right would vitiate the process of arrest and remand."

### ➤ Copy of Reasons for Arrest- a Fundamental Right :

- The verdict said, "There is no doubt in the mind of the Court that any person arrested for an allegation of commission of offenses **under the provisions of the UAPA or for that matter any other offense(s) has a fundamental and a statutory right to be informed about the grounds of arrest in writing, and a copy of such written grounds of arrest have to be furnished to the arrested person** as a matter of course and without exception at the earliest."

### ➤ Procedure Adopted is Clandestine :

- Stating the facts of the case, the bench noted that the copy of the FIR was not shared with the appellant until after the remand order was passed.
- The judgment stated, "Apparently, this entire exercise was done in a **clandestine manner** and was nothing but a **blatant attempt to circumvent the due process of law**; to confine the accused to police custody without informing him of the grounds on which he has been arrested; deprive the accused of the opportunity to avail the services of the legal practitioner of his choice to oppose the prayer for police custody remand, seek bail and also to mislead the Court."

### ➤ FIR Not an Encyclopaedia:

- The judgment also states that, "The law is well settled that the **FIR is not an encyclopedia and is registered just to set the process of criminal justice in motion**. The Investigating Officer has the power to investigate the matter and collect all relevant material which would form the basis for filing of a charge sheet in the Court concerned."
- "The **grounds of arrest informed in writing must convey** to the arrested accused all basic facts on which he was being arrested so as **to provide him with an opportunity of defending himself against custodial remand and to seek bail**."

- Thus, the "**grounds of arrest**" would invariably be personal to the accused and cannot be equated with the "**reasons of arrest**", which are general in nature."

## What is Due Process of Law?

### ➤ Meaning :

- **Due process of law** is application by the state of all legal rules and principles pertaining to a case so all legal rights that are owed to a person are respected.
- Due process balances the power of law of the land and protects the individual person from it. When a government harms a person without following the exact course of the law, this constitutes a due process violation, which offends the rule of law.

### ➤ Significance:

- It involves **the right to fairness, reasonableness, justness, and non-arbitrariness**.
- Any inequality involved in the procedure of law will stand invalid.
- The court incorporates its legislative mind while passing any statute on this ground.
- The due process of law gives weightage to individual rights.
- If the apex court found any law as biased, it will declare it null.
- The law that got the assent of the state must be passed by following the basic process.
- The term Due Process of Law is nowhere defined in the Constitution of India, 1950 (COI).

### ➤ Historical Background:

- The expression "due process" was used for the first time two centuries later in the statute of **British King Edward III**.
- But it was the Fifth Amendment to the **American Constitution (1791)** that introduced the concept of "due process" in a constitution.
- In 1918, the Indian National Congress asked the colonial government to revoke all laws that allowed state authorities to arrest or detain people without due process. **Balgangadhar Tilak** and **M K Gandhi** invoked due process in their defence against unjust laws.
- On March 17, 1947, the Assembly received a note from K M Munshi, a member of the fundamental rights sub-committee. It included a draft provision: "No person shall be deprived of his life, liberty or property without due process of law".

- It was however B N Rau, who proposed to replace due process with the narrower expression "procedure established by law".

➤ Evolution through Case Laws:

- After independence, starting from its regressive judgment in A K Gopalan (1950) to ADM Jabalpur (1976), the SC contributed to undermining the due process by overemphasising the literal meaning of procedure established by law.
- The court did change its stand in the **Bank Nationalisation case (1970)** and extended the due process to the right to property.
- Subsequently, Justice Fazal Ali's dissent in Maneka Gandhi (1978) became a majority opinion and due process was judicially recognised as part of the right to life and personal liberty. Every law must now be reasonable, just, fair and non-arbitrary.

### ***How Does the UAPA 1967 Raise Concerns Regarding the Due Process of Law?***

➤ **UAPA Provisions Differ From Regular Criminal Law :**

- A remand order can be for **30 days** instead of the usual **15**, and the maximum period of judicial custody before the filing of a chargesheet is extendable from the usual **90 days to 180 days**.
  - In **Pramod Singla (2023)**, the SC termed preventive detention laws as a colonial legacy with great potential of abuse. It said that every procedural requirement must be rigidly followed.

➤ **Controversy About Bail Provisions :**

- Under **Section 43D(5) of the Act**, bail cannot be granted to a suspect if the court is of the opinion that there are reasonable grounds to believe that the charges are prima facie true.
- The onus is on the accused to show that the case is false but without inviting the court to evaluate the available evidence. This is why human rights defenders feel that the provision is draconian, virtually rendering it impossible for anyone to obtain bail until the completion of the trial.

➤ **Scope Expanded Over The Years :**

- In its present form, the Act, after the amendments in 2004 and 2013, **covers the declaration of associations as unlawful**, punishment for terrorist acts and activities, acts threatening the country's security, including its economic security (a term that covers fiscal and monetary security, food, livelihood, energy ecological and environmental

security), and provisions to prevent the use of funds for terrorist purposes, including money laundering.

- The ban on organisations was initially for **two years**, but from 2013, the period of proscription has been extended to **five years**.

- After the Prevention of Terrorism Act (POTA), 2002, was repealed, the UAPA was expanded to include what would have been terrorist acts in earlier laws.

➤ **Pendency of Cases:**

- As per the National Crime Records Bureau (NCRB) over 12,000 people were in prisons in 2021 under such laws and 76 % of prison inmates were under trial in 2022
- Only 18 % of the UAPA cases end up in conviction and the pendency of UAPA cases in courts is 89 %.

### ***How to Balance State Security within the Framework of Due Process of Law?***

➤ **Clear Legal Framework:**

- Establish laws that clearly define the limits and procedures for state actions in the name of security. These laws should be precise to prevent misuse and ensure accountability.
- Constitute a parliamentary committee to oversee and recommend changes to security legislation.

➤ **Judicial Oversight:**

- Strengthen judicial oversight mechanisms to review and check arbitrary actions by state authorities. Courts should have the power to scrutinize the legality of detentions and other security measures.
- Establish a judicial review committee to assess cases of detention under laws like UAPA.

➤ **Independent Monitoring Bodies:**

- Establish independent bodies to monitor the implementation of security laws and investigate abuses. These bodies should have the authority to hold state actors accountable.
- Strengthen the role of independent bodies like the National Commission for Minorities and NHRC in monitoring security operations.

➤ **Human Rights Training:**

- Train law enforcement and security personnel in human rights standards and the importance of protecting individual liberties while maintaining security.
- Develop comprehensive training programs for law enforcement in collaboration with the National Police Academy.

### ➤ Public Participation:

- Engage civil society and the public in discussions about security policies and their impact on rights. This can help create more balanced and widely accepted policies.
- Facilitate public consultations and forums on security policies through platforms like [MyGov](#).

### ➤ International Cooperation:

- Collaborate with international organizations, such as [UNESCO](#) and international press freedom groups, to promote press freedom and share best practices.
- The **UN Plan of Action on the Safety of Journalists** aims to create a free and safe environment for journalists and media workers.

### Conclusion :

As India progresses, it must continually strive for ensuring that laws, especially stringent ones like the UAPA, do not overshadow the fundamental rights of individuals. Moving forward, India's legal and constitutional ethos must embody a harmonious balance between state security and individual liberties. This equilibrium is essential not only for the protection of personal freedoms but also as a testament to the maturity and integrity of our democratic civilization.



## Revamping India's Higher Education System

*This editorial is based on the article "[The hyperpoliticisation of Indian higher education](#)" which was published in The Hindu on 18/5/2024. It talks about the issue of politicization of Indian higher education and calls for significant reforms.*

**Tag:** GS Paper-2, Education, Welfare Schemes, Issues Related to Children, Human Resource, Skill Development, Government Policies & Interventions

[India's higher education system](#) stands as one of the largest in the world, reflecting both its historical legacy and its aspirations for the future. The nation boasts an impressive array of institutions, from the globally recognized [Indian Institutes of Technology \(IITs\)](#) and [Indian Institutes of Management \(IIMs\)](#) to a vast network of universities and colleges. According to the [QS World University Rankings for Asia 2024](#), India has the most represented higher education system.

Yet, beneath this expansive structure lie challenges and opportunities that define the current landscape of higher education in India. Despite significantly expanded access, concerns persist regarding **quality, relevance, and the capacity to equip youth** for the demands of the 21<sup>st</sup> century. Recent reports have also highlighted the concerning trend of increasing **politicization in Indian higher education institutions**, which poses a grave threat to **academic freedom, intellectual discourse, and the overall quality of education**.

### What is the Current Status of the Higher Education System in India?

According to the **All India Survey of Higher Education (AISHE) 2021-22**, which was released in **January 2024**:

- **Student Enrolment:** The student enrolment in higher education institutes is **4.33 crore** as of 2021-22, which is a significant uptick from 4.14 crore in 2020-21 and 3.42 crore in 2014-15
  - The number of women enrolled in higher education is **2.07 crore as of 2021-22** which is a 32% jump from 1.5 crore in 2014-15.
  - The proportion of women enrolled is highest at the postgraduate level (**55.4%**).
- **Gross Enrolment Ratio (GER) and Gender Parity Index (GPI):** The estimated GER for the age group 18-23 years in India is **28.4%**.
  - The GPI, which shows the ratio of female GER to male GER, is **1.01 at the all-India level**, indicating gender parity.
- **Discipline-wise Enrolment:** At the undergraduate level, the Bachelor of Arts (BA) programme has the highest enrolment (34.2%), followed by science (14.8%), commerce (13.3%), and engineering and technology (11.8%).
  - At the postgraduate level, the **social science stream** has the highest enrolment (10.8 lakh students).
  - At the PhD level, **engineering** has the highest enrollment, followed by science and social sciences.
- **Primacy of Government Institutions:** **73.7%** of all students attend government universities, **which make up only 58.6% of all universities**.
  - State public universities have the largest share of enrollment (around **31%**) among government-owned universities.

### What are the Key Government Initiatives Related to Higher Education?

- **National Education Policy (NEP) 2020:** The NEP 2020 aims to overhaul the education system, including



higher education, with a focus on multidisciplinary learning, skill development, and promoting research and innovation.

- It proposes increasing the Gross Enrolment Ratio in higher education to **50% by 2035**.
- **Institutions of Eminence (IoE) Scheme:** The Education Ministry had launched the IoE scheme in 2018 as per which **20 institutions** were to be selected to enjoy complete autonomy.
- **National Credit Framework:** It is designed to integrate training and skill development into the education system, spanning both schools and higher education.
  - Credits earned by students will be stored digitally in the **Academic Bank of Credits**, making them accessible via a linked **Digilocker account**.
- **Revamped Accreditation and Ranking Systems:** The **National Institutional Ranking Framework (NIRF)** was launched in 2015 to rank higher education institutions across different categories.
  - The **National Assessment and Accreditation Council (NAAC)** has been revamped to ensure quality standards among institutions.
- **Digital Initiatives:** **SWAYAM** (Study Webs of Active-Learning for Young Aspiring Minds) is a platform offering online courses, covering school to postgraduate levels.
  - The **National Digital Library of India** provides access to a vast collection of educational resources.
- **Study in India Program:** Launched in 2018, this program aims to attract more international students to study in India by providing scholarships and facilitating their admission process.
- **Foreign Institutions in India:** The University Grants Commission in 2023 released regulations that pave the way for foreign universities, ranked among the **world's top 500**, to establish branch campuses in India.
- **SHE under INSPIRE:** The Scholarship for Higher Education (SHE), part of the **Innovation in Science Pursuit for Inspired Research (INSPIRE)** program by the Department of Science and Technology (DST), aims to attract students to study basic and natural sciences at **undergraduate and postgraduate levels** and pursue research careers by offering scholarships to deserving candidates.

### ***What are the Current Major Challenges in the Indian Higher Education System?***

- **Inequitable Access and Low GER:** Access to higher education remains skewed, with significant disparities based on socio-economic background, gender, and geographical location.

- Also, India GER has significantly improved (currently 28.4%) but it is still below the global average of **36.7%**.
- **Politicization and Lack of Autonomy:** There have been concerns about the increasing politicization of higher education institutions, with allegations of **political interference in appointments and curriculum decisions**.
  - Many institutions lack autonomy in areas such as **faculty recruitment, curriculum design, and resource allocation**, hampering their ability to innovate and adapt to changing needs.
  - The appointment of **Governors as Chancellors** and certain Vice Chancellors of Universities has sparked significant controversy in recent times.
- **Limited Funding:** The **Interim Budget 2024-25** for Education in India has been reduced by **7%**, with the **allocation for the University Grants Commission slashed by 61%**.
  - Also, despite the fact that India's R&D sector is growing, as shown by the **Gross Expenditure on Research and Development (GERD)** rising from ₹6,01,968 million in 2010-11 to ₹12,73,810 million in 2020-21.
  - India's R&D investment as a percentage of GDP is still at **0.64%**, lagging behind **China (2.4%), Germany (3.1%), South Korea (4.8%), and the United States (3.5%)**.
- **Shortage of Faculty and Brain Drain:** India faces a severe shortage of qualified faculty members in higher education institutions.
  - As of 2023, over **30% of teaching positions** were vacant in **45 Central Universities across India**.
  - The brain drain of talented academics to other countries or the private sector due to better opportunities and remuneration is a significant challenge.
- **Inadequate Industry-Academia Collaboration:** There is a lack of effective collaboration between higher education institutions and industries in India, leading to a skill gap among graduates.
  - India has a **60-73% demand-supply gap** in key roles such as ML engineer, data scientist, DevOps engineer, and data architect (**India Skills Report 2024**).
- **Uneven Regional Development of Higher Education:** The development of higher education institutions is uneven across different regions and states in India.
  - For instance, states like **Delhi, Tamil Nadu, and Maharashtra** have a higher concentration of reputed institutions, while several states in the **northeastern and central regions** lag behind in terms of quality and access.

### ***What Measures can be Adopted to Revamp Higher Education System in India?***

- **Redefining the Role of Universities:** Shift the focus from rote learning to practical skill development through project-based learning, internships, and industry collaborations from second year.
  - Encouraging universities to work with local communities on social development projects, promoting **social responsibility and civic engagement** among students.
  - Transforming higher educational institutes from **mere Degree Issuers to Skill Generators**.
- **Open Education Resources (OER) Initiatives:** Enhancing the National Digital Library of India and promoting the development and adoption of open educational resources, similar to the **MIT OpenCourseWare initiative**, which provides free access to course materials and lectures.
  - This approach could enhance access to quality educational resources, reduce costs, and foster a **culture of knowledge sharing and collaboration**.
- **Entrepreneurship and Innovation Centers:** Establishing dedicated entrepreneurship and innovation centers within universities, modeled after successful examples like **Stanford University's StartX** and entrepreneurship programs.
  - These centers could provide mentorship, funding opportunities, and a supportive ecosystem for students and faculty to transform their innovative ideas into successful ventures.
  - **HCL TechBee** is a significant step in assisting **Class XII** students who are interested in making careers in Information technology (IT).
- **Transnational Education Partnerships:** Promoting transnational education (TNE) partnerships, where Indian higher education institutions collaborate with reputed international universities to **offer joint degrees, twinning programs, or branch campuses**.
  - This approach could enhance global exposure, facilitate knowledge transfer, and improve the international competitiveness of Indian higher education.
  - Recent **IITM Zanzibar campus** (in Africa) by IIT Madras is a significant step in this direction.
- **Dual Study Programs:** Phase wise implementation dual study programs, similar to **Germany's apprenticeship model**, where students combine theoretical learning at universities with practical training in companies.
  - This approach ensures industry-relevant skills development and enhances employability, while also providing a skilled workforce for companies.

- **Competency-based Credentialing and Blockchain Certificates:** Implementing competency-based credentialing system that recognizes and validates skills and competencies acquired through various learning pathways.
  - Leveraging **blockchain technology** to issue tamper-proof, verifiable digital certificates and credentials, ensuring transparency and trust in the credentialing process.
  - This approach could promote lifelong learning, skill-based education, and recognition of diverse learning experiences.

■■■

## **India's Strategic Investment in Chabahar**

*This editorial is based on "**Anchoring ties in Chabahar waters**" which was published in Hindustan Times on 21/05/2024. The article brings into picture the 10-year contract between India and Iran for the operation of a terminal at the Chabahar port and its strategic significance.*

**Tag:** GS Paper-2, Effect of Policies & Politics of Countries on India's Interests, Regional Groupings

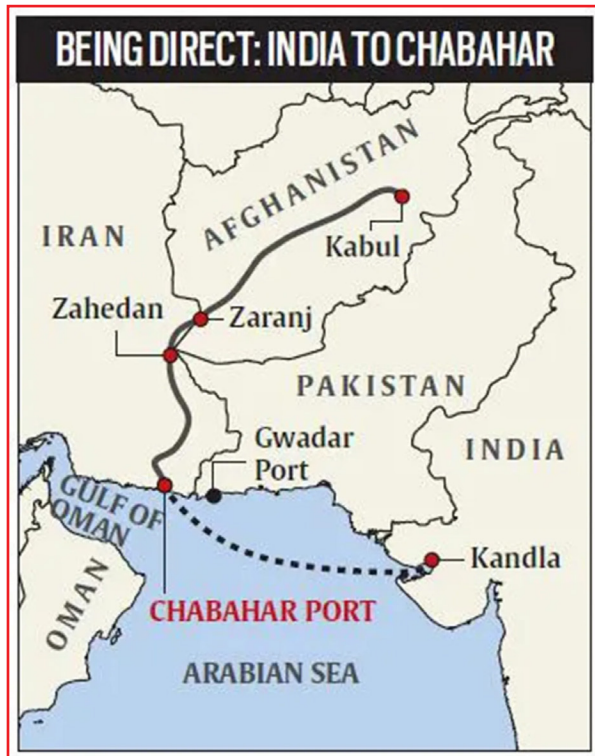
The recent signing of a **10-year contract** between **India and Iran** for the operation of a terminal at the strategically located **Chabahar port** marks a significant milestone in India's efforts to expand its connectivity and influence in the wider Central Asian region. Under the pact, India will invest around **USD 120 million to develop and operate the Shahid Beheshti Terminal** in Chabahar besides offering a credit window of \$250 million for infrastructure upgradation.

However, India's involvement in Chabahar Port faces challenges despite its strategic value. To succeed, India needs **diplomatic finesse, infrastructure upgrades, and diverse connectivity options**.

### ***What is the Chabahar Port Project?***

- Chabahar, which in Persian means '**four springs**', is a deep-water port in the **Sistan Baluchistan** province of Iran.
  - Located in the open sea, it provides easy and secure access for large cargo ships.
  - Described by 10th century Iranian scholar **Al Biruni** as the **entry point to the subcontinent**, it is close to the **Gulf of Oman** as well as the **Strait of Hormuz**.

- It is just about 550 nautical miles from Kandla port in Gujarat, India.
- The Chabahar port comprises two terminals: the **Shahid Beheshti and Shahid Kalantari**.
  - India's investment is only in **Shahid Beheshti terminal**.
  - The development of the port is being done in four phases. On completion, its capacity will be **82 million tonnes per year**.



### ***What is the Timeline Related to the Development of Chabahar Port?***

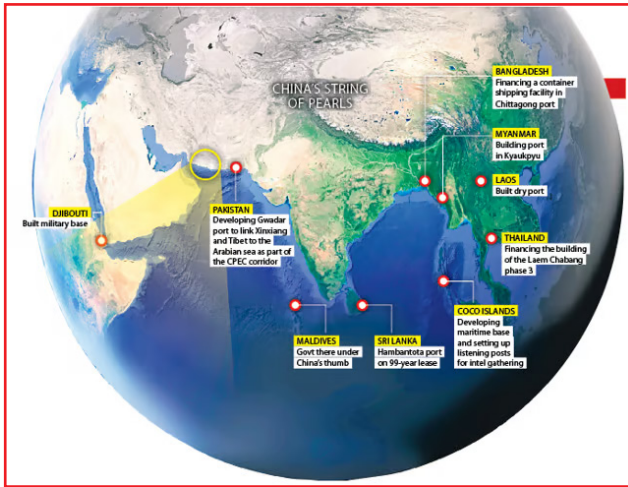
- **Geopolitical Shift and Trade Route Focus (1990s-2000s)**
  - **1990s:** India's strategic shift towards trade routes as a central element of its geopolitical strategy.
  - **Late 1990s:** Enhanced cooperation between India and Iran amid the **rise of the Taliban in Afghanistan**.
- **Early Engagement and Strategic Cooperation (2002-2003)**
  - **2002:** Discussions between India and Iran started for developing Chabahar Port. It aligned with India's growing economic needs and desire for alternative trade routes to Central Asia, bypassing Pakistan.
  - **2003:** India and Iran signed a roadmap for strategic cooperation, including the development of Chabahar Port.

- However, the US labeling Iran as part of the **"Axis of Evil"** under President Bush led to pressure on India, stalling significant progress.
- **Developmental Progress and Agreements (2010 Onwards)**
  - **2010s (Early):** India remains committed to Chabahar and invests in a **218-km road connecting Delaram, Afghanistan, to Zaranj** on the Iran-Afghan border to improve access. However, the overall project development remains slow.
  - **2015:** Breakthrough in talks between **Iran and the P-5+1 powers**, paving the way for progress in Chabahar.
  - **2016:** Signing of the **Trilateral Agreement among India, Iran, and Afghanistan**, establishing the **International Transport and Transit Corridor** and fast-tracking Chabahar's development.
  - **2017:** Inauguration of the first phase of **Shahid Beheshti terminal**, marking a significant milestone in Chabahar's operationalization.
    - India sends its first shipment of wheat to Afghanistan via Chabahar, demonstrating the port's functionality.
  - **2015:** Incorporation of **India Ports Global Limited (IPGL)** as a key player in Chabahar's development, aligning with India's strategic objectives.
  - **2018:** IPGL takes over Chabahar operations, leading to substantial cargo handling and humanitarian aid efforts through the port.
  - **2021:** It was used to supply environment-friendly pesticides to Iran.
- **Current Development (Present):**
  - India and Iran signed a **10-year contract for IPGL to operate a terminal at Chabahar Port**. This signifies India's long-term strategic and economic commitment to the development of Chabahar.

### ***What is the Significance of Chabahar Port for India?***

- **Counterbalancing China's String of Pearls Strategy:** China has established strategic facilities in various locations like Chittagong, Karachi, and Gwadar (Pakistan), Colombo and Hambantota (Sri Lanka), and Kyaukphyu (Myanmar).
  - While presented as commercial projects, these could swiftly transform into Chinese naval bases in a conflict involving India.
  - Chabahar serves as a strategic counterweight for India as a part of the **Necklace of Diamond Strategy**. It allows India to monitor Chinese activities in the region and potentially disrupt **China's "String of Pearls" encirclement strategy**.





- **Ensuring Connectivity amid West Asian Turmoil:** The ongoing conflicts and tensions in the West Asian region, such as the **Yemen crisis** and the recent escalation between **Iran and Pakistan**, have disrupted vital maritime trade routes.
  - Chabahar provides India with an **alternative route for its commercial interests**, reducing dependence on traditional chokepoints like the **Strait of Hormuz**.
- **Enhancing India's Role in the New Great Game:** The race for influence in Central Asia, often referred to as the "**New Great Game**," has intensified with the involvement of global powers like **China, Russia, and the US**.
  - Chabahar strengthens India's position in this geopolitical contest, allowing it to leverage its economic and strategic interests in the region.
- **Facilitating India's Extended Neighborhood Policy:** Chabahar aligns with India's "**Extended Neighborhood Policy**," which aims to enhance its influence and engagement in regions beyond its immediate neighborhood.
  - The port serves as a strategic gateway to Central Asia, enabling India to project its soft power and economic clout in the region.
- **International North-South Transport Corridor (INSTC):** Chabahar is a key link in the INSTC project, which aims to reduce transportation time and costs for the movement of goods between **India, Iran, Afghanistan, Russia, and Europe**, compared to traditional routes like the **Suez Canal** which has recently become an international issue related to transit.
  - According to industry estimates, shipments through the INSTC route will take **15 days less compared to the Suez Canal route**.

**Note:** Apart from developing the Chabahar port in Iran, India is constructing a deep sea port in **Sabang, Indonesia**, and will assist Bangladesh in revamping the seaport in Mongla. In 2016, India constructed a deep water port in **Sittwe, Myanmar**.

### **What are the Major Challenges India Faces with the Chabahar Port Project?**

- **Navigating the India-U.S.-Iran Triangle:** As **U.S.-Iran tensions** oscillate, India faces the challenge of ensuring that its **investments in Chabahar do not invite secondary sanctions from the U.S.**, which could jeopardize its broader economic and strategic ties with the US.
  - Also, New US sanctions on **Iran** (due to its drone strikes on Israel), increase the older risk of companies avoiding involvement in Chabahar.
- **Unstable Political Environment in Iran:** Iran's political instability and internal conflicts can disrupt project continuity.
  - **Israel's continuing war in Gaza** and the extensive disruption to maritime trade in the **Red Sea** caused by Iran-backed armed groups, increase regional instability.
  - According to a World Bank, **Iran ranks 127th out of 190 countries** in the Ease of Doing Business, reflecting its challenging business environment.
- **Iran's Openness to China and Pakistan:** Iran itself has remained open to **Chinese and Pakistani investment** in Chabahar along with India.
  - For instance, India's withdrawal from the **Chabahar-Zahedan railway project** in 2020 was indirectly attributed to Iran's exploration of a 25-year agreement with China (comprising USD 400 billion for infrastructural development).
- **Reconciling Divergent Regional Priorities:** India's involvement in Chabahar could potentially strain its relations with key regional players like **Saudi Arabia and Israel**, who **view Iran as a destabilizing force in the region**.
- **Environmental Concerns:** The delicate ecosystem of the **Gulf of Oman**, where Chabahar resides, is vulnerable to pollution from increased shipping traffic and potential **oil spills**.
  - Unlike concerns about competition or sanctions, **environmental issues can garner international criticism** and complicate project financing if not addressed proactively.

### **What Measures can India Adopt to Curtail Issues Related to Chabahar?**

- **Multilateral Financing Mechanism:** India could explore setting up a multilateral financing mechanism involving like-minded countries to fund the Chabahar project.

- This could involve countries like **Russia, or even some European nations** that have an interest in the **International North-South Transport Corridor**.
- A diverse group of investors could help insulate the project from the risks of unilateral sanctions or political pressures.
- **Regionalize the Project:** Rather than being seen as a strictly bilateral India-Iran initiative, India could work towards **regionalizing the Chabahar project**.
- This could involve inviting regional players like the **Central Asian nations** to participate in the development and operation of the port.
- Their involvement could help mitigate concerns about Iran's destabilizing influence and potentially ease tensions with these nations.
- **Green Shipping Corridor:** India could position Chabahar as a pioneer in establishing a **"Green Shipping Corridor"** in the region.
- By implementing stringent environmental standards, adopting green technologies, and promoting sustainable practices, the port could attract international support and financing from institutions focused on environmental sustainability.
- This could help counter concerns about the ecological impact and garner broader backing.
- **Digital Silk Road:** In addition to its physical connectivity objectives, India could leverage Chabahar to establish a **"Digital Silk Road"** in the region.
- This could involve developing digital infrastructure, promoting e-commerce, and enabling cross-border data flows along the INSTC.
- Such a **digital component could attract investments** from technology companies, diversifying the project's stakeholders and reducing reliance on traditional players affected by geopolitical tensions.
- **Soft Power Diplomacy:** India could complement its economic efforts with soft power diplomacy in the region. This could involve cultural exchanges, educational partnerships, and people-to-people initiatives involving countries along the INSTC route.
- Such efforts could help **build goodwill, foster understanding, and potentially ease geopolitical tensions** that could impact the Chabahar project.



## Revolutionizing E-Commerce Landscape

*This editorial is based on "**Watch out, AI and GenAI are transforming e-commerce from the ground up**" which was published in The Livemint on 09/05/2024. The article discusses the transformative impact of Generative AI on the e-commerce industry landscape.*

Tag: GS Paper - 3, Capital Market, Industrial Growth, Industrial Policy

**E-commerce** has redefined the shopping experience, allowing consumers to browse and purchase products from the comfort of their homes or on-the-go via mobile devices. This multi-billion dollar industry has witnessed exponential growth, fueled by **convenience, wide product assortments, and competitive pricing**.

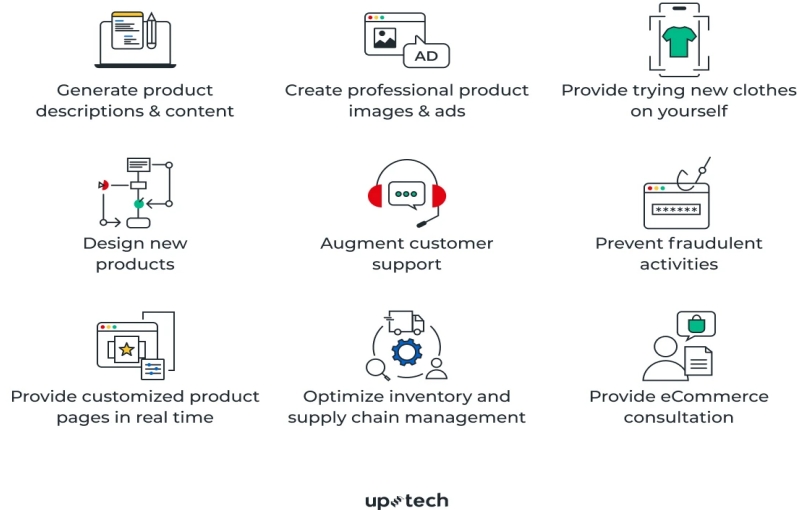
The rise of **generative AI** technologies like **ChatGPT, DALL-E, and Midjourney** is rapidly transforming the ecommerce landscape. Generative AI has been shown to drive **higher conversion rates and revenue growth of 3-15%** for companies investing in the technology. However, Generative AI models can sometimes **"hallucinate"** and generate incorrect or fabricated information without human oversight.

### How Generative AI is Revolutionizing the E-Commerce Sector?

- **Personalized Product Recommendations:** Generative AI can analyze customer data and browsing patterns to provide highly personalized product recommendations.
  - New Epsilon research indicates **80% of consumers** are more likely to make a purchase when brands offer personalized experiences,
- **Automated Product Descriptions and Marketing Content:** AI can automatically generate product descriptions, ads, social media posts and more, saving time while maintaining quality.
  - 55% of marketers using generative AI for content creation reported improved performance, according to a **World Federation of Advertisers study**.
- **Demand Forecasting and Inventory Optimization:** By training on historical data, generative AI models can forecast demand patterns and seasonality more accurately than traditional methods.
  - This allows ecommerce businesses to **optimize inventory levels**, reducing costs and preventing stockouts.

- **Increased Conversion Rates and Revenue:** Businesses investing in generative AI have experienced **3-15% revenue increases** and a 10-20% improvement in sales return on an investment, according to **McKinsey**.

### Generative AI Use Cases In Ecommerce



**Note:** Generative AI is a subset of artificial intelligence that employs algorithms to generate new and unique data or content, mimicking patterns and characteristics learned from analyzing large datasets.

### Artificial Intelligence vs. Traditional Machine Learning, Generative AI

Characteristic	AI	Traditional ML	Generative AI
Purpose	Develop computer systems that can perform tasks that typically require human intelligence.	Make predictions or decisions based on given data.	Generate new data samples that resemble a given set of training data.
Data Interaction	Models use various techniques and strategies designed to mimic human intelligence across a wide range of applications.	Models learn from data to make predictions or decisions on new unseen data.	Models produce new data that weren't part of the original dataset but share similar characteristics.

Techopedia

(ML- Machine Learning)

### What is the Status of the E-Commerce Sector in India?

- **About:** The Indian e-commerce industry is projected to reach **USD 300 billion by 2030**, experiencing significant growth.
  - In FY23, the **Gross Merchandise Value (GMV)** of e-commerce reached **USD 60 billion**, increasing 22% over the previous year.
  - After **China and the US**, India had the third-largest online shopper base of 150 million in FY21 and is expected to be 350 million by FY26.
- **Factors Driving E-Commerce Growth in India:**
  - **Increasing Internet Penetration:** With over **821 million users**, India was the **second-largest internet** market in the world. This growing connectivity is a major driver for e-commerce adoption.

- **Increasing Footprint in Tier 2 and Tier 3 Cities:** The e-commerce trend is gaining major popularity even in tier-2 and tier-3 cities as they now make up nearly **half of all shoppers** and contribute three of every five orders for leading e-retail platforms.
  - The e-commerce market's share of Tier-3 cities grew from **34.2% in 2021 to 41.5% in 2022**.
- **Rising Middle Class and Disposable Incomes:** The size of India's middle class will nearly double to 61% of its total population by 2047, from 31% in 2020-21 (**PRICE Report 2023**).
  - With increasing disposable incomes, more consumers are shopping online for convenience and access to brands.
- **Favorable Demographics:** India has a median age of **28 years** according to **World Population Prospects (WPP)**, making it one of the youngest populations globally.
  - This demographic dividend and tech-savvy population is a significant boost for e-commerce adoption and growth.
- **Growth of D2C Brands and Social Commerce:** The rise of direct-to-consumer (D2C) brands like **boAt, Mamaearth, and Licious** has disrupted traditional retail models.
  - Social commerce platforms like **Meesho** are also gaining traction.
- **Fintech Solutions for Easier Payments:** Digital payment solutions like **UPI, mobile wallets, and buy-now-pay-later** options have made online transactions more accessible and convenient for Indian consumers.



- The total volume surged to a staggering 65.7 billion transactions in 2023, according to **India Digital Payments Report (H2 2023)**.
- **Logistics and Supply Chain Improvements:** Investments in logistics infrastructure, warehousing, and last-mile delivery networks by players like **Delhivery, Ecom Express, and Xpress Bees** have supported e-commerce growth across India.

### ***What are the Major Issues Related to E-Commerce in India?***

- **Logistics and Supply Chain Inefficiencies:** While improving, India's logistics infrastructure still lags, leading to **higher costs and delivery delays**, especially in remote areas.
  - **Economic Survey 2022-23** stated that logistics costs in India have been in the range of **14-18% of GDP** against the global benchmark of 8%.
- **Social and Environmental Impact Concerns:** Issues like **excessive packaging waste, unethical labor practices** in the supply chain, and unsustainable business models raise concerns about the broader ecological and social impact.
  - In May 2023, **Swiggy delivery partners** went on Strike in Chennai, demanding better pay and working conditions.
- **Antitrust and Anti-Competitive Practices:** Allegations of anti-competitive practices like deep discounting, preferential treatment, and misuse of data by large e-commerce firms threaten a level playing field.
  - **Example:** In 2021, the **Competition Commission of India (CCI)** imposed a **₹202 crore fine on Amazon** for not fully disclosing the Future Group entity deal's scope and purpose.
- **Counterfeiting and Piracy Concerns:** Proliferation of counterfeit and pirated products on e-commerce platforms not only impacts sales of genuine brands but also **endangers consumer safety and trust in the ecosystem**.
  - Recently, the Crime Branch of Mumbai, seized counterfeit goods worth ₹55,000 being sold as **"WoW" products**.
- **Human Resource Challenges:** The rapid growth has created a demand-supply gap for skilled tech, supply chain, and logistics professionals.

### **What are the Major Government Initiatives Related to E-Commerce?**

- **Government e-Marketplace (GeM) Portal:** Launched in August, 2016, by the Ministry of Commerce and Industry to create an inclusive, efficient, and transparent platform for buyers and sellers to conduct public procurement activities.
  - In FY23, procurement crossed Rs. 2 lakh crore.

- **Open Network for Digital Commerce (ONDC):** It is an online network launched by the Government of India in 2022, aims to provide **equal opportunities to MSMEs** to thrive in digital commerce and democratize e-commerce.
- **National E-Commerce Policy:** The Indian government is poised to unveil a national e-commerce policy, aiming to foster sector growth and boost exports.
  - Initially proposed in 2018, a draft of the policy was released in **2019**.
- **Consumer Protection (E-commerce) Rules 2020:** Directed e-commerce companies to display country of origin alongside product listings.
  - It also mandated companies to reveal parameters determining product listings on their platforms.
- **FDI in E-commerce:** Limit of FDI in the E-commerce marketplace model hiked to up to 100% (in B2B models)
- **Equalisation Levy Rules 2016 (Amended in October 2020):** The equalisation levy aims to ensure a fair share of digital economy tax and avoid double taxation.
  - Foreign companies operating e-commerce platforms in India mandated to have Permanent Account Numbers (PAN)
  - **A 2% tax imposed in FY21 budget** on sale of goods or delivery of services through a non-resident e-commerce operator.

### ***What Measures can be Adopted to Revamp the E-Commerce Landscape in India?***

- **Develop Logistics Parks and Multimodal Hubs:** Incentivize the creation of state-of-the-art **logistics parks and multimodal logistics hubs** through public-private partnerships, leveraging innovative financing models.
  - These hubs would integrate different modes of transportation (**road, rail, air, and waterways**) and provide modern warehousing, packaging, and distribution facilities, **streamlining the entire supply chain**.
- **Foster Rural E-commerce Logistics Startups:** Encourage and support the growth of **rural e-commerce logistics startups** by providing them with access to technology, funding, mentorship, and training.
  - These startups could leverage local knowledge and resources to **bridge the last-mile delivery gap in remote areas**, creating employment opportunities and boosting rural entrepreneurship.

- **Implement “Logistics Reverse” and Circular Economy Models:** Mandating the use of sustainable packaging materials and promoting the **concept of “Logistics Reverse,”** where e-commerce platforms **incentivize customers to return packaging materials** for recycling or reuse.
  - Additionally, encouraging the adoption of circular economy principles, facilitating the **resale, refurbishment, or recycling of products** to reduce waste and promote sustainable consumption.
- **Establish a Dedicated E-commerce Regulatory Authority:** Setting up a dedicated e-commerce regulatory authority or a **specialized division within the Competition Commission of India** to proactively monitor and address anti-competitive practices, data misuse, and unfair business practices in the e-commerce sector.
  - This authority could also oversee the implementation of **“Fairness by Design”** principles in e-commerce platforms’ algorithms and policies.
- **Implement Advanced Authentication and Traceability Technologies:** Mandating the use of advanced product authentication technologies like **RFID tags, QR codes, and blockchain-based traceability systems** to combat counterfeiting and ensure product authenticity.
  - Collaborate with industry associations and law enforcement agencies to establish a **centralized reporting mechanism** and a dedicated task force to tackle the sale of counterfeit goods on e-commerce platforms.
- **Encourage Gig Talent Pools:** Encouraging the development of **“Gig Talent Pools,”** where e-commerce companies can access a **curated network of skilled freelancers** and independent contractors for short-term or project-based engagements.
- **Regulating Generative AI in E-commerce:** To maintain competition and ethical practices, regulatory frameworks must mandate transparency in AI-generated content and algorithms.
  - E-commerce companies should be required to **disclose AI usage and adhere to ethical standards.**
  - Regular audits and compliance checks will ensure fairness and accountability.



## Guardians of the Green: Tribals

*This editorial is based on “**To preserve forests, it’s important to listen to tribal communities**” which was published in The Indian Express on 23/05/2024. The article talks about the Indian President’s recent emphasis on the vital role of tribal knowledge in forest conservation and climate change mitigation, urging Indian Forest Service officers to integrate traditional wisdom with modern practices.*

**Tag:** GS Paper-2, Issues Related to SCs & STs, Government Policies & Interventions

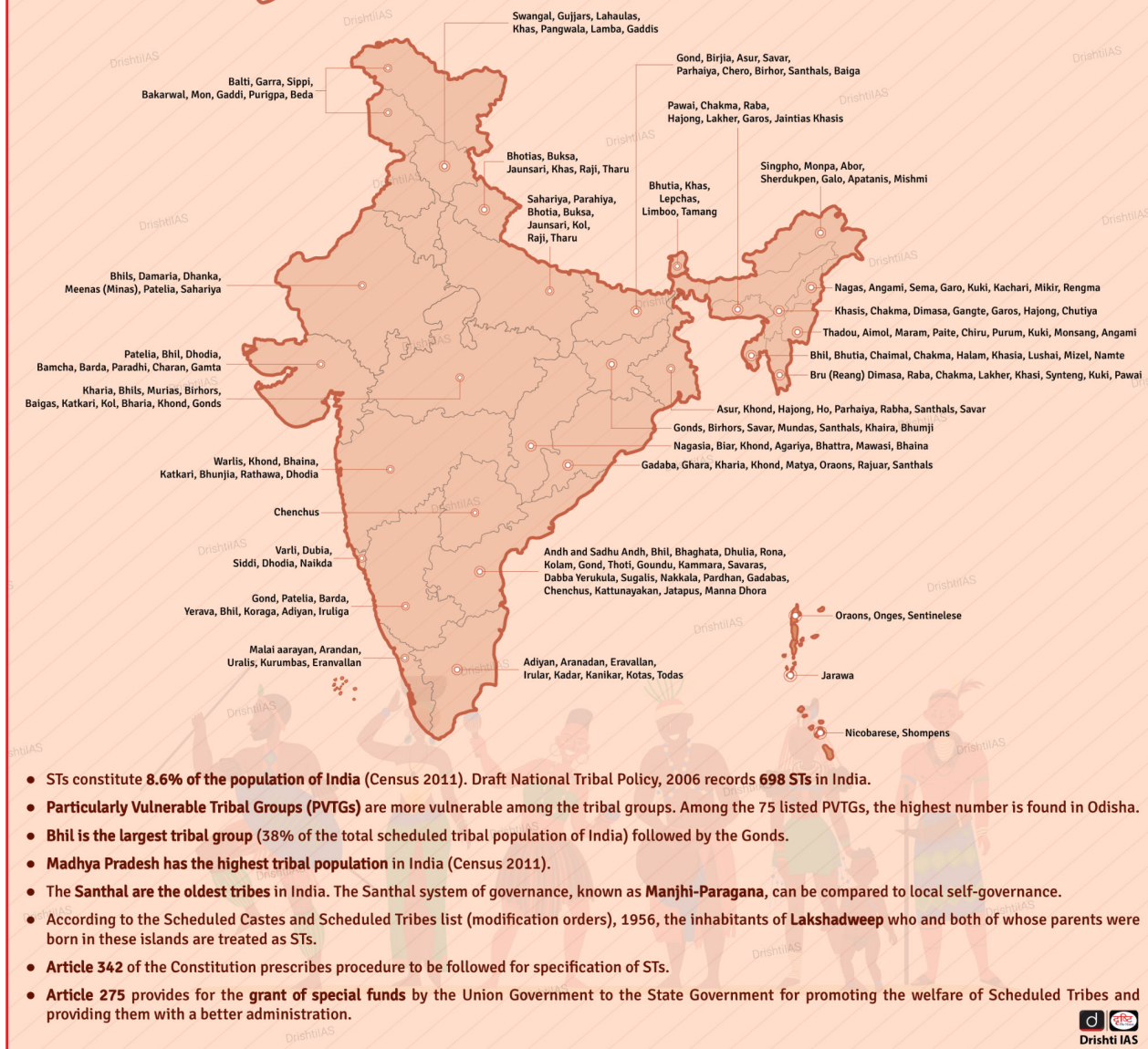
For centuries, **tribal communities** have lived in harmony with nature, preserving the **delicate balance of forests and their rich biodiversity**. **Forests** are the lungs of our planet, providing essential ecosystem services and sustaining life on Earth. However, the relentless pursuit of development and industrialization has often come at the cost of environmental degradation, leading to the rapid depletion of forest resources.

As we confront the pressing challenges of climate change and environmental degradation, it is imperative that we embrace the **wisdom of tribal communities and integrate their traditional ecological knowledge into modern conservation efforts along with their empowerment**. By learning from their sustainable practices and involving them in decision-making processes, we can forge a path towards a more sustainable future.

### What Roles Tribal Population Play in Forest Conservation?

- **Sustainable Resource Utilization:** Tribal communities have developed sustainable methods of **resource extraction from forests**.
  - Every resource collection practice done by **Kadars tribes of South India**, whether honey, firewood, resin, or herbs, is designed to allow for regeneration.
  - The **Bhotias of Central Himalayas** inspect the maturity of leaves before harvesting medicinal plants to prevent overharvesting.
- **Preservation of Sacred Groves:** Many tribes consider certain forest areas as sacred groves dedicated to folk deities.
  - The **Garasia tribes in Sirohi district, Rajasthan** have preserved patches of forests termed sacred groves, protecting threatened plant species listed in the **IUCN Red List**.

# Major Tribes in India



- **Rotational Farming and Grazing:** Tribes like the **Gond, Pradhan, and Baiga** of **Madhya Pradesh** practice **Utera farming**, where the next crop is sown before harvesting the primary one, utilizing existing soil moisture.
  - They also follow the **Badi cropping system**, planting fruit trees along the periphery to prevent soil erosion.
- **Sustainable Fishing Practices:** Unlike harmful methods like **dynamiting**, tribes employ sustainable **fishing** techniques.
  - The **Wancho and Nocte tribes** of Tirap district, Arunachal Pradesh create obstructions in streams using bamboo and stones to trap fish, distributing the catch among the community (**Bheta method**).
- **Wildlife Protection through Beliefs and Totems:** Tribal beliefs and totems restrict the culling of certain animals and plants.
  - For the **Adi tribes of Arunachal Pradesh**, tigers, sparrows, and pangolins are well-wishers of humankind and are not hunted.
- **Community-based Conservation Efforts:** Some tribes have declared parts of their forest land as “**Community Conserved Areas**” governed by locals.
  - The **Idu Mishmis** have taken this step, while the **Bishnoi Tiger Force**, an environmental campaign group, actively fights against poaching and rescues injured animals in Rajasthan.



### What are the Key Challenges Encountered by Tribals in India?

- **Land Alienation and Displacement:** Tribal communities have faced widespread displacement due to various development projects, such as **mining, dams, and infrastructure projects**, leading to the loss of their traditional lands and disruption of their way of life.
  - For instance, the **Dongria Kondh tribes persons** of Odisha allege they have been unfairly targeted for resisting **bauxite mining plans in Niyamgiri Hills**.
- **Lack of Implementation of Forest Rights Act:** The **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006**, aimed to recognize the rights of forest-dwelling communities over land and resources.
  - However, its implementation has been **slow and ineffective**, with many tribes facing delays, harassment, and illegal evictions.
  - For example, in **2019**, the Supreme Court ordered the eviction of **over 1 million forest-dwelling families**, including tribal communities.
- **Threats to Traditional Livelihood Practices:** Traditional livelihood practices of tribal communities, such as shifting cultivation, hunting, and gathering, are increasingly under threat due to conservation policies and restrictions imposed by forest departments.
  - The **Van Gujjars**, a semi-nomadic pastoral community in the **Himalayas**, have faced attempts by forest departments to restrict their entry into forests, which is essential for their transhumance practices.
- **Loss of Traditional Knowledge and Cultural Erosion:** With the younger generation of tribals migrating to urban areas in search of better opportunities, there is a risk of losing the traditional knowledge and practices passed down through generations.
  - This **erosion of cultural identity and knowledge systems** poses a significant challenge to the conservation of forests and biodiversity.
- **Impact of Climate Change:** Tribal communities, heavily dependent on natural resources, are among the most vulnerable to the impacts of climate change.
  - For instance, the **Khasi tribe in Meghalaya** has witnessed a decline in their traditional agricultural practices due to changing rainfall patterns and temperature increases.

### What are the Major Challenges Related to Forests in India?

- **Deforestation and Habitat Loss:** India has witnessed a massive surge in deforestation, ranking **second only after Brazil** between 2015 and 2020, according to a report by **Utility Bidder**.
  - The primary reasons for deforestation include expanding human settlements, infrastructure development, and conversion of forest land for agriculture and mining activities.
  - For example, the construction of the **Mumbai-Ahmedabad High-Speed Rail project** is expected to result in the cutting of over **21,000 mangrove trees** in Maharashtra.
- **Illegal logging and Timber Trade:** **Illegal logging** and the associated timber trade continue to pose a significant threat to India's forests.
  - The northeastern states, particularly **Arunachal Pradesh**, have witnessed rampant illegal logging activities, leading to the degradation of precious forest resources.
  - In January 2024, a timber-loaded truck was seized in **Arunachal Pradesh**.
- **Human-Wildlife Conflicts:** As human settlements encroach upon forest areas, the instances of human-wildlife conflicts have increased.
  - **Elephants, tigers, and other animals** frequently stray into human habitations, leading to loss of life and property on both sides.
  - For instance, 3938 human lives lost to wild elephant attacks between **2014-2022**, while several elephants were also killed in retaliation.
- **Invasive Species:** The introduction of invasive alien species poses a significant threat to the native flora and fauna of Indian forests.
  - **Lantana camara**, a notorious invasive shrub, has invaded vast areas of forests, particularly in southern India, outcompeting native species and altering the ecosystem.
  - The **Nilgiri Biosphere Reserve in the Western Ghats** is one of the largest impacted invasion hotspot areas, dominated by *Lantana camara*.
- **Forest Fires:** Forest fires, both natural and human-caused, have become a significant concern in India.
  - Based on the forest inventory records, **54.40%** of forests in India are exposed to occasional fires.
  - These fires not only destroy valuable forest resources but also contribute to air **pollution** and **greenhouse gas emissions**.

- **Climate Change:** Climate change is emerging as a significant threat to Indian forests, with rising temperatures, erratic rainfall patterns, and extreme weather events all contributing to the stress on forest ecosystems.
  - For example, the **Western Ghats**, a biodiversity hotspot, is predicted to experience significant shifts in vegetation patterns due to climate change, with the **potential loss of several endemic species**.

### ***What Measures can be Adopted to Integrate Tribal Empowerment with Forest Conservation?***

- **Eco-tourism Initiatives:** Promoting eco-tourism initiatives led by tribal communities can provide them with alternative livelihood opportunities while preserving their cultural heritage and traditional knowledge.
  - The **Khonoma village in Nagaland, managed by the Angami tribe**, is a successful example of community-based eco-tourism, where the tribe has preserved their traditional practices and forests while generating income from tourism.
- **Tribal Forest Guardians Program:** Implementing a "Tribal Forest Guardians" program, where members of tribal communities are trained and employed as forest guards or eco-guides.
  - This approach can **leverage their intimate knowledge** of the local ecosystems, promote ownership, and provide sustainable livelihoods.
- **Tribal Knowledge Banks:** Documenting and integrating traditional ecological knowledge of tribal communities into modern conservation strategies.
  - For instance, the sustainable agricultural practices of the **Apatani tribe in Arunachal Pradesh**, such as their **rice-fish cultivation system**, can be studied and adapted in other regions.
  - It can also provide valuable insights into identifying and conserving rare and medicinal plant species.
- **Forest Product Value Addition and Marketing:** Establishing value-addition and marketing initiatives for forest products collected by tribal communities.
  - This could involve setting up **processing units for products like medicinal plants, honey, and handicrafts**, as well as creating direct market linkages for these value-added products.
  - This approach can provide sustainable livelihoods while incentivizing the conservation of forest resources by the tribes.

- **Hakki Pikki tribe's Adiwasi Herbal Hair Oil** can be an excellent role model.
- **Participatory Forest Management:** Promoting participatory forest management models, where tribal communities are actively involved in decision-making processes related to forest conservation and management.
  - The **Joint Forest Management (JFM) program** in India can be strengthened by ensuring greater representation and decision-making powers for tribal communities, recognizing their traditional knowledge and practices.

■■■

## **Press Freedom in India: Challenges and Strategies**

*This editorial is based on the article '**Questions on press freedom**' which was published in The Hindu Business Line on 21/5/2024. The article discusses India's recent ranking in the World Press Freedom Index which is alarming, especially considering its status as the world's largest democracy.*

**Tag:** GS Paper-2, Fundamental Rights, Indian Constitution, Government Policies & Interventions

In a democratic country like India, the press plays a pivotal role in **amplifying the voices of the populace** and shedding light on government actions, serving as a **crucial watchdog**, tasked with scrutinising the workings of the government and bringing attention to any **perceived injustices or shortcomings** done by any state actors. However, the recently released **World Press Freedom Index** presents a concerning picture for India.

India's ranking in the recently released **World Press Freedom Index -159<sup>th</sup>** out of 180, is alarming, especially considering its status as the world's largest democracy. While there was a slight improvement in rank, it's not due to progress but rather due to declines in press freedom in other countries.

The challenge to **Freedom of Press in India** includes the **concentration of media** in the hands of a few individuals or entities (corporate and political hijacking of media institutions) and the ownership of media can lead to a **lack of diversity in viewpoints** and a **potential dominance of specific narratives** or agendas and can **limit the plurality of voices**, thereby hindering the ability of journalists to freely report.

### What is the World Press Freedom Index (WPI)?

- **Introduction:**
  - It is a comprehensive assessment of the level of press freedom in countries around the world, compiled annually by **Reporters Sans Frontiers (RSF)** since 2002.
- **Objective:**
  - It aims to gauge the extent to which journalists, media organisations, and citizens can freely exercise their rights to gather, report, and access information, while also considering the efforts made by authorities to uphold this freedom.
  - The index focuses specifically on press freedom and **does not evaluate the quality of journalism** or broader human rights issues within the countries it assesses.
- **Methodology:**
  - Its methodology, **updated in 2021**, centres on defining press freedom as the ability of journalists, both individually and collectively, to select, produce, and disseminate news in the public interest.
  - It emphasises independence from **political, economic, legal, and social influences**, as well as ensuring the safety of journalists, both physically and mentally.
- **Key Indicators:** To assess press freedom, the index utilises five key indicators:
  - Political context
  - Legal framework
  - Economic context
  - Socio-cultural environment
  - Safety

### What are the Key Highlights of the World Press Freedom Index (WPI) 2024?

- **Global Trends:**
  - Press freedom remains relatively robust in European Union countries, notably with the recent implementation of the **European Media Freedom Act (EMFA)**.
  - Conversely, the **Maghreb and Middle East regions** face severe government-imposed press restrictions.
- **Comparative Analysis on a Global Scale:**
  - Scandinavian countries like **Norway, Denmark, and Sweden** lead the rankings, while Eritrea, Syria, and Afghanistan are ranked at the bottom.
  - Within the BRICS nations, **Brazil and South Africa rank higher than India**, with China and Russia ranking lower. In South Asia, **India** ranks lower than all countries except Bangladesh.

### ➤ India's Position in Press Freedom Rankings:

- India's 2024 ranking at **159<sup>th</sup>**, slightly better than 2023's **161<sup>st</sup>**, places it alongside countries such as the occupied **Palestinian territories**, UAE, Turkey, and Russia, reflecting worrying levels of press freedom.
- **India's Response:** India rejected this report on the following grounds:
  - **Reasonable Restriction:** Freedom of speech and expression (**Article 19(1)**), **encompassing freedom of press**, can be curtailed on certain grounds outlined under **Article 19(2)** - in the interest of **sovereignty, security, friendly relations, public order, decency, morality, contempt of court, defamation**, or incitement to an offence.
  - **Dubious Methodology:** This reluctance is attributed to several factors, including the **small sample size**, inadequate consideration of **democratic principles**, and the methodology perceived as dubious and lacking transparency.

#### INDEX 2024

**159** / 180

Score : 31.28

#### INDEX 2023

**161** / 180

Score : 36.62

POLITICAL  
INDICATOR

**159**  
21.58

POLITICAL  
INDICATOR

**169**  
33.65

ECONOMIC  
INDICATOR

**157**  
31.67

ECONOMIC  
INDICATOR

**155**  
34.15

LEGISLATIVE  
INDICATOR

**143**  
40.87

LEGISLATIVE  
INDICATOR

**144**  
42.92

SOCIAL  
INDICATOR

**156**  
33.33

SOCIAL  
INDICATOR

**143**  
45.27

SECURITY  
INDICATOR

**162**  
28.97

SECURITY  
INDICATOR

**172**  
27.12

### What is the Significance of Free and Unrestricted Media in Democracy?

- **Essential in a Democratic Framework and Civic Awareness:**
  - The liberty of the press constitutes a cornerstone of democratic societies such as India, as it fosters the reinforcement of democratic principles and instigates engagement with the three pillars of democracy.



- An example is the case of **Romesh Thapar v. State of Madras (1950)**, in this case, the Supreme Court of India affirmed the fundamental right to freedom of speech and expression, including the **freedom of the press**, as guaranteed by the Indian Constitution.
- **Enhancing a Nation's Resilience:**
  - Through unbiased reporting and analysis, media outlets facilitate informed decision-making among citizens, ensuring the integrity of the democratic process by making them aware of their **rights and responsibilities**.
  - For example, during elections, media outlets play a pivotal role in disseminating information about political parties, candidates, and their policies to the electorate.
- **Safeguard against Governmental Overreach:**
  - A free and independent press serves as a vital check on the actions of governments and administrative bodies.
  - The **RTI Act, enacted in 2005**, grants citizens the right to access information held by public authorities, thus promoting transparency and accountability in governance.
- **Advocating against Societal Injustices:**
  - It bears the responsibility of raising awareness and advocating against societal wrongs and injustices.
  - Media coverage of the **Nirbhaya case in 2012**, galvanised public discourse and prompted discussions on crucial issues such as women's safety, law enforcement reforms, and the importance of gender sensitisation.
- **Vigilant Oversight and Championing Public Interests:**
  - Across national, regional, and local levels, the media functions as the voice, advocate, and watchdog of the public, while also serving as an educator, entertainer, and contemporary chronicler.
  - For instance, in uncovering instances of **fraud or corruption**, the media plays a pivotal role in scrutinising government policies and expenditures, contributing to **transparent governance** through unbiased reporting.

### ***What are the Various Obstacles Hindering the Freedom of Press in India?***

- **Physical Threats and Violence against Journalists:** Particularly when they report on sensitive issues like **corruption or communal tensions**, tragically, some

journalists have paid the ultimate price, facing attacks or even losing their lives while fulfilling their professional duties.

- Laws such as **section 124A** of the Indian Penal Code, which criminalises sedition with potential life imprisonment, further endanger press freedom.
- **Corporate and Political Influence:** The overwhelming influence of **corporate and political entities** on large sections of the media, both print and visual, compromises journalistic independence and serves **vested interests**, thereby undermining the freedom of the press.
- **Fake News and Hate Speech:** Media practices such as **paid news, advertorials**, and the proliferation of fake news undermine the credibility of the media and erode its ability to report impartially.
  - **Hate speech** targeting journalists is frequently disseminated and amplified on social networks, posing a direct threat to their safety and well-being.
  - For instance, in **Bijoe Emmanuel v. State of Kerala (1986)** SC held that the right to speak includes the right to be silent or to utter no words.
- **Self-Censorship and Ethical Challenges:** The practice is pervasive within the media fraternity, influenced by the **fear of consequences** or pressure from different sources and this careful attitude results in **avoiding certain subjects** or taking a less outspoken position on controversial issues.
  - Prevalent ethical challenges revolve around the **balance between reporting the truth and navigating censorship** or government-imposed restrictions.
  - Journalists may find themselves torn between their duty to provide accurate, comprehensive information to the public and the risk of facing censorship, legal repercussions, or **personal harm** for reporting on sensitive topics or dissenting viewpoints.
- **Government Interference:** Government involvement makes the situation more complex, as it can undermine the **editorial independence** of media organisations, by controlling **advertising budgets**, authorities can either favour media that aligns with their views or **punish those that express dissent**, thus shaping the media's portrayal of events.

### ***What are the Various Bodies Associated with Press Freedom in India?***

- **Regulatory Bodies:**
  - **Press Council of India (PCI):** Established under the **Press Council Act of 1978**, the Press Council of

India serves as a **watchdog** to uphold and promote press freedom and **ethical standards** in journalism.

- **Ministry of Information and Broadcasting:** This governmental body is tasked with creating policies and guidelines for the media sector in India.
- **News Broadcasters Association (NBA):** The NBA is a **self-regulatory organisation** representing **private television news** broadcasters in India. It sets and enforces ethical standards for television news channels.
- **Bodies Ensuring Press Freedom:**
  - **Editors Guild of India:** Comprising editors from prominent newspapers and news magazines, it defends press freedom and addresses journalists' rights and responsibilities.
  - **Legal System:** India's judiciary, including the Supreme Court, plays a vital role in safeguarding press freedom and courts have the authority to address press freedom violations, protect journalists, and interpret media-related laws.
  - **International Organisations:** Global entities like **Reporters Without Borders (RSF)** and the **Committee to Protect Journalists (CPJ)** monitor press freedom in India and highlight violations on the international stage.

### ***What Strategies Can Be Adopted to Revamp Press Freedom in India?***

- **Implementing Committee's Recommendations:**
  - **Justice J.S. Verma Committee (2012), the Press Council of India, and the National Human Rights Commission** have recommended adopting legal and ethics training for journalists, fostering transparency and accountability within media institutions, and ensuring the protection of constitutional guarantees of press freedom via legal measures and international cooperation.
- **Strong Legal Framework:**
  - India has a robust legal framework in the form of **Article 19(1)(a)** of the Constitution, which guarantees **freedom of speech and expression**.
  - However, there is a need to strengthen laws and regulations to protect journalists from harassment, intimidation, and violence. **In 2017**, the Supreme Court upheld the importance of free speech and the press, stating that freedom of speech and expression is the "**quintessential instrument**" to attain truth.
- **Independent Media Regulatory Bodies:**
  - Establishing **independent and autonomous regulatory bodies** to oversee the functioning of the media can help ensure fair and unbiased reporting.

- **Ensuring transparent appointment** processes for their members, providing adequate resources and funding, and **fostering public trust** in their ability to regulate the media impartially.

#### ➤ **Protection for Whistleblowers and Journalists:**

- Enacting laws and mechanisms to protect whistleblowers and journalists who expose wrongdoings or report on sensitive issues can encourage fearless reporting.
- For example, the **Whistleblowers Protection Act, of 2014**, provides a legal framework to protect whistleblowers in the public sector.

#### ➤ **Addressing Online Threats and Fake News:**

- With the increasing use of digital media, it is essential to address online threats such as **cyber harassment, trolling, and misinformation** campaigns targeting journalists.
- In 2022, the **News Broadcasters & Digital Association (NBDA)** launched a campaign to combat online harassment and abuse of journalists, particularly women journalists and fake news.

#### ➤ **Media Literacy and Training:**

- Media literacy and ethics training programme for journalists to tackle ethical dissonance in journalism, promoting transparency and accountability within media organisations, and safeguarding constitutional guarantees of press freedom through legal protections.

#### ➤ **International Cooperation:**

- Collaborating with international organisations and forums can help promote best practices, share experiences, and leverage global support for press freedom in India.
- India is a member of the **International Programme for the Development of Communication (IPDC)**, a UNESCO initiative that supports media development and freedom of expression worldwide.

### ***Conclusion***

The endeavour to uphold press freedom in India is multifaceted and requires collaborative action, recommendations from committees such as the **Justice J.S. Verma Committee (2012), the Press Council of India, and the National Human Rights Commission** emphasise the importance of enhancing media literacy, strengthening ethics training for journalists, promoting transparency and accountability within media organisations.



## Economic Ripples of Climate Change

*This editorial is based on “[The growing cost of climate change](#)” which was published in The Indian Express on 23/05/2024. The article brings into picture the rising economic impacts of climate change and need for mitigation as well as adaptation measures.*

**Tag:** GS Paper-3, Environmental Pollution & Degradation, Conservation

**Climate change** is transforming the global **geoeconomic landscape**, and its mounting economic tolls can no longer be disregarded. Two recent studies have sounded alarms- one by the **US National Bureau of Economic Research** estimates the **world’s GDP would be 37% higher today without global warming since 1960**, while another in Nature projects average incomes could plummet by nearly a fifth in the next 26 years due to climate impacts.

Global climate policy has rightly focused on mitigation, but **adaptation remains underfunded** despite growing awareness of its need. Investing in resilience against climate change is not just an **environmental imperative but an economic necessity** for safeguarding sustainable development.

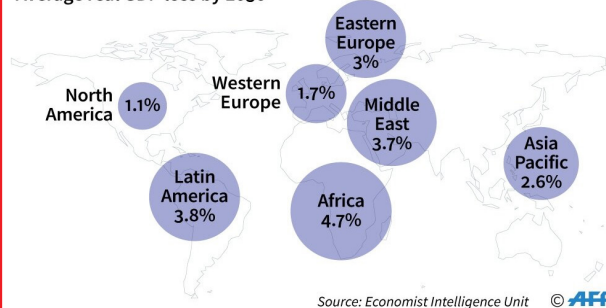
### How Climate Change is Shifting Global Geoeconomic Landscape?

- **Shifting Agricultural Patterns:** Rising temperatures, **changing precipitation patterns**, and **extreme weather events** are altering the geographic distribution of suitable areas for agriculture.
  - For instance, declining crop yields in traditionally fertile regions like the **Middle East and North Africa** due to drought and desertification are leading to increased **food insecurity** and potential economic instability.
- **Resource Scarcity:** Climate change is exacerbating water scarcity, leading to conflicts over shared water resources.
  - The **Nile River basin**, shared by several African countries, is facing increasing **tensions as water levels fluctuate** due to climate change, impacting agriculture, hydropower, and economic activities.
- **Migration and Displacement:** Climate-induced events are forcing people to migrate from their homes, creating economic challenges for host communities and potential conflicts over resources.
  - For example, according to the **Natural Resources Defense Council**, rising sea levels will submerge around **17% of Bangladesh’s coastal lands** and displace about 20 million people by 2050.

- **Erupted Arctic Economic Opportunities:** The melting of **Arctic sea ice** is opening up new shipping routes and access to natural resources, leading to a **potential economic race** among nations with interests in the region.
  - For example, Russia has been investing in developing its **Northern Sea Route** for commercial shipping, while countries like **China and India** are exploring economic opportunities in the region.
- **Climate-induced Conflicts:** Climate change is acting as a “**threat multiplier**,” exacerbating existing tensions and conflicts over resources, particularly in regions already facing political instability and economic challenges.
  - For instance, the **prolonged drought in Syria (2007–2010)** is believed to have played a role in **fueling the civil unrest** that led to the Syrian conflict.
- **Climate-related Supply Chain Disruptions:** Extreme weather events and climate-induced disasters can disrupt global supply chains, leading to economic losses and potential shortages of critical goods.
  - For example, the **2011 floods in Thailand**, a major manufacturing hub for electronics and automotive parts, caused **widespread supply chain disruptions** and economic impacts globally.
- **Climate Gentrification:** As certain regions become more susceptible to climate change impacts, such as rising sea levels or extreme weather events, there is a risk of “climate gentrification,” where **wealthier individuals and businesses relocate to areas deemed safer or more resilient**.
  - This could lead to economic displacement and further marginalization of vulnerable communities.

### Economic impacts of climate change

Average real GDP loss by 2050



### What are the Major Impacts of Climate Change on the Indian Economy?

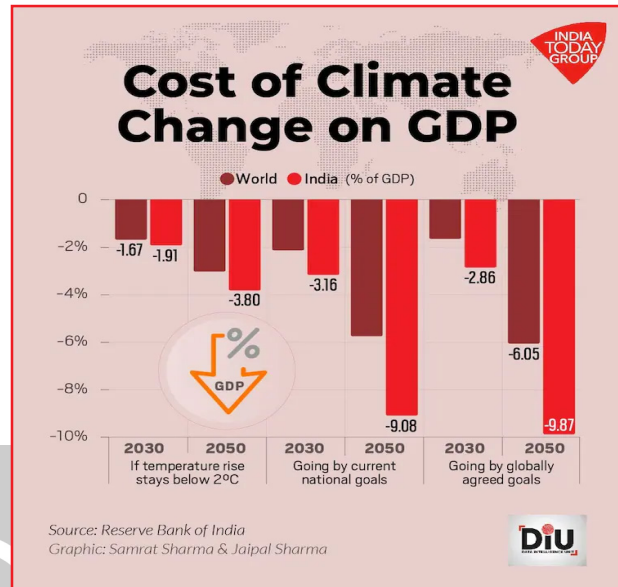
- **Reduced Agricultural Productivity and Yield:** Climate change can severely disrupt crop cycles and cause low agricultural yield.



- **Agriculture** is the primary source of livelihood for **around 55% of India's population** and contributes significantly to the economy.
- Low yields can hit the rural economy and push **inflation** in urban areas.
  - For instance, in absence of adoption of adaptation measures, **rainfed rice yields in India** are projected to reduce by **20% in 2050**.
- **Setback to Industrial and Service Sector:** There could be an increase in operational costs and a reduction in profits in the industrial sector.
  - Reasons include imposition of **new climate-friendly regulations**, **reduced utilization of old stock**, and **diversion of investment** towards greener infrastructure.
    - Relocation of production processes and activities due to climate-related losses can also add to economic loss.
  - **Also, increased insurance claims and disruptions in travel and hospitality** can pose multiple threats to the **service sector**.
- **Infrastructure Damage:** Extreme weather events induced by climate change like floods and heatwaves can significantly damage infrastructure.
  - For instance, India spent **USD 3 billion** of economic damage caused by floods in the last decade which is **10% of the global economic loss**.
- **Labor Market Impacts:** Climate induced health hazards could lead to a loss in productivity and cause migration from areas more prone to climate risks.
  - The **Reserve Bank of India (RBI)** estimates that up to **4.5% of India's GDP could be at risk by 2030 due to lost labor hours** from extreme heat and humidity.
  - It is estimated that India could account for about 3.4 crore (34 million) of the projected 8 crore (80 million) global job losses from heat stress by 2030.
- **Risks for Banks and Financial Institutions:** The RBI classifies risks from climate change into **physical risks** (extreme weather events, temperature shifts, etc.) and **transition risks** (credit, market, liquidity, operational, and reputational risks).
  - These risks can have **direct, indirect, and spillover effects** (intra-economy, cross-border impact, or contagion risks) on banks and financial institutions.
- **Impacts on High-Emission Industries:** Industries like electricity production, metal products production, transportation, and mining cause **maximum greenhouse gas emissions**.
  - The RBI notes that in India, about **40% of current annual carbon emissions could be addressed by**

replacing fossil fuels with renewables, and another 15% by switching to electric vehicles and energy-efficient electrical appliances.

- However, the remaining **45% relate to hard-to-abate sectors** like heavy industries, animal husbandry, and agriculture.



#### What are the Key Initiatives India has Undertaken to Tackle Climate Change?

- **National Action Plan on Climate Change**
  - **National Solar Mission**
  - **National Mission for Enhanced Energy Efficiency**
  - National Mission on Sustainable Habitat
  - **National Water Mission**
  - **National Mission for Sustaining the Himalayan Ecosystem**
  - National Mission on Strategic Knowledge for Climate Change
  - **National Mission for a Green India**
  - **National Mission on Sustainable Agriculture**
- **Panchamrit Commitments**
- **Green Hydrogen Mission**

#### What Measures Should be Adopted to Mitigate the Impacts of Climate Change on the Indian Economy?

- **Exploring Industrial Symbiosis:** India should revolutionize the **circular economy model**, which focuses on minimizing waste, reusing materials, and regenerating natural systems.
  - The Indian government can incentivize companies to adopt circular business models, such as **product-as-a-service** or **industrial symbiosis**, where one industry's waste becomes another's raw material.

- **Foster Public-Private Partnerships for Green Innovation:** India can encourage public-private partnerships (PPPs) to accelerate the development and deployment of green technologies and solutions.
  - The government can establish a dedicated fund or incubator to support startups and companies working on innovative climate change mitigation and adaptation technologies, such as **carbon capture and storage**, **renewable energy storage**, or **drought-resistant crop varieties**.
- **Promote Climate-Conscious Urban Planning:** India should prioritize **climate-conscious urban planning** to create sustainable and resilient cities.
  - The Indian government's **Smart Cities Mission** can be linked with **India's National Action Plan on Climate Change** to include specific climate change adaptation and mitigation measures.
- **Develop Climate-Resilient Special Economic Zones (SEZs):** India can create climate-resilient SEZs that prioritize sustainable practices and green infrastructure.
  - These zones could attract businesses and industries that are committed to reducing their **carbon footprint** and enhancing resilience.
  - **Masdar City in the UAE**, which is a planned eco-city, can be a significant role model.
- **Develop a National Green Taxonomy:** India can establish a national green taxonomy, which is a classification system that defines **environmentally sustainable economic activities**.
  - This taxonomy can guide investments, lending decisions, and policy interventions towards sectors and projects that contribute to climate change mitigation and adaptation.
  - The **European Union sustainable finance taxonomy** can be a significant model.
- **Green Bond Financing for Infrastructure:** India can accelerate issuing **sovereign green bonds** to attract domestic and international capital for building climate-resilient infrastructure.
  - These funds can be used for **flood-resistant embankments**, **heat-resistant buildings**, and renewable energy projects.

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## India's Tryst with Antarctica

*This editorial is based on "Southern sojourn: On the 46th Antarctic Treaty Consultative Meeting in India" which was published in The Hindu on 25/05/2024. The article brings into picture the 46th Antarctic Treaty Consultative*

*Meeting in Kochi, where delegates focused on regulating rising tourism in Antarctica to protect its environment and address territorial concerns.*

**Tag:** GS Paper-1, Geographical Features and their Location, GS Paper-3, Achievements of Indians in Science & Technology, GS Paper-2, International Treaties & Agreements

The icy expanse of **Antarctica**, untouched by human civilization and teeming with unique life forms, has long held a sense of mystery. This remoteness, however, is rapidly changing. Tourism to the continent has seen a phenomenal rise, with visitor numbers jumping from **8,000 in 1993 to over 1,05,000 in 2022**. This surge has ignited concerns about the continent's delicate ecosystem, prompting the ongoing **46th Antarctic Treaty Consultative Meeting (ATCM)** held in Kochi, Kerala to debate the very future of tourism in this pristine wilderness.

The debate at the ATCM represents a critical juncture for Antarctica. India, as a rising power with a growing stake in the continent's future, has a unique opportunity to **champion responsible tourism** and ensure that the pristine beauty of Antarctica remains accessible for generations to come.

### Why is Antarctica Becoming Increasingly Significant?

- **Climate Change Implications:** Antarctica plays a crucial role in Earth's climate system, and the **melting of its ice sheets** has far-reaching consequences for global sea levels and weather patterns.
  - The recent satellite pictures showed that the **Antarctic iceberg called A23a** was moving beyond the northern tip of the Antarctic Peninsula.
- **Resource Potential:** Antarctica is believed to hold significant reserves of valuable minerals, including **rare earth elements, coal**, and potentially **untapped oil and gas deposits**.
  - With the growing global demand for resources and the depletion of traditional sources, the potential for responsible and sustainable resource exploration in Antarctica has gained attention.
- **Scientific Research Opportunities:** Antarctica's unique and pristine environment offers unparalleled opportunities for scientific research across various disciplines, including **glaciology, astronomy, geology, and biology**.
  - As technological advancements enable more sophisticated research methods, the scientific value of Antarctica continues to increase.
  - Example: The **IceCube Neutrino Observatory**, located at the Amundsen-Scott South Pole Station in Antarctica.

- **Rising Geopolitical Interests:** As nations seek to establish their presence and influence in strategically important regions, Antarctica has become an area of growing geopolitical interest.
  - Countries are vying for a stronger voice in the governance and decision-making processes related to the Antarctic region, driven by potential resource opportunities and a desire for global influence.
  - The USA has three stations in Antarctica. China opened its 5th station (**Qinling Station**) in Antarctica in **February, 2024**
- **Environmental Monitoring and Conservation:** Antarctica serves as a critical indicator of global environmental changes, and monitoring its ecosystems and wildlife provides valuable insights into the health of the planet.
  - The Antarctic Peninsula is one of the regions experiencing the fastest warming on Earth, leading to significant changes in **penguin and krill populations**.
- **Tourism and Adventure:** As adventure tourism continues to grow, Antarctica's unique and untouched landscapes have become an attractive destination for travelers seeking extraordinary experiences.
  - According to the **International Association of Antarctica Tour Operators (IAATO)**, a record 105,331 people visited Antarctica over the 2022-23 season.

#### What is the Antarctic Treaty?

- **About:** Signed in **1959** by 12 countries active in Antarctic research during the **International Geophysical Year (1957-58)**.
  - Currently has **57 member nations** including **India** (joined the treaty in 1983).
- **Key Provisions:**
  - **Peaceful Use:** Antarctica is dedicated to peaceful purposes only (Article I).
  - **Scientific Collaboration:** Freedom of scientific investigation and cooperation are encouraged (Article II).
  - **Information Sharing:** Scientific observations and results must be exchanged and made readily available (Article III).
- **Territorial Claims:**
  - Seven signatory countries (**Argentina, Australia, Chile, France, New Zealand, Norway, and the UK**) have overlapping territorial claims.
    - Other countries do not recognize these claims.

- The US and Russia maintain a **"basis of claim"** without asserting it.
- Article IV maintains the status quo by:
  - Disallowing any existing activity to be used to support or deny territorial claims.
  - Prohibiting new or expanded territorial claims while the Treaty is in force.

#### ➤ **Inspection Regime:**

- To ensure adherence to the Treaty, all areas of Antarctica, including stations and installations, are subject to inspection by any Party at any time (Article VII).

### What is the Significance of Exploring Antarctica For India?

- **Advancing India's Space Program:** Antarctica's unique location and conditions make it an ideal testing ground for India's space technologies, such as **landers, rockets and remote sensing systems**.
  - Conducting environment-friendly experiments and trials in the harsh Antarctic environment could help India refine its space technologies for future missions.
- **Securing Energy and Mineral Resources:** With India's growing **energy demands** ( **third-largest consumer of energy** in the world) and the need for **critical minerals**, Antarctica's potential for responsible and sustainable resource exploration could help address the **country's long-term resource security needs**, subject to the Antarctic Treaty System's regulations.
- **Advancing Climate Change Research and Adaptation:** India's geographical location (**Cap of Himalayas to North and Sandal of Seas in South**) that increases its vulnerability to climate change impacts make it crucial to understand the changes in Antarctica climate systems.
- **Strengthening India's Maritime Capabilities:** India's involvement in Antarctic logistics and operations could provide valuable opportunities to enhance its maritime capabilities, including navigation in **icy waters, ship-building for polar environments, and developing advanced icebreaker vessels**.
  - This would bolster India's strategic interests in the Indian Ocean region and beyond.
- **Exploring Bioprospecting Opportunities:** Antarctica's unique ecosystems have the potential to yield novel microorganisms, enzymes, and bioactive compounds with applications in industries such as **pharmaceuticals, biotechnology, and agriculture**. Indian researchers could explore bioprospecting opportunities in Antarctica, contributing to the **country's bioeconomy**.

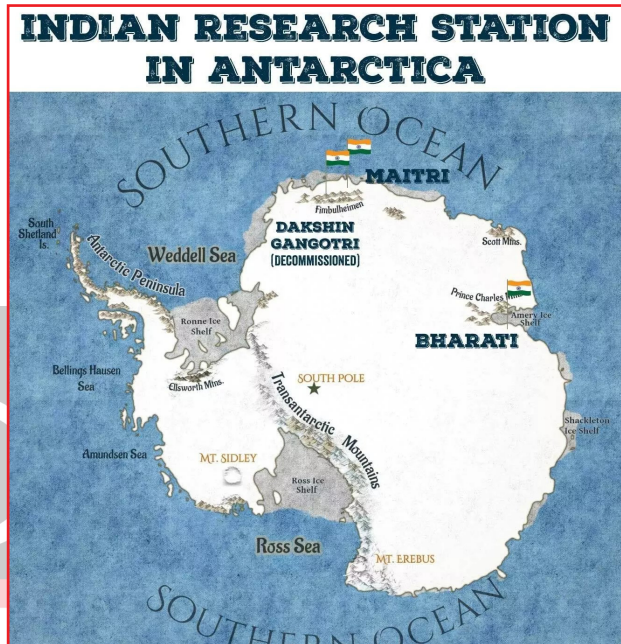


## How can India Enhance its Role and Contributions in Antarctica?

- **Developing Advanced Autonomous Systems for Polar Exploration:** India can be a frontrunner in developing advanced autonomous systems leveraging **robotics and artificial intelligence**, such as **unmanned aerial vehicles (UAVs)** and underwater vehicles (AUVs), specifically designed for polar exploration.
  - These systems could be used for **mapping, surveying, and monitoring** by different countries, enhancing **India's scientific diplomacy**.
- **Collaborate on Rare Earth Element (REE) Exploration:** With the growing demand for rare earth elements in high-tech industries, India could collaborate with other nations to conduct geological surveys and assessments of potential **REE deposits** in Antarctica.
  - This could position India as a key player in future responsible and sustainable REE exploration efforts, **subject to the Antarctic Treaty System's regulations**.
- **Invest in Sustainable Infrastructure Development:** India could invest in developing sustainable infrastructure in Antarctica, such as renewable energy systems, waste management facilities, and **eco-friendly transportation solutions**.
  - This would not only support India's research and logistical operations but also demonstrate its commitment to minimizing environmental impacts in the region.
  - Currently, **Maitri and Bharati** are the two active research stations that India operates in Antarctica.
    - In April 2024, the **Department of Posts** opened a second branch of the post office at the Bharati research station in Antarctica after almost four decades.
- **Promote Responsible and Sustainable Antarctic Tourism:** India could collaborate with international partners to develop guidelines and best practices for responsible and sustainable Antarctic tourism.
  - This could involve training Indian tour operators and guides on **minimizing environmental impacts**, adhering to strict regulations, and offering educational experiences that raise awareness about the region's unique ecosystems and the importance of conservation.
  - **India**, in the **46th Antarctic Treaty Consultative Meeting**, pressed for a proposal to introduce a regulatory framework governing tourism in the continent.

**Note:** In 1984, India established its first post office in Antarctica at **Dakshin Gangotri**, which was also its first research station. Unfortunately, in **1988-89**, Dakshin Gangotri was submerged in ice and subsequently decommissioned.

- **National Centre for Polar and Ocean Research (NCPOR)** is India's premier R&D institution responsible for the country's research activities in the Polar and Southern Ocean realms.



## Towards Sustainable Urbanism

*This editorial is based on “**Fires in Rajkot and Delhi: To get safer cities, we must demand them**” which was published in **The Indian Express** on 28/05/2024. The article brings into picture the rise of India's gaming sector and challenges associated with it.*

**Tag:** GS Paper-2, Urbanization, Separation of Powers, Local Self Governance, Government Policies & Interventions

India's **urban landscape** is undergoing a period of transformative growth. Fueled by economic dynamism, cities across the nation are witnessing a surge in development. However, this rapid expansion has ignited a critical debate about the **quality and sustainability of urban spaces**.

Recent incidents such as the collapse of oversized hoardings in **Ghatkopar and Pune**, a boiler blast at a chemical factory in **Dombivli**, a fire outbreak in **Rajkot's Game Zone**, and an oxygen cylinder blast in a **New Delhi** pediatric hospital highlight ongoing safety concerns.

Therefore, a nuanced approach to urban planning in India, advocating for a balance between **economic development, safety, and the well-being** of citizens is the need of the hour.

### ***What is the Framework in India Related to Urban Governance?***

- Institutions:
  - **Ministry of Housing and Urban Affairs (MoHUA):** Formulates national policies and oversees central government schemes related to urban development.
  - **State Departments of Urban Development:** Implement central government policies and enact state-specific urban development regulations.
  - **Municipal Corporations/Municipalities:** They are responsible for **local-level planning**, development control, and service delivery within their jurisdictions.
  - **Urban Development Authorities (UDAs):** Special agencies established for development of specific urban areas or projects.
- Constitutional and Legal Frameworks:
  - **Constitution of India (Articles 243Q, 243W):** Empowers local governments (Municipalities) for urban planning and development within their jurisdictions.
  - **74th Constitutional Amendment Act, 1992:** Provided constitutional status to urban local bodies and added Part IX-A to the Constitution.

### ***What are the Major Challenges Related to Urban Spaces in India?***

- **Inadequate Housing and Slum Proliferation:** According to the **Ministry of Housing and Urban Affairs**, the urban housing shortage in India was around 18.78 million units between 2012-27, with over **65 million** people living in slums or informal settlements.
- **Air Pollution and Environmental Degradation:** Urban areas in India are grappling with severe air pollution levels, primarily due to vehicular emissions, industrial activities, and construction projects.
  - **Example:** According to the **World Air Quality Report 2023**, **9 of the top 10** most polluted cities are in India.
- **Traffic Congestion and Mobility Challenges:** Rapid urbanization and the influx of private vehicles have led to severe **traffic congestion**, increasing commute times and hampering productivity.

- **Example:** In Bengaluru, the average traffic speed during peak hours is estimated to be around **18 km/h**, resulting in significant economic losses due to lost productivity and fuel wastage.
- **Inadequate Solid Waste Management:** Indian cities struggle with the management of **solid waste**, leading to piling garbage and health hazards.
  - **Example:** According to the Central Pollution Control Board, Indian cities generate approximately **62 million tons** of municipal solid waste annually, with only around **20% of it being processed or treated properly**.
- **Issue of Cybersecurity and Resilient Digital Infrastructure:** With the increasing digitalization in major urban spaces, **digital threats** are on rise and building resilient digital infrastructure is a critical issue.
  - The ransomware attack on **AIIMS Delhi** in 2022, highlights the vulnerability of urban digital systems.
- **Water Scarcity and Inadequate Water Management:** Many cities face **acute water shortages** due to rapid urbanization, population growth, and depleting groundwater levels.
  - **Example:** Chennai faced a severe water crisis in 2019, with residents relying on water tankers and desalination plants. Also, **the recent water crisis in Bengaluru** highlights the depth of the issue.
- **Urban Heat Island Effect and Lack of Green Spaces:** Rapid urbanization and loss of green spaces have led to the **urban heat island effect**, increasing temperatures and energy demand.
  - **Example:** The extreme **heatwave** in Delhi has driven the city's power demand to a record high of over **8,000 megawatts** in **May 2024**.
- **Rising Cases of Fire Hazards:** **Urban fires** pose significant risks due to the lack of proper fire safety infrastructure and awareness.
  - The **high density of these areas**, coupled with narrow access routes, exacerbates fire hazards, making it difficult for emergency services to respond effectively.
- **Urban Flooding and Drainage Infrastructure:** Inadequate stormwater drainage systems and encroachment on natural water bodies lead to frequent **urban flooding** during monsoons.
  - India has experienced major floods in recent years, notably in **Hyderabad (2020 and 2021)**, **Chennai (November 2021)**, **Bengaluru and Ahmedabad (2022)**, parts of **Delhi (July 2023)**, and **Nagpur (September 2023)**, forcing many residents to evacuate.

### What are Major Government Initiatives Related to Urban Areas?

- **Smart Cities**
- **AMRUT Mission**
- **Swachh Bharat Mission-Urban**
- **Pradhan Mantri Awas Yojana-Urban**
- **Aspirational District Programme**
- **Deen Dayal Antyodaya Yojana - National Urban Livelihood Mission (DAY-NULM)**

### What Strategies Should be Implemented to Revitalize India's Urban Landscape?

- **Distributed Waste-to-Energy and Decentralised Waste Management Systems:** Incentivizing community-based waste management initiatives and promoting **public-private partnerships** for waste collection, sorting, and processing.
  - Encouraging the development of **small-scale waste-to-energy plants** that convert municipal solid waste into renewable energy sources, such as **biogas** or **electricity**.
  - Incentivize community-based waste management initiatives and promote public-private partnerships for waste collection, sorting, and processing.
- **Smart Water Management and Recycling Infrastructure:** Deploying smart water metering and monitoring systems to **detect leaks, optimize water distribution, and promote efficient water usage**.
  - Investing in **advanced wastewater treatment and recycling facilities** to recycle and reuse treated wastewater for non-potable purposes, such as industrial cooling, landscaping, and flushing.
- **Urban Digital Twins and Predictive Modeling:** Developing digital twins of urban areas, which are virtual replicas of cities, to simulate and analyze various scenarios, infrastructure projects, and environmental impacts.
  - Leveraging predictive modeling and artificial intelligence to **optimize urban planning, resource allocation, and infrastructure management** based on real-time data and simulations.
  - Integrating digital twins with urban governance platforms to enable data-driven decision-making, citizen engagement, and **participatory urban planning processes**.
- **Sponge City Concept and Permeable Urban Landscapes:** Implementing the "Sponge City" concept, which involves the **integration of permeable pavements, green roofs, rainwater gardens, and other water-absorbing features** into urban landscapes.

- Encouraging the preservation and restoration of **natural water bodies, wetlands, and floodplains** through **Blue-Green Infrastructure** within urban areas to enhance water retention and flood mitigation.
- Incorporating biophilic design principles into urban architecture and infrastructure, bringing nature into the built environment. **Singapore's Jewel Changi Airport** is a notable example of biophilic design.
- **Smart City Infrastructure:** Democratizing smart city technologies, such as **intelligent traffic management systems, smart grids, and IoT-enabled public services**, to improve efficiency, reduce carbon emissions, and enhance the quality of life for citizens.
- **Real-time Fire Risk Assessment and Alert System:** Deploying sensors to monitor air quality, temperature, and humidity in high-risk areas especially **Public Buildings**, integrating with weather and smart meter data.
  - Using **Artificial Intelligence** to assess fire risk and trigger alerts to residents, firefighters, and authorities via public address systems and mobile alerts.
- **Cybersecurity and Digital Infrastructure Resilience:** Investing in robust cybersecurity measures, including advanced **encryption, access controls, and real-time threat monitoring**, to protect critical urban digital infrastructure from cyber threats.
  - Implementing **redundancy and failover mechanisms** in digital infrastructure to ensure continuity of essential services during cyber attacks or system failures.

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## Securing India's Nuclear Future

*This editorial is based on "**Election rhetoric, nuclear weapons and Pakistan- the need to expand debate**" which was published in The Indian Express on 28/05/2024. The article brings into picture the shifting global nuclear dynamics. It argues that India should modernize its nuclear capabilities and energy program to address these evolving threats.*

**Tag:** GS Paper-2, GS Paper-3, Nuclear Technology, Government Policies & Interventions, Effect of Policies & Politics of Countries on India's Interests



The world is witnessing a resurgence of **nuclear anxieties**. The **Russia-Ukraine war** and China's assertiveness are prompting a rethink on **nuclear deterrence strategies**. In Europe, talk of strengthening **NATO's nuclear forces** and collaboration between **France and Britain** is gaining ground. Similarly, anxieties about **Iran's nuclear program** are pushing Arab nations towards acquiring atomic capabilities. Meanwhile, the rise of **Artificial intelligence** and robotic weapons raises concerns about the **automation of nuclear decision-making**.

For **India**, while Pakistan's nuclear arsenal remains a concern, a bigger threat is emerging from China's rapidly expanding nuclear program. India needs to prioritize modernizing its nuclear arsenal and civilian nuclear energy program to counter these challenges.

### ***How is the Nuclear Landscape Evolving Globally?***

- **Russia-Ukraine War:** Russia's veiled threats of using nuclear weapons during the Ukraine conflict have shattered Europe's sense of security.
  - This has led to discussions within **NATO** about strengthening its nuclear forces and potential collaboration between France and Britain on their nuclear arsenals.
  - Russia has also withdrawn from ratification of the **Comprehensive Nuclear Test Ban Treaty**.
- **China's Nuclear Expansion:** China is rapidly expanding its nuclear arsenal, with estimates suggesting a potential tenfold increase by 2035.
  - This significant build-up, coupled with **China's assertive territorial claims in Asia**, is prompting anxieties amongst its neighbors.
  - Countries like Japan and South Korea are re-evaluating their reliance on the **US "nuclear umbrella"** and considering potential nuclear programs of their own.
- **Iran's Nuclear Program:** Iran's ongoing nuclear program, despite international efforts to curb it, continues to be a source of concern for the **Middle East**.
  - This has intensified fears of a regional nuclear arms race as Arab nations like **Saudi Arabia** reportedly are exploring options for acquiring nuclear capabilities to counterbalance Iran's potential.
- **North Korea's Nuclear Activity:** North Korea's continued development and testing of **ballistic missiles** and nuclear weapons remains a major security threat in East Asia.
  - This has led to increased tensions with **South Korea** and heightened anxieties in the region.

- **Modernization of Nuclear Arsenals:** Even established nuclear powers like the **US and Russia** are modernizing their nuclear arsenals, raising concerns about a potential arms race and lowering the threshold for nuclear use.
- **Erosion of Arms Control Treaties:** The breakdown of key arms control treaties, like the **Intermediate-Range Nuclear Forces Treaty between US and Russia (erstwhile Soviet Union)**, has weakened international frameworks for managing nuclear stockpiles and fostering nuclear disarmament efforts.

### ***What is India's Historic Stance on Nuclear Energy and Usage of Nuclear Weapons?***

- **1948:** The Atomic Energy Commission is established, with **Homi J. Bhabha** as its chairman, to spearhead India's nuclear program.
- **1956:** India's first nuclear reactor, Apsara, becomes operational, marking the beginning of its nuclear research program.
  - This was not only first in India but was also the first reactor in whole of Asia
- **1968:** India refused to sign the **Nuclear Non-Proliferation Treaty**.
- **1969:** India's first commercial nuclear power plant, **Tarapur Atomic Power Station**, under the agreement between **India, the United States**, and the International Atomic Energy Agency (IAEA)
- **1974:** India conducts its first underground nuclear test, codenamed **"Smiling Buddha,"** at Pokhran, officially labeling it a peaceful nuclear explosion.
- **1995-1996:** India opposed the indefinite extension of the NPT and also refused to sign the **Comprehensive Test Ban Treaty (CTBT)**.
- **1998:** India carries out a series of nuclear tests at Pokhran codenamed **Operation Shakti**, declaring itself a nuclear-armed state.
  - India adhered to a self-imposed commitment to **'No First Use' (NFU)** of nuclear weapons on another country.
- **2003:** **India and Pakistan** agree to a ceasefire along the **Line of Control** in Kashmir, reducing the risk of nuclear escalation.
- **2005:** The United States and India reach a landmark **civil nuclear agreement**, paving the way for nuclear cooperation and fuel supplies.
- **2008:** The **Nuclear Suppliers Group (NSG)** grants India a waiver, allowing it to engage in nuclear trade despite its **non-NPT status**.
- **2016:** India gains entry into the **Missile Technology Control Regime (MTCR)**.

- **2019:** India successfully tests its **anti-satellite missile capability**, demonstrating its ability to shoot down low-orbit satellites.
- **2024:** India initiated the core loading of **India's Prototype Fast Breeder Reactor (PFBR)** at **Kalpakkam, Tamil Nadu** marking a significant milestone in India's nuclear program.
  - The PFBR is part of **India's three-stage plan** to harness its **thorium reserves** for **sustainable nuclear energy**.

#### Why did India not Sign NPT and CTBT?

- **Nuclear Non-Proliferation Treaty (NPT):** India views the NPT as discriminatory as it categorizes states as **"nuclear weapon states" (NWS)** and **"non-nuclear weapon states" (NNWS)**.
  - NWS like the **US, Russia, UK, France, and China** can retain their nuclear arsenals, while NNWS are obligated to give up pursuit of nuclear weapons.
    - India perceives this as **unfair** and hindering its right to self-defense.
  - India remains committed to the goal of universal, non-discriminatory and verifiable nuclear disarmament, **which the NPT does not explicitly call for**.
- **Comprehensive Test Ban Treaty (CTBT):** India emphasizes the importance of maintaining a credible minimum nuclear deterrent against potential threats, particularly from neighboring **Pakistan and China**.
  - Signing the CTBT, which bans all nuclear explosions for military or civilian purposes, could **limit India's ability to further develop and refine its nuclear arsenal**.

#### What are the Current Nuclear Threats that India Faces?

- **India's Neighbourhood Nuclear Threats:** Pakistan possesses a substantial nuclear arsenal, estimated to be around **170 warheads**. The long-standing tensions between India and Pakistan over issues such as **Kashmir** and **cross-border terrorism** raise the risk of nuclear escalation in the event of a conflict.
  - China's construction of numerous **missile silos** and the deployment of **road-mobile intercontinental ballistic missiles (ICBMs)** have raised concerns in India about the shifting nuclear balance in the region.
- **Command and Control Vulnerabilities:** The safety and security of nuclear command and control systems are critical, and any vulnerabilities or potential for

unauthorized access or cyberattacks could have severe consequences.

- Example: The 2019 **alleged cyberattack on one of India's Kudankulam Nuclear power plant**, although denied by officials, highlighted the need for robust cybersecurity measures in the nuclear realm.
- **Environmental and Health Risks:** The risks associated with nuclear accidents, radioactive contamination, and long-term environmental and health impacts pose challenges for India's expanding nuclear energy program.
  - Example: The **2011 Fukushima nuclear disaster in Japan** underscored the need for stringent safety protocols and emergency preparedness measures for nuclear facilities.
- **Emerging Technologies and Regional Arm Race:** The rapid development of **hypersonic missiles**, autonomous weapons systems, and **artificial intelligence (AI)** raises new challenges for nuclear deterrence strategies.
  - India's development of its own hypersonic missile capabilities, while aimed at deterrence, **could contribute to a regional arms race**.

#### What Measures Should India Adopt to Strengthen its Nuclear Program?

- **Pursue Responsible Nuclear Modernization:** While maintaining a credible minimum deterrence, India should focus on **responsible nuclear modernization**.
  - This involves developing advanced delivery systems, improving the survivability and reliability of its nuclear forces, and exploring emerging technologies such as **directed energy systems**.
- **Enhance Nuclear Risk Reduction Measures:** India should actively engage in nuclear risk reduction measures with neighboring nuclear-armed states, **particularly Pakistan and China**.
  - This can involve **confidence-building measures**, crisis communication mechanisms, and agreements to prevent inadvertent escalation or misunderstandings during crises.
- **Invest in Advanced Nuclear Technologies:** India should continue to invest in advanced nuclear technologies, such as **thorium-based reactors, small modular reactors, and next-generation nuclear power plant designs**.
  - This can help address India's long-term energy needs while minimizing environmental and safety risks.

- **Enhance Civilian Nuclear Cooperation:** India should seek to **expand civilian nuclear cooperation** with like-minded countries and organizations.
  - This can involve joint research and development projects, technology sharing, and collaboration in areas such as nuclear waste management, nuclear medicine, and peaceful applications of nuclear technology.
- **Participate in Global Nuclear Governance Initiatives:** India should actively participate in global nuclear governance initiatives, such as the **Nuclear Security Summits and Global Initiative to Combat Nuclear Terrorism (GICNT)**.
  - This would demonstrate India's commitment to nuclear non-proliferation and the peaceful use of nuclear technology.



## Making India Disaster Resilient

*This editorial is based on “**Cyclone Remal aftermath shows why it's necessary to build disaster-resilient infrastructure**” which was published in The Indian Express on 30/05/2024. The article brings into picture the rise of India's gaming sector and challenges associated with it.*

**Tag:** GS Paper-2, Important International Institutions, GS Paper-3, Disaster Management, Environmental Impact Assessment (EIA), Environmental Pollution & Degradation

India is a vast country prone to a multitude of **natural disasters**. From the wrath of **cyclones** like **Odisha in 1999** to **2004 Indian Ocean Tsunami** to the recent landslides triggered by **Cyclone Remal** in the Northeast, the country has witnessed the destructive force of nature.

While the establishment of the **National Disaster Management Authority (NDMA)** marked a positive step. The very nature of disasters has undergone a drastic shift. **Extreme weather events**, often intensified by climate change, are becoming more frequent and severe. New threats like **heat waves** are emerging, and even more concerning is the rise of **multi-hazard disasters**, leading to cascading effects and far greater destruction.

In this critical scenario, reactive measures are no longer enough. India needs a **proactive approach** that prioritizes disaster preparedness.

### What is the Framework Related to Disaster Management in India?

- **Disaster Management Act of 2005:** The **Disaster Management Act of 2005** has provided the legal and

institutional framework for disaster management in India at national, state and district levels.

- While the **primary responsibility of disaster management rests with the States**, the Central Government supports the efforts of State Governments by providing logistical and financial support.
- **Institutional Framework under Disaster Management Act of 2005 :**
  - **National Disaster Management Authority (NDMA):** Apex body headed by the **Prime Minister**, responsible for policy, plan, and guideline formulation for disaster management (DM).
    - NDMA addresses both **natural and man-made disasters** and coordinates enforcement and implementation.
  - **National Executive Committee (NEC):** Assists NDMA, chaired by the **Union Home Secretary**, comprising various secretaries and officials.
    - Prepares and monitors the National Plan for DM and coordinates responses to disaster situations.
  - **State Disaster Management Authority (SDMA):** Headed by the **Chief Minister**, responsible for state-level DM policies and plans, coordinating implementation, and integrating mitigation measures in state development plans.
  - **District Disaster Management Authority (DDMA):** Led by the **District Collector** with an elected representative as Co-Chairperson.
    - Prepares and implements district-level DM plans and ensures compliance with national and state policies.
  - **Local Authorities:** Includes **Panchayati Raj Institutions, Municipalities, District and Cantonment Boards**, and Town Planning Authorities. Responsible for capacity building, relief, rehabilitation, and preparing DM plans.
- **Key Institutions:**
  - **National Institute of Disaster Management (NIDM):** Focuses on capacity development, training, research, and documentation.
    - Functions under NDMA's guidelines and aims to become a **'Centre of Excellence'** in DM.
  - **National Disaster Response Force (NDRF):** Specialized response force for natural and man-made disasters, including Chemical, Biological, Radiological, and Nuclear emergencies.
    - Operates under NDMA's direction, with eight battalions positioned across different locations.



### ➤ Committees:

- **Cabinet Committee on Management of Natural Calamities (CCMNC):** Oversees management of natural calamities, suggests preventive measures, and promotes public awareness.

### ➤ International Commitments:

- **Sendai Framework for Disaster Risk Reduction (SFDRR):** India is a signatory to the SFDRR which was adopted during the **Third UN World Conference on Disaster Risk Reduction** in March 2015.
  - India is dedicated to achieving the seven goals set under the framework through systematic and sustainable efforts.
- **Hyogo Framework for Action (HFA):** India is a signatory to the HFA, adopted globally to reduce disaster losses in lives and economic and environmental assets.
  - The HFA set three strategic goals and five priority action areas focused on integrating disaster risk reduction into **sustainable development policies**, capacity building, preparedness, and vulnerability reduction.

### **What are the Current Major Disaster Threats that India Faces?**

- **Floods:** India experiences frequent **floods**, particularly during the monsoon season. Over **40 million hectares (12% of land)** are prone to floods and river erosion. It is getting exacerbated by **Glacial Lake Outburst Floods**.
  - **Examples:** Floods in **Bihar (2023)**, **Assam (2022)**
- **Cyclones and Storms:** India's coastline is susceptible to cyclones originating in the Bay of Bengal and the Arabian Sea. Of the **7,516 km long coastline**, approximately **5,700 km** is vulnerable to cyclones and tsunamis.
  - **Examples:** **Cyclone Biparjoy (2023)** and **Cyclone Fani (2019)**.
- **Earthquakes:** India is located in a seismically active region, with several fault lines running across the country. **58.6%** of the landmass is prone to moderate to very high intensity earthquakes.
  - **Examples:** Earthquake in **Mizoram (2022)**, Earthquake in **Sikkim (2011)**
- **Droughts:** Prolonged dry spells and erratic rainfall patterns can lead to severe **droughts**, affecting agriculture and water resources. **68%** of the cultivable area is susceptible to drought.
  - **Examples:** Drought in 66% of **Maharashtra (2024)**.

- **Landslides:** Hilly and mountainous regions in India are prone to **landslides**, especially during heavy rainfall or earthquakes. India is considered among the **top five landslide-prone countries** globally.

- **Examples:** Landslides in **Himachal Pradesh (2023)**, Landslides in **Manipur (2022)**.

- **Heat Waves:** Rising temperatures and prolonged periods of high heat can lead to life-threatening heat waves.

- **Examples:** Heat waves across India (2022, 2023, 2024).
  - The country reported **280 heat wave days** from 11th March- 18th May, 2022.

- **Forest Fires:** Dry conditions and human activities can contribute to **forest fires**, causing environmental damage and air pollution. Based on the forest inventory records, **54.40% of forests in India** are exposed to occasional fires

- **Examples:** Forest fires in **Himachal Pradesh (2024)** and Forest fires in **Goa (2023)**.

- **Industrial and Chemical Accidents:** India's growing industrial sector and improper handling of hazardous materials can lead to industrial and chemical accidents.

- **Examples:** Chemical spill in **Surat (2023)**, Industrial fire in **Mumbai (2024)**.

### **What Factors are Exacerbating India's Disaster Risk?**

- **Urbanization and Unplanned Development:** Rapid urbanization and unplanned development in cities have increased the vulnerability to disasters like floods and earthquakes.
  - **Example:** The **2023 Chennai floods** were attributed to unchecked development and encroachment on water bodies and wetlands.
- **Rising Climate Change Impact:** Climate change is amplifying the frequency and intensity of extreme weather events like cyclones, floods, and droughts.
  - **Example:** The devastating **Cyclone Amphan in 2020** was fueled by warmer ocean temperatures due to climate change.
- **Aging Infrastructure and Lack of Maintenance:** India's aging infrastructure, such as **dams, bridges, and buildings**, coupled with inadequate maintenance, increases the risk of disasters.
  - The **Parliamentary Standing Committee on Water** in 2023 raised concerns over the safety of aging dams that are **more than 100 years old**.
- **Environmental Degradation:** Activities like **deforestation, mining, and unsustainable land-use practices** have increased the risk of landslides and soil erosion.

- **Example:** The **2022 Joshimath land subsidence crisis** in Uttarakhand was attributed to unregulated construction and mining activities.
- **Industrial and Technological Hazards:** India's growing industrialization and reliance on hazardous materials increase the risk of industrial accidents and chemical disasters.
  - **Example:** The gas leak at a chemical plant in **Visakhapatnam (2020)** exposed thousands to toxic fumes.

### ***What Measures Should India Adopt to Reduce Disaster Risk and Enhance Disaster Preparedness?***

- **Establish Dedicated Disaster Response Corridors:** Designate and develop dedicated disaster response corridors, including **road networks, rail links, and air routes**, to ensure uninterrupted access for emergency services and aid during disasters.
  - These corridors could be designed to be **resilient to hazards** and equipped with necessary infrastructure and resources for efficient disaster response.
- **Promote Disaster-Resilient Infrastructure:** Mandate the adoption of disaster-resilient design and construction principles for all critical infrastructure projects, such as **bridges, dams, power plants**, and communication networks.
  - Implementing **stricter building codes** that mandate disaster-resistant construction using **earthquake-proof materials, fire-proof materials** and **wind-resistant designs**.
    - Additionally, offering tax breaks and financial assistance for retrofitting existing structures to improve their resilience.
- **Develop Disaster-Resilient Agricultural Practices:** Promote the adoption of disaster-resilient agricultural practices, such as drought-resistant crops, precision farming, and soil conservation techniques.
  - Learning from successful examples like **Burkina Faso's Zai pit farming technique**, which enhances soil moisture retention and crop yields during droughts.
- **Promote Ecosystem-based Disaster Risk Reduction (Eco-DRR):** Integrate ecosystem-based approaches into disaster risk reduction strategies by conserving, restoring, and sustainably managing natural ecosystems like **forests, wetlands**, and **coastal habitats**.
  - These ecosystems can act as **natural barriers against hazards like floods, storms, and landslides**, while also providing co-benefits like carbon sequestration and biodiversity conservation.

- **Strengthen Multi-Hazard Early Warning Systems:** Develop robust, integrated early warning systems that can detect and provide timely alerts for multiple hazards, such as cyclones, floods, heatwaves, and landslides.
  - Leveraging advanced technologies like **remote sensing, AI, and big data analytics** to improve hazard monitoring, forecasting, and risk communication.
- **Micronet Grids for Critical Infrastructure:** Establish localized, self-sufficient power grids powered by renewable sources like **solar and micro-hydro for critical infrastructure** like hospitals and communication systems.
  - This ensures continued functionality even during widespread power outages caused by disasters.
- **Mental Health Response Teams:** Integrating mental health professionals into disaster response efforts to provide **psychological support** to survivors dealing with trauma, anxiety, and displacement. This can significantly improve long-term recovery outcomes.
- **Enhanced Institutional Capacity:** The institutions must hire permanent workforce rather than contractual.
  - A permanent workforce allows for continuous **skill development, knowledge transfer, and institutional memory**.
    - This fosters a more capable disaster management system compared to relying on temporary staff who may lack experience.
  - Moreover, the Local bodies should be allocated a substantial **Disaster Readiness Reserve** to **complement disaster reactivity to proactive measures**.

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## **Combating the Desertification Demon**

*This editorial is based on "**A quarter of India's land is undergoing desertification. Stop this. Trees defend against soaring heat**" which was published in Times on India on 31/05/2024. The article brings into picture the looming threat of desertification in India and the need for reversing this menace.*

**Tag:** GS Paper-1, GS Paper-2, Women's Organization, GS Paper-3, Conservation, Environmental Pollution & Degradation

**Desertification** is a silent crisis gripping India with a staggering **25% of its landmass** undergoing this process. While scorching summer temperatures and record highs grab headlines, the underlying issue- **unchecked desertification**, demands immediate attention because this insidious process silently transforms fertile lands into arid wastelands.

Desertification is not merely an environmental concern, it poses a significant threat to India's **food security, economic stability, and the very foundation of its agricultural prowess**. More than **half of the degraded land in the country is either rainfed farmland**, responsible for the food security of the country, or forest land that offers the best defense against climate change. Therefore, effectively addressing desertification is crucial for ensuring the long-term sustainability of India's land resources and the well-being of its population.

### What is the Status of Desertification in India?

- **Status:** Almost all Indian states have witnessed an increase in degraded land over the past 15 years.
  - **Rajasthan** accounts for nearly 22-23% of the degraded land in the country, followed by **Maharashtra and Gujarat**.
  - According to the **2021 estimates of ISRO**,
    - **Mizoram** has been experiencing one of the fastest rates of desertification in India.
- Between **2003-05 and 2018-19**, 0.18 million hectares were degraded, a rise of over 188%.
  - **Arunachal Pradesh** saw a 46% increase in land degradation between 2003-05 and 2018-19.
  - **Nagaland's** desertified area increased by 29.4%.
- **Affected Land Types:**
  - **Rainfed Farmland:** Around **37 million hectares** of degraded land is unirrigated agricultural land, where **water erosion (80%) and wind erosion (17%)** are the main causes of degradation.
  - **Forest Land:** Approximately **21 million hectares of forest land** (30% of total forest area) is degraded, primarily due to vegetation degradation (96%) caused by deforestation and overgrazing.

### What Factors are Leading to Desertification in India?

- **Deforestation and Forest Degradation:** India's **insatiable appetite for timber** and land for agriculture and settlement has led to rampant deforestation. According to a recent report by the **IISc's Energy and Wetlands Research Group**, Western Ghats lost **5% evergreen forest cover**.

- **Overexploitation of Groundwater:** Excessive extraction of groundwater for **irrigation and industrial purposes** depletes water tables, leading to land subsidence and reduced soil moisture.
  - **Example:** The decline of water levels in aquifers across **Punjab and Haryana** due to over-extraction for agriculture has contributed to desertification concerns in these regions.
    - A study from the **Central Ground Water Board** found that Punjab's groundwater levels could drop nearly **1,000 ft by 2039**.
- **Salinity Ingress in Coastal Areas:** In coastal regions like Gujarat and Tamil Nadu, the intrusion of seawater into groundwater aquifers and agricultural lands has led to **soil salinization and reduced productivity**.
  - As per an estimate **627 villages of Saurashtra and Kutch** region are highly affected by salinity ingress.
- **Mining and Industrial activities:** Unregulated **mining** and industrial operations have resulted in soil contamination, air pollution, and the degradation of surrounding lands, contributing to desertification.
  - **Example:** The mining activities in the **Jharia coalfields of Jharkhand** have led to land subsidence, soil contamination, and desertification in the surrounding areas.
- **Inadequate Implementation of Land Degradation Neutrality:** India has adopted the **United Nations Convention to Combat Desertification (UNCCD)** and committed to achieving **land degradation neutrality**, but the implementation of related programs and policies has been inadequate in many regions.
- **Urbanization and Infrastructure Development:** Rapid urbanization and the construction of large-scale infrastructure projects, such as **highways, airports, and industrial corridors**, have led to the loss of productive agricultural lands and the disruption of natural ecosystems, exacerbating desertification.
  - **Example:** The **Delhi-Mumbai Industrial Corridor project**, spanning across several states, has resulted in the acquisition of vast tracts of fertile land, contributing to land degradation and desertification in the surrounding areas.
- **Invasion of Alien Plant Species:** The introduction and spread of **invasive alien plant species**, often facilitated by human activities and climate change, have disrupted native ecosystems and contributed to desertification.
  - **Example:** The invasion of the highly adaptable **Prosopis juliflora (mesquite)** in the arid and semi-arid regions of India has led to the displacement of **native vegetation, soil degradation, and desertification**.



### What is Land Degradation Neutrality?

- **About:** LDN is a state where the **amount and quality of land resources** necessary to support ecosystem functions and services, and enhance food security, remain stable or increase within specified temporal and spatial scales and ecosystems.
- **Objective:** The concept aims to ensure that the **amount of healthy and productive land remains stable** or increases by reversing land degradation through sustainable land management practices.
- **International Commitment:** LDN became a target for the **Sustainable Development Goal 15 in 2015**, and countries have committed to setting voluntary targets to **achieve “no net loss” of land by 2030**.
- **India's LDN Target:** India has committed to halt any further land degradation and rehabilitate at least **26 million hectares** of degraded wasteland, forest, and agricultural land by 2030
  - India plans to increase forest cover and undertake large-scale afforestation efforts to combat land degradation.
  - This includes initiatives like the **Compensatory Afforestation Fund (CAF)** and the **Green India Mission**.

### What are the Major International Initiatives to Curb Desertification?

- **United Nations Convention to Combat Desertification (UNCCD):** It was established in **1994**, the sole legally binding international agreement linking environment and development to sustainable land management.
  - India is a signatory to the UNCCD.
    - The **14th Conference of Parties (COP14)** in India focused on the theme **“Restore land, sustain future.”**
- **Large-Scale Restoration Initiatives:**
  - The **Bonn Challenge** aims to bring 350 million hectares of deforested and degraded land into restoration by 2030.
    - Achieving that outcome would **sequester up to 1.7 billion tonnes** of carbon per year, equivalent to 14% of global emissions.
  - The **African Forest Landscape Restoration Initiative (AFR100)** aims to restore 100 million hectares of degraded landscapes in Africa by 2030.

### What Measures Should India Adopt to Tackle Desertification?

- **Promote Agroforestry and Reforestation with Native Species:** Implementing large-scale agroforestry initiatives, integrating trees and shrubs into

agricultural systems, to restore soil fertility, reduce erosion, and create microclimate conditions that combat desertification.

- Successful agroforestry initiatives in **Niger, Mali, Burkina Faso, Senegal, Ethiopia, and Malawi** can be a prominent model.
- **Seed Biopriming and Seed Encapsulation:** Developing and promoting the use of seed biopriming techniques, which involve **treating seeds with beneficial microorganisms** to improve seed viability and **water-use efficiency in desertified areas**.
- **Fog Harvesting Nets:** Installing specialized mesh nets in arid regions to **capture moisture from fog**. The collected water can then be used for irrigation purposes or to support native vegetation, promoting plant growth and **reversing desertification trends**.
- **Biosaline Agriculture and Halophyte Cultivation:** Investing in research and development of **biosaline agriculture**, which involves cultivating salt-tolerant crops (**halophytes**) in saline or degraded soils.
  - Halophytes like **Salicornia** and **Atriplex** can be grown for food, fodder, and biofuel production, providing economic opportunities in desertified regions.
- **Establishing Desertification Adaptation Zones:** Identifying and designating specific areas as **“Desertification Adaptation Zones,”** where targeted interventions, such as sustainable agriculture practices, soil conservation measures, and ecosystem restoration, are strictly implemented.
  - Providing incentives and support to local communities within these zones to encourage their active participation in desertification control efforts.
  - Comprehensive measures in **Ningxia province of China** involving local communities can be an example.
- **Establish Desertification Early Warning Systems:** Develop advanced monitoring and early warning systems that integrate remote sensing, ground-based sensors, and environmental data to **detect and predict desertification trends in various regions**.
  - Using this information to guide decision-making and implement timely interventions can mitigate the impacts of desertification.
- **Desert Tourism with a Conservation Focus:** Designing **responsible desert tourism** programs that raise awareness about desertification and generate revenue for local communities.
  - These programs can **incentivize conservation efforts** and promote sustainable practices within the tourism industry.



## Drishti Mains Questions

1. Discuss the challenges and opportunities associated with the care economy in India, particularly focusing on the impact of unpaid care work on gender equality and women's workforce participation.
2. Assess the impact of India's technological advancements on economic growth, societal transformation, and global competitiveness. Also, propose strategic measures for sustainable tech-led development in India.
3. Discuss the evolution of India's trade policy from protectionism to liberalization, highlighting key challenges, opportunities, and transformations in its trade dynamics.
4. Discuss the challenges faced by street vendors and suggest the policy measures that can be taken for their empowerment.
5. Despite India's global rise, what factors contribute to its diminishing influence within the South Asia region, and what strategies could India employ to address this challenge?
6. Examine the hurdles encountered by Indian MSMEs and assess the government's efforts in mitigating these obstacles. Propose strategies for fostering the growth and resilience of the MSME sector, given its pivotal role in India's economy and job creation.
7. The online gaming industry in India is witnessing rapid growth and has the potential to become a global hub. Analyze the factors driving this growth and the challenges faced by the industry.
8. Examine the factors hindering women's socio-economic empowerment in India and propose effective policy interventions for inclusive development.
9. Assess the primary sources of air pollution in urban areas of India and propose actionable measures to combat the rising pollution levels. Evaluate the role of technological advancements and public awareness in achieving long-term improvements in air quality.
10. What strategies can be employed to ensure the effective implementation of carbon trading in the agriculture sector, thereby mitigating greenhouse gas emissions and fostering sustainable farming practices?
11. "What are the implications of internal migration on urbanisation and infrastructure development in India?"
12. How can deepfake technology impact the integrity of election campaigns, and what measures can be implemented to mitigate its influence?"
13. What are the primary factors behind India's Rising food inflation, and what strategies can be employed to mitigate this gap between Overall Inflation and Food Inflation?
14. Examine the challenges and opportunities presented by the changing landscape of the Indian Economy, Evaluate the significance of different sectors in fostering sustainable and inclusive growth.
15. Discuss the need for the position of Chief of Defence Staff in India. Also, suggest measures for improving coordination and effectiveness in integrated defense planning and operations.
16. Critically examine that the continued existence and use of preventive detention laws in India pose a significant risk to due process of law and individual freedoms in the country.
17. Discuss the challenges and opportunities in India's higher education system, emphasizing the need for reforms to ensure quality, inclusivity, and relevance in the context of global competitiveness.
18. Explain the strategic importance of Chabahar Port Project for India, outlining the obstacles encountered and potential solutions for ensuring its success.
19. Examine the current state of India's e-commerce industry, highlighting key policy initiatives, challenges, and the sector's impact on the economy.

## Drishti Mains Questions

20. Discuss the role of tribal communities in forest conservation and the sustainable management of natural resources. Provide examples to support your answer.
21. Examine the primary obstacles confronting press freedom in India and propose strategies for safeguarding and advancing a free and autonomous press within the nation.
22. Examine the economic impacts of climate change and how they are transforming the global geoeconomic landscape. Highlight key sectors affected.
23. Discuss the strategic and scientific significance of Antarctica for India and elaborate on how India can enhance its contributions and leadership in the region.
24. How can India revitalise its urban landscape to ensure sustainable development and address the challenges of rapid urbanisation?
25. Discuss the evolving global nuclear dynamics in the context of recent geopolitical developments. How should India respond to the nuclear challenges especially posed by neighboring countries?
26. Examine the factors contributing to India's increasing vulnerability to disasters. What measures should India adopt to enhance its disaster preparedness?
27. Examine the primary challenges India faces in combating desertification and evaluate the effectiveness of Land Degradation Neutrality targets in addressing these challenges.