



Monthly Editorial Consolidation



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Northeast: India's Untapped Frontier

This editorial is based on "Rhetoric of Collective Action in North East India" which was published in Economics and Political Weekly on 22/06/2024. The article brings into picture the limited effectiveness of cooperatives in Northeast India, exemplified by GIN-FED relying on traders instead of empowering indigenous growers directly, undermining local community institutions essential for cooperation.

Tag: GS Paper-3, Infrastructure, Growth & Development, Inclusive Growth, GS Paper-2, Government Policies & Interventions

Nestled in the eastern Himalayas, **India's Northeast region** is a land of breathtaking landscapes, diverse cultures, and rich tribal heritage. However, this region faces a significant challenge in fully integrating its indigenous communities into the mainstream development narrative.

Despite being endowed with natural resources and a vibrant cultural identity, the Northeast struggles with issues like **weak infrastructure, limited access to markets, and social inequalities** and **recent conflicts like Manipur**. One example of this complexity is the case of **ginger cultivation in Karbi Anglong, Assam**. Here, a cooperative society aimed to empower indigenous ginger growers but ultimately failed due to factors like the weakening of traditional institutions and the dominance of exploitative middlemen.

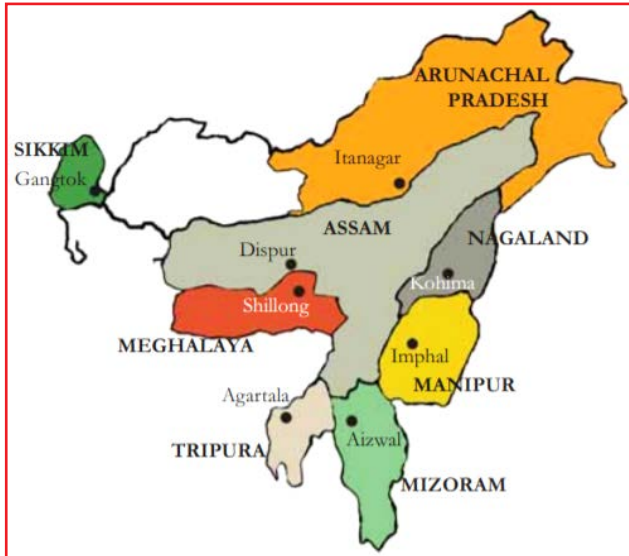
This case highlights the need for India to do more to bridge the gap between its Northeast region and the rest of the country. By investing in its Northeast, India can **unlock a treasure trove of cultural richness, economic opportunity, and environmental stewardship**.

What is the Significance of the North-East Region for India?

- **Strategic Geopolitical Location:** The Northeast is envisioned as a key economic corridor connecting India with Southeast Asia.
 - Infrastructure projects like the **India-Myanmar-Thailand Trilateral Highway** and **Kaladan Multi-Modal Transit Transport Project** are not just about regional connectivity but about positioning India as an economic counterweight to China in Southeast Asia.
 - Its unique geographical position makes it crucial for **India's 'Act East' policy**, aimed at strengthening economic and strategic ties with Southeast Asian nations.

- **Rich Biodiversity and Natural Resources:** The Northeast is one of the world's **biodiversity hotspots**, home to numerous rare and endemic species of flora and fauna.
 - Its diverse ecosystems, ranging from **tropical rainforests to alpine meadows**, play a crucial role in maintaining ecological balance and combating climate change.
 - The region also possesses significant **reserves of oil, natural gas and coal**, making it a valuable source of natural resources for India's growing economy.
- **Cultural Diversity and Ethnic Mosaic:** With over **220 ethnic groups** and an equal number of dialects, the Northeast represents India's cultural diversity in microcosm.
 - This richness of cultures, traditions, and languages **contributes significantly to India's pluralistic identity** and soft power on the global stage.
 - The region's unique cultural heritage, including its music, dance, handicrafts, and culinary traditions, offers immense potential for cultural tourism.
- **Agricultural and Horticultural Potential:** The Northeast's diverse agro-climatic conditions make it suitable for cultivating a wide range of crops, including many high-value and exotic varieties.
 - The region has significant potential in **organic farming, floriculture, and cultivation of medicinal plants**, which align with growing global demand for organic and natural products.
- **Hydroelectric Power Generation:** With its abundant water resources and mountainous terrain, the Northeast has immense potential for hydroelectric power generation.
 - The region is estimated to have about **58,000 MW of hydropower potential**, nearly **40% of India's total**.
 - Harnessing this potential could not only meet the region's energy needs but also contribute significantly to India's renewable energy goals.
- **Tourism Potential:** The Northeast's pristine landscapes, diverse wildlife, unique cultural heritage, and adventure tourism opportunities present significant untapped potential for the tourism industry.
 - From the **rhino-inhabited grasslands of Kaziranga** to the **living root bridges of Meghalaya** and **Keibul Lamjao National Park** the region offers unique experiences that could attract both domestic and international tourists.

- **Human Resource Development:** The Northeast boasts a **high literacy rate of 78.5% significantly higher than the national average of 74%** and a young population, presenting a demographic dividend that could drive India's future growth.
 - Investing in **education, skill development, and employment generation** in the region could harness this potential, turning the Northeast into a hub for innovation and entrepreneurship.



What are the Major Challenges Related to India's Northeast Region?

- **Persistent Insurgency and Ethnic Conflicts:** Despite peace accords with several groups, insurgency remains a challenge, particularly in **Manipur and parts of Nagaland** (demand for autonomy).
 - The recent violence in **Manipur (2023) between Meiteis and Kukis** highlights the fragility of inter-ethnic relations.
 - These conflicts not only threaten security but also **hinder development efforts and foreign investment**, creating a cycle of underdevelopment and unrest that's difficult to break.
- **Agricultural Challenges:** Despite being an agrarian economy, the Northeast faces significant agricultural challenges.
 - While Sikkim promoted organic farming, its success was limited. **Lack of premium prices for organic produce, difficulty in certification, and competition from cheap**, often imported fertilizers hinder its adoption by farmers.
 - Also, the dominance of middlemen remains a persistent thorn in the side of Northeast agriculture. Even initiatives like cooperatives (e.g. **Ginger Growers Cooperative Federation**) struggle to compete.

- These middlemen often provide essential credit and supplies to farmers upfront, creating a cycle of debt and dependence.
 - This control over the market allows them to dictate prices, leaving farmers with minimal profits despite their hard work.
- **China's Growing Influence and Border Disputes:** China's claims over **Arunachal Pradesh** and its infrastructure development along the border pose significant security challenges.
 - Recent clashes in **Tawang (December 2022)** and **Doklam Region** underscore the tension.
 - China's growing economic influence in **Myanmar** also threatens to isolate the Northeast, challenging India's strategic interests in the region.
- **Climate Change and Environmental Degradation:** The Northeast faces severe climate change impacts, including **erratic rainfall, flooding, and landslides**.
 - The **2022 Assam floods**, affecting millions, exemplify this vulnerability.
- **Infrastructure Deficit and Connectivity Issues:** Despite recent efforts like the **Act East Policy**, the region still lags in infrastructure.
 - The **slow progress of key projects like the India-Myanmar-Thailand Trilateral Highway** hampers economic integration with Southeast Asia.
 - Last-mile connectivity within the region remains poor, impacting healthcare, education, and economic opportunities, especially in remote areas.
- **Economic Underdevelopment and Unemployment:** The region's economy remains largely agrarian with limited industrialization.
 - Recent initiatives like the **North East Industrial Development Scheme (2017)** have had limited success in attracting investments.
 - High youth unemployment fuels social unrest and **out-migration**, creating a brain drain that further hampers development.
- **Drug Trafficking and Cross-border Crime:** The **Northeast's proximity to the Golden Triangle** has made it vulnerable to drug trafficking.
 - Recent years have seen a surge in drug seizures, particularly in **Manipur and Mizoram**.
 - This not only poses law enforcement challenges but also contributes to social issues like **drug addiction among youth, straining the region's healthcare and social fabric**.



- **Political Instability and Governance Issues:** Frequent changes in government, especially in states like **Manipur** and **Arunachal Pradesh**, hinder policy continuity.
 - The complex interplay of ethnic politics, autonomy demands, and national political dynamics often results in unstable coalitions.
 - Recent **controversies over the Citizenship Amendment Act (CAA)** have further complicated the political landscape, sparking protests and inter-community tensions.

How can India Strengthen the Integration of Northeast India?

- **“Northeast to Southwest” Cultural Exchange Program:** Launch a large-scale, long-term cultural exchange program between the Northeast and southwestern states of India.
 - This could involve **year-long student exchanges, artist residencies, and business incubation programs.**
 - The goal is to create deep, personal connections between these geographically distant regions, fostering understanding and integration at a grassroots level.
- **“Digital Silk Road” Initiative:** Develop a cutting-edge digital infrastructure network specifically for the Northeast, positioning it as India’s hub for digital innovation.
 - This could include establishing a **“Silicon Valley of the East”** with tax incentives for tech companies, specialized digital skills training programs, and a focus on developing technologies suited to mountainous and rural areas.
 - This **would not only integrate the Northeast into India’s digital economy but potentially make it a leader** through transferring optical fiber connectivity to the Southeast Asian countries like Myanmar, Vietnam etc.
- **Transnational Indigenous Knowledge University:** Establish a world-class university in the Northeast focusing on indigenous knowledge systems, inviting

scholars and students from other parts of India and Southeast Asian countries.

- This institution could become a global center for studying and preserving indigenous cultures, traditional medicine, sustainable agriculture, and ecological conservation, positioning the **Northeast as a cultural and intellectual bridge between South and Southeast Asia.**

- **Northeast Olympic Training Center:** Create a **state-of-the-art Olympic training center in the Northeast**, taking advantage of its sports enthusiasts of Northeast.

- This could become India’s primary facility for training athletes in various Olympic sports, **bringing national and international attention to the region** and fostering a sense of pride and integration through sports.

- **Floating Markets Tourism Circuit:** Develop a network of floating markets across the rivers of the Northeast, **inspired by Southeast Asian models but with a unique Indian twist.**

- This could become a major tourist attraction, showcasing the region’s diversity, boosting local economies, and creating a distinctive Northeast brand within India’s tourism landscape.

- **Bamboo Revolution Program:** Launch a comprehensive national program centered on bamboo cultivation and product development in the Northeast.

- This could involve everything from **bamboo-based textiles to construction materials and biofuels.**
- By making the Northeast the epicenter of a **sustainable “bamboo economy,”** it could drive economic integration and position the region as a leader in eco-friendly innovation.
- **Himalayan Medicinal Research Corridor:** Create a specialized research and development corridor focusing on traditional Himalayan medicine, **integrating knowledge from the Northeast with Ayurveda and modern biotechnology.**
- This could position the Northeast as a global leader in alternative medicine research and production, driving economic growth and scientific integration with mainstream India.
- **Autonomous Vehicle Testing Ground:** Designate parts of the Northeast as testing zones for autonomous vehicles in challenging terrains. This unique landscape could attract global auto and tech companies, **integrating the region into the future of transportation technology.**

■■■

Legalising MSP in India: Challenges and Way Forward

*This editorial is based on “**Legal guarantee for MSP is a must**” which was published in The Business Line on 01/07/2024. The article critically examines recent MSP hikes for Kharif crops, emphasizing farmers’ discontent over inadequate compensation amid rising input costs.*

Tag: GS Paper - 2, Government Policies & Interventions, GS Paper - 3, Direct & Indirect Farm Subsidies, Public Distribution System (PDS), Buffer Stocks & Food Security, Agricultural Marketing

MSP is not against the principles of free markets; instead, it helps to minimise extreme market fluctuations and volatility.

The recent increase in **Minimum Support Prices (MSPs)** for 14 **Kharif crops** has left protesting farmers and those aiming to **double farmers’ incomes** disappointed. The announced price hikes are being criticised for not considering the **inflation** in various farm inputs that farmers have been facing. As a result, the **nominal increase in MSP fails to provide fair compensation, as it does not proportionally reflect the rise in input costs.**

For instance, the hike in **paddy** MSP from ₹2,183 per quintal to ₹2,300, a **mere difference of ₹117, represents**

an insignificant increase of about 5%. This seems unfair to millions of paddy growers, whose input costs have surged by over 20% in 2023.

As recommended by the government’s expert committee report in 2017, **the MSP announcement seems to be more of a routine seasonal price revision rather than a step towards doubling farmers’ income.**

Progress toward doubling farmers’ income lacks effective measurement, and the government has been **hesitant to legalise MSP due to concerns that it might lead to inflation and reduce the competitiveness of agricultural exports.**

AGRI BOOST

Minimum support price of kharif crops for 2024–25 season

Crops	₹/quintal	% change	
		Over 2022–23	Over 2023–24
Paddy-common	2,300	7.01	5.4
Jowar-hybrid	3,371	7.07	6.0
Bajra	2,625	6.38	5.0
Ragi	4,290	7.49	11.5
Maize	2,225	6.52	6.5
Tur(arhar)	7,550	6.06	7.9
Moong	8,682	10.35	1.4
Urad	7,400	5.30	6.5
Groundnut	6,783	9.01	6.4
Sunflowerseeds	7,280	5.63	7.7
Soybean-yellow	4,892	6.98	6.3
Sesame	9,267	10.28	7.3
Nigerseed	8,717	6.13	12.7
Cotton - medium	7,121	8.88	7.6

Note: The crop year runs from July to June

Source: Govt

Note: In February 2024, farmers from Punjab, Haryana, and Uttar Pradesh were marching towards Delhi in the ‘Delhi Chalo’ protest, **demanding legal guarantees for the MSP.**

- In **2020, farmers protested** against three farm laws passed by the government, at Delhi borders, leading to their repeal in 2021.
- **These laws were --** The **Farmers’ Produce Trade and Commerce (Promotion and Facilitation) Act, The Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Act, and The Essential Commodities (Amendment) Act.**

What is the Minimum Support Price (MSP)?

- **About:**
 - The MSP regime was established in 1965 by setting up the **Agricultural Prices Commission (APC)** as a form of market intervention to enhance **national food security** and protect farmers from significant decline in market prices.

➤ **MSP Calculation:**

- The **Commission for Agricultural Costs & Prices (CACP)** calculates three types of production costs for every crop, **both at the state and all-India average levels**.
 - **A2:** Covers all paid-out costs directly incurred by the farmer in cash and kind on seeds, fertilisers, pesticides, hired labour, leased-in land, fuel, irrigation, etc.
 - **A2+FL:** Includes an estimated value of unpaid family labour with A2.
 - **C2:** A comprehensive cost, which is A2+FL cost plus imputed rental value of owned land plus interest on fixed capital, rent paid for leased-in land.
- The government maintains that the **MSP was fixed at a level of at least 1.5 times the all-India weighted average Cost of Production (CoP)**, but it calculates this cost as 1.5 times the A2+FL cost.

MINIMUM SUPPORT PRICE (MSP)

The rate at which the govt. purchases crops from farmers; based on a calculation of at least 1.5x the cost of production incurred by the farmers

RECOMMENDED BY

Commission for Agricultural Costs & Prices (CACP) (recommends MSPs for 22 mandated crops and Fair and Remunerative Price for Sugarcane)

22 MANDATED CROPS

(14 Kharif, 6 Rabi and 2 Other Commercial crops)

7 CEREALS	Paddy, Wheat, Barley, Jowar, Bajra, Maize And Ragl
5 PULSES	Gram, Arhar/tur, Moong, Urad And Lentil
7 OILSEEDS	Groundnut, Rapeseed/mustard, Soyabean, Sunflower, Sesamum, Safflower And Niger Seed
RAW COTTON	
RAW JUTE	
COPRA	

MSP is the price at which the govt. is supposed to procure the mandated crops from farmers if the market price falls below it

FACTORS FOR RECOMMENDING MSP

- Cost of cultivation
- Demand-Supply situation for the crop
- Market price trends
- Inter-crop price parity
- Implications for consumers (inflation)
- Environment (soil and water use)
- Terms of trade b/w agri and non-agri sectors (ratio of farm inputs and outputs)

Considers both A2+FL and C2 costs


Actual expenses on seeds, fertilisers, irrigation and the like

Unpaid family labour

A2 + FL = C2

Rent or interest foregone on owned land and fixed capital assets

MSP has no statutory backing — a farmer cannot demand MSP as a matter of right



How can Legalising MSP help Indian Agriculture?

- **Income Security for Farmers:** By providing a legally guaranteed MSP, farmers would have a safety net against price fluctuations, ensuring they receive a minimum price for their crops.
 - This could help stabilize their income, reduce the risk of financial distress, and potentially lower the debt burden on farmers.
 - The average monthly income of agricultural households is around ₹10,695, which is often insufficient for a dignified life.
 - Additionally, on average, 30 farmers die by suicide each day.
- **Boost to Rural Economy:** Improved price realization from both government procurement and private sector transactions could enhance the purchasing power of rural communities, stimulating economic activity in these areas.
- **Extending FRP Model and Direct Compensation:** Currently, private mills are mandated to procure sugarcane at or above the **Fair and Remunerative Price (FRP)** set by the Cabinet Committee on Economic Affairs (CCEA).
 - This model could be extended to other MSP-covered crops. Furthermore, farmers should receive direct compensation if they are forced to sell below MSP, reimbursing them for the price difference.
- **Legal Mandate for Private Crop Purchases:** Private players should be legally mandated to purchase crops at or above MSP, with rigorous monitoring systems in place and penalties for any violations. This would ensure that farmers are not solely reliant on government procurement agencies for crop purchases.
- **Encouragement for Investment:** With assured returns, farmers might be more inclined to invest in better farming techniques, equipment, and inputs, potentially leading to increased productivity and agricultural growth.
- **Corporate-Centric Approach:** When there is a conflict between consumer prices and farmer compensation, governments tend to favor the interests of profit-making corporations involved in agri-produce processing.
 - These corporations already benefit from legalised Maximum Retail Prices (MRP) on their products.
 - This corporate-centric approach, along with intermediaries claiming a significant portion of the margin between farm and end-consumer prices, has negatively impacted farmers.

Fair and Remunerative Price (FRP)

- FRP is the **price declared by the government, which mills are legally bound to pay** to farmers for the cane procured from them.
 - Mills have the **option of signing an agreement with farmers**, which would allow them to pay the FRP in installments.
- The payment of FRP across the country is governed by the Sugarcane Control Order, 1966, issued under the **Essential Commodities Act (ECA), 1955** which mandates payment within 14 days of the date of delivery of the cane.
- It has been determined on the **recommendation of the Commission for Agricultural Costs and Prices (CACP)** and announced by the Cabinet Committee on Economic Affairs (CCEA).
 - CACP is an attached office of the Ministry of Agriculture and Farmers Welfare. It is **an advisory body whose recommendations are not binding on the Government**.
 - CCEA is chaired by the Prime Minister of India.
- The FRP is **based on the Rangarajan Committee report** on reorganising the **sugarcane industry**.

What are the Challenges Related to Farming and Legalising the MSP in India?

- **Budgetary Concerns:** There is a growing argument against legalising MSP, claiming that creating legal provisions is practically impossible. The combined value of all crops covered under MSP may exceed ₹11-lakh crore, **while India's total budgeted expenditure in 2023-24 was around ₹45-lakh crore**.
 - Thus, it appears **unrealistic for the government to allocate such a large portion of the budget solely for purchasing crops** from farmers. Moreover, farmers retain around 25% of their produce for personal and livestock use, further complicating the feasibility of legalising MSP.
- **Complexity in Implementation:** Creating legal provisions for MSP is deemed challenging due to the vast array of crops and the diverse agricultural landscape in India. Ensuring compliance and fair implementation across the country poses logistical and administrative challenges.
- **Market Demand Mismatch in Agriculture:**
 - Lack of effective mechanisms for farmers to anticipate market demand and adjust their planting accordingly. Farmers **often face price volatility and uncertainty because their planting decisions are not aligned with actual market demand**. This disconnect leads to situations

where high production levels result in oversupply and subsequent price drops, impacting farmer incomes negatively.

- In the **2016 kharif season, for example**, the government pushed farmers to reduce cotton and plant more pulses. Those who continued growing cotton made good money but the majority who went in for pulses **faced excess supply and are dealing with a steep fall in prices**.
- **Impact on Market Dynamics:** Critics argue that MSP, if not implemented carefully, could distort market dynamics and inhibit the efficiency of agricultural markets. This includes concerns about disincentivising private investment and innovation in agriculture.
 - For example, **MSP has led to a decline in the cultivation of crops other than wheat and rice** because the government predominantly procures these two crops in large quantities for **Public Distribution System (PDS)** distribution.
- **Limitations of APMC Law:** The **Agricultural Produce Market Committee (APMC) Act** prohibits farmers from selling their produce in any mandi other than their designated one. This makes farmers vulnerable to middlemen and vested interests. They are exposed to global prices but are **not provided with access to cost-efficient technologies and information systems**. This places them at a disadvantage with farmers from other countries.
 - Just **15% of the APMC markets have cold storage facilities**. Weighing facilities are available in only 49% of the markets.
 - As of March 2017, **there were 6,630 APMCs** in India, which means each APMC serves an average geographical area of 496 square kilometers. This exceeds the recommended area of 80 square kilometers per APMC (**as per the National Farmers' Commission 2006**).

Welfare Schemes Related to Farmers in India

- **PM Kisan Samman Nidhi (PM-KISAN)**
- **PM Kisan MaanDhaan Yojana (PM-KMY)**
- **PM Fasal Bima Yojana (PMFBY)**
- **Modified Interest Subvention Scheme (MISS) (provides concessional short-term agri-loans)**
- **Sub-Mission on Agriculture Extension (SMAE)**
- **Market Intervention Scheme and Price Support Scheme (MIS-PSS)**

Way Forward

- **Recommendations of Swaminathan Commission:** The commission report recommends that the

government should ensure a MSP that is at least 50% higher than the weighted average cost of production. This recommendation, also referred to as the 'C2+50% formula,' includes the imputed cost of capital and the rent on the land (termed 'C2') to guarantee farmers a 50% return.

- It is **suggested that the government implement a legal guarantee for this MSP based on the C2+50% formula.**
- **Recommendations of Ashok Dalwai Committee**
Recommendations: The report suggests adhering to the Model Agricultural Land Leasing Act, 2016, proposed by the Haque Committee (Haque Committee, 2016).
 - In developing countries like India, tenancy reforms aimed to abolish informal and exploitative contracts to protect poor tenants from eviction and regulate rent. The Dalwai report, based on "market-led agrarian reform," assumes equal bargaining power between lessors and lessees.
- **Comprehensive Policy Framework:** A holistic national agriculture policy, embodied with an effective and efficient procurement policy of every grain as well as vegetables and fruits on FRP, is needed.
 - **The FIVE 'Cs'** — Conservation of water and soil, **Climate change** resistance, Cultivation, Consumption, and Commercial viability are crucial for the livelihoods of farmers across the country.
- **Need to Amend APMC Act:** States should amend their APMC Acts to align with the Model Act and promptly notify the necessary rules. To **maximise the benefits of these reforms for small and marginal farmers**, states should also promote the formation of Self Help Groups, Farmers/Commodity Interest Groups, and similar organizations.
- **Balancing Market Forces and Government Support:** Recognise that while some agricultural segments, such as horticultural crops, can thrive through market forces, others require government support through mechanisms like MSP.
 - Consider the growth of horticultural crops, **which have doubled the growth rate of rice and wheat in the last decade**, as evidence that demand-driven factors can significantly enhance farmers' income and growth.
- **Assured Price to Farmers (APF):** Implement an APF system that includes both an MSP component and a profit margin. Set the MSP equal to the cost C2 to ensure a net return for farmers, **with an additional margin determined annually by an expert body** like

the CACP. This margin should remain variable, unlike the consistently rising MSP.

- **Categorisation and Implementation of MSP Crops:** For effective MSP implementation, crops should be categorised into those of all-India importance and regional importance.
 - The central government **should handle the Assured Price to Farmers (APF) for all-India crops**, while states, with shared funding from the central government, should manage the APF for regionally important crops.
- **Establishment of Commodity-based Farmers' Organisations:** To provide global demand-supply projections, guide planting decisions, and moderate acreages to avoid price crashes. Additionally, **there's a need for non-partisan platforms** where farmers can engage with policymakers, economists, and scientists objectively, prioritizing scientific approaches over political or special interest agendas.
 - In other countries, such organisations **advise farmers on global projections of demand and supply for specific crops** and help in moderating acreages in line with projected demand.
- **Comprehensive Cost Inclusion in MSP:** The MSP should be revised to include all production costs such as labour costs, expenses, fertilizers, irrigation, and interest on working capital and land rent. This should also encompass the imputed value of family labour.
 - By including these comprehensive costs in the MSP calculation, the **aim is to provide farmers with a price that not only covers their basic production expenses but also ensures a reasonable profit margin.**
- **Use of Evolving Technologies:** Karnataka has united all mandis in the state on an electronic platform and this has reportedly **improved farmers' selling prices** by 38%. This system enhances price transparency and market access, benefiting farmers economically. Adopting **this model across the country could similarly boost farmers' incomes nationwide.**

Conclusion

The agricultural sector has faced numerous challenges over the years, and there is a pressing need for a legal guarantee for MSP to address this crisis. Despite the agreement reached with protesting farmers, the Central Government has not taken concrete action in the past two years. The government should have promptly addressed the demand for a legal guarantee for MSP and other issues to transform the country's focus from food security to nutrition security.



Unveiling India's MPCE Trends and Implications

This editorial is based on "What's driving rural spending?" which was published in The Business Line on 02/07/2024. The article examines the NSSO's MPCE survey, highlighting reduced rural-urban consumption disparities, state-wise performance, the impact of government transfers on rural spending, as well as the survey's representativeness and implications for policy and market strategies.

Tag: GS Paper - 2, Government Policies & Interventions, GS Paper - 3, Growth & Development, Planning, Inclusive Growth, Growth & Development

Recently, the **Monthly Per Capita Consumption Expenditure (MPCE)** survey was released by the **National Sample Survey Office (NSSO)**.

Consumption surveys have become increasingly essential in today's world for several reasons. Firstly, they help assess **whether individuals are better off now compared to the past, accounting for inflation**. Additionally, these surveys provide **insights into the rural-urban divide and consumption patterns** across different income groups.

They also highlight inter-state differences, which are valuable for policy formulation.

Moreover, **economists can use the data from these surveys to adjust national inflation indices** by incorporating updated weights. Finally, businesses find consumption surveys useful for tailoring their products to various markets, enhancing their ability to meet diverse consumer needs.

Note: The National Sample Survey Office (NSSO) headed by a **Director General** is responsible for conducting large scale sample surveys in diverse fields on an All India basis. Primarily **data are collected through nation-wide household surveys on various socio-economic subjects, Annual Survey of Industries (ASI)**, etc.

What are the Findings of the Monthly Per Capita Consumption Expenditure (MPCE) Survey?

- **Reduction in Rural-Urban Divide:** The gap between urban and rural MPCE has decreased from 84% to 75% over an 11-year period ending in 2022-23, indicating progress in the rural economy.
 - This reduction **challenges the commonly held view that urban areas are significantly ahead of rural areas** in terms of economic well-being and consumption.

- **Comparison of Growth Rates:** In real terms, the compound annual growth rate of MPCE in rural areas was 4.7%, whereas in urban areas it was only 2.7% over the same period.
- **State-wise Performance Comparison:** The survey highlights the relative performance of different states in terms of rural MPCE over the years.
 - The average MPCE for rural India is ₹3,773.
- **States Above National Average:** 10 of the 18 major states listed have an MPCE higher than the national average.
 - Kerala tops the list with an MPCE of ₹5,924.
- **Regional Patterns:** All five southern states (Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, and Telangana), along with Punjab and Haryana in the North, and the three western states of Maharashtra, Gujarat, and Rajasthan, have higher MPCEs than the national average.
 - These **states attract more investment, both domestic and foreign**, contributing to their higher growth rates.
- **States Below National Average:** Chhattisgarh, Jharkhand, and Odisha have MPCEs of less than ₹3,000, which is significantly lower than the national average.
 - Rajasthan, **which performs well in rural MPCE, falls below the urban national average**.
 - The average MPCE for urban India is ₹6,657.
- **Bottom Tier States:** Madhya Pradesh, Bihar, and Jharkhand have urban MPCEs of less than ₹5,000, placing them in the bottom tier for urban consumption.
- **Lack of Formalisation:** The lower urban MPCE in states indicates limited formalisation, which means they lack significant industrialisation and developed service industry. This combination **affects their urban income and consumption levels**.
- **Stark Disparity:** The significant differences in MPCE across states reflect uneven rural development, with some states performing much better than others.
 - The disparity in MPCE **indicates a need for targeted policy interventions** to address the lower consumption and potential underlying issues in the states that are lagging.

What are the Factors Influencing Rural Consumption Pattern?

- **Government Cash Transfers:** Large cash transfers by the government, such as those under the **PM-Kisan scheme** and the **National Rural Employment Guarantee Act (NREGA)**, have increased the effective spending power of rural households.

- Additional **government subsidies have further boosted the purchasing power of rural residents**, contributing to higher consumption.
- **Urban Migration and Remittances:** Urban **migration** has led to money being sent back to rural homes, increasing consumption in rural areas while **reducing it in urban areas**.
 - **Remittances** are money transfers that migrants send to their families and friends in their home countries.
- **Lower Savings Rates in Rural Areas:** Rural areas tend to have lower savings rates compared to urban areas, as evidenced by the concentration of bank deposits in urban regions. **This lower savings rate translates to higher consumption growth in rural areas.**

What are the Challenges that still persist related to Rural Consumption Pattern?

- **Agricultural Dependence & Seasonal Employment:** Rural incomes are largely dependent on agriculture, which is subject to the vagaries of weather, pests, and market fluctuations. This makes rural income volatile and unpredictable.
 - Much of the rural employment is seasonal, leading to periods of high income during harvest times and low income during off-seasons.
- **Environmental and Climatic Challenges:** Increasingly erratic weather patterns, droughts, and floods due to climate change disproportionately affect rural areas, impacting agricultural productivity and income.
- **Limited Access to Credit:** Though Microfinance institutions and **Self-Help Groups (SHGs)** provide small loans to rural households, enabling them to invest in income-generating activities or purchase goods, thereby enhancing consumption.
 - But many rural households still lack access to formal banking services due to insufficient collateral, lack of credit history, and inadequate banking infrastructure.
 - This leads to reliance on informal moneylenders who charge high interest rates, further straining rural finances.
- **Higher Inflation:** Inflation affects purchasing power, especially for essential goods. **High inflation often erodes disposable income, whereas stable or low inflation can enhance consumption capacity.**
 - Rural retail inflation is still over 5% (May 2024), reducing the consumption expenditure of rural households.

- **Paradox of Thrift:** Higher inflation also leads to Higher savings as well. High savings mean households allocate more income towards savings rather than spending on goods and services immediately, which can dampen current consumption levels.
- **Inadequate Infrastructure:** Many rural areas still lack adequate road, transport, and communication infrastructure, limiting access to markets and services.
 - Irregular or non-existent electricity and water supply hinder productivity and the ability to use modern appliances and technologies.

What can be Done to Enhance Rural Consumption Expenditure?

- **Optimising Marketing Strategies:** For consumer goods companies, varying levels of rural-urban consumption differentials across different states or regions are crucial because they need to devise different strategies for states with varying levels of rural-urban consumption differentials. States with higher consumption differentials (where rural consumption is closer to urban levels) may present attractive markets for lifestyle products favored by higher income groups.
 - In contrast, states with lower rural consumption relative to urban areas require strategies that cater to lower consumer spending capacity.
 - **Understanding specific consumption patterns, economic conditions, and unique consumer preferences in each state is essential** for optimising market penetration, enhancing consumer engagement, and maximising sales potential.
- **Balanced Regional Development:** The reduction in the rural-urban consumption differential is primarily attributed to affirmative actions in rural India rather than balanced economic growth. This means that specific government policies and interventions aimed at rural areas, such as subsidies, welfare schemes, and employment guarantees like NREGA, **have effectively increased rural incomes and consumption levels.**
 - However, **this improvement is not necessarily reflective of overall balanced economic growth** across all regions of the country. There may still be disparities in economic development between rural and urban areas despite the narrowing consumption gap. **Addressing these disparities requires targeted policies** that promote equitable development across all regions.

- **Financial Inclusion and Digital Payments:** Promoting financial literacy and expanding digital payment infrastructure in rural areas (through UPI, [Aadhaar Enabled Payment System \(AePS\)](#), etc.) reduces cash dependence, enhances convenience, and stimulates transactions, thereby increasing overall consumption.
- **Infrastructure Development:** Improving rural infrastructure such as roads, electrification, and internet connectivity (via initiatives like [BharatNet](#)) facilitates easier access to markets, services, and employment opportunities, thereby boosting economic activity and consumption.
- **Financial Inclusion Innovations:** Introducing innovative financial products such as micro-insurance, crop insurance, and savings schemes tailored to rural needs can build resilience and encourage higher investment in consumption goods.

Initiatives Related to Rural Development

- [Pradhan Mantri Awas Yojana - Gramin](#)
- [Pradhan Mantri Gram Sadak Yojana](#)
- [Deen Dayal Upadhyay - Grameen Kaushal Yojana](#)
- [National Social Assistance Programme \(NASP\)](#)
- [Saansad Adarsh Gram Yojana](#)
- [Shyama Prasad Mukherjee Rurban Mission](#)



Strengthening India's Medical Research

This editorial is based on "[Trials, medical ethics and the orbit of power](#)" which was published in The Hindu on 04/07/2024. The article brings into picture allegations of ethical violations in Bharat Biotech's Covaxin clinical trials and highlights systemic issues in India's medical research ethics.

Tag: GS Paper - 2, Government Policies & Interventions, Health, Education

[India's medical research](#) landscape stands at a critical juncture. On one hand, the nation possesses undeniable assets: a **burgeoning pool of talented researchers**, a richly diverse population ideal for clinical trials, and a growing emphasis on scientific and technological advancement.

However concerns like Ethical lapses in medical research cast a long shadow over India's aspirations in healthcare innovation. Recent controversies, such as the **alleged irregularities in the [Covaxin](#) trial in Bhopal**, have brought to light systemic issues in clinical trials and drug

development processes. Furthermore, the allegation on the dysfunctional state of **institutional ethics committees**, which are meant to be the primary safeguards against ethical violations.

There is an urgent need for comprehensive reform in India's medical research and clinical trial landscape. This should **encompass building expertise in clinical development**, and ensuring strict adherence to ethical guidelines, particularly in obtaining informed consent from vulnerable populations.

Which are the Key Organizations Involved in Medical Research in India?

- **Department of Health Research (DHR):** The apex body under the Ministry of Health and Family Welfare, responsible for promotion and coordination of basic, applied and clinical research including clinical trials and operational research in areas related to medical, health, biomedical and medical profession.
- **Indian Council of Medical Research (ICMR):** The Indian Council of Medical Research is the apex body in India for the formulation, coordination and promotion of biomedical research
- **Drugs Controller General of India (DCGI):** The national regulatory authority responsible for approving clinical trials of new drugs and vaccines in India.

What are the Recent Advancements in Medical Research in India?

- **Rise of Specialized Research Institutes:** India is establishing dedicated institutes for advanced medical research, **fostering innovation in specific fields of medical science**. These institutes are accelerating progress in cutting-edge areas of healthcare.
 - **Example:** The **Translational Health Science and Technology Institute (THSTI)** in Faridabad has been instrumental in developing and validating **diagnostic kits for [Covid-19](#)**, showcasing India's growing capabilities in biotechnology research.
- **Improved Focus on Indigenous Health Challenges:** Researchers are increasingly targeting health issues specific to India, addressing local needs and developing solutions tailored to the population.
 - This approach is leading to breakthroughs in areas previously neglected by global research.
 - **Example:** The **development of [ROTAVAC](#)**, an affordable rotavirus vaccine by Bharat Biotech, specifically addresses a **major cause of diarrhea in Indian children**, demonstrating the country's ability to **solve local health problems**.

- **AI and Big Data in Healthcare:** The integration of **artificial intelligence and big data analytics** is revolutionizing medical research in India.
 - These technologies are enabling more accurate diagnostics, personalized treatments, and efficient healthcare delivery.
 - **Example: Niramai Health Analytix** has developed an AI-based breast cancer screening tool that's non-invasive and cost-effective, potentially improving early detection rates in resource-limited settings.
- **Genomics Revolution:** India is participating in large-scale genomic studies, contributing to a better understanding of genetic diversity and its impact on health.
 - This research is paving the way for personalized medicine approaches tailored to the Indian population.
 - **Example: The GenomeAsia 100K project, which includes a significant Indian cohort,** aims to create a comprehensive genetic database that will inform future medical research and treatments specific to Asian populations.
- **Telemedicine and Remote Healthcare Research:** The rapid adoption of telemedicine is not only improving healthcare access but also generating valuable data for research.
 - This trend is **enabling studies on healthcare utilization patterns** and outcomes across diverse Indian populations.
 - **Example: Practo**, a leading telemedicine platform in India, has been leveraging its vast user data to provide insights into disease patterns and healthcare-seeking behaviors, contributing to public health research.

What are the Major Challenges Related to Medical Research in India?

- **Ethical Concerns in Clinical Trials:** India faces ongoing issues with ensuring ethical conduct in clinical trials, particularly **regarding informed consent and protection of vulnerable populations**.
 - These concerns can hinder research progress and damage public trust in medical studies.
 - **Example: The recent controversy surrounding the Covaxin trial in Bhopal, where allegations of ethical violations and exploitation of vulnerable groups emerged.**
- **Inadequate Funding and Outdated Infrastructure:** Despite improvements, many research institutions in India still struggle with **insufficient funding and outdated infrastructure**, limiting their ability to conduct cutting-edge research.

- India's expenditure on R&D hovers around 0.6% of **Gross Domestic Product (GDP)**.
 - The Ministry of Science and Technology, the Council of Scientific and Industrial Research, and the Indian Council of Medical Research garner about 20% of it.
- In **China, Japan, South Korea and the U.S**, the private sector contributed **70% of the research expenditure**.
 - However, Only 36% of India's research expenditure came from the private sector in 2019-20.
- **Brain Drain and Lack of Talent Retention:** India continues to lose skilled researchers to institutions abroad, where better facilities, funding, and career prospects are often available.
 - This exodus of talent impacts the country's research capacity and innovation potential.
 - **Example: Dr. Rahul Purwar**, who developed a novel **CAR-T cell therapy** for cancer treatment at IIT Bombay, moved his research to the USA due to better facilities there.
- **Regulatory Hurdles and Bureaucratic Colostral:** Complex and often slow regulatory processes can **delay research projects and clinical trials**, discouraging both domestic and international investment in Indian medical research.
 - **Example: The development of the indigenous Covid-19 vaccine, Covaxin,** faced initial setbacks due to regulatory challenges in obtaining approvals for human trials.
- **Limited Research on Non-communicable Diseases:** It is estimated that the proportion of deaths due to **Non-Communicable Diseases (NCDs)** in India have increased from 37.9% in 1990 to **61.8% in 2016**.
 - Despite the rising burden of NCDs in India, research funding and focus remain disproportionately skewed towards infectious diseases.
- **Neglect of Practical Clinical Applications:** While India produces valuable medical research, there's often a disconnect between research findings and their practical implementation in healthcare settings.
 - **Example: Despite numerous studies on the effectiveness of community health workers (like ASHAs) in improving maternal health outcomes, the implementation of evidence-based practices for ASHA training and support remains inconsistent across states, limiting the real-world impact of this research.**

- **Inadequate Research on Traditional Medicine Integration:** Despite the prevalence of traditional medicine use in India, there's insufficient rigorous research on integrating these practices with modern medicine.
 - **Example:** While the use of **Ayurvedic herbs like Ashwagandha** is widespread, there's a lack of well-designed clinical trials to establish its efficacy and safety in combination with conventional treatments for conditions like **anxiety disorders**.

What are the Major Government Initiatives for Promotion of Medical Research?

- **Ayushman Bharat Health Infrastructure Mission:** It is an Centrally Sponsored Scheme with an objective of the scheme is to fill critical gaps in health infrastructure, surveillance and **health research**- spanning both the urban and rural areas
- **National Policy on Research and Development and Innovation in Pharma Medtech Sector:** It aims to encourage Research & Development (R&D) in pharmaceuticals and medical devices and to create an ecosystem for innovation in the sector in order for India to become a leader in drug discovery
- **MedTech Product Development Acceleration Gateway of India (mPRAGATI):** It is a National Centre under the Medical Device and Diagnostics Mission Secretariat (MDMS), sponsored by Indian Council of Medical Research (ICMR) and Department of Health Research (DHR) for **development of medical devices and technology**.
- **Champion Service Sector Scheme:** Ministry of AYUSH has developed the Champion **Services Sector Scheme for Medical Value Travel** to promote medical tourism in traditional medicine.

What Measures can be Adopted to Enhance Medical Health Research?

- **Blockchain-based Research Collaboration Platform:** Develop a national, blockchain-powered platform for research collaboration, ensuring transparent data sharing, credit attribution, and cross-institutional project management.
 - Implement a system similar to **Ethereum** for smart contracts, but tailored for research protocols.
 - This could enable seamless collaboration between institutions like **AIIMS Delhi** and **CMC Vellore** on **multicentric studies**, with automatic tracking of contributions and data integrity.
- **AI-driven Research Prioritization:** Utilize artificial intelligence to analyze health data, research outputs, and funding patterns to identify underserved research areas and optimize resource allocation.

- **Example:** Develop an AI system that combines data from the **National Health Mission**, **academic publications**, and **global health trends** to suggest high-impact research priorities, similar to how **Netflix algorithms predict viewer preferences** but for medical research needs.
- **Quantum Computing for Drug Discovery:** Invest in quantum computing capabilities specifically for accelerating drug discovery and molecular modeling.
 - Establishing a national quantum computing facility, similar to **IBM's Quantum Network**, but focused on solving complex pharmaceutical challenges like **protein folding and drug-target interactions** for diseases prevalent in India.
- **Mandatory Research Sabbaticals for Clinicians:** Implement a system where practicing clinicians are required to take **periodic research sabbaticals**, **bridging the gap between clinical practice and research**.
 - Establishing a program where every five years, **clinicians spend 2-3 months fully devoted to research projects**, similar to the academic sabbatical system but tailored for healthcare professionals.
- **Vernacular Medical Research Network:** Develop a national platform for conducting and disseminating medical research in regional languages to **increase participation and knowledge sharing among non-English speaking healthcare professionals**.
 - Launch a multilingual journal and research database to contribute valuable clinical observations and access cutting-edge research in their native language.
- **Tribal Knowledge Integration Program:** Create a systematic program to document and scientifically validate traditional medical knowledge from India's diverse tribal communities and integrate it with **Ayush Next Database**.
 - Establishing research stations in areas like the **Nilgiris**, partnering anthropologists with medical researchers to study unique **Toda tribe healing practices**, potentially uncovering novel compounds for pain management or wound healing.

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Climate Resilient Industrial Sector

*This editorial is based on "**Mixed signals: On data and the key industrial sectors**" which was published in The Hindu on 07/05/2024. The article brings into picture*

the impact of a heatwave on India's industrial output, highlighting slowdowns in key sectors and the resilience of coal and electricity generation.

Tag: GS Paper-3, Industrial Policy, Infrastructure, Growth & Development

Recent data from May 2023 reveals a **slowdown in India's core sectors**, largely due to a severe **heatwave**. While coal and electricity production saw growth due to increased cooling needs, other sectors like **crude oil, fertilizers, and cement experienced contractions**.

The heatwave particularly impacted construction activities in northern India, affecting cement and steel demand. Persistent weakness in fertilizer production signals ongoing challenges in the agricultural sector. By implementing strategic measures to make India's industrial sector resilient to the **impacts of climate change**, the nation can navigate future hurdles and build a more **sustainable industrial base for sustainable economic growth**.

What are the Sectors Driving India's Industrial Growth?

- **Information Technology (IT) and IT-enabled Services:** The IT sector remains a cornerstone of India's economy, expected to reach **USD 350 billion in revenue by FY 2026**.
 - India's IT industry employs over **4.5 million people** and accounts for 8% of the country's GDP.
 - Notable developments include the rapid adoption of cloud services, with the **Indian Public Cloud Services (PCS) market likely to reach USD 13.5 billion by 2026**.
- **Renewable Energy:** As of December 2023, **India ranks 4th globally for the total renewable power capacity**.
 - The country aims to achieve 500 GW of renewable energy capacity by 2030.
 - Notable projects include the **world's largest solar park in Bhadla, Rajasthan**.
- **E-commerce and Digital Services:** Indian **e-commerce** is expected to grow at a compound annual growth rate (CAGR) of 27% to reach **USD 163 billion by 2026**.
 - The sector has been boosted by increasing internet penetration, over **820 million active internet users**.
 - Digital payments have seen explosive growth, in the calendar year 2022, UPI processed over **74 billion transactions**, worth Rs 125.94 trillion (**NPCI**).

- Companies like **Flipkart and Amazon** have expanded their reach to tier 2 and 3 cities, driving further growth in the sector.
- **Food Processing:** India has a vast agricultural base, making it a natural hub for **food processing**.
 - With rising incomes and urbanization, the demand for processed and packaged food is growing rapidly.
 - Companies like **ITC, Britannia Industries, and Nestle** are expanding their operations in this sector.
- **Aerospace and Defense:** India's aerospace and defense sector is rapidly expanding, with the government aiming to **achieve USD 25 billion in defense production by 2025**.
 - The country has implemented policies to promote self-reliance, including the **ban on importing 101 defense items in 2020**.
 - Notable developments include the indigenous development of the **Tejas Light Combat Aircraft** and the successful test of the Agni-V.
- **Pharmaceuticals and Biotechnology:** India is the world's largest provider of generic medicines, accounting for **20% of global supply by volume**.
 - The pharmaceutical industry is expected to reach **USD 130 billion by 2030**.
 - The biotechnology sector is also growing rapidly, expected to reach **USD 150 billion by 2025**, with over **5,000 biotech startups** currently operating in the country.
- **Telecommunications:** The **Telecom industry in India** is the second largest in the world with a subscriber base of 1.091 billion as of April 2024.
 - The ongoing 5G rollout is expected to contribute **USD 450 billion to the Indian economy by 2040**.
- **Electric Vehicles (EVs):** **India's EV market** is projected to reach \$206 billion by 2030.
 - The government has implemented policies like **FAME II to promote EV adoption**, aiming for **30% of private cars to be electric by 2030**.
 - The country is also focusing on building charging infrastructure, with plans to install **69,000 charging stations** across national highways.
- **Textiles and Apparel:** India is the world's **sixth-largest exporter of textiles and apparel**, with the domestic apparel and textile industry contributing about **2.3% to the country's GDP**, 13% to industrial production, and 12% to exports.
 - Recent initiatives like the **Production Linked Incentive (PLI) scheme** aim to boost manufacturing of man-made fiber apparel and technical textiles.

- **Fintech:** India's fintech market is projected to reach \$150 billion by 2025. The country has over **6,636 fintech startups**, with digital payments leading the sector.
 - The government's initiatives like **Jan Dhan Yojana** have promoted financial inclusion.

What are the Recent Government Initiatives for the Growth of the Industrial Sector in India?

- **Production-Linked Incentive (PLI)**
- **PM Gati Shakti- National Master Plan**
- **Start-up India**
- **Make in India 2.0**
- **Atmanirbhar Bharat Campaign**
- **Special Economic Zones**
- **National Monetisation Pipeline**

What are the Major Threats of Climate Change to India's Industrial Sector?

- **Water Scarcity and Stress:** 50% of districts in India could face 'severe' water scarcity by 2050. This threatens water-intensive industries like **textiles, power generation, and agriculture**.
 - A report by **NITI Aayog** suggests that water scarcity could cost India up to **6% of its GDP by 2050** if left unaddressed
- **Extreme Weather Events:** Increasing frequency and intensity of extreme weather events pose significant risks to industrial infrastructure and operations.
 - Cyclones, floods, and heatwaves can disrupt supply chains, damage facilities, and halt production.
 - **Cyclone Amphan of 2020** resulted in **USD 14 Billion** economic losses in India: UN report
- **Rising Temperatures:** Higher temperatures reduce worker productivity and increase cooling costs for industries.
 - India is expected to lose around **5.8% of daily working hours due to rising temperatures by 2030**, leading to erosion in productivity and lower collection of fiscal revenue. (**United Nations Economic and Social Commission for Asia and the Pacific**)
- **Supply Chain Disruptions:** Climate change is increasing the vulnerability of global and local supply chains, posing a significant threat to India's industries.
 - Extreme weather events can **disrupt transportation networks**, damage storage facilities, and affect raw material availability.
 - The automobile sector, which relies heavily on just-in-time manufacturing, is particularly vulnerable.
- **Regulatory and Market Pressures:** Increasing global focus on climate action is leading to **stricter regulations and changing market dynamics**.
 - Industries face pressure to reduce their carbon footprint and adopt sustainable practices.
 - The **EU's Carbon Border Adjustment Mechanism**, for instance, could significantly impact India's export-oriented industries like steel and chemicals.
- **Shifting Disease Patterns and Healthcare Industry:** Climate change is altering the geographic distribution and prevalence of various diseases.
 - This shift presents complex challenges for **India's pharmaceutical and healthcare industries**.
 - For instance, rising temperatures are expanding the range of vector-borne diseases like **malaria and dengue**.
 - This requires the healthcare sector to **rapidly adapt its research, drug development, and healthcare delivery systems**.
 - The pharmaceutical industry may need to reallocate resources to develop new treatments and vaccines, potentially disrupting existing business models.
- **Climate-Induced Migration and Labor Market Disruptions:** Climate change is expected to trigger significant **internal migration in India**.
 - This mass movement poses challenges for industries in both origin and destination areas.
 - Rural industries may **face labor shortages, while urban industries could struggle with rapid population influx**, potentially leading to social tensions and pressure on urban infrastructure.
- **Changing Atmospheric Chemistry and Industrial Processes:** Increasing CO₂ levels and changing atmospheric composition due to climate change can directly impact certain industrial processes.
 - For example, the cement industry, which **contributes about 8% to India's CO₂ emissions**, may face challenges in cement curing processes as higher CO₂ levels can affect concrete strength and durability.
 - Similarly, the chemical industry may need to adapt synthesis processes that are sensitive to temperature and humidity changes.
 - These subtle changes could necessitate significant R&D investments and process modifications across various manufacturing sectors.
- **Coastal Industrial Corridors at Risk:** India's major industrial corridors along the coast face severe threats from sea-level rise and increasing cyclone intensity.

- In 2020, **Cyclone Nisarga** forced the shutdown of operations at **Jawaharlal Nehru Port Trust**, India's largest container port, disrupting supply chains nationwide.

What Measures can be Implemented to Enhance the Climate Resilience of India's Industrial Sector?

- **Industrial Symbiosis Parks:** Develop specialized industrial parks where different industries collaborate to utilize each other's waste and byproducts.
 - For example, a **steel plant's waste heat could power a textile factory**, while a food processing unit's organic waste could fuel a biogas plant.
 - This approach not only reduces waste and emissions but also creates a more **resilient ecosystem less dependent on external resources**.
- **Climate-Responsive Architecture for Factories:** Mandate and incentivize the construction of climate-adaptive industrial buildings. This could include:
 - **Self-shading structures** that adjust based on sun position
 - **Green roofs** and walls that provide natural cooling and capture rainwater
 - Underground factories in heat-prone areas to maintain stable temperatures
 - Floating factories in coastal areas to adapt to sea-level rise
- **Artificial Intelligence-Driven Climate Risk Management:** Develop an **AI system** that integrates real-time climate data, long-term projections, and industrial operations data. This system could:
 - Predict **specific climate risks for individual factories**
 - Automatically adjust production schedules based on weather forecasts
 - Optimize supply chains in real-time to avoid climate-related disruptions
 - Suggest **location-specific adaptation measures**
- **Decentralized Micro-Grid Networks:** Encourage industries to form decentralized, climate-resilient energy networks. \
 - Each factory in the network would have its **own renewable energy generation (solar, wind, biomass)** and storage capabilities.
 - These micro-grids would be interconnected, allowing energy sharing during disruptions.
- **Vertical Integration of Agriculture and Industry:** Promote the development of vertically integrated agro-industrial complexes.

- These would combine climate-controlled **vertical farming with food processing industries**, reducing transportation needs and increasing resilience to agricultural disruptions.
- For example, create a multi-story complex that grows tomatoes on upper floors and produces ketchup on lower floors, all powered by **rooftop solar**.
- **Underground Water Banking System:** Implement a nationwide network of underground aquifer recharge and storage facilities.
 - During monsoons, excess water would be pumped into these aquifers, creating vast underground reservoirs. Industries could then draw from these reserves during dry periods.
 - This system would be particularly beneficial in water-stressed regions like **Gujarat or Tamil Nadu**.
 - Integrate smart sensors and blockchain technology to manage water credits and ensure fair distribution among industrial users.



India-France: Partnership for the Planet

*This editorial is based on "**France: India's steady partner in green growth**" which was published in The Hindu on 03/07/2024. The article emphasises India's long standing importance as a partner for the French Development Agency (AFD) Group. The AFD has pledged over Euro (€) 4 billion for nearly 100 projects in India since 2008.*

Tag: GS Paper- 2, Effect of Policies and Politics of Countries on India's Interest, International Treaties & Agreements.

In a recent event in Paris, **India and France** emphasised the '**Partnership for the Planet**' as pivotal to the **Indo-French Horizon 2047 Roadmap**, highlighting their enhanced cooperation on climate change, biodiversity, health, and environmental issues.

The **partnership is evolving** to encompass **Indo-Pacific biodiversity initiatives** and emphasise innovation. France, through the **French Development Agency (AFD)**, remains committed to supporting India's journey towards resilience and equity, with plans to showcase collaborative innovations during the upcoming **Indo-French Year of Innovation in 2026**.

Additionally, it underscores a **joint commitment** to harmonising **socio-economic development** with **environmental protection**, addressing global disparities, and advancing further cooperation and development **towards sustainable solutions**.

India-France Relationship: Historical Development

➤ Post-Independence Period (1947-1991):

- Diplomatic ties were established soon after India gained independence.
- Military cooperation began in the 1960s with French aircraft and helicopters (**Ouragan, Mystere, Alize, Alouette, Jaguar**) joining India's air fleet.
- France provided critical support in 1984 by supplying nuclear fuel to the Tarapur power plant when the US withdrew.
- Early space collaboration included French assistance in establishing the Sriharikota launch site and providing Centaure and Viking rocket technologies in the 1970s.
- Despite these collaborations, **Cold War dynamics** limited the full development of bilateral relations.

➤ Post-Cold War Era (1991-Present):

- India and France formalised a Strategic Partnership in 1998, marking a significant expansion in bilateral ties.
- The partnership focuses on three key pillars:
 - Defence and security cooperation
 - Space collaboration
 - Civil nuclear cooperation

What are the Key Sectors and Initiatives Related to the Indo-French Horizon 2047 Roadmap?

➤ Partnership for the Planet and Global Issues:

- **Environment:** Indo-France both countries are committed to promoting environmental sustainability through initiatives that focus on sustainable **urban development**, **waste management**, and **water conservation**.
 - Projects like the **Pune metro system** and **Chandigarh's water supply system**, supported by AFD, emphasise sustainable urban infrastructure development.
 - Commitments to curb plastic pollution through international agreements, recycling programs, and innovative solutions.
- **Climate Change:** Support for **clean energy technologies**, **decarbonized hydrogen production**, and financing initiatives for sustainable energy

projects. This includes promoting renewable energy, enhancing energy efficiency, and reducing greenhouse gas emissions.

- The **International Solar Alliance**, co-founded by **India and France**, promotes solar energy deployment in solar-rich countries to reduce dependence on fossil fuels.

- Since 2008, France has invested over **4 billion Euros** through agencies like the **French Development Agency (AFD)** in climate projects in India, supporting initiatives from renewable energy to climate-resilient infrastructure.

- **Biodiversity:** Both countries are engaged in conservation efforts to protect biodiversity hotspots and endangered species. Projects such as the **conservation of one-horned rhinos in Assam**, supported by AFD, demonstrate joint efforts to preserve India's rich biodiversity.

- India is the **top partner for the AFD** in terms of financial commitment. A substantial **63%** of its portfolio is dedicated to addressing **gender equality**.

➤ Partnership for People:

- **Student Mobility:** Targeting 30,000 Indian students in **France by 2030** and issuing **5-year short-stay** visas for Indian Master's degree holders.

- **Diplomatic and Consular Network:** Opening new consulates in Marseille and Hyderabad.

- **Culture:** Collaboration on establishing a new National Museum in New Delhi and exchanging audio-visual content.

- **Research:** Increased funding for the Indo-French Centre for Advanced Research.

➤ Partnership for Security and Sovereignty:

- **Indo-Pacific:** India and France have jointly strategised to enhance cooperation in the **Indo-Pacific**, focusing on maritime security, economic collaboration, and forming strategic partnerships with regional nations.

- They conduct joint military exercises across all branches - **Shakti (Army)**, **Varuna (Navy)**, and **Garuda (Air Force)**.

- **Defence:** Defence Acquisition Council (DAC) has approved the acquisition of **26 Rafale aircraft for the Navy**. He noted that negotiations on pricing and contractual procedures are progressing actively, although an official announcement may not be imminent.

- Additionally, the DAC has sanctioned the construction of three additional Scorpène submarines (known as Kalvari class).

- **Space: ISRO and the French Space Agency (CNES)** have been carrying on various joint research programmes and collaborating in satellite launches.
 - For example, in 2022, the GSAT-24 communication satellite of New Space India Ltd (NSIL) was successfully launched on board Ariane-5 from Kourou, French Guiana.
- **Civil Nuclear Energy:** An agreement on **civil nuclear cooperation** was signed between India and France in 2008. France is involved in the construction of the Jaitapur Nuclear Power Project.

What is the Significance of Indo-France Relations?

- **Indo-Pacific Security:** France's support is crucial for India in maintaining stability in the Indo-Pacific region and countering Chinese assertiveness in this region. This is exemplified by the 2018 India-France Joint Strategic Vision for Indian Ocean cooperation.
- **Mutual Strategic Autonomy:** The relationship is uniquely balanced, free from Anglo-Saxon influences in France and anti-Western sentiments in India. Moreover, after the nuclear tests in May 1998, when India declared itself a nuclear-weapon State, France was the first major power to open talks with India.
- **International Organization Access:** France's backing is vital for India's aspirations to join key bodies like the UN Security Council and the Nuclear Suppliers Group.
- **Global Power Balance:** Indo-France partnership plays a role in moderating Russian influence in Europe and Chinese influence in Asia, contributing to global stability and a balanced world order.

- **Defence Cooperation:** France holds substantial significance for India's defence sector through robust strategic partnerships and collaborations. The procurement of Rafale fighter jets from France. Additionally, France and India engage in **joint military exercises, technology transfers, and collaborations** in defence research and development.
- **Future-Oriented Collaboration:** The **Horizon 2047 agreement** outlines a **25-year roadmap** for bilateral cooperation. It emphasises collaboration in advanced technologies like supercomputing, AI, and quantum computing, which are critical for India's future development.



What are the Challenges Related to Indo-France Relations?

- **Economic Limitations:**
 - The absence of a Free Trade Agreement hinders deeper economic ties and progress on the India-EU Broad-based Trade and Investment Agreement (BTIA) has stalled, limiting further economic integration.
- **Trade and Intellectual Property Issues:**
 - Trade imbalance **favours France**, with **higher exports to India** and more often France has expressed concerns about inadequate **protection of intellectual property rights** for French businesses in India.
 - Some negotiated projects face operational challenges, such as the Jaitapur nuclear project.
- **Divergent Geopolitical Stances:**
 - Differing approaches to global issues are evident. For instance, France has openly criticised Russia's invasion of Ukraine, while India has maintained a **more neutral stance**.

What Steps Need to Be Taken to Accelerate Indo-France Relations?

- **Economic Engagement:**
 - Accelerate negotiations on the **India-EU BTIA with France** as a key supporter within the EU. Explore a bilateral economic partnership agreement as an interim measure. The **Indo-French Centre for the Promotion of Advanced Research (CEFIPRA)** model could be expanded to other sectors.
 - The Japan-India Comprehensive Economic Partnership Agreement could serve as a model.
- **Negotiating Trade and Intellectual Property:**
 - Establish a **joint working group on IP** protection and technology transfer. Create sector-specific trade facilitation mechanisms.
 - Involve private sector expertise to overcome technical and financial hurdles. The success of the **Rafale jets** deal shows how political will can overcome obstacles.
- **Managing Geopolitical Positions:**
 - Increase strategic dialogues to align perspectives on global issues and collaborate on areas of mutual interest, such as **Indo-Pacific security**.
 - The India-France-Australia trilateral initiative demonstrates the potential for aligned interests.
- **Addressing Emerging Global Tensions:**
 - Enhance **intelligence sharing and joint strategic assessments**, and develop joint crisis response mechanisms. The Quad (India, US, Japan, Australia) framework could be expanded to include France in specific areas.
 - Collaborate on **humanitarian aid and conflict resolution initiatives**.
 - Strengthen naval cooperation in the Indian Ocean against China's Assertiveness, Example: Expand joint naval exercises like **Varuna to include other regional partners**.

Conclusion

As global dynamics shift, the **India-France partnership** is poised to play a significant role in shaping a balanced and stable international order. By leveraging their **complementary strengths and addressing existing challenges**, India and France can elevate their partnership to new heights, benefiting not just both nations but contributing to global peace, security, and prosperity.

Office of NSA & India's National Security Framework

*This editorial is based on "**What it means — and could mean — to be India's National Security Advisor**" which was published in *The Indian Express* on 08/075/2024. The article brings into picture the evolving role and challenges of the National Security Advisor (NSA) in India, highlighting concerns about the restructuring of the security architecture.*

Tag: GS Paper - 2, Indian Constitution, Government Policies & Interventions, GS Paper -3, Various Security Forces & Agencies & Their Mandate

The recent appointment of a **new Additional National Security Advisor (ANSA)** and the restructuring of India's national security apparatus have raised important questions about the evolving role of the **National Security Advisor (NSA)** and the broader security framework. While the NSA now oversees a larger organization, including an ANSA and three deputy NSAs, the changes appear to shift the position towards a **more advisory and less operational role**.

The changes prompt a reevaluation of fundamental questions about the NSA's role, issues such as the balance between **internal and external security priorities** and relationship between intelligence gathering and processing. As India faces growing security challenges, reforming India's national security framework alongside restructuring the role of NSA demands a multifaceted approach.

What are the Major Functions of the office of NSA in India?

- **Strategic Advisory Function:** Principal advisor to the Prime Minister on national security matters.
 - Provides comprehensive strategic counsel on domestic, foreign, and defense policies.
 - Offers in-depth analysis and insights on complex security and intelligence issues.
- **Coordination and Integration:** The NSA receives all intelligence (**R&AW, IB, NTRO, MI, DIA, NIA**) reports and co-ordinates them to present before the Prime Minister.
 - Ensures synergy among different ministries on security-related policies and actions.
- **Crisis Management and Response:** Leads crisis management efforts during national security emergencies.

- Oversees the implementation of crisis response strategies.
- **Diplomatic Engagement and Negotiations:** Participates in high-level diplomatic negotiations on security matters.
 - Engages in track-two diplomacy for sensitive international issues.
 - Represents India in international security forums and bilateral security dialogues.
- **Institutional Leadership:** NSA acts as the secretary of the **National Security Council** that is headed by the Prime Minister.

Note: Recently, the **Appointments Committee of the Cabinet** has approved the appointment of **Shri Ajit Doval, IPS (Retired)** as **National Security Adviser** with effect from 10.06.2024. His appointment will be co-terminus with the term of the Prime Minister or until further orders, whichever is earlier. During the term of his office, he will be assigned the rank of Cabinet Minister in the Table of Precedence.

What are the Advantages and Concerns Related to the Office of NSA?

Advantages	Concerns
Centralized Strategic Oversight: Provides holistic approach to complex security challenges	Constitutional Ambiguity: Lacks explicit constitutional backing, raising questions about legitimacy and scope
Rapid Decision-Making: Direct access to PM enables quick actions in crises	Accountability Deficit: Not directly answerable to Parliament, raising transparency concerns
Inter-Agency Coordination: Bridges gaps between security and intelligence agencies	Personalization of National Security: Risk of policies being overly influenced by incumbent's personal views
Long-Term Strategic Planning: Ability to focus on foresight and long-term strategies	Civil-Military Imbalance: Can disrupt delicate balance of civil-military relations
Diplomatic Flexibility: Enables discreet, high-level diplomacy for sensitive negotiations	Coordination with State Mechanisms: Ill-defined role in federal structure can lead to conflicts

Specialized Focus: Dedicated attention to national security matters	Potential for Overreach: Broad mandate may lead to stepping into other ministries' domains
Crisis Management: Equipped to handle and coordinate responses to national crises	Risk of Politicization: Close association with PM's office may politicize security decisions

What are the Major Security Challenges that Necessitate Having an Office of NSA in India?

- **Cyber Warfare and Digital Threats:** The rapidly evolving landscape of cyber warfare poses a significant and multifaceted threat to India's national security.
 - **State-sponsored cyber attacks** targeting critical infrastructure have the potential to **cripple essential services** and disrupt daily life on a massive scale.
 - The **2020 power outage in Mumbai**, suspected to be caused by Chinese cyber attacks, serves as a stark reminder of the vulnerability of India's critical infrastructure to digital threats.
- **Cross Border Terrorism and Radicalization:** The evolving nature of **cross border terrorism and radicalization continues to pose a significant threat** to India's security landscape.
 - The rise of **lone-wolf attacks** inspired by global extremist ideologies presents a new dimension of unpredictability and complexity in counter-terrorism efforts.
 - There's also growing concern about the **potential for bioterrorism and the use of emerging technologies like drones by terrorist groups**, which could significantly amplify the impact of attacks.
 - The recent **terrorist attack in Reasi** serves as a stark reminder of the persistent and evolving threat of terrorism.
- **Border Disputes and Regional Instability:** India faces persistent challenges from border disputes, particularly with **China and Pakistan**.
 - The ongoing tensions along the **Line of Actual Control with China, exemplified by the 2020 Galwan Valley clash**, highlight the potential for sudden escalations.
 - Instability in neighboring countries, such as **Afghanistan and Myanmar**, poses risks of spillover effects including refugee crises and increased terrorist activities.

- **Space and Satellite Security:** India's growing reliance on space technology for communication, navigation, and surveillance makes satellite infrastructure a critical security concern.
 - The increasing amount of space debris threatens operational satellites.
 - The **potential militarization of space** by global powers, as demonstrated by **China's 2007 anti-satellite test**, presents new challenges for space security and international relations.
- **Maritime and Oceanic Threats:** India faces multiple challenges in the maritime domain, including piracy, terrorism, and fishing area conflict in the Indian Ocean.
 - The expansion of China's naval presence in the Indian Ocean (such as **Hambantota Port of Sri Lanka**) challenges India's maritime interests.
- **Information Warfare and Social Media Manipulation:** The **weaponization of information through social media** poses a significant threat to social cohesion and democratic processes.
 - The rise of **deepfake technology** undermines public trust in information, complicating efforts to maintain societal stability and informed decision-making.

What Measures can be Adopted to Strengthen the Office of NSA and National Security Framework in India?

- **Implement a "Whole-of-Government" National Security Database:** Develop a secure, centralized digital platform that integrates real-time information from various ministries, intelligence agencies, and military branches.
 - This system would provide the NSA and key decision-makers with a comprehensive, up-to-date view of national security issues and opportunities.
- **Create a National Security Foresight Unit:** Establish a dedicated team within the NSA's office focused on **long-term strategic planning and scenario analysis**.
 - This unit would regularly produce reports on potential future security challenges and opportunities, helping to shape proactive policies.
- **Develop an Inter-State Security Coordination Mechanism:** Establish a formal structure under the NSA for **regular consultation and coordination with state-level security officials**.
 - This would improve information sharing and policy implementation across federal and state levels, particularly for issues like border security and counter-terrorism.

- **Implement a Transparent Metrics System:** Develop a set of key performance indicators for national security outcomes, which would be regularly reviewed and **reported (in a secure manner)** to relevant government stakeholders.
 - This would enhance accountability and provide a basis for continuous improvement in national security management.
- **Establish a National Crisis Simulation Center:** Build a state-of-the-art facility for conducting regular, large-scale simulations of various security scenarios.
 - This center would allow policymakers, military leaders, and key stakeholders to practice coordinated responses to complex crises, improving overall preparedness and **identifying gaps in the current security framework**.
- **Establish a National Security Innovation Fund:** Set up a dedicated fund to invest in cutting-edge research and development of technologies crucial for national security.
 - This fund would support projects in areas such as **quantum computing, advanced materials, autonomous systems, and space-based technologies**, ensuring India stays at the forefront of technological advancements relevant to security.
- **Develop a Unified Emergency Response Network:** Create an integrated platform that connects all emergency services, including police, fire, medical, and disaster response teams across the country.
 - This network would enable rapid, coordinated responses to **both localized incidents and large-scale emergencies**, improving overall national resilience.
- **Establish a National Cognitive Warfare Center:** Create a specialized institution to counter and **develop capabilities in cognitive warfare**, focusing on protecting India's information space and societal cohesion.
 - This center would combine expertise in **psychology, data science, and strategic communications** to defend against and potentially engage in **influence operations, disinformation campaigns, and other forms of cognitive manipulation**.

■■■

Breaking India's Jobless Growth Trap

*This editorial is based on "**Welfarism is not the solution for India's job problem, skill creation is**" which was published in The Indian Express on 09/07/2024. The*

article highlights the urgent need to address India's unemployment crisis by implementing long-term job creation policies, emphasizing vocational training, wage subsidies, and basic income supplements to boost demand and create sustainable employment opportunities.

Tag: GS Paper-3, Employment, Growth & Development, Skill Development, Human Resource, GS Paper-2, Government Policies & Interventions

India's urban landscape is a canvas of ambition. Modern metropolises pulsate with economic activity, attracting a steady stream of young graduates seeking their fortunes. For countless young Indians, the **city lights represent the beacon of opportunity**. They arrive with dreams of a better life, fueled by years of education and ambition. However, these dreams are increasingly deferred by the harsh reality of urban unemployment.

India faces a critical challenge of creating **good-quality jobs**, especially for its young population. This issue has persisted across decades, with **economic growth failing to keep pace with job creation**. India needs to shift focus on creating a **future-proof workforce** equipped to navigate the demands of the evolving Indian economy. By addressing this challenge head-on, India can ensure its cities remain engines of growth and opportunity for all.

Why Is India's Economic Growth Not Corresponding with Sufficient Job Creation?

- **Paradox of High-Skill, Low-Employment Sectors:** India's economic growth has been predominantly driven by **services and capital-intensive manufacturing sectors**, which typically generate fewer jobs relative to their economic output.
 - The **IT sector**, for instance, contributes significantly to GDP but **employs only about 4.5 million people directly**.
 - This trend is further exemplified by the recent push for advanced manufacturing, such as in **semiconductors and electronics**.
 - While these industries boost economic indicators, they **often fall short in creating large-scale employment opportunities**, particularly for the less skilled workforce.
- **Premature Deindustrialization and Its Impact:** India is experiencing premature deindustrialization, where the share of manufacturing in both GDP and employment begins to decline at a **much lower level of per capita income compared to developed countries**.

- This trend, partly driven by **global competition and automation**, limits the ability of the manufacturing sector to absorb surplus labor from agriculture, traditionally a key pathway for job creation in developing economies.
- **Impact of Global Economic Trends:** India's job market is increasingly influenced by global economic trends. **Protectionist policies** in developed economies have affected India's export-oriented industries, impacting job creation in these sectors.
 - Moreover, global supply chain disruptions, **economic recession (over 4.25 lakh tech employees lost jobs in 2023)** have highlighted vulnerabilities in certain industries and their employment potential.
- **Skill Mismatch:** The rapid pace of technological change has created a significant gap between the skills demanded by the job market and those possessed by the workforce.
 - The 2015 Report on National Policy on Skill Development and Entrepreneurship had estimated that **only 4.7% of the total workforce in India had undergone formal skill training**, highlighting a severe shortage of job-ready skills.
 - Recent initiatives like **Skill India**, while ambitious, have struggled to meet targets and ensure successful job placements.
 - This mismatch **not only leads to unemployment but also underemployment**, where individuals work in roles below their qualification level or potential.
- **Informal Sector Dominance:** Over **90% of India's workforce is employed in the informal sector**, characterized by lower productivity, limited job security, and minimal social protections.
 - This prevalence of informal work not only affects job quality and worker welfare but also **hampers overall economic productivity and the ability to create sustainable, high-quality jobs**.
 - The **gig economy** and platform-based work have created new employment opportunities but also introduced job market precarity.
 - These platforms offer flexible work but often lack job security, benefits, and career growth prospects.
- **Demographic Dividend Challenge:** India adds approximately **12 million people to its workforce annually**, creating an immense pressure on job creation.
 - To absorb these new entrants and address existing unemployment, the economy needs to generate 10-12 million jobs per year.

- However, job creation has consistently fallen short of this target.
 - This failure to harness the **demographic dividend** risks turning it into a demographic burden, potentially leading to social unrest and economic instability.
- **'Missing Middle' and MSME Subsidence:** India's industrial landscape is marked by a predominance of very small firms (with less than 50 workers) and a few very large corporations, with a **conspicuous absence of mid-sized firms**.
 - This 'missing middle' phenomenon **hampers job creation, as mid-sized firms typically have the highest potential for employment generation** and scaling up.
 - The **lack of adequate growth from small to medium enterprises stunts overall job creation** in the formal sector.
 - Also, the MSME sector, initially hit by demonetization and further exacerbated by the COVID-19 pandemic, continues to struggle in its recovery efforts, hampering job growth.
- **Impact of Automation and AI:** Emerging technologies, particularly automation and artificial intelligence, are reshaping the job landscape across sectors.
 - The McKinsey Global Institute estimates that **9% of India's workforce could be displaced by automation by 2030**.
 - While these technologies create new job roles, they often require high-skill levels, potentially exacerbating unemployment among less skilled workers.
- **Mismatch Between Academia and Industry 4.0:** India's traditional education system, often fails to equip students with the critical thinking and practical skills required in the modern job market.
 - The India Skills Report found that **only 47% of Indian graduates were employable in 2019**, highlighting a significant gap between academic qualifications and job readiness.
 - This mismatch not only leads to unemployment among graduates but also **creates inefficiencies in the labor market**, where companies struggle to find suitable candidates despite a large pool of job seekers.
- **Regional Disparities in Growth and Job Creation:** Economic growth and job opportunities in India are **heavily concentrated in a few urban centers, leading to significant regional imbalances**.
 - This concentration creates migration pressures, with workers moving from less developed regions to urban areas in search of employment.

What are the Major Government Initiatives to Bridge the Employment Gap?

- **Skill Development and Training Programs:**
 - **Skill India Mission:** Launched in 2015, this flagship program aims to train millions of youth in industry-relevant skills through various schemes like **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)** and **National Skill Development Corporation (NSDC)**.
 - **Apprenticeship Initiatives:** Schemes like **Apprentice Protsahan Yojana (APY)** incentivize companies to hire apprentices, providing on-the-job training and experience for young individuals,
 - Under this Scheme **50% of prescribed stipend** paid to the apprentices is shared by the Government of India.
- **Incentivizing Job Creation:**
 - **Aatmanirbhar Bharat Rojgar Yojana (ABRY):** Introduced during the pandemic, this scheme provides wage subsidies to employers who create new jobs and retain existing ones.
 - **Production Linked Incentive (PLI) Schemes:** These schemes offer financial incentives to companies in specific sectors (**like electronics, automobiles**) to boost domestic manufacturing and create jobs.
- **Fostering Entrepreneurship and Self-Employment:**
 - **Pradhan Mantri Mudra Yojana (PMMY):** Provides microloans to aspiring entrepreneurs for starting or expanding small businesses.
 - **Stand-Up India:** This initiative aims to promote entrepreneurship among women and Scheduled Castes/Scheduled Tribes by facilitating bank loans.
- **Addressing the Informal Sector:**
 - **e-SHRAM Portal:** This online platform aims to register informal workers, improving their access to social security benefits and potentially formalizing their employment.
- **State-Specific Initiatives:**
 - **Indira Gandhi Urban Employment Guarantee Scheme- Rajasthan**

What Measures can be Adopted to Boost Job Creation in India?

- **Localized Skill Ecosystems:** Create micro-level skill development hubs aligned with **local industry needs**.
 - These hubs would offer tailored training programs based on the specific requirements of industries in each region, ensuring a direct pipeline of skilled workers to local employers.

- **Green Jobs Transition Fund:** Establish a dedicated fund to support workers **transitioning from carbon-intensive industries to green jobs**.
 - This fund would provide **retraining, relocation assistance, and temporary income support**, facilitating a smoother shift towards a sustainable economy while minimizing unemployment.
- **Gig Worker Cooperatives:** Promote the formation of worker-owned cooperatives in the gig economy. These cooperatives would **provide gig workers with better bargaining power, shared resources, and a safety net**, while still maintaining the flexibility of gig work.
- **AI Job Augmentation Program:** Implement a national program to train workers in AI-assisted job roles. Instead of viewing AI as a job destroyer, **this initiative would focus on creating new job categories that combine human skills with AI capabilities**, increasing overall productivity and employment.
- **Circular Economy Job Clusters:** Develop specialized industrial clusters focused on circular economy principles. These clusters would create jobs in **recycling, upcycling, and sustainable product design**, fostering a new sector of employment while addressing environmental concerns.
- **Micro-Manufacturing Networks:** Encourage the creation of decentralized, small-scale manufacturing units connected through digital platforms.
 - This network can be **led by MSMEs through credit guarantee schemes** that would **enable distributed production, reducing the need for large factories** while creating jobs in smaller towns and rural areas.
- **Nano-Entrepreneur Incubation Zones:** Establish specialized zones in tier-2 and tier-3 cities focused on nurturing ultra-small businesses.
 - These zones would provide shared resources, mentorship, and market linkages for **entrepreneurs starting with as few as 10-15 employees**, targeting rapid scaling to 40-50 employees within 1-2 years.
- **Precision Agriculture Employment Initiative:** Launch a nationwide program to train and employ youth in **high-tech, precision agriculture techniques**.
 - This would include drone operations for **crop monitoring, data analytics for yield optimization, and IoT-based farm management**, creating a new category of tech-savvy agricultural professionals.
- **Accelerating the Passage of DESH Bill:** Accelerating the passage of the DESH Bill, which replaces the Special Economic Zones Act, can create a flexible framework for attracting investments and generating employment.

- It facilitates the development of **specialized hub development based on regional strengths through more GIFT Cities like Gujarat's**, while enabling partnerships with economically similar cities abroad.
- Also, by integrating the **sister cities concept**, India can foster international economic cooperation, facilitating skill development, technology transfer, and market access.



Envisaging Strong Opposition

*This editorial is based on "**Friction in Parliament reflects political reality**" which was published in Hindustan Times on 09/07/2024. The article highlights a significant change in the 18th Lok Sabha with a stronger opposition and challenges in maintaining decorum amidst increased scrutiny and assertive legislative dynamics.*

Tag: GS Paper-2, Parliament, Constitutional Bodies, Indian Constitution

Recent years have seen a shift where **disruptions**, rather than meaningful discussions, dominate **parliamentary proceedings**. Critical legislations like **farm laws** were alleged to have been passed without meaningful scrutiny from a **dispirited Opposition** and the **parliamentary committee system** was largely bypassed.

A **feeble opposition** poses greater risks than a weak government which can lead to detrimental consequences. A weak opposition fails to represent the voices and demands of a significant portion of the populace who did not support the ruling party.

The presence of a strong Opposition with **234 seats** along with the recognition of the **Leader of the Opposition (LoP)** in the **Lok Sabha**, which was vacant for a decade, has significantly altered the appearance and workings of **Parliament** in **18th Lok Sabha**.

"In a democracy, the opposition is not only tolerated as constitutional, but must be maintained because it is indispensable." --- Walter Whipmann

What is the Leader of Opposition?

➤ About Opposition in Parliament:

- Parliamentary opposition is a crucial political position to check the ruling government, especially in **Westminster-based parliamentary systems**.
- The "**Official/Principal Opposition**" title is typically held by the largest party opposing the government, with its leader designated as the "**Leader of the Opposition**."

➤ Leader of Opposition (LoP)

- The leader of the **largest opposition party** having **not less than one-tenth seats** of the total strength of the **House** is recognised as the **Leader of Opposition**.
- The leader of opposition is not a Constitutional post, rather it is a statutory post.
 - The term Leader of the Opposition was defined for the first time by Parliament by enacting the **Salary and Allowances of Leaders of Opposition in Parliament Act, 1977**.
- LoP is the opposition's representative in the high-powered committees for appointment to key posts such as the **Director of Central Bureau of Investigation (CBI)**, the **Central Vigilance Commissioner** and **Chief Information Commissioner**, the Chairperson and Members of the **National Human Rights Commission**, **Chief Election Commissioner** and other **Election Commissioners** and the **Lokpal**.

Leader of the Opposition (LoP) in Westminster model of United Kingdom

- In the **Westminster model**, the LoP holds the title "**Prime Minister-in-waiting**" and forms a **shadow cabinet**.
- The **shadow cabinet** criticises government policies and offers alternative strategies, mirroring the real cabinet's functions.
- Responsibilities of LoP include **ensuring effective parliamentary functioning**, **leading debates**, **demanding accountability** from the government, and **upholding democratic norms**.

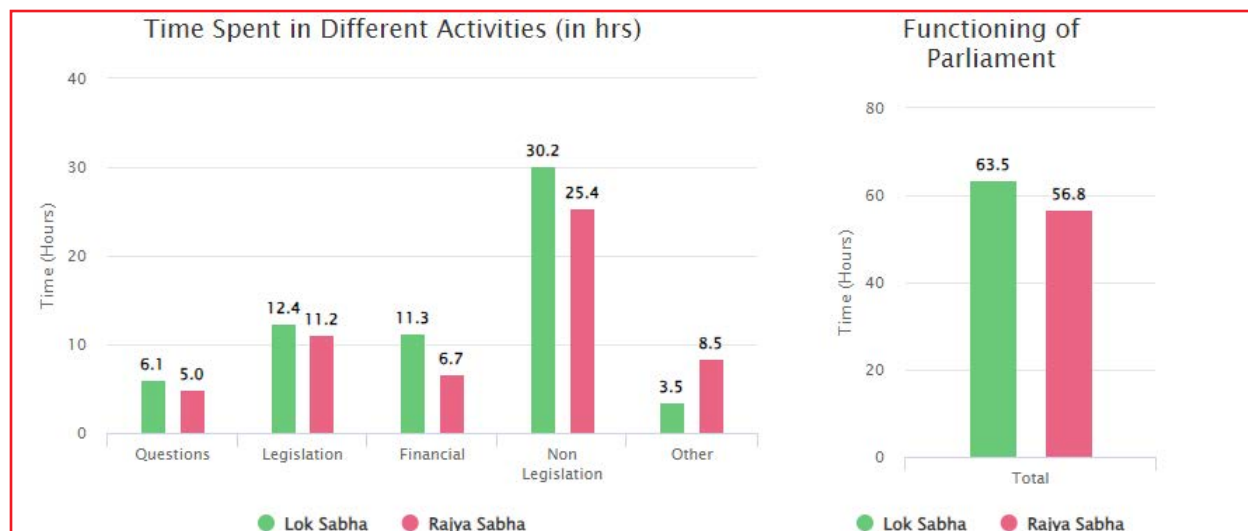
What is the Significance of Opposition in a Democracy Like India?

➤ Significant Role of Opposition:

- A **constructive opposition** can play a major role in building public opinion against erroneous policies and programmes of the incumbent government.
- The opposition's primary role involves **reacting, questioning, and scrutinizing the government's actions daily** in parliament, committees, media, and among the public.
- It ensures the government adheres to **constitutional norms** and critically examines policies and legislation proposed by the ruling party.
- In parliament, the opposition not only criticizes but also advocates for **constituency-specific needs, proposes amendments, and seeks assurances** using parliamentary procedures.

➤ For Improved Parliamentary Functioning:

- Presently, the parliamentary functioning faces several challenges which are as follows:
- **Declining Sittings:** The number of sitting days in recent Lok Sabhas has decreased significantly compared to earlier terms, with the **16th** and **17th Lok Sabhas** averaging **66** and **55 days per year**, respectively.
- **Low Productivity:** Despite more sessions in the **17th Lok Sabha**, productivity in terms of hours spent on legislative work declined sharply. For example, the **2023 Winter Session** saw **only 62 hours** of overall work and **37 hours spent on Bills**, compared to 281 hours and 125 hours in the 2019 Budget Session.



- **Declining Bill Passage:** The number of Bills passed by the **17th Lok Sabha** showed a gradual decline over its 15 sessions, from a peak of 35 Bills in the 2019 Budget Session to just six in the 2023 Budget Session.

- **Discussion Time:** More than a **third of the Bills** passed in this Lok Sabha underwent less than an hour of discussion, highlighting limited scrutiny.
- **Declining role of Parliamentary Committees:** In the **17th Lok Sabha**, only **16%** of Bills introduced in Parliament were referred to committees for detailed scrutiny, which is low when compared to earlier Lok Sabhas.
- Strong opposition (with more representation in Parliament) will have **equal stake in ensuring better productivity** of the Parliament and addressing above-mentioned challenges.

What are Present Challenges with Opposition?

- **Numerical Disadvantage:**
 - Many opposition parties face the challenge of **lacking sufficient numerical strength** in parliament compared to the ruling party or coalition.
 - **For example**, the **16th and 17th Lok Sabhas** had no recognised Leader of Opposition as no party fulfilled the 10% criteria .
 - This affects their ability to influence **legislative outcomes, secure committee memberships, and challenge government** policies effectively.
 - However, this scenario seems changed in **18th Lok Sabha** but representation of regional parties upto the number of **voicing regional aspirations** is still an issue.
- **Fragmentation and Ideological Diversity:**
 - The opposition in India has been **fragmented and poorly organised** which has led to **absence of a common minimum programme** to be raised in and outside the parliament.
 - **Internal rivalries and lack of cohesion** among opposition leaders can undermine their collective effectiveness in challenging the ruling party.
 - Moreover, Indian opposition parties are often fragmented due to **diverse ideologies, regional interests, and agendas** which can lead to difficulty in presenting a **cohesive opposition narrative** and **coordinating unified strategies** against the government.
- **Prevalence of Vindictive Politics:**
 - It has been alleged that the ruling party's control over **state institutions**, including **law enforcement agencies, regulatory bodies, and electoral machinery**, poses challenges for opposition parties.
 - This can lead to allegations of biased enforcement, electoral malpractices, and misuse of state power to undermine opposition activities.

- **For instance**, according to a petition filed by political parties in the Supreme Court, around **95%** of political leaders investigated by the **Central Bureau of Investigation (CBI)** and **Directorate of Enforcement (ED)** are opposition leaders.

➤ **Financial and Organizational Constraints:**

- **Opposition parties**, especially smaller ones, often struggle with **limited financial resources and organizational capacity**.
- **For example**, political parties that secured **at least 1% of the votes polled** in the recent General or State Assembly elections were eligible to take donations through **electoral bonds** (however, this has been declared unconstitutional by the **Supreme Court**)
- This hampers their ability to **mobilize grassroots support, conduct effective electoral campaigns, and sustain political activities** throughout the electoral cycle.

➤ **Limited Access to Media and Public Platforms:**

- The ruling party typically enjoys greater access to mainstream media and government-controlled platforms for communication.
- Opposition parties may find it **challenging to disseminate their messages, counter government narratives, and gain equal visibility in public discourse**.

➤ **Legislative and Procedural Hurdles:**

- Opposition parties often face procedural hurdles in parliament, such as **limited speaking time, curtailed debate opportunities, and dismissal of opposition motions**.
- This restricts their ability to **scrutinize legislation, propose amendments, and hold the government accountable effectively**.

Ways Forward:

- **Building Alliances:** **Strengthening alliances** by opposition parties to collectively increase numerical strength and present a unified front against the ruling party or coalition can help in **voicing concerns of the general public**.
- **Empowering Parliamentary Oversight:** Strengthen parliamentary oversight mechanisms by actively **participating in parliamentary committees, debates, and legislative scrutiny**.
- **Enhancing Organizational Capacity:** Focusing on building robust **organizational structures, enhancing outreach capabilities, and improving grassroots connect**.

- **Equal Media Coverage:** Providing equal coverage by **State owned media channels** such as Doordarshan and All India Radio for political campaigns and advertising.
- **Utilizing Digital and Alternative Media:** Embrace digital platforms and alternative media channels to reach a wider audience with opposition messages.
- **Engaging with Public Opinion:** Prioritize engagement with public opinion through regular interactions, town hall meetings, and public consultations.
- **Advocating Electoral Reforms:** Advocate for electoral reforms that promote transparency, fairness, and equitable access to electoral processes.
 - Reforms such as **State funding of elections** as recommended by **Indrajit Gupta Committee** would provide a level playing field for the political parties.



India's Multi-alignment in Contemporary Geopolitics

*This editorial is based on “**Message from Moscow: India-Russia relationship is not in ‘terminal decline’**” which was published in The Indian Express on 11/072024. The article highlights India’s nuanced multi-alignment strategy, balancing relations with Russia amid global geopolitical challenges, emphasizing diplomatic finesse, economic cooperation, and strategic engagement to reinforce bilateral resilience and navigate international complexities effectively.*

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

Indian Prime Minister’s recent visit to Russia (**22nd India-Russia Annual Summit**) showcased India’s **adept multi-alignment strategy**. While maintaining warm ties with Russia, including agreements on boosting trade and cooperation on various fronts, India also addressed concerns about the **Ukraine war** and the need for peaceful resolution. This visit highlights India’s ability to navigate complex geopolitical situations and maintain strong relationships with major powers despite their differences.

However, the **trade imbalance with Russia** and potential limitations in military cooperation due to sanctions requires India to find multifaceted solutions. To ensure the long-term viability of its **multi-alignment approach**, India will need to carefully balance its relationships with various powers and address these emerging issues.

How is India Maintaining a Multi-Alignment Stance in Global Geopolitics?

- **Balancing Russia and the West:** India’s relationship with Russia and the West exemplifies its multi-alignment approach.
 - Despite pressure from Western allies, India has maintained its strategic partnership with Russia, as evidenced by the Indian Prime Minister’s recent visit to Moscow.
 - Simultaneously, India has strengthened its ties with the **United States through Strategic Partnership**.
 - This delicate balancing act allows India to leverage its historical ties with Russia while also benefiting from technological and strategic partnerships with Western powers.
- **African Union Inclusion in G20:** **India’s G20 Presidency 2023** marked a significant diplomatic achievement, showcasing its ability to **bridge divides in a fractured global landscape**.
 - A major highlight was India’s successful push for the **African Union’s permanent membership in the G20**, elevating the representation of the Global South.
 - This move demonstrated India’s commitment to **reforming global governance structures and its role as a voice for developing nations**, while also strengthening its ties with African countries.
 - The **New Delhi Leaders’ Declaration**, achieved glory despite geopolitical tensions, further underscored India’s diplomatic prowess in fostering consensus on critical global issues.
- **Navigating the Russia-Ukraine Conflict** India’s stance on the Russia-Ukraine conflict exemplifies its nuanced diplomacy.
 - While maintaining its historic ties with Russia, including **continued oil purchases at discounted rates**, India has also expressed concern over the conflict.
 - The Indian Prime Minister’s statement to the Russian President that “**today’s era is not of war**” **gained global attention**.
 - Also, the Indian Prime Minister of India met the President of Ukraine during the **G7 summit in Italy**.
 - This balanced approach allows India to maintain its strategic autonomy while positioning itself as a **potential mediator in global conflicts**.
- **Balanced Approach to the Israel-Hamas Conflict:** India’s response to the Israel-Hamas conflict exemplifies its nuanced multi-alignment approach in foreign policy.

- While swiftly condemning the **7th October, 2023 Hamas attack** and expressing solidarity with Israel, India has simultaneously called for **de-escalation, dialogue, and a return to diplomacy**.
- Maintaining its **long-standing support for a two-state solution**, India continues to advocate for an **independent Palestinian state** alongside Israel.
- Through this approach, India manages to maintain its strategic partnership with Israel, uphold support for the Palestinian cause, reinforce its anti-terrorism stance, and position itself as a **responsible global player** capable of navigating complex geopolitical issues.
- **Quad Engagement and Indo-Pacific Strategy:** India's active participation in the **Quadrilateral Security Dialogue (Quad)** with the US, Japan, and Australia represents a key aspect of its Indo-Pacific strategy.
 - Concurrently, India maintains its involvement in other regional forums like the **Shanghai Cooperation Organisation (SCO)** and **BRICS**, showcasing its ability to engage with seemingly opposing blocs to further its interests in the Indo-Pacific region.
- **Middle East Diplomacy:** India's involvement in the **I2U2 group (India, Israel, UAE, USA)** marks a new chapter in its Middle East diplomacy.
 - This quadrilateral economic forum aims to leverage private sector capital and expertise to modernize infrastructure, advance low carbon development, and improve public health.
 - Alongside this, India continues to **balance its relationships with Iran (Chabahar Port development)** and **Saudi Arabia**, demonstrating its ability to navigate complex regional dynamics.
- **Strategic Autonomy in Defense Acquisitions** India's defense procurement strategy epitomizes its multi-alignment approach.
 - The country has diversified its defense imports, acquiring **S-400 missile systems from Russia**, **Rafale jets from France**, and **MQ-9B drones from the US**.
 - Simultaneously, India is pushing for indigenous development through the **"Atmanirbhar Bharat" (Self-Reliant India) initiative in defense**, as seen in the production of the **Tejas fighter jets** and the development of indigenous aircraft carriers like **INS Vikrant**.
- **Climate Leadership and Energy Partnerships:** India has positioned itself as a leader in climate action while balancing its development needs.
 - The **International Solar Alliance**, spearheaded by India, now has over 100 member countries.

- India's ambitious renewable energy targets and the recent launch of the **Global Biofuels Alliance at the G20 summit** showcase its commitment to sustainable development.
- Simultaneously, India continues to **engage with multiple partners for its energy security, including oil imports from Russia** and nuclear cooperation with countries like France and the US.
- **Space Diplomacy and Technological Cooperation** India's space program exemplifies its diverse international cooperation.
 - The **successful Chandrayaan-3 lunar mission** not only demonstrated India's technological capabilities but also its collaborative approach, with **NASA's Deep Space Network** providing support.
 - India is also part of the **Artemis Accords**, a US-led initiative for lunar exploration, while maintaining **space cooperation with Russia through programs like Gaganyaan**.
 - This multifaceted space diplomacy allows India to benefit from various partnerships while asserting its position as a major space power.
- **Vaccine Diplomacy and Health Partnerships:** India's response to the **Covid-19 pandemic** through its **Vaccine Maitri initiative** showcased its capacity as a global health partner.
 - By supplying vaccines to numerous countries, including both Western nations and Global South partners, **India reinforced its image as the "pharmacy of the world"**.
 - This was balanced with meeting domestic vaccine needs and collaborating on vaccine development with multiple countries, **including the US (Novavax) and Russia (Sputnik V)**.

What are the Major Challenges Related to India's Multi Alignment Approach?

- **Balancing Conflicting Interests:** One of the primary challenges is maintaining a delicate balance between conflicting interests of various partners.
 - For instance, India's continued oil purchases from Russia amid the Ukraine conflict have **strained its relations with Western allies, particularly the EU**.
 - This balancing act becomes increasingly difficult as geopolitical tensions rise, forcing India to make tough choices that may disappoint one partner or another.
- **Responding to Regional Power Dynamics:** India's multi-alignment approach is constantly **tested by shifting regional power dynamics**, particularly in its neighborhood.

- Balancing relations with countries like **Nepal, Sri Lanka, and the Maldives**, where China has made significant inroads, requires careful diplomacy.
- The **recent strain in India-Maldives relations** following the pro-China stance of the new Maldivian government exemplifies this challenge.
- **Reliability Concerns:** India's multi-alignment strategy may lead to perceptions of unreliability among its partners.
 - For example, India's withdrawal from the **Regional Comprehensive Economic Partnership (RCEP)** in 2019 raised questions about its commitment to economic integration initiatives.
 - Similarly, its stance on issues like **data localization and e-commerce regulations** has sometimes put it at odds with the US and other Western partners, potentially impacting its image as a reliable strategic ally.
- **Navigating Economic Pressures:** Economic interdependence can limit India's ability to maintain true strategic autonomy.
 - The **threat of secondary sanctions from the US** over dealings with Russia or Iran puts India in a difficult position, potentially forcing it to choose between economic interests and strategic partnerships.
 - The challenge of reducing dependence on Chinese imports while seeking to maintain economic engagement highlights the complexities of economic multi-alignment.
- **Technological and Strategic Autonomy:** Maintaining technological independence while benefiting from partnerships is a major challenge.
 - India's participation in initiatives like the **Quad's critical and emerging technology working group** must be balanced with its own technological development goals.
 - The debate over **5G technology and the exclusion of Chinese firms like Huawei** illustrates the difficulty in balancing security concerns with technological advancement.
- **Defense Cooperation and Interoperability:** Procuring defense equipment from diverse sources (like S-400 systems from Russia and P-8I aircraft from the US) **raises issues of interoperability** and may **complicate joint military exercises** and operations with various partners.
 - It also risks running afoul of partner countries' sanctions or export control regimes, as seen with the **potential CAATSA sanctions** over the S-400 purchase.

- **Climate Action vs. Development Needs:** India's commitment to climate action (like the International Solar Alliance) often conflicts with its development needs and energy security concerns.
 - Balancing **ambitious climate goals with continued reliance on coal and oil imports** presents a significant challenge in maintaining credibility across different international climate forums.
- **Diaspora Dynamics:** India's large and influential diaspora, while an asset, can also complicate its multi-alignment strategy.
 - For example, **balancing the interests of the Indian diaspora in the Gulf countries (recent release of navy veterans from Qatar)** with India's growing ties with Israel requires careful diplomacy.
 - Similarly, the Indian diaspora's influence in countries like Canada and the UK (like the **recent escalation of Khalistan Movement**) can sometimes create diplomatic pressures that conflict with India's broader foreign policy objectives.
- **Non-Traditional Security Challenges:** Addressing non-traditional security issues like terrorism, cybersecurity, and pandemics requires India to cooperate with various, sometimes competing, international partners.
 - For instance, **counter-terrorism cooperation with the US** might conflict with maintaining cordial relations with countries like Iran or Turkey.

What Strategies can India Implement to Achieve More Sustainable Diplomacy?

- **Adaptive Strategic Frameworks:** Develop flexible, **scenario-based strategic frameworks** that can quickly adapt to changing global dynamics.
 - This could involve creating a **multi-tiered engagement model** where relationships are categorized based on shared interests, values, and strategic importance, allowing for nuanced responses to different international situations.
- **Enhanced Inter-ministerial Coordination:** Establish a more robust inter-ministerial coordination mechanism, perhaps a '**Diplomatic Strategy Group**', that brings together representatives from various ministries (**External Affairs, Defense, Commerce, Science & Technology, etc.**) to ensure coherence in India's international engagements across different domains.
- **Specialized Diplomatic Cadres:** Develop specialized diplomatic cadres focused on emerging areas like **tech diplomacy, climate diplomacy, and health diplomacy**.

- These experts can navigate the complex intersections of these fields with geopolitics, ensuring more informed and nuanced engagement in these crucial areas.
- **Leveraging Diaspora Networks Strategically:** Create a structured program to engage the Indian diaspora in diplomatic efforts. 4
 - This could include establishing a '**Diaspora Diplomacy Council**' that leverages the expertise and networks of overseas Indians to enhance India's soft power and economic diplomacy.
- **Regional Engagement Platforms:** Initiate regional dialogue platforms that bring together diverse stakeholders from neighboring countries.
 - These forums could focus on shared challenges like **climate change, water security, or regional economic integration**, positioning India as a constructive regional leader.
- **Tiered Economic Partnership Model:** Develop a tiered economic partnership model that allows for **varying levels of economic integration** with different partners.
 - This could **help balance protectionist needs with the imperative of global economic engagement**, offering flexibility in trade negotiations.
- **Cultural Diplomacy 2.0:** Launch a 'Cultural Diplomacy 2.0' initiative that goes beyond traditional cultural exchanges.
 - This could involve collaborative projects in areas like **digital art, virtual reality experiences of Indian heritage, or global esports tournaments**, appealing to younger, tech-savvy global audiences.
- **Sustainable Development Diplomacy:** Position India as a leader in sustainable development diplomacy by initiating a '**Global South Sustainability Alliance**'.
 - This platform could focus on sharing best practices, technologies, and resources for sustainable development among developing nations, enhancing India's soft power and leadership in this crucial area.
- **Track 1.5 Diplomacy Enhancement:** Strengthen **Track 1.5** diplomacy efforts by creating a network of **think tanks, academic institutions, sport athletes, industry experts** that can engage in informal diplomacy.
 - This network can serve as a testing ground for new diplomatic ideas and a buffer for sensitive discussions.
 - **Cricket diplomacy** could pave the way for India to engage with Western countries through its **charismatic cricket professionals as coaches**.
- **Digital Sovereignty Initiative:** Launch a '**Digital Sovereignty Initiative**' that focuses on developing indigenous digital infrastructure and standards for developing countries.
 - This could help India navigate the challenges of technological fragmentation while positioning itself as a key player in **shaping global digital norms**.
- **Multilateral Reform Leadership:** Take a leadership role in reforming multilateral institutions like **UNSC** by proposing innovative governance models.
 - This could involve advocating for **more inclusive decision-making processes or suggesting new frameworks** for global cooperation that reflect the current multipolar world order.
- **Space-Based Diplomatic Missions:** Propose the concept of space-based diplomatic missions or '**orbital embassies**'.
 - This futuristic approach could symbolize India's commitment to space exploration while creating a unique platform for international cooperation.
- **Asymmetric Engagement Strategy:** Develop an "Asymmetric Engagement Strategy" that allows India to maintain different levels and types of engagement with various partners without compromising its core interests.
 - This could involve **creating a sophisticated matrix of engagement levels** across different domains (economic, strategic, cultural) with each international partner.

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India's Renewable Energy Transition

This editorial is based on "[A blueprint for RE ambitions](#)" which was published in The Financial Express on 11/07/2024. The article highlights India's urgent need for a smooth transition to renewable energy, emphasizing the importance of addressing challenges in land acquisition, infrastructure, policy consistency, grid integration, financing, and domestic manufacturing to meet ambitious clean energy targets.

Tag: GS Paper - 2, GS Paper - 3, Renewable Energy, Government Policies & Interventions

India is embarking on an ambitious journey to expand its **renewable energy (RE) capacity**, aiming for **500 GW by 2030 and potentially 1 TW by 2035**. This push is driven by the need to meet growing energy demands while transitioning away from fossil fuels to combat climate

change. The country has made significant progress, with an installed **RE capacity of 191 GW** as of May 2024, including **85 GW of solar power**. This growth has been fueled by government initiatives like the **National Solar Mission**.

However, achieving these lofty goals faces several challenges. These include **land acquisition issues, inadequate power evacuation infrastructure, inconsistent policies, grid integration problems**, and the need for massive investments of **USD 350-400 billion** over the next decade. India needs to work diligently and strategically in this regard to realize its renewable energy ambitions and meet its climate commitments.

What Factors are Driving India's Renewable Energy Transition?

- **Energy Security and Independence:** India imports over **80% of its oil needs**, making it vulnerable to global price fluctuations and geopolitical tensions.
 - Renewable energy offers a path to reduce this dependence. For instance, India's solar capacity growth to **85 GW in 2023** has already started reducing fossil fuel imports.
- **Economic Competitiveness:** Renewable energy, particularly solar, has become **cost-competitive with conventional sources**.
 - For instance, in **December 2020**, Gujarat Urja Vikas Nigam's (GUVNL) (Phase XI) auction for 500 MW of solar projects set a record for the lowest tariff of **₹1.99 (~USD0.025)/kWh**.
 - This economic advantage is driving both public and private sector investments in renewables.
- **Climate Change Commitments:** At COP26, India committed to reducing projected carbon emissions by **1 billion tonnes by 2030 and achieving net-zero emissions by 2070**.
 - These commitments necessitate a rapid transition to renewables. The target of 500 GW non-fossil fuel capacity by 2030 is a direct outcome of these climate goals.
- **Job Creation Potential:** The renewable sector offers significant employment opportunities.
 - According to a CEEW-NRDC report, India can potentially create about **3.4 million jobs (short and long term) by installing 238 GW solar and 101 GW new wind capacity by 2030**
 - The government's focus on domestic manufacturing through initiatives like the **PLI scheme for solar modules** aims to capitalize on this job creation potential.

- **International Cooperation and Pressure:** India's leadership in the **International Solar Alliance** and partnerships like the **Global Biofuel Alliance** and **India-US Clean Energy and Climate Partnership** have accelerated knowledge sharing and technology transfer.
 - These collaborations also bring international attention and pressure to meet stated goals.
- **Water Scarcity:** Thermal power plants require significant water resources. In water-stressed regions, renewables offer a more sustainable alternative.
 - For example, **Maharashtra's push for solar power** is partly driven by recurring droughts affecting thermal power generation.
- **Investor Pressure and ESG Considerations:** Global investors are increasingly prioritizing **Environmental, Social, and Governance (ESG)** factors.
 - This has pushed Indian companies and the government to accelerate renewable energy adoption.
 - For instance, India issued **USD 6.11 billion of green bonds** in 11 months of 2021. It was the strongest issue since the first issue in 2015, reflecting this trend.

What are the Major Roadblocks to India's Renewable Energy Transition?

- **Land Acquisition Hurdles:** The scale of land required for RE projects is immense. For instance, **a 1 GW solar plant needs about 2,000 hectares**.
 - Recent conflicts include protests in **Rajasthan's Jaisalmer district** against large solar parks encroaching on grazing lands.
 - These issues highlight the complex interplay between development needs and local community rights.
- **Stranded Asset Risk and Threat to Coal Sector Workers:** India has significant investments in coal-based power plants.
 - India has **8 stranded coal-based thermal power plants**, as of April 2023, according to Institute for Energy Economics and Financial Analysis (IEEFA).
 - The rapid RE transition could lead to an increase in the number of stranded assets, **creating economic and social challenges**, particularly in coal-dependent regions like **Jharkhand and Chhattisgarh**.
 - Also, the RE sector demands different skill sets, creating a mismatch with the existing workforce in conventional energy sectors like coal.

- **Coal India Limited** alone employs over **270,000 people**.
- **Grid Integration and Stability Issues:** As RE penetration increases, grid stability becomes a major concern.
 - Example, In Tamil Nadu, early onset of wind power generation has faced challenges as **Tangedco (Tamil Nadu Generation and Distribution Corporation)** curtailed production to ensure grid stability
 - The implementation of forecasting and scheduling regulations by states like **Gujarat and Tamil Nadu** is a step towards addressing this, but challenges persist.
- **Intermittency and Storage Challenges:** The variable nature of RE sources necessitates large-scale storage solutions.
 - Recent study indicates that by 2030, India would need **38 GW of four-hour battery storage and 9 GW of thermal balancing power projects** for the cost-efficient and reliable integration of 450 GW of renewables.
 - The first large-scale **battery storage tender (1000 MWh) by Solar Energy Corporation of India in 2021** is a step forward, but scaling up remains a challenge.
- **E-waste and End-of-Life Management:** With the massive deployment of solar panels and batteries, e-waste management is becoming a critical issue.
 - According to the **International Renewable Energy Agency**, India is projected to become the **fourth-largest producer of solar panel waste by 2050**.
 - India **currently lacks a comprehensive policy for solar panel recycling**, though MNRE has drafted rules in 2022.
 - The absence of large-scale recycling facilities poses environmental risks.
- **Geopolitical Resource Dependencies:** India's RE transition heavily depends on critical minerals like lithium, cobalt, and rare earth elements, predominantly controlled by a few countries. For instance:
 - China processes **80% of the world's rare earth elements**.
 - The **Democratic Republic of Congo** supplies **70% of global 'mined' cobalt**.
 - This dependency creates **vulnerabilities in India's RE supply chain**, potentially impacting national security and economic sovereignty.
- **Biofuel Land Use Dilemma:** India's ambitious biofuel targets (**20% ethanol blending by 2025**) compete with food production.

- For example, the **push for ethanol production** has led to increased sugarcane cultivation, which is water-intensive.
- This creates a **complex food-water-energy nexus challenge**, particularly in water-stressed states like Maharashtra.
- **Climate Change Impacts on RE Infrastructure:** Ironically, climate change itself poses risks to RE infrastructure:
 - **Increased cyclone frequency** in coastal areas threatens offshore wind projects.
 - Changing precipitation patterns affect hydropower potential, as seen in the **2021 Uttarakhand floods** damaging multiple hydro projects.
- **Urban Planning and RE Integration:** India's rapid urbanization presents unique challenges for RE integration. It is exemplified by **lack of uniform building codes for rooftop solar across cities**.
 - Limited open spaces in dense urban areas restrict large-scale RE projects, as seen in **Mumbai's struggles with solar adoption**.

What are the Major Government Initiatives Related to Renewable Energy Transition?

- **Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA)**
- **Green Energy Corridor (GEC)**
- **National Smart Grid Mission (NSGM) and Smart Meter National Programme**
- **Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME)**
- **International Solar Alliance (ISA)**
- **Surya Ghar Muft Bijli Yojana**

What Measures can India Adopt to Ensure a Smoother Transition to Renewable Energy?

- **Floating Solar Revolution:** India can harness its vast aquatic spaces by developing large-scale **floating solar projects** on reservoirs, lakes, and coastal areas.
 - This approach would preserve valuable land while reducing water evaporation and algae growth.
 - Integration with **existing hydroelectric infrastructure could create combined power generation systems**, maximizing energy output.
 - By focusing on floating solar, India can significantly boost its RE capacity while addressing land scarcity issues.
- **Land Leasing Revolution:** To address land acquisition hurdles, India could implement a "Solar Farming" model:
 - Introduce **long-term land leasing programs** where farmers retain ownership while earning steady income from RE projects

- Also, develop **agrivoltaic systems** that allow agricultural activities beneath elevated solar panels.
- **Renewable Energy Special Economic Zones (RE-SEZs):** Establishing dedicated zones with streamlined regulations and **incentives for RE manufacturing** and R&D can accelerate India's transition.
 - These RE-SEZs would create **end-to-end RE ecosystems**, from raw material processing to finished product assembly.
 - By attracting global RE companies and fostering domestic innovation hubs, India can **position itself as a manufacturing powerhouse in the RE sector**.
 - This approach would not only boost the economy but also ensure a robust domestic supply chain for RE technologies.
- **Workforce Transition From Coal to Clean Energy:** Launch a **"Green Collar"** initiative to retrain coal sector workers for RE jobs
 - Establish **RE manufacturing hubs in coal-dependent regions** to create alternative employment.
 - Implement a **phased transition plan with clear timelines** to allow for gradual workforce adaptation
- **Blockchain-Powered Decentralized Energy Trading:** Implementing peer-to-peer energy trading platforms using blockchain technology can revolutionize India's energy market.
 - This system would **enable prosumers to sell excess energy directly to neighbors or the grid**, increasing overall grid flexibility.
 - By incentivizing small-scale RE adoption, this approach can accelerate distributed energy resource deployment across the country.
 - The decentralized nature of this system would also enhance grid resilience and reduce transmission losses.
- **Vertical Axis Wind Turbines (VAWTs) for Urban Environments:** Promoting the adoption of **VAWTs in cities** can unlock urban wind energy potential.
 - These turbines are more suitable for **turbulent urban wind patterns** and can be integrated into existing urban infrastructure like buildings and bridges.
 - VAWTs also **reduce the visual impact and noise pollution** associated with traditional **wind turbines**, making them more acceptable in densely populated areas.
 - This urban wind energy strategy can complement rooftop solar installations, diversifying India's urban RE mix.
- **Green Hydrogen Highways:** India can create a network of green hydrogen production and distribution centers along major transportation corridors.
 - These **"Green Hydrogen Highways"** would **use excess renewable energy to produce hydrogen**, which can then fuel long-haul trucks and buses.
 - The system could include hydrogen filling stations, storage facilities, and dedicated hydrogen-powered public transport.
 - This initiative would address the challenge of storing renewable energy while simultaneously **decarbonizing the transportation sector**.
- **Solar Thermal Oases:** Developing large-scale concentrated solar power (CSP) plants in arid regions, integrated with greenhouse agriculture, could create **"Solar Thermal Oases"**.
 - These facilities would **use excess heat from CSP for desalination**, providing water for crops grown in adjacent greenhouses.
 - The controlled environment of the greenhouses would **allow for year-round cultivation of high-value crops**.
 - This synergistic approach addresses energy, water, and food security challenges simultaneously.
- **Waste-to-Energy Circular Parks:** Creating integrated waste management and energy production facilities, or **"Waste-to-Energy Circular Parks"**, could revolutionize both sectors.
 - These parks would combine various technologies like **anaerobic digestion, gasification, and pyrolysis** to handle different waste streams.
 - The energy produced would power the facility itself and feed into the grid, while byproducts like **biochar could be used in agriculture**.
 - This holistic approach **turns waste management from a cost center into an energy and resource generator**.

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Demographic Disaster to Demographic Dividend

This editorial is based on "[India's demographic journey of hits and misses](#)" which was published in The Hindu on 11/07/2024. This article discusses how India's advancement in SDGs hinges on the welfare of its populace, emphasizing the need to comprehend population dynamics and tackle associated challenges effectively.

Tag: GS Paper - 2, Human Resource, Skill Development, Health, Poverty, Education, GS Paper-3, Employment, Mobilization of resources, Inclusive Growth

As **World Population Day** is observed on **July 11**, India reflects on its demographic evolution since 1989 when the UN established the day, spurred by several challenges and disparities.

American biologist **Paul Ralph Ehrlich** in his book '**The Population Bomb (1968)**', raised serious questions about India's ability to feed its population in the years to come, however the **Green Revolution** changed the scenario altogether. Despite earlier fears of overpopulation leading to widespread hardship, the nation's progress towards the **The Sustainable Development Goals (SDGs)** by 2030 on understanding and managing its **demographic shifts**, to ensure a sustainable future is notable.

India possesses a **dynamic young demography** capable of making substantial national and global impacts if adequately educated, skilled, health and employed. Yet, there is apprehension that the nation may not fully capitalize on this demographic shift.

What is meant by Demographic Dividend?

- As per definition of the **United Nations Population Fund (UNFPA)**, **Demographic dividend** is "the economic growth potential that can result from shifts in a population's age structure, mainly when the share of the **working-age population** (15 to 64) is larger than the **non-working-age** share of the population (14 and younger, and 65 and older)".
- India entered the **demographic dividend opportunity window** in **2005-06** and will remain there till **2055-56**.
- **Around 68%** of the population falls between the ages of **15 and 64**, and **26%** falls within the **10-24 age group**, making India one of the youngest countries globally.
 - It is notable that India has a **relatively young population** with a **median age of 28.4 years**.
- Also, India will have **1.04B working age persons by 2030**. Correspondingly, India's **dependency ratio** would be the lowest in its history by 2030 at **31.2%**.
- With about **24.3%** of the incremental global workforce over the next decade India would remain the largest provider of human resources in the world.

How is India Unleashing its Demographic Dividend?

- **Youth Centric Policy:** India has **more than 50%** of its population **below the age of 25** and **more than 65%** below the age of 35.

- To cater the needs and aspirations of the youth Government of India has come up with several schemes like **National Youth Policy-2014**, **Pradhan Mantri Kaushal Vikas Yojana**, **National Skill Development Corporation**, **YUVA: Prime Minister's Scheme For Mentoring Young Authors**, **Rashtriya Yuva Sashaktikaran Karyakram Scheme** etc.

- **Investing in Education:** India's overall literacy rate of **74.04%** which is below the world average of **86.3%**.

- In order to address the issue of low literacy several government schemes like **Sarva Shiksha Abhiyan (SSA)**, **Right to Education (RTE) Act**, **Rashtriya Madhyamik Shiksha Abhiyan**, **Rashtriya Uchhatar Shiksha Abhiyan (RUSA)**, **Mid Day Meal Scheme**, **Beti Bachao Beti Padhao**, **PM SHRI Schools** etc. have been implemented by the government.

- **Skilled Workforce:** According to **India Graduate Skill Index 2023**, consistently reveal that roughly **45-50%** of Indian fresh graduates are deemed employable by industry standards.

- So, for skilling and upskilling people government has come up with schemes and initiatives like **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**, **Rozgar Mela**, **Pradhan Mantri Kaushal Kendras (PMKK)**, **Udaan**, **Apprenticeship Training under the Apprentices Act, 1961**, **Vocational Training Programme For Women**, **Skill Loan Scheme**, **Indian Institute of Skills (IISs)**, **SANKALP**.

- **Ensuring Healthy Population:** Healthy population and better healthcare facilities ensures better utilisation of **human capital** and also reduces the burden on the healthcare system.

- To ensure good health care facilities Government has invested in building world class hospitals like **AIIMS** along with schemes like **Aayushman Bharat Yojana**, **Digital Health Mission**, **Mission Indradhanush (MI)**, **Janani Suraksha Yojana**, **Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)**, **Mission Parivar Vikas**.

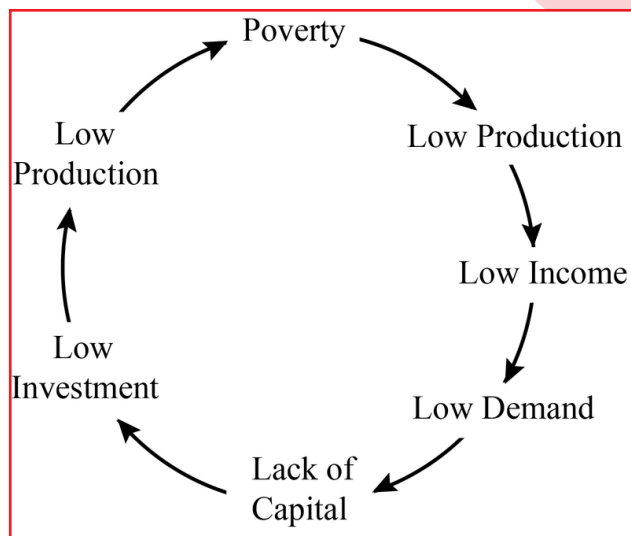
- **Building Infrastructure:** Infrastructure which encompasses components like **roads, ports, airports, bridges, railways, water supply, power, telecommunications** etc. forms the foundation for economic growth, comprising physical and structural systems crucial for sustainable development of demography.

- India's **capital expenditure** as a percentage of GDP increased from **1.7%** in 2014 to nearly **2.9%** in 2022-23.

- Schemes like **Digital India programme**, etc. to boost digital infrastructure, and **PM Gati Shakti Scheme**, **Bharatmala scheme** for building physical infrastructure and **PM SHRI**, **Har Ghar Nal Yojana** etc for boosting social infrastructure have been launched by the government.

What are the Factors that Can Lead to Demographic Disaster?

- **High Unemployment Rate:** The increase in population is accompanied by a **growth in the labor force**, resulting in a significant portion of the population experiencing **unemployment**.
 - As per the **India Employment Report 2024**, India's working population increased from **61% in 2011 to 64% in 2021**, and it is projected to reach **65 % in 2036**. On the other hand, the percentage of youth involved in economic activities declined to **37% in 2022**.
- **Aging Population:** According to the **India Ageing Report 2023** of **United Nations Population Fund**, India's elderly population is growing rapidly, with a **decadal growth rate of 41%** and by 2050, over **20% of India's population** will be elderly.
 - Aging population faces several challenges related to **healthcare, social and financial security**.



- **Resource Scarcity-** The rapid growth of the population has a negative effect on resource usage and its access.
 - **For example-** Cities like **Delhi and Bangalore** and the State of **Rajasthan** have been facing severe water stress.
 - Also, as per a recent survey of the **Central Water Commission**, India's **per capita water availability** has dropped from **1,816 cubic metres in 2001** to approximately **1,486 cubic metres in 2024**, leading the country towards water stress.

- **Low Living Standard:** Rapid population growth makes it more difficult for **low-income and lower-middle-income** countries to afford the increase in public expenditures on social sectors which negatively impacts a minimum quality of life for all citizens.
 - Moreover, the **vicious cycle of poverty** undermines the demographic dividend by limiting access to education, healthcare, and job opportunities.
 - High fertility rates and social inequality increase economic burdens, while poor infrastructure and economic instability stifle growth.
- **Unplanned Urbanisation:** It comes with issues such as **overburdened infrastructure, traffic congestion and pollution, slum growth on the outskirts of cities, housing challenges and environmental degradation**.
 - India's urban population is expected to grow from **410 million in 2014 to 814 million by 2050**. India is projected to add **4 new megacities** by 2030 which could lead to more **unplanned urbanisation and slum related issues**.

What Should India Further Do to Reap its Demographic Dividend?

- **Education and Skills Development**
 - **Enhance quality and accessibility** of education across all demographics, focusing on marginalized communities.
 - Promote **vocational training and skill development** aligned with industry needs to enhance employability.
 - Invest in **digital literacy** and **technological skills** to meet the demands of a digital economy.
- **Employment Generation**
 - Foster a **conducive business environment** to attract investments and promote job creation.
 - **Encourage entrepreneurship** and provide support for startups.
 - NITI Aayog estimates that the number of **gig and platform workers** is likely to increase from **7 million in 2020** to more than **20 million in 2030**, assuring social security to them will assimilate the human capital to the formal sector.
- **Healthcare and Well-being**
 - Strengthen **healthcare infrastructure** and services to improve health outcomes and reduce dependency ratios.
 - Focus on **preventive healthcare measures** and nutrition programs to address health disparities.
 - Promote **mental health awareness** and support systems to enhance overall well-being.

- **Inclusion Growth and Gender Equality**
 - Implement policies promoting **gender equality and empowerment**, ensuring equal access to education and employment.
 - Support initiatives that enhance social cohesion and reduce inequalities.
 - According to **International Labour Organization** estimates, **only 24%** of women were participating in the workforce in 2022, so getting more women to enter the workforce will be **pivotal for future growth**.
- **Infrastructure Development**
 - Invest in **robust infrastructure development**, including **transport, energy, and digital connectivity**.
 - Improve **urban planning and development** to accommodate rapid urbanization and migration trends.
 - Ensure sustainable infrastructure projects that support economic growth and enhance living standards.
- **Shifting from Agriculture to Formal Sector:**
 - The share of employment in agriculture has increased from **4% in 2018-19 to 45% in 2022-23**, while only 20% of employed are engaged in wage employment, and approximately 9% are in formal wage employment.
 - Shifting the workforce to the formal sector will help in addressing the issue of **disguised employment**.
- **Policy and Governance**
 - Formulate and implement **comprehensive policies** that prioritize demographic dividend considerations.
 - Strengthen governance mechanisms to ensure **effective implementation of initiatives**.
 - **Foster collaboration** between **government, private sector, and civil society** to address systemic challenges and promote inclusive growth.



PwDs in India: From Margins to Mainstream

*This editorial is based on “**The Supreme Court ruling on portrayal of disability in films**” which was published in The Hindu on 14/07/2024. The article brings into picture the Supreme Court’s recent guidelines to prevent stereotyping and discrimination against persons with*

disabilities in visual media, emphasizing accurate representation and involvement of disabled individuals in content creation. It also highlights the need for proper implementation of existing disability rights laws.

Tag: GS Paper - 2, Government Policies & Interventions, Welfare Schemes

The **Supreme Court of India** has issued landmark guidelines to **prevent stereotyping and discrimination against persons with disabilities (PwDs) in visual media**. The framework emphasizes avoiding stigmatizing language, providing accurate representations, and involving PwDs in content creation. This ruling builds upon existing legislation like the **Rights of Persons with Disabilities Rules, 2017**, highlighting a shift towards a **human rights model** that views PwDs as integral members of society with equal rights.

While this judicial intervention is significant, challenges remain in implementation and changing societal attitudes. The guidelines primarily focus on visual media, and there’s a need for broader application across all sectors. Disability rights advocates point out that despite progressive laws, **PwDs are often still viewed through a lens of charity rather than equality**.

India needs to work hard in this regard to **bridge the gap between legislative intent and societal reality**, ensuring full inclusion and respect for persons with disabilities across all aspects of life.

What is the Current Status of PwDs in India?

- **About:** As per **Census 2011**, the number of Persons with Disabilities in the country is **2.68 crore**, which is 2.21% of the total population of the country.
 - As per the **Rights of Persons with Disabilities (RPwD) Act, 2016**, there are 21 types of Disabilities which includes **Locomotor Disability, Visual Impairment, Hearing Impairment, Speech & Language Disability, Intellectual Disability, Multiple Disabilities, Cerebral Palsy, Dwarfism** etc.
- **Models of Disability Rights:** Disability rights are often viewed through different models:
 - **Medical Model:** Focuses on the individual’s impairment.
 - **Social Model:** Considers people with disabilities as part of society with the same rights as everyone else.
 - **Human Rights Model:** An evolution of the social model, emphasizing that individuals with disabilities should enjoy all human rights equally.

- The **Supreme Court's framework aligns with this model**, obliging both government and private entities to facilitate full and effective participation of persons with disabilities in society.
 - **Laws Granting Disability Rights:**
 - **RPwD Act, 2016:** This comprehensive law came into force on **19th April, 2017, replacing the 1995 Act**.
 - It aims to ensure equal opportunities, protection of rights, and full participation for persons with disabilities.
 - **National Trust Act, 1999:** An Act to provide for the constitution of a body at the National level for the **Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities** and for matters connected therewith or incidental thereto.
 - **Rehabilitation Council of India Act, 1992:** This act regulates training and registration of professionals working in the field of disability rehabilitation.
 - **Mental Health Care Act, 2017:** This act protects the rights and dignity of persons with mental illness.
 - **Recent Supreme Court Guidelines to Prevent Stigmatisation and Discrimination :**
 - **Language Use:** The framework emphasizes avoiding words like **"cripple"** and **"spastic"** which cultivate institutional discrimination and contribute to negative self-image.
 - **Stereotyping:** It calls for an **end to stereotyping** differently abled persons in visual media and films, urging creators to provide accurate representations rather than mocking disabilities.
 - **Inclusive Language:** Terms that individualize the impairment and overlook social barriers, such as **"afflicted," "suffering," and "victim,"** should be avoided.
 - **Inclusive Collaboration:** The principle of **"nothing about us, without us"** is highlighted, encouraging the involvement of persons with disabilities in creating and assessing visual media content.
- What are the Major Challenges faced by PwDs in India?**
- **Inaccessible Infrastructure:** Infrastructure remains largely inaccessible to PwDs. Public spaces, transportation, and even many private buildings lack proper ramps, elevators, or tactile paving.
 - According to a 2018 report by the **Department of Empowerment of Persons with Disabilities**, only **3% of buildings in India were found to be fully accessible**.
 - This architectural apartheid significantly limits the mobility and independence of PwDs.
 - **Educational Exclusion:** Despite the **Right to Education Act**, many PwDs face barriers in accessing quality education.
 - The **lack of inclusive schools, trained teachers, and assistive technologies** creates a knowledge gap.
 - Approximately **45% of disabled people are illiterate**, and only 62.9% of disabled people aged 3 to 35 have ever attended regular schools
 - This educational disparity **perpetuates a cycle of reduced employment** opportunities and economic marginalization.
 - **The Glass Ceiling of Prejudice:** PwDs face significant challenges in securing meaningful employment.
 - Workplace discrimination, lack of reasonable accommodations, and societal prejudices create a glass ceiling.
 - India has almost 3 crore people with disability (PwD) of which around **1.3 crore is employable** but only **34 lakh of them have been employed**.
 - **Healthcare Hurdles:** Accessing appropriate healthcare remains a significant challenge for PwDs.
 - Many healthcare facilities **lack disability-friendly equipment** or trained staff to handle specific needs.
 - The **Covid-19 pandemic** further exposed these vulnerabilities, with PwDs facing increased risks and reduced access to essential services.
 - **The Invisible Chains of Social Stigma:** Deep-rooted social stigma and misconceptions about disabilities continue to marginalize PwDs.
 - They often face discrimination, **exclusion from social activities, and even violence**.
 - This **social ostracism** impacts mental health and overall quality of life.
 - **Digital Divide- The New Frontier of Exclusion:** As India rapidly digitalizes, many PwDs are being left behind due to inaccessible digital platforms and technologies.
 - Websites, apps, and digital services **often lack features like screen readers or closed captions**.
 - A 2020 report by the 2020 Web Accessibility Annual Report found that **98% of websites fail to comply with accessibility requirements** for People With Disability
 - This digital divide exacerbates existing inequalities in education, employment, and social participation.

- **Legal and Policy Implementation Gap- The Paper Tiger Syndrome:** While India has progressive laws like the **Rights of Persons with Disabilities Act, 2016**, implementation remains a major challenge.
 - Many provisions remain on paper, creating a “paper tiger” syndrome.
 - For instance, a 2019 report by the Department of Empowerment of Persons with Disabilities revealed that **only 23 out of 35 states/UTs had constituted State Advisory Boards on disability**, as mandated by the Act.
 - This implementation gap undermines the potential impact of legal protections.

What are the Major Initiatives for the Empowerment of PwDs?

- **India:**
 - [PM-DAKSH \(Divyang Skill Development and Rehabilitation Scheme\)](#)
 - [Accessible India Campaign](#)
 - [DeenDayal Disabled Rehabilitation Scheme](#)
 - [Assistance to Disabled Persons for Purchase/fitting of Aids and Appliances](#)
 - [National Fellowship for Students with Disabilities](#)
- **Global:**
 - Incheon Strategy to “Make the Right Real” for Persons with Disabilities in Asia and the Pacific.
 - United Nations Convention on Rights of Persons with Disability.
 - [International Day of Persons with Disabilities](#)

What Measures Can Be Adopted to Empower Persons with Disabilities in India?

- **Disabled-Friendly Infrastructure:** Upgrade public infrastructure to be disability-friendly, including **clearly demarcated ramps, tactile paths, accessible public transportation, and adaptive technology in workplaces.**
 - Implement strict guidelines to make **school, hospitals, and digital services easily** accessible to all.
- **Increased Research and Development in Artificial Limbs:** To enhance the quality of life for persons with disabilities in India, increasing **research and development (R&D)** in prosthetics is crucial.
 - This can be achieved by **boosting funding from both government and private sectors** dedicated to innovation in prosthetics.
 - Establishing specialized national and regional prosthetic research centers will provide a focused environment for cutting-edge developments.

- **Clear Identification of PwDs:** A crucial step forward in ensuring that only genuine persons with disabilities (PwDs) receive benefits is the implementation of a **stringent identification and verification system.**
 - This can be achieved by creating a **centralized digital database that records and verifies disability certifications** through biometric authentication and regular audits.
 - Regularly updating and **cross-checking this database with other government records** will help identify and eliminate cases of false claims.
- **Changing Perceptions about PwDs:** Shift societal attitudes by promoting the use of empowering terms such as “**Divyang**” instead of “**Viklang**” (disabled).
 - Highlight the abilities and achievements of PwDs through **media, arts, and public platforms** to foster a more inclusive and respectful society.
 - **Badhte Kadam** initiative is a significant step in this direction.
- **AI-Powered Accessibility Audits:** Implement AI-driven accessibility audits in urban planning.
 - Use **machine learning algorithms** to analyze city infrastructure, identifying accessibility gaps in real-time.
 - This could involve **deploying sensor networks and computer vision systems** to map out **accessible routes, detect obstacles, and suggest improvements.**
 - Such a system could continuously update, providing dynamic accessibility information to both city planners and PwDs.
- **Universal Design Innovation Hub:** Establish a national **Universal Design Innovation Hub**, bringing together designers, engineers, PwDs, and policymakers.
 - This hub could focus on **developing and scaling up innovative, cost-effective universal design solutions** for products, services, and infrastructure.
 - It could also serve as a testing ground for new accessibility technologies before wider implementation.
- **Neuro-Adaptive Learning Platforms:** Invest in developing neuro-adaptive learning platforms that use **electroencephalogram (EEG)** to personalize educational content for students with different learning disabilities.
 - These platforms could **adjust in real-time to a student's cognitive load**, attention levels, and learning style, making education more accessible and effective for PwDs.

- EEG is a test that measures electrical activity in the brain
 - It is relevant to disability as it can help diagnose neurological conditions that may result in disabilities.
- For instance, **EEGs are used to detect epilepsy**, which can lead to cognitive impairments, or brain injuries that might result in motor or sensory disabilities.
- **Gig Economy Inclusion Initiative:** Create a dedicated platform within existing gig economy apps that **caters specifically to PwDs, offering flexible, skill-matched job opportunities**.
- This could include features like sign language support, and AI-assisted task matching.
 - Partnering with major gig economy players could rapidly scale this initiative.
- **Disability-Inclusive Disaster Management System:** Create a comprehensive, tech-driven disaster management system that specifically addresses the needs of PwDs.
- This **could include real-time accessible emergency alerts**, GPS-tracked evacuation assistance, and a database of PwDs' locations and specific needs for first responders.
- **Adaptive Sports Technology Hub:** Establish a national Adaptive Sports Technology Hub to develop cutting-edge assistive technologies for para-athletes.
- This could include **AI-powered prosthetics, smart wheelchairs, and VR training systems**.
 - With India's growing focus on sports, **this initiative could boost para-sports participation and performance**, while also generating innovations applicable to everyday life for PwDs.
- **Inclusive Digital Governance Platforms:** Redesign e-governance platforms with a focus on universal accessibility.
- This would involve creating **multimodal interfaces (voice, text, video)** for all government services, ensuring compatibility with various assistive technologies, and providing real-time sign language interpretation for video-based services.



Flood Management in India

*This editorial is based on "**Behind Assam's annual flood woes, a history of unintended consequences**" which was published in The Indian Express on 16/07/2024. This article discusses how Assam's geography, shaped by the Himalayas and monsoons, has led to chronic flooding, further highlighting the complex human-nature relationship in flood management.*

Tag: GS Paper - 2, Government Policies & Interventions, GS Paper - 3, Disaster Management

Recent floods in **Assam** highlight a **recurring annual crisis** in India, exacerbated by both **natural and man-made factors**. Floods are typically categorized as natural disasters by organizations like the **National Institute of Disaster Management** and the **World Health Organisation**. However, this classification overlooks the **human factors** contributing to flood damage.

Heavy monsoon rains significantly contribute to these floods, but **poor disaster management** and **inadequate preparedness** amplify their impacts. India's geographical vulnerability results in severe losses each year, necessitating an **Integrated Flood Management System**.

With the monsoon accounting for **75% of annual rainfall**, the country faces a dual challenge of floods and droughts. The monsoon every year follows this destructive pattern, reinforcing the urgent need for comprehensive **flood risk mitigation strategies** to safeguard lives and property.

What are the Causes of Floods in India?

- **Natural Causes:**
- **Heavy Rainfall:** The primary cause of floods in India is heavy rainfall, especially during the **monsoon season** from June to September.
 - **Intense and erratic rainfall** can exceed the soil's absorption capacity or overwhelm drainage systems, leading to floods.
 - **Melting of Glaciers:** **Melting snow and glaciers** in mountainous regions due to **rising temperatures** can increase river and stream water levels, resulting in downstream flooding.
 - For example: **Glacial lake outburst** flood killed around 14 in **Sikkim** more than hundred people were missing.
 - **Cyclones and Storms:** **Cyclones and storms** can generate strong winds and heavy rainfall, particularly affecting coastal regions.
 - For instance, **Cyclone Michaung** in December 2023 caused intense rain and flooding that killed around 13 people.
 - **River Overflow:** Flooding can occur when a river's water level exceeds its capacity due to excessive inflow from upstream or diminished outflow downstream.
 - In 2023, the **Yamuna River** overflowed due to heavy rains in Himachal Pradesh and Haryana, overwhelming the barrages in Delhi and causing flooding in several areas along the river.

➤ **Man Made Causes:**

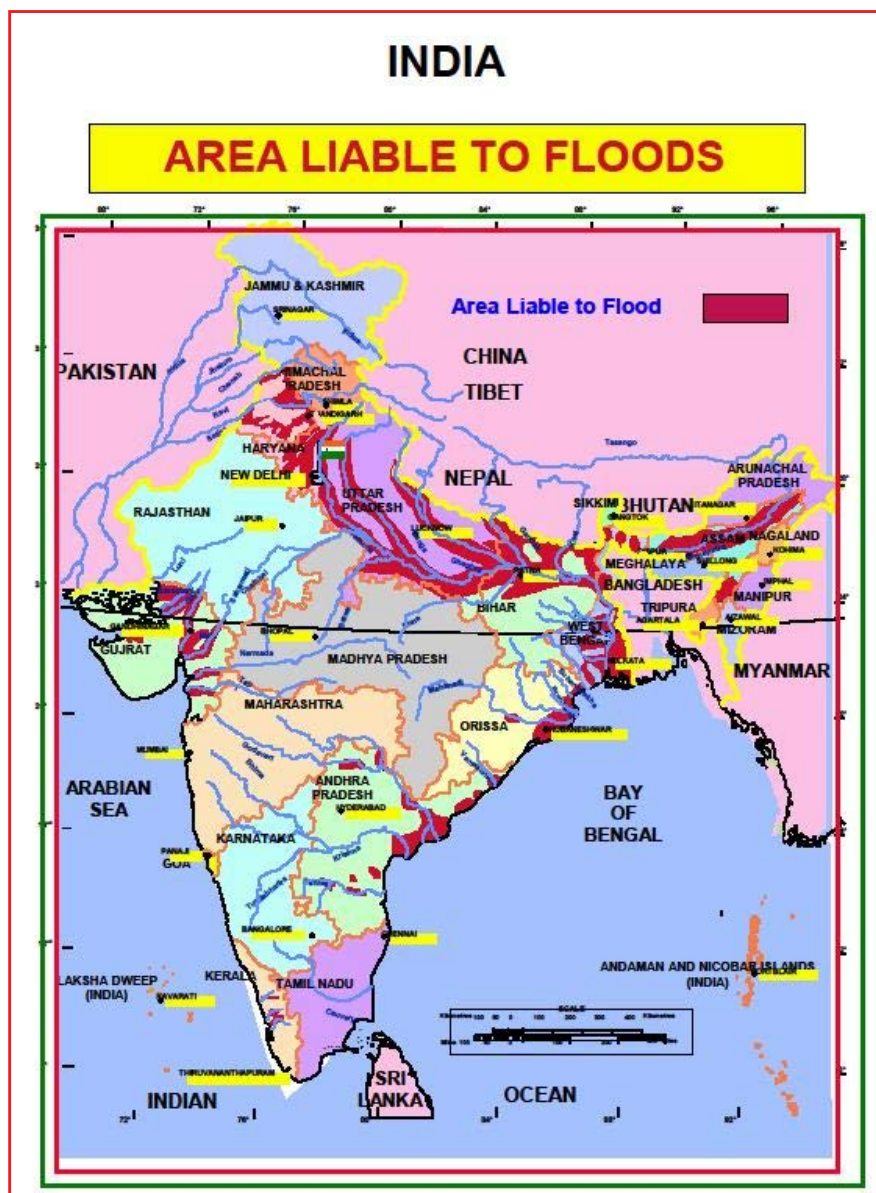
- **Unplanned & Rapid Urbanisation:** Unplanned urbanisation and shooting up of slums on the outskirts of urban centres add to flood havoc in case of heavy rainfall.
 - The **2020 floods in Hyderabad and Chennai in 2015**, thousands of houses were submerged, reminding of how rapid urbanisation is making cities prone to urban floods.
 - Another fine example is Gurugram which has a persistent problem that haunts it every monsoon season – severe flooding.
- **Concretisation:** The **rapid concretisation** due to use of **asphalt and concrete** has increased impervious surfaces that do not absorb rainwater, leading to **increased surface runoff**.
 - As a result, during heavy rainfall, water accumulates quickly, overwhelming drainage systems and contributing to localized flooding.
- **Encroachment of Water Resources:** Construction and **development activities in riverbeds and floodplains** can severely disrupt the natural flow of rivers and **encroachment of lakes and ponds**.
 - For example, encroachment activities in lakes of urban centers like **Bhopal and Chennai** have increased flooding instances in these cities.
- **Deforestation:** **Forests** play a crucial role in absorbing rainfall and facilitating ground water recharge.
 - **Deforestation** leads to reduced soil's capacity to retain water, leading to **greater surface runoff** which carry excess water into rivers and streams, raising the risk of flooding.
- **Dams and Barrages:** **Dams and barrages** are built to manage water flow and generate hydroelectric power, but heavy rain and poorly managed reservoirs can pose significant risks.
 - For instance, alleged poor management of water in **Mullaperiyar dam** in **Tamilnadu and Kerala border** area caused floods in 2018.
- **Unsustainable Mining Practices:** Mining operations can disrupt the landscape, leading to **soil erosion and sedimentation** in nearby rivers.
 - This **sediment** accumulation reduces the carrying capacity of rivers, while **mining** activities can alter natural drainage patterns, increasing the risk of water accumulation.
- **Climate Change:** Human activities that contribute to climate change are altering weather patterns

worldwide. Increased temperatures can lead to more **intense and unpredictable rainfall**, raising the potential for flooding events.

- **Poor Drainage Systems:** In many urban and rural areas, due to **siltation and clogging** by solid waste, drainage infrastructure is inadequate to handle heavy rainfall.
 - **Poorly designed** or maintained drainage systems can cause significant flooding, even during moderate rain events.
 - For Example: **Improper urban planning** and ineffective drainage solutions lead to **waterlogging** in cities like Delhi.

How Vulnerable is India to Floods?

- According to the **National Disaster Management Authority (NDMA)**, regions susceptible to floods lie mostly along the **Ganga-Brahmaputra river basin**, from the northern states of **Himachal Pradesh and Punjab**, covering **Uttar Pradesh and Bihar** and stretching to **Assam and Arunachal Pradesh** in the northeast.
- The coastal states of Odisha and Andhra Pradesh, parts of Telangana and Gujarat also witness yearly floods.
- **Old Estimation:**
 - The current demarcation is based on estimates made in 1980 by **Rashtriya Barh Ayog (RBA)** or National Flood Commission formed four decades ago.
 - Around **12.19% of geographical area** in India is vulnerable to floods, according to the RBA.
- **Climate Change:**
 - Over the last four decades, India has been reeling from the effects of climate change.
 - **Extreme rainfall events have tripled** in central India between 1950 and 2015, according to the science journal Nature.
 - **According to Climate Change and India report** by the **Union Ministry of Environment and Forest**, there will be a rise in the frequency of floods in India due to rising temperatures between 2070 and 2100,
- **Increased Downpour:**
 - In recent times, the southwest monsoon period has also been causing massing floods in parts of the country in recent years.
 - In 2020, 256 districts across 13 states in India reported floods due to excess rainfall.



➤ Role of Embankments in Flood Management:

- In several states like **Bihar and Assam**, flood mitigation policies primarily rely on building **embankments**.
- **Increased Flood Intensity:** The rising intensity of floods has rendered these embankments largely ineffective.
- **Lack of Analysis:** No comprehensive cost-benefit analysis has been conducted to evaluate the effectiveness of embankments.
- **False Security:** Communities near embankments live in fear of breaches, while those inside face flash floods and other flood types.
- **Exacerbated Flooding:** Breaches cause more severe flooding than natural river floods, resulting in destructive water cascades.
- **Silt and Debris Accumulation:** Embankments contribute to the build-up of silt and debris in riverbeds, raising water levels and increasing the risk of breaches.
- **Changes in River Dynamics:** The construction of embankments alters river flow patterns, leading to severe flooding during breaches.
- Experts on embankment:

- **G R Garg committee (1951)** noted that while **embankments** might be beneficial for stable rivers with low silt levels, they could **cause more harm than good** in rivers that carry significant silt, as this could disrupt natural land-building processes and drainage systems.
- **The National Flood Commission (1976-1980)** concluded that **embankments in Assam**

What is the Role of Dams and Embankments in Flood Management?

➤ Role of Dams in Flood Management:

- While dams are often seen as a solution to control river flooding, they can also contribute to flood disasters under certain conditions.
- As per a report by the **Comptroller and Auditor General (CAG)** only 7% of dams have **Emergency Action Plans**, highlighting a significant gap in disaster management readiness
- **Inadequate Management:** Dams may be filled to capacity without considering flood risks, leading to the need for sudden water releases that can exacerbate downstream flooding.
- **Impact of Poor Operations:** If dams are not operated with flood moderation as a priority, they can inadvertently increase flood severity in downstream areas.
- **Examples:** Several floods in India like **Uttarakhand (June 2013)**, **Chennai (December 2015)** and **Kerala Floods (2018)** have been linked to improper dam management, on other hand various dam projects in the **Brahmaputra Basin** have contributed to increased flood risks across the region.

had exacerbated flooding issues by causing the deposition of coarse silt and sand in riverbeds. As a result, riverbeds rose above surrounding land, creating a precarious situation that would lead to severe devastation if the embankments were breached.

What are Solutions for Flood Management in India?

Structural Measures

- **The InterLinking of Rivers programme (ILR) programme:**
 - It is aimed at linking different **surplus rivers** of the country with deficient **rivers** so that the excess water from surplus regions could be diverted to deficient regions.
 - **For instance:** **Ken-Betwa linking project** is the flagship project of the national government and is crucial for the **water security and socio-economic development** of Bundelkhand region.
- **Reservoirs:**
 - **Storage reservoirs** are artificial structures designed to store excess water during high-flow periods and release it during low-flow periods.
 - They moderate flood peaks by reducing water volume and velocity downstream; conserves water for irrigation, power generation, and supply.
 - **Example:** **Bhakra Nangal Dam** on the **Sutlej River** has a storage capacity of about 9621 Million Cubic Meter (MCM), aiding in flood control, power generation, and irrigation.
- **Managing Coastal Flood:**
 - The 2004 Tsunami made people realize that mangroves can serve as a reliable safety hedge against **coastal calamities** like storm surge and coastal flooding.
 - **MISHTI Initiative** for mangroves plantation was launched in the Union Budget 2023-24.
- **Embankments:**
 - **Embankments** are raised structures that confine water flow within channels or along riverbanks.
 - They protect adjacent areas from flooding; increase river carrying capacity; divert excess water; provide access roads and recreational areas.
- **Diversions:**
 - **Diversions** are structures that redirect water flow from one channel to another and they reduce flooding by transferring excess water to less vulnerable areas or reservoirs; providing irrigation or drinking water to other regions.

- **Example:** **Indira Gandhi Canal project** diverts water from **Sutlej and Beas rivers** to the **Thar desert** in Rajasthan for irrigation and drinking.

Non-structural Measures:

- **Flood Forecasting and Early Warning:** Systems that provide early estimates of approaching floods using meteorological and hydrological data.
 - They **facilitate timely evacuation of people and assets**; assists in reservoir management and flood relief coordination.
 - **Example:** **Central Water Commission (CWC)** operates a network of forecasting stations that issue daily flood alerts.
- **Flood Plain Zoning:** It is regulatory measures that control land use in flood-prone areas based on vulnerability and promotes conservation of natural flood buffers like wetlands and forests.
 - **Example:** **National Disaster Management Authority (NDMA)** guidelines classify flood-prone land into four zones: prohibited, restricted, regulated, and free.
- **Flood Insurance:** It is in the form of financial compensation for flood-related losses to individuals or groups who pay a premium which may reduce government relief burdens; encourages risk reduction measures; creates a database for flood risk assessment.
 - **Example:** **Pradhan Mantri Fasal Bima Yojana (PMFBY)** provides crop insurance for losses due to floods and other calamities.
- **Flood Awareness:** Flood awareness and education initiatives to raise awareness preparedness and response capabilities; fosters a culture of safety and resilience among communities.
 - **Example:** **NDMA** conducts awareness campaigns and training programs focused on flood management in India.

Conclusion

To effectively tackle flooding, it is vital to recognize that both **natural and man-made factors** contribute to this ongoing crisis. While natural causes are unavoidable, human actions like **urban encroachment and poor infrastructure management**, which significantly worsen the impact, can be managed. By adopting a holistic strategy that incorporates **advanced forecasting, sustainable practices, and community awareness**, we can better prepare for and respond to flooding challenges.



Strengthening India's Statistical System

This editorial is based on "Official Statistical System in India" which was published in The Hindu on 12/07/2024. The article brings into picture the critical assessment of India's statistical data quality scrutinizing methodology and international standards' applicability.

Tag: GS Paper - 1, Population and Associated Issues, GS Paper - 2, Government Policies & Interventions

Recent debates about the quality of India's official statistics, particularly data from the **National Sample Survey Office (NSSO)**, have highlighted important issues in the country's statistical system. The concerns raised about sample design and data quality, though not proven statistically valid, underscore the importance of **modernizing India's statistical approach**.

The core issue revealed by these debates is not necessarily that India's statistical data is fundamentally flawed, but rather that the **country's statistical system has not kept pace with global advancements in data science and integration**.

To maintain the credibility and relevance of its official statistics, India needs to invest in modernizing its statistical methodologies, **improving the frequency and timeliness of data releases**, and exploring innovative approaches to data collection and analysis. This will be crucial for providing policymakers with the **accurate, up-to-date information** needed to make informed decisions in a rapidly changing economic and social landscape.

What is the Current Statistical Framework in India?

➤ Central Government:

- The **Ministry of Statistics and Programme Implementation (MoSPI)** serves as the central nodal agency for the country's official statistics system.
- The **National Statistics Office (NSO)**, under MoSPI, oversees the integrated development of the national statistical system.

➤ NSO comprises the **Central Statistics Office (CSO)** and the **National Sample Survey Office (NSSO)**.

- Apart from NSO, various line ministries/ departments maintain statistical establishments for data collection, dissemination, and coordination with NSO.

➤ State Government:

- In states, the official statistical system is typically laterally decentralized across various departments of the State Government.

- At the apex level, **Directorates of Economics & Statistics (DES)** coordinate statistical activities within the State/UT.

- States are responsible for data collection, compilation, processing, and preparing results for most sectors, with state-wise data contributing to national-level statistics used by the Centre.

➤ **National Statistical Commission (NSC):**

- Established in 2006 based on recommendations from the **C. Rangarajan Commission**, NSC serves as the apex advisory body on statistical matters.

➤ **Placement in Seventh Schedule:**

- The subject of 'Statistics' is included in both the **Union and Concurrent Lists** of the Seventh Schedule of the Constitution of India, specifically listed under **Entry 94 (Union List) and Entry 45 (Concurrent List)**.

➤ **Legislative Framework:**

- Specific legislative acts governing statistics include the **Census Act, 1948**; the **Registration of Births and Deaths Act, 1969**; and the **Collection of Statistics Act, 2008**.

What are the Major Issues Related to India's Statistical System?

- **Census Delay and Its Implications:** The repeated postponement of **India's 2021 Census** represents a critical disruption in the country's statistical system, with wide-ranging impacts on governance, policy-making, and resource allocation. Key examples include:

- **Policy Distortions:** Outdated demographic data leads to misaligned policies.

- For instance, education planning for school infrastructure and teacher recruitment is based on **2011 population figures**, potentially underestimating current needs in rapidly growing urban areas.

- **Economic Miscalculations:** The delay affects the **revision of state-wise poverty ratios and Centre-state tax sharing**.

- States like Bihar or Uttar Pradesh, with higher population growth rates, may be underfunded based on decade-old data.

- **GDP Estimation Methodology Concerns:** India's GDP estimation methods have faced scrutiny for potential overestimation, impacting the credibility of economic growth figures. For instance, the **2015 revision of India's GDP series** sparked significant controversy.

- It raised the GDP growth rate for 2013-14 from **4.7% to 6.9%**, leading to skepticism about its accuracy.

- Former CEA Arvind Subramanian stated that the 2011-12 GDP series released in 2015 **overestimates growth**. This made India surpass China in 2015 to become the **fastest growing major economy**.
- **Employment Data Reliability and Frequency:** The discontinuation of the **NSSO's comprehensive Employment-Unemployment Surveys** created a significant data gap.
 - The **Periodic Labour Force Survey (PLFS)**, introduced in 2017-18, faced criticism for methodological changes that made it difficult to compare with previous surveys.
 - This issue underscores the need for **consistent, comparable, and frequent labor** market data.
- **Poverty Estimation Challenges:** The government has **not released official poverty estimates since 2011-12**, partly due to methodological debates.
 - The **Tendulkar Committee** methodology, which set the poverty line at **Rs 27 per day for rural areas and Rs 33 for urban areas** in 2011-12, was criticized as too low.
 - The **Rangarajan Committee** suggested higher thresholds, but its recommendations weren't officially adopted.
 - This lack of consensus and updated data has led to **widely varying unofficial estimates of poverty**, hampering effective policy formulation.
- **Discrepancies in Mortality Data during COVID-19:** The pandemic highlighted significant gaps in India's death registration system.
 - According to **WHO**, there were likely 4.7 million deaths, directly or indirectly attributable to Covid-19 in India in 2020 and 2021.
 - India officially estimated only 4.8 lakh cumulative deaths linked to Covid-19 as of December 2021, which implies that the **WHO estimate is nearly 10 times the government count**.
 - This massive discrepancy points skeptics to **issues in death registration and cause-of-death reporting**, crucial for health policy and demographic projections.
- **Informal Sector Measurement Challenges:** India's large informal sector, estimated to employ over **80% of the workforce**, poses significant measurement challenges.
 - The **Economic Census** (6th) was last released in 2013-14. And the **7th Economic Census** is yet to be released.
 - The **6th Economic Census** reported **58.5 million establishments**, but experts argue this likely undercounts home-based and highly mobile economic activities.

- The lack of robust data on this sector affects policy formulation for a significant portion of the economy.
- **Data Suppression and Delayed Releases:** There have been instances of withholding unfavorable statistical reports.
 - A notable example is the **NSSO's 2017-18 consumption expenditure survey**, which reportedly showed a decline in rural consumption.
 - This survey was **withheld from release, citing data quality issues**. Such actions **raise questions about the independence of statistical institutions** and the transparency of the statistical system.
- **Lack of Technological Integration and Big Data Utilization:** Despite initiatives like **Digital India**, the integration of big data and advanced analytics in official statistics remains limited.
 - For example, while countries like **Estonia use digital footprints** for real-time economic indicators, India's statistical system still heavily relies on traditional survey methods.
 - The **potential of GST data and digital transactions** for enhancing economic and agricultural statistics remains largely untapped.
- **Environmental Data Gaps:** India lacks comprehensive, regularly updated environmental statistics.
 - For instance, the **country's last comprehensive forest survey using ground-truthing was conducted in the 1980s**, with subsequent surveys relying primarily on satellite data.
 - This **affects the accuracy of forest cover estimates** and carbon sequestration calculations, crucial for climate policy and international commitments.

What Measures can be Adopted to Strengthen the Statistical System in India?

- **Comprehensive Legal and Institutional Reforms:** Enact a new **Statistical Act** to replace the outdated **Collection of Statistics Act, 2008 (amended in 2017)**.
 - Strengthen the autonomy of the statistical agencies like **National Sample Survey Office** through legislative reforms, ensuring they have the authority to release data without political interference.
 - Streamline **National Statistical Service** to streamline recruitment and career progression for statisticians across all government departments.
 - Establish an **independent regulatory body** to oversee data quality and methodological standards across all official statistical products of the government.

- **Modernization of Data Collection and Processing Infrastructure:** Implement a nationwide digital data collection system, replacing paper-based surveys with tablet or smartphone-based data entry.
 - Develop a centralized, **cloud-based data storage** and processing infrastructure with robust security measures.
 - Integrate various administrative databases (e.g., **GST, income tax, land records**) with the statistical system for more comprehensive and frequent data updates.
 - Establish real-time data pipelines from key economic indicators (e.g., high-frequency indicators like **power consumption, e-way bills**) for timely economic monitoring.
- **Capacity Building and Skill Enhancement:** Create a dedicated Statistical Training Institute for continuous upskilling of government statisticians at all levels.
 - Develop **partnerships with leading global statistical organizations** and universities for knowledge exchange and best practice adoption.
 - Implement a **mandatory statistical literacy program** for all concerned government officials involved in policy-making.
- **Enhanced Data Transparency and Accessibility:** Develop a user-friendly National Data Portal providing access to all official statistics, including **metadata and methodologies**.
 - Implement a **pre-announced calendar for all major statistical releases** to ensure predictability and reduce speculation.
 - Establish a public consultation process for major methodological changes in key statistical products.
- **Strengthening Subnational Statistical Capabilities:** Create State Statistical Innovation Funds to encourage modernization of **state-level statistical systems**.
 - Implement a ranking system for state statistical capabilities to foster healthy competition and improvements.
 - Establish regional data processing centers to support smaller states and union territories.
- **Blockchain and Distributed Ledger Technology:** Implement blockchain for maintaining an **immutable audit trail** of all changes to official statistics.
 - Use smart contracts for automated data sharing agreements between different government departments.
 - Create a blockchain-based system for secure and **transparent conduct of household surveys**, ensuring data integrity from collection to publication.

- **Big Data Analytics and Alternative Data Sources:** Develop methodologies to incorporate big data sources (e.g., **mobile phone non-personal data, social media, web scraping**) into official statistics.
- **Reforming Census and Sample Survey Systems:** Implement a **rolling census model**, conducting surveys continuously over a **5-year period** instead of a single decennial exercise.
 - Develop a master sample frame updated annually for all household surveys.
 - Introduce adaptive survey designs that adjust sample sizes based on real-time data quality indicators.



India's Blue Economy Potential

*This editorial is based on "**Plumbing the depths to scale the heights**" which was published in Economics Times on 12/07/2024. The article highlights India's initiatives in deep-sea exploration through the Deep Ocean Mission for sustainable use of marine resources, while balancing ecological conservation and geopolitical competition.*

Tag: GS Paper - 2, Government Policies & Interventions, GS Paper - 3, Environmental Pollution & Degradation, Water Resources, Growth & Development

As pressure on land-based resources mounts, India is setting its sights on the vast potential of the ocean. The **Deep Ocean Mission**, or **Samudrayaan**, signifies a multi-pronged approach to tapping the **Blue Economy**. This includes exploring and utilizing both living (**biodiversity**) and non-living (**minerals**) resources in a sustainable manner. The mission encompasses crucial areas like developing tools for **climate change** prediction, exploring **renewable energy generation possibilities**, and establishing underwater research labs to understand and utilize marine life responsibly.

However, venturing into the deep blue comes with its own set of challenges. The **fragile ocean ecosystem**, with vast swathes still unknown, demands a cautious approach. Additionally, the potential for resource extraction raises concerns about the **impact on communities dependent on the sea for their livelihoods**. India must navigate these challenges by prioritizing sustainable practices and ensuring responsible development of the Blue Economy.

What are the Major Opportunities Related to the Blue Economy for India?

- **Sustainable Fisheries and Aquaculture:** India's coastline and extensive inland water resources present significant opportunities for sustainable fisheries and aquaculture development.

- The **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** is revolutionizing the sector by promoting technology-driven, sustainable practices.
- **Ocean Energy:** India's coastline offers immense potential for harnessing ocean energy, including tidal, wave, and offshore wind power.
 - **IIT Madras** deployed a wave energy generator off **Tamil Nadu** coast is a significant step forward.
 - The government's target of installing 30GW of offshore wind capacity by 2030 underscores the sector's potential.
- **Marine Biotechnology:** The exploration of India's marine biodiversity for biotechnological applications presents a frontier of immense potential.
 - This sector offers opportunities for developing **novel drugs, nutraceuticals, cosmeceuticals, and biofuels**.
 - By investing in marine biotechnology, India can position itself as a leader in this emerging field, driving innovation and creating high-value products.
- **Seabed Mining:** Government of India currently holds two contracts for exploration in the Indian Ocean.
 - The first is for **exploration for polymetallic nodules** in the **Central Indian Ocean Basin**. The second is for the exploration for **polymetallic sulfides** in the **Indian Ocean Ridge**.
 - This presents a significant opportunity to secure critical minerals like **copper, nickel, cobalt, and manganese**, essential for emerging technologies and renewable energy systems.
- **Coastal and Cruise Tourism:** The development of coastal and cruise tourism offers substantial economic benefits for India's coastal regions.
 - The **Sagarmala programme's** plans for developing cruise terminals at major ports like Mumbai and Cochin aim to tap into the growing global cruise market.
 - This sector can create diverse employment opportunities, from hospitality to local handicrafts, while also promoting cultural exchange.
- **Shipbuilding and Ship Recycling:** India's **₹4,000 crore subsidy scheme** to promote shipbuilding presents opportunities not only in new ship construction but also in developing environmentally friendly ship recycling practices.
 - The **Recycling of Ships Act, 2019**, positions India to become a global leader in sustainable ship recycling.

- This sector can generate significant employment, boost exports, and contribute to the development of ancillary industries.
- **Desalination Technologies** With growing water scarcity issues, India's focus on developing cost-effective desalination technologies is timely.
 - The **Low Temperature Thermal Desalination (LTTD) plant in Lakshadweep**, developed by NIOT, showcases India's capability in indigenous desalination technology.
 - This sector offers opportunities for addressing domestic water needs, especially in coastal and island regions, while also positioning India as an exporter of desalination technology to other water-stressed nations.
- **Marine Spatial Planning** Implementing comprehensive marine spatial planning is crucial for balancing economic activities with conservation efforts in India's maritime zones.
 - The Blue Flag certification program, under which many Indian beaches like **Shivrajpur (Dwarka, Gujarat)**, **Ghoghla (Diu)** are certified, exemplifies efforts towards sustainable coastal development.
- **Deep Sea Exploration and Research:** The Deep Ocean Mission, launched in 2021, marks India's ambitious foray into deep-sea exploration.
 - The development of a manned submersible vehicle **MATSYA 6000**, capable of reaching 6,000 meters depth, will significantly enhance India's deep-sea research capabilities.

What are the Major Challenges Related to the Blue Economy for India?

- **Environmental Degradation and Biodiversity Loss:** India's marine ecosystems are under severe stress due to **pollution and unsustainable development**.
 - Over **65% of the coral reefs** in the Indian Ocean and the Middle East are under stress by local threats
 - The **Sundarbans**, the world's largest mangrove forest, is losing about **16 sq km annually** due to sea-level rise and coastal erosion.
 - This biodiversity loss threatens not only ecosystems but also the livelihoods of millions dependent on marine resources.
 - **Example:** The **2020 oil spill from MV Wakashio near Mauritius** highlights the vulnerability of marine ecosystems to human activities.
- **Overfishing and Unsustainable Fishing Practices:** India's fisheries sector, while crucial for food security and employment, faces the challenge of overfishing.

- According to a 2022 study by the **ICAR-Central Marine Fisheries Research Institute (CMFRI)**, **8.2%** of India's 135 assessed fish stocks were overfished, while **4.4%** were subject to overfishing.
- Destructive fishing practices like **bottom trawling** further exacerbate the problem.
- **Climate Change and Sea-Level Rise:** Rising sea levels and increasing frequency of extreme weather events pose significant threats to India's coastal regions.
 - The **Ministry of Earth Sciences** predicts that a 3 cm sea level rise could cause the sea to intrude inland by about **17 meters**
 - This threatens coastal infrastructure, agriculture, and livelihoods.
 - **Example:** Cyclone Amphan in 2020 caused damages worth **USD 13.5 billion** showcasing the vulnerability of coastal areas to climate-induced disasters.
- **Marine Debris:** Marine pollution, particularly plastic waste, is a major challenge. India generates about **9.46 million tonnes of plastic waste annually**, of which a significant portion ends up in the oceans.
 - Microplastics are now found in marine food chains, posing risks to both marine life and human health.
- **Balancing Economic Development with Conservation:** Striking a balance between exploiting marine resources for economic gain and conserving marine ecosystems is a significant challenge.
 - **Example:** The proposed Great Nicobar Island transshipment port project has faced criticism for its potential impact on pristine rainforests and coral reefs.
- **Maritime Security and Piracy:** Ensuring maritime security in the Indian Ocean Region (IOR) is crucial for the blue economy. Piracy and transnational crimes pose significant challenges to this.
 - The IMB annual report recorded **120 incidents of maritime piracy** and armed robbery against ships in 2023 highlighting the persistent security challenges.
- **Limited Research and Development:** Despite having several **oceanographic research institutions**, India's investment in marine R&D remains limited compared to other maritime nations.
 - This affects the country's ability to innovate in areas like marine biotechnology and ocean energy.
 - **Example:** India's expenditure on **research is less than 1%** of its total R&D budget, significantly lower than countries like China and the US.

What Actions can India Take to Foster a Sustainable Blue Economy?

- **Sustainable Fisheries and Aquaculture Management:** India must implement a **comprehensive fisheries management plan** to address overfishing and promote sustainable practices.
 - This should include **strict enforcement of fishing quotas and seasonal bans**, promotion of sustainable aquaculture techniques like **recirculating aquaculture systems (RAS)**, and introduction of traceability systems for fish products.
 - The **success of the Marine Stewardship Council (MSC)** certification for the **Ashtamudi short-necked clam fishery in Kerala** demonstrates the potential for sustainable fishing practices in India.
- **Integrated Coastal Zone Management:** A holistic approach to coastal management is essential, balancing development needs with environmental conservation.
 - This involves implementing **strict regulations on coastal construction** and pollution, promoting **nature-based solutions** for coastal protection such as **mangrove restoration**, and **engaging local communities in conservation efforts** through eco-tourism and alternative livelihood programs.
 - The **Integrated Coastal Zone Management Project (ICZMP)** in states like Gujarat and Odisha has shown success in this area and can serve as a model for nationwide implementation.
- **Marine Pollution Control and Waste Management:** Combating marine pollution requires a multi-pronged strategy focusing on both prevention and cleanup.
 - This includes enforcing **strict regulations on industrial effluent discharge**, improving urban wastewater treatment infrastructure in coastal cities, and implementing **extended producer responsibility (EPR)** for plastic packaging.
 - Promoting circular economy initiatives for marine plastic waste, such as the **Ocean Recovery Alliance's Plastics Disclosure Project**, can significantly reduce pollution while creating economic opportunities.
- **Advanced Maritime Security and Surveillance:** Enhancing maritime security is crucial for protecting India's blue economy interests.
 - This involves upgrading coastal surveillance systems with AI-powered drones and satellite monitoring to combat illegal fishing, piracy, and transboundary crimes.

- **Strengthening the capabilities of the Indian Coast Guard and Navy**, and improving coordination among various maritime agencies is essential.
 - The **Information Fusion Centre – Indian Ocean Region (IFC-IOR)** is a step in the right direction for enhancing maritime domain awareness.
- **Skill Development and Capacity Building in Maritime Sectors:** Addressing the skill gap in maritime sectors is vital for India's blue economy ambitions.
 - Launching a comprehensive skill development program targeting various blue economy sectors, including **offshore energy, marine biotechnology, and sustainable fisheries**, is necessary.
 - The **Sagarmala programme's component on coastal community development** provides a framework that can be expanded for nationwide skill development initiatives.
- **Research and Innovation in Marine Technology:** Boosting research and innovation in marine technology is essential for India to compete globally in the blue economy sector.
 - This requires **increased investment in oceanographic research institutions**, promoting collaboration between academia and industry, and establishing innovation hubs in coastal cities.
 - The **Technology and Innovation in Exploration and Mining of Deep-sea Resources (TEM) programme** by the Ministry of Earth Sciences is a step in this direction that can be further expanded.
- **Coastal Disaster Risk Reduction and Resilience Building:** Enhancing coastal resilience to **natural disasters and climate change** impacts is essential for protecting lives and livelihoods in coastal areas.
 - This involves developing comprehensive **coastal hazard maps**, implementing nature-based solutions for coastal protection such as **mangrove restoration, and strengthening early warning systems** for extreme weather events.
 - The **National Cyclone Risk Mitigation Project** provides a framework that can be expanded to address a broader range of coastal hazards and climate change impacts.

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Rethinking Forest Conservation Efforts

*This editorial is based on “**The issue with India's tree planting schemes**” which was published in The Hindu on 19/07/2024. The article highlights the degradation of forest landscapes due to unsustainable practices and*

underscores the need for effective tree-planting and ecosystem restoration strategies, emphasizing the importance of community participation, post-planting measures, and technical considerations for sustainable environmental conservation.

Tag: GS Paper - 2, GS Paper - 3, Conservation, Issues Relating to Development, Management of Social Sector/Services, Forest Resources

The **United Nations' declaration of 2021-2030** as the **Decade of Ecosystem Restoration** has spurred global efforts to address **deforestation and climate change**, with tree planting emerging as a popular strategy. Numerous large-scale initiatives have been launched worldwide, attracting media attention and public participation. However, these mass tree-planting drives have **faced criticism from environmentalists and scientists for their limited community involvement, inadequate post-planting care, and tendency to promote monocultures**. Experts caution that such oversimplified approaches may prove less effective for carbon sequestration and biodiversity development than intended.

India, in particular, faces significant challenges in **forest conservation**, including widespread encroachment, high dependence of millions on forests for livelihood, and **substantial loss of forest land to non-forestry purposes**. While the country has made commitments to restore degraded forests and increase forest cover, there is a growing recognition of the need for more nuanced, ecologically sensitive strategies.

What is the Significance of Forests for India?

- **Biodiversity Conservation:** The **Ministry of Environment and Forests Govt. of India (2000)** records 47,000 species of plants and 81000 species of animals in India.
 - This is about **7% and 6.5% respectively of global flora and fauna** making them crucial biodiversity hotspots.
 - The discovery of new species, such as the **Namdapha flying squirrel in Arunachal Pradesh in 2022**, highlights the ongoing importance of forests as reservoirs of undiscovered life.
- **Climate Change Mitigation:** Forests act as significant **carbon sinks**, with India's forests and trees absorbing **15% of its total CO₂ emissions (2016)**.
 - The country's pledge to create an additional carbon sink of 2.5-3 billion tonnes of CO₂ equivalent by 2030 relies heavily on forest conservation and expansion.

- Recent efforts like the **Green India Mission**, aiming to increase forest cover by 5 million hectares, demonstrate India's commitment to leveraging forests for climate action.
- **Livelihood Support:** Over **250 million people** in India depend on forests for their livelihoods, including tribal communities.
 - The implementation of the **Forest Rights Act** and recent initiatives like **Van Dhan Yojana** aim to enhance forest-based livelihoods sustainably.
 - The success of programs like **Madhya Pradesh's Tendu Patta collection**, which benefits tribal people, illustrates the economic potential of well-managed forests.
- **Ecosystem Services:** Forests provide essential ecosystem services valued at trillions of rupees annually, including **air purification, soil conservation, and pollination**.
 - The recent emphasis on valuing these services, as seen in the **Economics of Ecosystems and Biodiversity (TEEB) Initiative**, is reshaping forest management policies.
- **Cultural and Spiritual Significance:** Forests hold deep cultural and spiritual importance for many communities in India, supporting traditional knowledge systems and practices.
 - The recognition of **sacred groves** under the **Biological Diversity Act** strengthens the protection of these culturally significant forest patches.
 - Initiatives like the documentation of traditional ecological knowledge in the **Nilgiris Biosphere Reserve** highlight the intertwining of cultural preservation and forest conservation.
- **Human-Wildlife Conflict:** As forest habitats shrink and fragment, incidents of human-wildlife conflict have increased significantly.
 - For instance, more than **500 people, 100 elephants** die every year due to human-animal conflict in India.
 - The situation in states like **Maharashtra**, where **leopard** encounters in human settlements have become frequent, exemplifies this issue.
- **Plantation Vs Conservation:** Plantation drives often **promote monoculture**, which can harm biodiversity and ecosystem health.
 - **Monocultures** **lack the ecological diversity necessary** to support a wide range of plant and animal species, leading to less resilient ecosystems.
 - Moreover, these drives frequently **neglect the specific ecological needs of the local environment**, sometimes planting trees in inappropriate areas like grasslands, which can disrupt existing habitats and exacerbate issues like wildfires.
 - Additionally, many plantation initiatives **lack adequate post-planting care and monitoring**, resulting in low survival rates of the planted trees.
- **Legislative Loopholes and Judicial Interventions:** Recent amendments to Forest Conservation Act, 1980 have sparked a complex legal battle over India's forest protection framework.
 - The proposed changes aim to **exempt certain forest lands recorded before 1980 from protection**, potentially opening up vast areas to deforestation.
 - This move contradicts the **Supreme Court's 1996 verdict in the T.N. Godavarman Thirumulpad case**, which ensured legal protection for all forests in government records.
 - Critics argue that vague terms like **'proposed', 'ecotourism facilities', and 'any other purposes'** in the amendments could be exploited for activities detrimental to forest ecosystems.
 - In a significant development, in **February 2024**, the **Supreme Court instructed the government to maintain this broad interpretation of "forest"** until a final decision is reached on a petition challenging the amended Forest Conservation Act of 2023.
- **Climate Change Impacts:** Indian forests are increasingly vulnerable to climate change effects, including **altered precipitation patterns, increased forest fires, and pest outbreaks**.
 - The **2024 forest fires in Uttarakhand** exemplify this growing threat.

What are the Major Challenges Faced by Forests in India?

- **Deforestation and Forest Degradation:** Despite conservation efforts, India continues to lose forest cover due to development projects, mining, and agriculture expansion.
 - The Forest Survey of India report 2021 showed that India's moderately dense forest area decreased by **1,582 sq km**.
 - Recent controversies like the **Aarey forest clearing for Mumbai Metro** and the **diamond mining in Madhya Pradesh's Buxwaha forests** highlight the ongoing tension between development and conservation.
 - The controversial **Ken-Betwa river linking project**, set to submerge 6,017 hectares of forest land including part of **Panna Tiger Reserve**, epitomizes this conflict.

- While India has committed to creating an additional carbon sink through forests under its **Nationally Determined Contributions**, achieving this amid changing climatic conditions poses a significant challenge.
- Recent initiatives like the **National Action Plan on Forest Fires (2018)** aim to address these issues, but implementation remains a challenge.
- **Invasive Species and Biodiversity Loss:** The spread of invasive species is threatening native biodiversity in many Indian forests.
 - For instance, the rapid spread of **Lantana camara in the Western Ghats and Senna spectabilis in Mudumalai Tiger Reserve** is altering ecosystem dynamics.
 - Recent studies showing the decline of native grasslands due to invasive species underscore this issue.
- **Funding and Resource Allocation Issue:** Despite the critical importance of forests, funding for forest conservation and management often falls short.
 - The **Compensatory Afforestation Fund Management and Planning Authority (CAMPA) funds**, meant for afforestation, have faced issues of underutilization and misallocation.
- **Shrinking Forest Corridors:** Wildlife corridors, crucial for animal movement and genetic diversity, are rapidly disappearing.
 - The **Kaziranga-Karbi Anglong corridor in Assam**, vital for elephant migration, is shrinking due to encroachment and infrastructure development.
 - Similarly, the **Kanha-Pench corridor in central India faces fragmentation**, threatening tiger populations.
 - These disappearing links not only isolate animal populations but also intensify human-wildlife conflicts.

What Measures can be Adopted to Enhance Forest Conservation in India?

- **Integrated Landscape Management Approach:** Implement a holistic landscape-level conservation strategy that goes beyond protected area boundaries.
 - This approach should **integrate forest conservation with sustainable land use practices** in surrounding areas.
 - For example, the **Terai Arc Landscape initiative, spanning India and Nepal**, has shown success in connecting fragmented habitats while addressing local livelihood needs.

- Scaling up such models across India can help maintain ecological connectivity and reduce human-wildlife conflicts.
- **Technological Integration in Forest Monitoring:** Leverage advanced technologies for real-time forest monitoring and management. Implement a **nationwide network of remote sensing, drones, and AI-powered systems** for early detection of forest fires, illegal logging, and encroachments.
 - The **Forest Survey of India's** adoption of high-resolution satellite imagery for forest cover assessment is a step in the right direction.
 - Expanding this to include IoT sensors for wildlife tracking and habitat health monitoring can significantly enhance conservation efforts.
- **Community-Centric Conservation Models:** Strengthen and scale up successful community forest management models like **Van Panchayats in Uttarakhand and Community Forest Resource rights under the Forest Rights Act**.
 - These models have shown remarkable success in forest regeneration and biodiversity conservation.
 - For instance, the **Mendha Lekha village in Maharashtra has effectively managed 1,800 hectares of forest**, increasing forest cover and local incomes.
 - Replicating such models with proper policy support can lead to more effective and sustainable forest conservation.
- **Green Finance and Market-Based Conservation Mechanisms:** Develop innovative financing mechanisms to support forest conservation.
 - Implement **large-scale Payment for Ecosystem Services (PES) schemes**, where beneficiaries of forest services pay for their maintenance.
 - Additionally, explore **carbon credit markets and green bonds** to finance forest conservation and restoration projects.
- **Urban Forestry and Green Infrastructure:** Develop comprehensive urban forestry programs that go beyond tree planting to create functional urban ecosystems.
 - This should include the **creation of urban biodiversity parks, green corridors, and the integration of nature-based solutions** in urban planning.
 - The success of **Delhi's Yamuna Biodiversity Park** in restoring ecosystem services and biodiversity can serve as a model.
- **Strengthening Forest Governance and Capacity Building:** Modernize forest departments through comprehensive capacity building programs.

- This should focus on training forest staff in new technologies, community engagement skills, and interdisciplinary approaches to conservation.
- **Sustainable Forest-Based Livelihoods:** Develop and promote sustainable, forest-based livelihood options to reduce dependency on destructive forest use.
 - This can include scaling up successful models like the **Van Dhan Yojana for non-timber forest produce** and promoting eco-tourism initiatives managed by local communities.
 - The **Periyar Tiger Reserve's eco-development committees**, which have successfully integrated conservation with community livelihoods, can serve as a model for replication.
- **Restoration of Degraded Forests and Ecological Corridors:** Launch a nationwide program for ecological restoration of degraded forests and critical wildlife corridors. This should go beyond traditional afforestation to include assisted natural regeneration and ecosystem-based approaches.
 - The **successful restoration of the Aravalli Biodiversity Park in Gurugram** from a mining wasteland to a thriving ecosystem demonstrates the potential of such approaches.
 - Identifying and restoring key corridors can significantly enhance landscape-level conservation.
- **Legal and Policy Reforms for Enhanced Protection:** Strengthen legal frameworks for forest protection by addressing loopholes in existing laws and ensuring strict implementation.
 - This includes **amending the Forest Conservation Act** to provide **clearer definitions of forest land** and streamlining the process for declaring eco-sensitive zones.
 - Additionally, develop a comprehensive national policy on wildlife corridors to provide legal protection to areas outside protected forests that are crucial for wildlife movement.
- **Indigenous Seed Banks for Forest Restoration:** Establish a network of community-managed indigenous seed banks to preserve local biodiversity and support forest restoration efforts.
 - These banks can **collect, store, and distribute seeds of native species**, ensuring that reforestation efforts maintain local genetic diversity.
 - The successful model of **Vrikshamitra in Maharashtra** could be replicated across different forest types in India.
- **Drone-Seeding for Difficult Terrains:** Employ drone technology for seed dispersal in difficult-to-access or degraded forest areas.

- This method can be **particularly effective for restoring mangrove forests** or revegetating steep hillsides.
- **Combating Forest Fires:** To effectively combat forest fires, a multi-pronged approach is crucial. Firstly, preventative measures like **controlled burns to manage undergrowth, creating fire breaks around vulnerable areas**, and educating communities on responsible forest use are essential.
 - **Early detection** through watchtowers and advanced technology can help nip fires in the bud.
 - Additionally, investing in **well-equipped firefighting teams** with rapid response capabilities and specialized training is paramount.
 - Finally, fostering **international collaboration for knowledge sharing and resource deployment during large-scale wildfires** can significantly improve our collective response to this environmental threat.

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Reforming Urban Governance

This editorial is based on "[Why our large cities need metropolitan governance](#)" which was published in Hindustan Times on 17/07/2024. This article reflects on present challenges in governing India's largest cities amidst rapid urbanisation. Lack of a cohesive metropolitan governance framework hampers leveraging agglomeration economies and addressing environmental sustainability.

Tag: GS Paper - 2, Constitutional Amendments, Constitutional Bodies, Federalism, Transparency & Accountability, E-Governance, Issues Relating to Development, Government Policies & Interventions

Over the past three decades, **India** has transformed from a stagnant economy to the **third-largest in the world**. This growth is accompanied by significant **urbanisation**; by 2036, 600 million people (40% of the population) will live in urban areas, up from 31% in 2011. Also, urban areas are projected to contribute nearly **70% to GDP**.

Proper governance is essential for managing infrastructure development, ensuring the upkeep of vital systems like **roads, water supply, and sanitation**. Moreover, **effective urban governance** promotes sustainability, fostering environmentally friendly practices to combat pollution and mitigate climate change impacts.

However, cities continue to face challenges such as **poor governance, inadequate infrastructure, and insufficient services**, although there are emerging signs of positive change.

What is Urban Governance?

➤ **About:**

- **Urban governance** refers to the systems, processes, and practices through which cities are managed and developed.
 - It encompasses the **decision-making frameworks and institutions** that guide **urban planning, service delivery, and the overall administration of urban areas**.
- **Effective urban governance** is significant for improving the quality of life for residents, enhancing urban resilience, and **fostering sustainable development**.

➤ **Key Elements of Urban Governance Include:**

- **Stakeholders:** Involves local governments, citizens, businesses, and **non-governmental organisations (NGOs)**.
- **Policies and Regulations:** Encompasses laws, policies, and regulations that govern land use, zoning, housing, transportation, and environmental management.
- **Service Delivery:** Manages essential services like **water supply, waste management, transportation, and public safety**.
- **Participatory Governance:** Encourages citizen involvement in decision-making processes to ensure transparency and accountability.
- **Sustainability:** Focuses on balancing economic growth with social equity and environmental protection.

What is the Present Mechanism of Urban Governance in India?

- The **74th Constitutional Amendment Act 1992** inserted a new Part IX-A into the Constitution and provided for the establishment of **urban local bodies (ULBs)**, including municipal corporations, as institutions of local self-government.
 - It added article 243P to 243ZG and a new twelfth schedule to the Constitution.
 - It empowered the states to devolve the responsibility of **18 functions** including urban planning, regulation of land use, water supply, and slum upgradation to ULBs.

- The **Urban Local Government** consists of **eight types** of Urban local bodies:

- **Municipal Corporation:** Municipal corporations are usually found in big cities such as Bangalore, Delhi, Mumbai, Kolkata, etc.
- **Municipality:** The smaller cities have the provision of municipalities, which are often called by other names such as the **municipal council, municipal committee, municipal board**, etc.
- **Notified Area Committee:** Notified area committees are set up for the fast-developing towns and the towns lacking the basic amenities.
- **Town Area Committee:** The town area committee is found in the small towns with minimal authority.
- **Cantonment Board:** It is usually set up for a civilian population living in the cantonment area.
- **Township:** It is another form of urban government to provide basic facilities to the staff and workers living in the colonies established near the plant.
- **Port Trust:** They are established in the coastal areas to manage and take care of the port.
- **Special Purpose Agency:** These agencies undertake the designated activities or specific functions belonging to the municipal corporations or municipalities.

What Steps Have Been Taken to Improve Urban Governance?

➤ **Smart Cities Mission (SCM):**

- It is a **Centrally Sponsored Scheme**, launched in 2015, to transform **100 cities** to provide the necessary core infrastructure and clean and sustainable environment to enable a decent quality of life to their citizens through the application of **"Smart Solutions"**.
- It aimed to improve the **quality of life for citizens** through **sustainable and inclusive development**.

➤ **Allocation of Funds for Pollution Control:**

- In December 2023, 131 million plus/non-attainment cities (cities exceeding **National Ambient Air Quality Standards (NAAQS)**, consecutively for five years) have been identified and accordingly **City Specific Clean Air Action Plans** have been prepared along with **fund allocation** for these cities to **improve the air quality**.

➤ **Pradhan Mantri Awas Yojana (PMAY):**

- It falls under the Government's mission - **Housing for All by 2022** for urban housing being implemented by the **Ministry of Housing and Urban Affairs (MoHUA)**.

- It makes **home loans affordable for the urban poor** by providing a subsidy on the Interest Rate of a home loan during repayment by way of EMI.
- **Swachh Bharat Mission-Urban (SBM-U):**
 - It was launched in 2014, by the **Ministry of Housing and Urban Affairs** as a national campaign to **promote cleanliness, sanitation, and proper waste management** in urban areas.
- **Urban Platform for Delivery of Online Governance (UPYOG):**
 - It is the national reference platform created for the **delivery of municipal services online**, which utilises the National Urban Innovation Stack principles.
- **AMRUT Scheme:**
 - **Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Mission** was launched in 2014 to ensure that every household has access to a tap with the assured supply of water and a sewerage connection.

What are the Challenges in Urban Governance?

- **Lack of Autonomy:**
 - Urban governance is part of the **state list** under the **Indian Constitution**. Thus, the **administrative framework and regulation** of ULBs varies across states.
 - Also, experts have highlighted that ULBs across the country **lack autonomy** in city management and several city-level functions are managed by **parastatals** (managed by and accountable to the state).
- **Draining Financial Resources:**
 - As per the **OECD**, India has the **world's lowest property tax collection rate** (property tax to GDP ratio).
 - An **RBI survey (2020-21)** of 221 municipal corporations revealed that more than 70% of these corporations saw a decline in revenues while in contrast, their **expenditure rose by almost 71.2%**.
 - The RBI report also highlights the limited coverage of **property tax** and its failure in shoring up municipal corporation revenues.
 - **Several taxation powers** have also not been devolved to these bodies, leading to stressed municipal finances.
 - With taxes being main revenue sources the income generated is inadequate relative to their responsibilities.

- **Multiplicity of Agencies:**
 - The creation of **special-purpose agencies** under direct state supervision, without accountability to urban local governments, complicates governance.
 - Municipal bodies are required to fund these agencies without having control over them, as seen with entities like the **State Transport Corporation and the Water Supply Department**.
 - Also, parallel agencies and schemes, such as **MP/ MLA Local Area Development Funds**, undermine the financial autonomy of local governments, distorting the intended federal structure and complicating urban governance and service delivery.
- **Unplanned Urbanisation:**
 - Without **proper planning**, municipal services struggle to meet the growing needs of the population, both in quality and quantity.
 - The administrative capacity of local bodies is limited, leading to **poor land use, inadequate housing development, slum mushrooming, unauthorised colonies and inadequate amenities like water supply, sewage, electricity and traffic congestion**.
 - **For example: Delhi has 1,799 unauthorised colonies**, and water pipelines have been laid and commissioned in 1,638, with work underway or set to begin for a further 48.
- **Environment Concerns:**
 - **High pollution levels and poor waste management** in urban cities are one of the major nuisance for residents.
 - Urban India produces about **42.0 million tons** of municipal solid waste annually that is **1.15 lakh metric tons per day (TPD)**, out of which **72%** is generated in 423 **tier-I cities** like Bengaluru, Delhi, Chennai, Hyderabad etc.
 - As per a recent study, **45%** of **National Clean Air Programme (NCAP)** cities showed a rise in **PM2.5** during summer 2024.
 - The declining urban environment negatively impacts **public health and productivity**, reducing overall quality of life.
- **Low Public Participation:**
 - Despite relatively **high literacy and educational levels**, city residents often show limited interest in the workings of urban government bodies.
 - Also, **people's participation** in waste management and pollution control is lacking.

What Should be Way Forward?

➤ The Three F's for Urban Governance:

- The functional autonomy of city governments must be allowed and this should happen with three F's: the transfer of '**functions, finances and functionaries**' to city governments.
- **For example:** In the **People's Planning model of Kerala**, **40%** of the State's plan budget was for local bodies (directly) with a transfer of important subjects such as planning, etc, which paved the way for a new dimension to urban governance.

➤ Investing in Infrastructure:

- As per World Bank, India needs to invest an average of **\$55 billion (1.2% of GDP)** annually for infrastructure.
- **Central and state governments** currently finance **72%** of urban projects, while commercial financing accounts for **only 5%**. **Private capital** must play a significant role in funding urban infrastructure.

➤ Strengthening Municipal Revenue:

- The **Scandinavian countries** manage their functions well from city planning and mobility to waste management by giving a chunk of the income-tax collected from citizens to urban governments.
- **Finance Commissions** have recognised the need to augment property tax revenue to improve municipal finances.
- **For example:** The **12th Finance Commission** encouraged the use of the **Geographical Information System (GIS)** and digitisation to improve property tax administration.

➤ Strategic Property Management:

- Local bodies often hold underutilised properties. These can be monetised through **public-private partnerships (PPP)** for developing commercial spaces, markets, or parking lots.
- **For Example:** The **World Bank** recommends PPPs as a tool for local governments to access financing and expertise for infrastructure development.
 - The **14th Finance Commission** recommended that municipalities be enabled to levy vacant land tax.

➤ Capacity Building for Urban Local Bodies (ULBs):

- **Capacity building** is a process that involves value added instruction. It involves both **institutional capacity-building**, as well as **human capacity-building**.
- ULBs need to **develop their capacity** and focus on executing bankable projects.

➤ Municipal Bond and Social Stock Exchange (SSE):

- A **municipal bond** is a debt security issued by a state, municipality or county to finance its capital expenditures, including the construction of highways, bridges or schools.
- **Social Stock Exchange (SSE)** allows social enterprises, which focus on social impact alongside profit generation, to raise capital.
- Developing the **municipal bond market and SSE** could attract investment towards initiatives that address local needs while generating revenue for the local body.

➤ Need of Behavioural Change for Transformation:

- Cities must be treated as important centres of governance, where **democratic decentralisation and people's participation** can bring in amazing results.
- **For example- Indore model of waste management**, which is a decentralised and people driven model, can bring significant changes.

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India's Digital Public Infrastructure

*This editorial is based on "**Shock-proof state: On an outage and a democratic digital infrastructure**" which was published in The Hindu on 22/07/2024. The article highlights the widespread impact of a software glitch on various services and emphasizes the need for robust failsafes and emergency protocols. It calls for a 'Digital India' initiative to ensure resilient digital infrastructure that addresses technological interconnections and societal inequalities.*

Tag: GS Paper - 2, Government Policies & Interventions, E-Governance, GS Paper - 3, Inclusive Growth, Achievements of Indians in Science & Technology

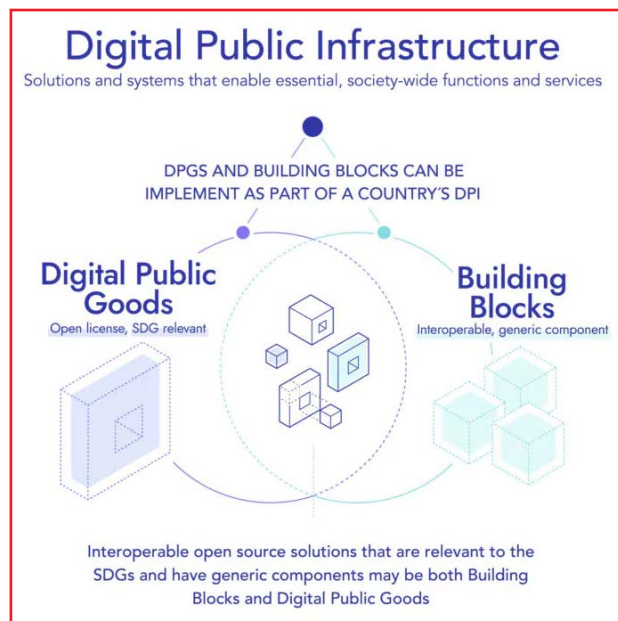
India positioned **digital public infrastructure** as a key pillar of its **G20 presidency**, promoting its adoption globally as a model for inclusive development. The country has made significant strides in developing its **digital public infrastructure**. However, the global software glitch on **19th July 2024** exposed **vulnerabilities in interconnected systems across critical sectors**, highlighting the need for a more comprehensive approach to digital infrastructure.

The '**Digital India**' initiative must evolve to address not only technological advancement but also **digital privacy, data sovereignty, and socio-economic disparities** affecting technology adoption. India needs to

work diligently in this regard, focusing on creating **shock-proof digital infrastructure** that maintains essential services, supports informal economies, and builds public trust through open-source solutions and integrity testing.

What is Digital Public Infrastructure?

- **Digital Public Infrastructure (DPI)** refers to the foundational digital systems and services provided by the government or public sector to support and enhance the functioning of a digital economy and society. It includes:



- **Digital Identity Systems:** Platforms for verifying and managing individuals' identities online, such as Aadhaar in India.
- **Digital Payment Systems:** Infrastructure that supports secure financial transactions, including **digital wallets, payment gateways, and banking platforms**.
- **Public Digital Services:** Online services provided by the government, such as **e-governance portals, public health information, and digital education platforms**.
- **Data Infrastructure:** Systems for storing, managing, and sharing data securely, ensuring data sovereignty and privacy.
- **Cybersecurity Frameworks:** Measures and protocols to protect digital assets and personal information from cyber threats.
- **Broadband and Connectivity:** Infrastructure ensuring widespread and equitable access to high-speed internet across regions.

What are the Key Developments in India's Digital Public Infrastructure?

- **Unified Payments Interface (UPI):** UPI has revolutionized digital payments in India, showing exponential growth since its inception.
 - UPI transactions have grown from 92 crore in FY 2017-18 to **8,375 crore in FY 2022-23**.
 - The system has expanded internationally, with countries like **UAE, Singapore, and France** adopting or considering UPI.
 - Recent developments include the **integration of UPI with credit cards and the launch of UPI Lite** for offline transactions.
 - These advancements have not only enhanced financial inclusion but also positioned India as a leader in digital payments globally.
- **Aadhaar Ecosystem:** Aadhaar, India's biometric identification system, has become the backbone of many government and private sector services.
 - With over **1.3 billion enrollments**, it's the **world's largest biometric ID system**.
 - The integration of Aadhaar with DigiLocker has enabled secure storage and sharing of documents.
 - This ecosystem has significantly reduced fraud in welfare distribution and streamlined KYC processes across sectors.
- **Open Network for Digital Commerce (ONDC):** ONDC represents India's ambitious attempt to democratize e-commerce.
 - Launched in the pilot phase across multiple cities, it aims to bring **30 million sellers and 10 million merchants online**.
 - By creating an open network, ONDC challenges existing e-commerce monopolies and provides a level playing field for small and medium enterprises.
- **Account Aggregator Framework:** The Account Aggregator framework is transforming financial data sharing in India.
 - It enables secure, consent-based sharing of financial information across institutions.
 - As of 2023, over **1.1 billion accounts are AA-enabled** across various banks.
 - This system has particularly benefited MSMEs, with faster loan processing times and improved access to credit.
- **Digital Health Initiatives:** India's digital health ecosystem, centered around the **Ayushman Bharat Digital Mission**, is making significant strides.

- As of December 2023, **50 crore individuals have Ayushman Bharat Health Account (ABHA)** as their unique health ID.
- The **CoWIN platform**, initially developed for Covid-19 vaccination, has been repurposed for universal immunization programs.
- Telemedicine consultations have surged, with platforms like **eSanjeevani** conducting over 100 million consultations.
 - These initiatives are improving healthcare access and efficiency across India.
- **Digital India BHASHINI: BHASHINI (BHASHA Interface for India)** is an AI-powered language translation platform aimed at breaking language barriers in digital communication.
 - It's being integrated into various government websites and apps, enhancing accessibility.
- **Central Bank Digital Currency (CBDC):** The **Reserve Bank of India** launched the **Digital Rupee** pilot in December 2022, marking India's entry into the CBDC space.
 - By mid-2023, over **2.2 crore transactions** have been processed since the launch of CBDC pilot.
 - This initiative aims to reduce the cost of currency management and enable more real-time, cost-effective cross-border transactions.
- **Government e-Marketplace (GeM):** GeM portal has seen a significant surge in procurement, surpassing **Rs 1.24 lakh crore** in the first quarter of 2024-25.
 - This system has achieved a **10% savings** in public procurement costs
 - GeM's success has led to its adoption by public sector enterprises and its model is being studied by other countries for replication.

Note: India Stack, a set of open APIs and digital public goods, continues to evolve as the backbone of India's digital infrastructure. It includes **Aadhaar for authentication**, **UPI for payments**, and **DigiLocker** for document verification.

- The Consent Layer, part of the **Data Empowerment and Protection Architecture (DEPA)**, enables secure data sharing.

What are the Major Challenges Related to India's Digital Public Infrastructure?

- **The Digital Divide Dilemma:** The digital divide remains a significant challenge, with disparities in access to technology and digital literacy.
 - As of 2022, **India's internet penetration stood at about 52% (Internet in India Report 2022)**, around half the population offline.

- Rural areas lag behind urban centers in digital adoption. For instance, **while UPI transactions are booming in cities**, many village residents still rely on cash.
- The **National Family Health Survey 2019-21** found only **33% of Indian women** using the Internet, compared to **57% of men**.
- **Digital Literacy Lag:** While infrastructure development is crucial, equally important is enhancing digital literacy.
 - Despite initiatives like the **Pradhan Mantri Gramin Digital Saksharta Abhiyan**, a significant portion of the population remains digitally illiterate.
 - This **impacts the adoption and effective use of digital services**, from UPI to e-governance platforms.
- **Vulnerability to External Shocks:** Recently, the global IT system outage was triggered by a faulty software update from **CrowdStrike**, causing widespread disruptions across various **Windows operating system (OS) types**.
 - This overdependence created a **domino effect**, disrupting critical services across sectors.
 - The lack of robust **fail-safe mechanisms** further exacerbated the situation, highlighting the **urgent need for a more resilient digital ecosystem**.
 - With increased digitization comes heightened cybersecurity risks.
 - India businesses face over **3,000 cyberattacks per week**.
 - For instance, the recent **ransomware attack on AIIMS Delhi in 2023** exposed vulnerabilities in critical infrastructure.
- **Vernacular Issues:** In a country with 22 official languages and numerous dialects, language poses a significant barrier to digital adoption.
 - While initiatives like **BHASHINI aim to address this**, ensuring comprehensive language support across all digital platforms remains a challenge.
 - For example, many government apps and websites are still predominantly in **English or Hindi**, limiting their reach.
- **Digital Sovereignty Struggle:** India's push for data localization, as seen in draft policies, aims to ensure digital sovereignty.
 - However, this creates challenges for global tech companies and potentially impacts cross-border data flows.
 - For example, the **Reserve Bank of India's mandate for storing payment data locally** has led to compliance complexities for international payment providers.

- Also, **Digital Personal Data Protection Act, 2023** allows transfer of personal data outside India, **except to countries notified by the central government**.
 - This mechanism may **not ensure adequate evaluation of data protection standards** in the countries where transfer of personal data is allowed.
- **Personal Data Privacy Paradox:** As digital services expand, concerns about data privacy and security intensify.
 - The provisions of the **Digital Personal Data Protection Act, 2023**, have yet to be fully implemented.
 - Incidents like the **Aadhaar data breaches reported in 2018** have raised public concerns.

What Steps can be Taken to Enhance the Resilience of India's Digital Public Infrastructure?

- **Enhanced Cybersecurity Measures:** India should significantly increase its cybersecurity budget allocation, to reflect the growing importance of digital security.
 - **Mandatory cybersecurity audits** for all critical infrastructure sectors would help identify vulnerabilities and strengthen defenses.
 - Implementation of a **robust national cyber incident response plan**, complete with regular drills, would enhance India's preparedness to handle large-scale cyber attacks.
- **Interoperability Standards:** The development and enforcement of national interoperability standards for all digital services would ensure seamless integration and data exchange across platforms.
 - An **Open API policy for government services like Maya OS for defense** should be created to encourage innovation and enable third-party developers to build on existing infrastructure.
 - Establishing a **regulatory sandbox for testing interoperability of financial services** would promote innovation while ensuring security and compliance.
 - The adoption of the **IndEA (India Enterprise Architecture) framework** across sectors would provide a common ground for digital transformation.
- **Inclusive Digital Literacy Programs:** India should launch a nationwide "**Digital Saksharta Abhiyan 2.0**" focused on **practical digital skills**, partnering with NGOs and tech companies to reach remote areas.

- The initiative should introduce **digital literacy modules in school curricula** from the secondary level onwards, ensuring a strong foundation for future generations.
- **Targeted programs for women, the elderly, and marginalized communities** should be developed to bridge the digital divide.
- These efforts would collectively work towards creating a digitally empowered society, enabling all citizens to participate in and benefit from India's digital economy.
- **Cyber Security Board:** Establish a Cyber Security Board in India, including both **government and private sector members**, with the power to analyze significant cyber incidents and recommend improvements.
 - Implement a **zero-trust architecture**, enforce a standardized incident response playbook, and urgently modernize state networks and response policies.
- **Agile Regulatory Framework:** India should establish a multi-stakeholder **Digital Economy Task Force** to enable adaptive policymaking that keeps pace with technological advancements.
 - Developing principle-based regulations that are **technology-neutral and future-proof** would provide flexibility while maintaining necessary oversight.
- **Infrastructure Expansion:** Accelerating the BharatNet project to **connect all 600,000 villages with high-speed internet** is crucial for bridging the digital divide.
 - Promoting edge computing solutions would enable better service delivery in remote areas, reducing latency and improving user experience.
 - Developing a national strategy for **efficient 5G rollout and beyond** would ensure India stays at the forefront of wireless technology deployment.
- **Vernacular Digital Content:** Mandating **multi-lingual support for all government digital services** would ensure inclusivity and wider accessibility.
 - Developing **AI-powered real-time translation tools** for digital platforms would break down language barriers and facilitate seamless communication.
 - Implementing **voice-based interfaces for digital services** would overcome literacy barriers, making technology accessible to a broader population.
- **Green Digital Infrastructure:** Setting **energy efficiency standards for data centers and digital infrastructure** would promote sustainability in the rapidly growing tech sector.

- Promoting the use of **renewable energy** in **powering digital infrastructure** would **reduce the carbon footprint** of India's digital economy.
- Incentivizing **green technology** adoption in the **IT sector** would align India's digital growth with environmental sustainability goals.



Transformative Power of India's Services Sector

*This editorial is based on "**Services sector can power up the job engine**" which was published in The Hindu BusinessLine on 22/07/2024. It talks about how India's services sector is a significant contributor to its economy and what measures can be taken to reap its benefits to the fullest.*

Tag: GS Paper 2, Government Policies and Interventions, GS Paper 3, Planning, Employment, Inclusive Growth

India is awash with discussions about where it is headed economically and how it might achieve its desired development goals. There have been discussions about whether India shall grow and develop by prioritising service sector growth rather than industrial (manufacturing sector) growth.

In recent times, the services sector, **encompassing industries such as finance, healthcare, information technology, and tourism** has emerged as a dynamic engine of growth and innovation. The currently developed economies had gradually switched their economic resources from agriculture to manufacturing to services as they developed; witnessed more prominently in Asian economies like **China, S. Korea and Taiwan**.

In India's economic context too, though it has faced difficulties in expanding the share of the manufacturing sector, the service sector has witnessed significant growth. By **investing in digital infrastructure, enhancing skill development, and streamlining regulatory frameworks**, India can further harness the potential of its services sector, driving economic progress and social advancement.

What is the Contribution of the Services Sector to India's Economy (Economic Survey 2023-24)?

- The **Economic Survey 2023-24**, presented recently by the Union Minister of Finance and Corporate Affairs underscores the crucial role of the services sector in India's economic growth over the past three decades.

- **Contributing about 55% to India's economy in FY24**, the sector has thrived due to policy reforms, improved infrastructure, and logistics.
 - A significant transformation has occurred with the **rapid shift towards digital services**, including online payments, e-commerce, and entertainment platforms.
- The services sector has consistently driven growth, with its **Gross Value Added (GVA)** contribution increasing notably. In FY24, the **sector grew 7.6%**, while gross GST collections reached USD 241.27 billion (Rs. 20.18 lakh crore), an 11.7% increase from FY23.
- Post-pandemic, services exports have maintained a steady momentum and accounted for **44% of India's total exports in FY24** the survey notes. **India ranked fifth in services exports**, with the other top four being the European Union (excluding intra-EU trade), the US, the UK, and China.
- Growth of the service sector typically occurs through **rising demands for medical, legal, entertainment, accounting and other personal services**. Essentially, growth in these demands is the result of rising personal incomes of residents as well as increasing outsourcing of business processes by firms as they grow.



What is the Potential of India's Major Services Sectors?

- **Tourism:**
 - The tourism sector, which **accounted for about 13% of India's employment** in 2020-21, stands

out as a **major potential source of job creation**. Covering hospitality, travel, cultural, heritage, and religious tourism, it offers diverse roles for tour guides, travel agents, and local artisans, providing significant opportunities for low to medium-skilled workers.

- Success in these roles depends on strong interpersonal, management, and experiential abilities, which are crucial for improving service quality and visitor satisfaction.
- India's attractions — from **ecotourism in Kaziranga National Park** and **cultural tourism in Varanasi to backwaters-based tourism in Kerala** and **adventure tourism in Goa** — offer immense potential to drive growth and employment.
- **Aviation:**
 - Aviation is another sector with immense potential, driven by expansive airport projects and increased capacity. **India's aviation industry, in terms of gender diversity, is also doing much better** than the global average, with women comprising **15% of pilots** — about three times the global one.
 - As the industry continues to expand, more crew members, ground staff, and flight attendants will be needed to support the growing fleet, making continued investment in training and recruitment crucial for the sector's future.
- **e-Commerce:**
 - **Representing over 10% of the economy** and about **8% of the workforce**, the retail sector is undergoing a digital revolution with platforms like the **Open Network for Digital Commerce** transforming how small retailers connect with consumers.
 - By joining e-commerce platforms, small retailers can expand their market reach, enhance efficiency, and create new job opportunities in logistics, customer service, and technology.
- **Financial and Tech Services:**
 - The **financial, business, and tech services sectors showcase high-skill employment**, brimming with opportunities for innovation and start-ups. Over the past decade, employment in business services has nearly doubled, driven by digitisation, technological advancements, and supportive government initiatives.
 - **Though AI could slow down India's services export growth** (a challenge), it will **also create demand for new skills** in cybersecurity, data privacy, and advanced analytics.

What are the Major Areas of Concerns Regarding Growth of the Services Sector?

- **Lack of Skilled Workforce:** The rapid digitisation in the services sector necessitates a skilled workforce to keep pace with technological advancements. However, there is a **gap in the availability of workers with relevant digital and high-tech skills**.
 - India currently produces about **2.2 million STEM graduates, post-graduates and PhDs**. Unfortunately, a majority of them are unemployable with the training that they receive.
 - The Government has been focusing on skill development initiatives through programs like **Skill India** and the **National Education Policy 2020** to equip the workforce with the necessary skills.
- **Service Sector - A Segmented One:** The current service sector in India is very segmented. Its **output growth is primarily in high-tech services**, while its **job creation is mostly in low value-added, low skill services**.
 - The back-office led service sector may be able to generate a substantial number of jobs in due course. However, it will still take 10-15 years for it to become a viable alternative.
- **Access to Financial Resources:** Accessing finance can pose difficulties, **particularly for small and medium enterprises** operating in the services sector.
 - Several initiatives, such as **Mudra Yojana, Start-up India** and **Stand-up India**, have been implemented to ease credit accessibility.
 - **Streamlining loan processes, expanding the outreach of credit guarantee schemes, adopting alternative credit appraisal methods, and innovating supply chain financing** are some key areas that require attention.
- **Complex Regulatory Frameworks:** The regulatory landscape in the services sector, though undergoing positive transformations, is still notoriously complex.
 - While initiatives like **GST** simplification, **Start-up India**, and the **Real Estate (Regulation and Development) Act** have made strides towards a more conducive business environment, further efforts are essential.
 - Simplifying procedures through **single-window systems, streamlining legal provisions, and digitising government processes** at all administrative levels remain crucial hurdles to overcome to significantly boost economic efficiency.
- **Data Protection:** **Data privacy** and **cybersecurity** have become critical concerns with the increasing

digitisation of services. Given this, the Government is spearheading data protection laws and cybersecurity policies to safeguard consumer data and strengthen cybersecurity measures in the services sector.

- Ensuring the **adoption of strong security measures, compliance with privacy regulations, and fostering innovation in security technologies** are critical hurdles that must be addressed to confidently embrace technological advancements.
- **External Economic Uncertainties:** In the short run, tentative **global economic outlook and commodity price uncertainties** present a serious challenge to input costs and demand for services.
 - Thus, sustaining positive demand trends and effectively managing rising costs and competitive pressures will be critical for the services sector's continued growth and resilience in the upcoming year.

Way Forward

- **Value Addition, High Productivity and Upskilling for Youth:** A **stronger focus on upskilling**, combined with better allocation of resources is required.
 - A **well-educated and healthy population** is the foundation of personal and national productivity.
 - It will drive productivity and enable a more meaningful contribution towards value addition. **Greater value addition** creates more effective products or services, driving value across industries.
- **Upgrading Sector-wise Infrastructure:** To ensure the necessary skills for a specific sector translates into effective job opportunities and industry growth, upgrading sector-wise infrastructure is essential.
 - For example, for the tourism sector, skilling initiatives like '**Hunar Se Rozgar Tak**' and the **Incredible India Tourism Facilitator Certificate Programme** are steps in the right direction.
 - Alongside, infrastructure development is also ramping up with increased funding for tourism projects, and the launch of **Swadesh Darshan** and **PRASHAD** schemes.
- **Guidance for Boosting e-Com Sector:** Online retailers struggle with the technicalities of online selling, cataloguing, and data privacy, leaving them on the sidelines of the digital economy. To address this, support systems like '**Vyapaar Gyan Kendras**' — similar to Krishi Vigyan Kendras for agriculture — could provide guidance, simplify on-boarding, and offer ongoing assistance.

- These centres would **help retailers transition to digital, ensuring they benefit from e-commerce** and contribute to a more inclusive economic landscape.

- **Addressing the Logistics Concerns:** The logistics sector offers substantial employment for medium-skilled workers. Embracing innovative strategies in transportation, such as **harnessing inland waterways and using digital platforms** for route optimization, **dynamic freight bookings, automated cargo management, and streamlined passenger scheduling**, can transform logistics infrastructure.
- **A PLI (Productivity-Linked Income) Scheme for Services:** From an industrial policy standpoint, there is a need to institutionalise a productivity-linked income scheme, especially for the services industries.
 - Under this, companies within any services industry **exhibiting a distinctive increase in labour productivity, not through attrition but conscious skilling** and training initiatives, or with the help of path-breaking R&D and innovation, must be **awarded with tax benefits on sales/revenues**.
 - This will incentivise services industries to explore more innovative options to skill at scale, thereby helping the existing and prospective workforce to raise productivity.
- **Maintaining Pace with Latest Technologies:** The emerging job demands in the services sector entail greater and more focussed skills. A report by the **World Economic Forum** highlights an increasing focus on **cognitive abilities** (like complex problem-solving and creative thinking), digital literacy, and proficiency in AI and big data.
 - This shift underscores the strategic imperative for businesses and the workforce to adapt to technological advancements and meet global market demands.
 - Focus areas should include **blockchain, AI, machine learning, Internet of Things, cybersecurity, cloud computing, big data analytics, augmented reality, virtual reality, 3D printing, and web and mobile development**.

Conclusion

If tapped well, the services sector presents a solution for broad-based employment generation, where innovation meets opportunity and every skill finds its place in the economic growth mosaic. This calls for seamless and continuous interaction and coordination between industry, academic and skilling institutions and governments at different tiers.



Budget 2024: Fiscal Prudence and Strategic Investments

This editorial is based on *"Of prudence and plumbing: The Budget is fiscally and financially prudent and correctly focuses on fixing the economy's plumbing"* which was published in The Financial Express on 24/07/2024. The article talks about the current budget's fiscal and financial strategies, praising its prudence amid challenging global economic conditions.

Tag: GS Paper 3, Government Policies and Interventions, Planning, Employment, Inclusive Growth

In times of **global economic turbulence** and **domestic fiscal challenges**, the **budget 2024** stands as a beacon of fiscal prudence and strategic foresight, aiming to mend the economic foundations of India.

UNION BUDGET

A statement of the estimated receipts and expenditure of the Govt in an FY

ARTICLE 112 (PART V)

- President of India to present the Annual Financial Statement for each FY before both Houses of Parliament
- The term 'Budget' is not mentioned anywhere in the Constitution of India

NODAL BODY FOR PREPARING BUDGET

- Budget Division (Dept of Economic Affairs, Ministry of Finance) in consultation with NITI Aayog and concerned Ministries
- The first Budget of Independent India was presented in 1947

MAJOR COMPONENTS OF BUDGET

- Estimates of revenue and capital receipts
- Ways and means to raise the revenue
- Estimates of expenditure
- Actual receipts/expenditures of closing FY (+ deficit/surplus)
- Economic/financial policy of upcoming FY
- Till 2017, the Govt of India had 2 budgets - Railway Budget and General Budget

STAGES OF BUDGET ENACTMENT

- Presentation
- General discussion
- Scrutiny by Dept Committees
- Voting on Demands for Grants
- Passing an Appropriation Bill
- Passing of Finance Bill

What else does the Constitution of India provide for the Budget?

- Without the recommendation of the President:
 - No demand for a grant can be made
 - No money bill imposing tax can be introduced
- No money can be withdrawn from the Consolidated Fund of India except under appropriation made by law
- Role of Parliament:
 - Money/Finance Bill (involving taxation) - introduced only in LS
 - Vote on the demand for grants - RS has no such power
 - Money/Finance Bill - to be returned to LS by RS in 14 days
 - LS may/may not accept the recommendations made by RS

The budget's strategy is **multifaceted** aiming for **fiscal consolidation** with a **deficit** pegged at 4.9% of GDP, lower than previous expectations, while maintaining conservative revenue assumptions amidst **economic buoyancy**.

Despite robust domestic growth, India's rising **public debt/Gross Domestic Product(GDP)** ratio underscores the imperative for cautious **fiscal management**, limiting the room for expansive policies.

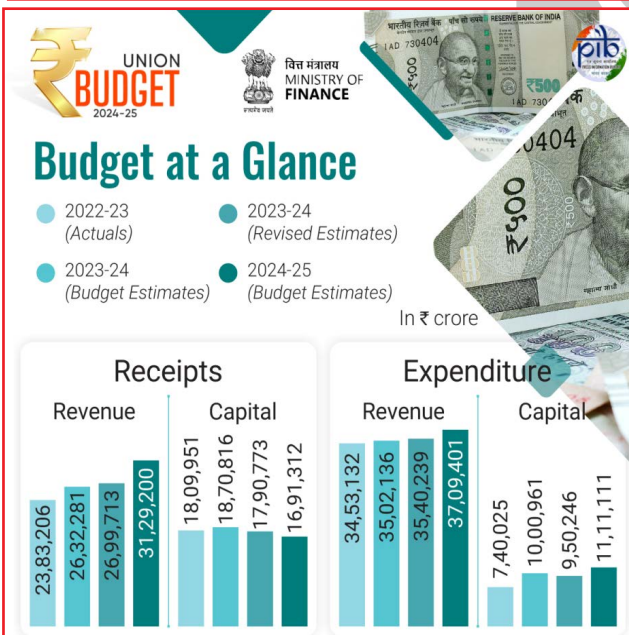
With **public sector investments** reaching their limits due to **fiscal and debt constraints**, the **private sector** is poised to take up the mantle of driving economic expansion, buoyed by healthy corporate balance sheets but requiring enhanced demand visibility.

Thus, **swift implementation** is **crucial for India's economy** to effectively navigate global challenges and capitalize on emerging opportunities.

What are the Key Highlights of the Budget 2024 For the Indian Economy?

- **Inflation Management:** India's inflation remains low, and stable, and is moving towards the **4% target**, indicating macroeconomic stability.
- **Export Competitiveness:** Reduction in **customs duties** across sectors aims to enhance export competitiveness. The budget aligns with trade theory, emphasizing that lowering import tariffs can effectively serve as an export promotion strategy.
- **Agriculture and Rural Development:** Introduction of **109 high-yielding and climate-resilient** varieties of crops, and ₹1.52 lakh crore provision for **agriculture and allied sectors** this year.
- **Employment and Skilling:** PM's package of **5 schemes with ₹2 lakh crore** outlay to facilitate **employment, skilling, and opportunities for 4.1 crore youth over 5 years**.
- **Human Resource Development:** Investment in education, skill development, and **healthcare** to empower the workforce.
- **Urban Development Initiatives:** Launch of **PM Awas Yojana Urban 2.0** with **₹10 lakh crore investment** to address housing needs of urban poor and middle-class families.

- **Ensuring Energy Security:** Policies focused on energy conservation, renewable sources, and sustainable energy practices.
- **Women Empowerment:** Allocation of more than ₹3 lakh crore for schemes benefiting women and girls.



What is Fiscal Prudence?

- Fiscal prudence refers to the **careful management of government finances aimed at maintaining fiscal discipline, sustainability, and stability**.
 - It involves making responsible decisions regarding **public spending, revenue generation, borrowing, and debt management** to achieve macroeconomic stability and long-term economic health.

What is the Significance of Fiscal Prudence in the Context of Budget 2024?

- **Macro-level Impact:**
 - **Debt Sustainability:** India's fiscal deficit for **FY 2023-24** is targeted at **4.9% of GDP**, lower than previous estimates, indicating a commitment to reducing the deficit. This reduction is crucial for maintaining fiscal health and debt sustainability.
 - Measures may include refinancing debt, **extending debt maturities, and minimizing reliance on costly forms of financing**.
 - **Investor Confidence:** Prudent fiscal management enhances investor confidence by signaling the government's commitment to financial stability and sustainable growth.
 - **Credit Rating:** A lower fiscal deficit and disciplined fiscal policies can potentially lead to improved credit ratings, reducing borrowing costs for the government and private sector alike.
- **Economic Stability:**
 - **Inflation Control:** By managing deficits, the government can mitigate inflationary pressures that arise from excessive public spending.
 - **Stimulus Effectiveness:** Prudent fiscal policies ensure that any fiscal stimulus provided during economic downturns is effective and does not lead to long-term fiscal imbalances.
- **Balanced Budgets:** It Strives to achieve a balance between **government revenues and expenditures over the economic cycle**.
 - This may involve running a budget deficit during economic downturns to stimulate growth and employment, balanced by surpluses during periods of economic expansion to reduce debt.
- **Transparency and Accountability:** Fiscal prudence maintains transparency in fiscal policies and practices to build trust among citizens and investors.
 - Accountability mechanisms, such as **regular audits and reporting of government finances**, are essential to ensure that public funds are used efficiently and effectively.

What are the Government Strategies for Fiscal Prudence and Economic Growth in Budget 2024?

- **Revenue Assumptions and Expenditure Management:**
 - **Revenue Projections:** The government projected a tax revenue growth rate of **10.8%** against a nominal GDP growth rate of **10.5%** for FY 2023-24.
 - This cautious estimation aims to ensure realistic revenue targets amid economic uncertainties.

- **Quality of Spending:** There is a focus on increasing capital expenditure relative to revenue expenditure. This shift aims to enhance productivity, create long-term assets, and stimulate growth in key infrastructure sectors.
- **Structural Reforms and Sectoral Focus:**
 - **Sectoral Investments:** Budget 2024 emphasizes strategic investments in sectors such as **infrastructure, healthcare, education, and technology**.
 - These investments are crucial for enhancing productivity, competitiveness, and overall economic growth.
 - **Export Promotion:** Reduction in customs duties across various sectors aims to boost export competitiveness and integrate Indian products more effectively into global markets.
- **Financial Prudence and Market Stability:**
 - **Financial Sector Reforms:** The budget outlines reforms in the financial sector to strengthen regulatory frameworks, enhance transparency, and mitigate risks associated with financial markets.
 - **Market-oriented Policies:** Policies aimed at rationalizing tariffs and enhancing ease of doing business contribute to a conducive environment for private sector investments and economic growth.
- **Long-term Economic Strategy:**
 - **Competitiveness and Equity:** The budget underscores the importance of enhancing India's global competitiveness through structural reforms in **factor markets (land, labour, and capital)**. This strategy aims to foster equitable growth and reduce regional disparities.
 - Land reforms such as **land Acquisition Laws, land Titling and Registration and Leasing Laws**, labour reforms include **codification of labour laws, and Social Security Nets** and capital reforms such as **Financial Sector Reforms, tax reforms, and easing the Investment Climate**.
- **Investment Flows:** **Foreign direct investment (FDI)** inflows into India are influenced by global economic conditions. Uncertainties in global markets can lead to volatility in FDI inflows, impacting sectors dependent on foreign investments.
- **Commodity Prices:** Fluctuations in global commodity prices, especially **crude oil and metals, impact India's import bills and inflation rates**. This affects domestic consumption patterns and overall economic stability.
- **Domestic Growth Slowdown:**
 - **Structural Bottlenecks:** **Infrastructure constraints, bureaucratic inefficiencies, and regulatory complexities** hinder economic growth. Delays in project implementation and inadequate logistics infrastructure affect manufacturing and export competitiveness.
 - Despite reforms, agriculture remains vulnerable to weather fluctuations, inadequate infrastructure, and market access issues.
- **Unemployment and Employment Quality:**
 - **Youth Unemployment:** As per the **ILO report**, the proportion of educated youth, who are unemployed, has nearly doubled to **65.7 percent in 2022 from 35.2 percent in 2000**.
 - This unemployment rate among India's youth population remains high, exacerbated by skill mismatches and inadequate job creation in formal sectors.
 - **Informal Sector Dominance:** **Almost 90 % of India's workforce operates in the unorganised sector**, lacking job security, social security benefits, and access to skill development opportunities.
- **Fiscal Constraints:**
 - **Fiscal Deficit:** The fiscal deficit target for **FY 2023-24 is projected at 6.8% of GDP**, reflecting the government's efforts to manage expenditures amidst revenue constraints.
 - **Public Debt Levels:** India's **public debt-to-GDP ratio** has increased (**81% in 2022**), limiting fiscal space for public investments and social spending. High debt levels pose risks to macroeconomic stability and debt sustainability.
 - **Revenue Mobilization:** Efforts to **enhance tax collections and broaden the tax base** are critical for reducing fiscal deficits and financing development priorities without compromising fiscal discipline.

What Are the Current Economic Challenges In the Indian Economy?

- **Global Economic Uncertainty:**
 - **Trade Impact:** Global trade tensions, geopolitical uncertainties, and shifts in the economic policies of major economies affect India's export performance. For instance, trade tensions between major economies like the **US and China, and the Russia-Ukraine war**, disrupt global supply chains, affecting India's export-driven sectors.

What Are the Various Reforms Needed to Revamp the Indian Economy?

- **Diversification of Trade Partnerships and Hedging Strategies:** Expand export horizons to diverse markets like **Africa, and Southeast Asia**, to reduce reliance on any single region. Strengthen ties with **Brazil and Vietnam** for new export opportunities.
 - Continue efforts to attract long-term FDI in sectors such as **renewable energy and digital infrastructure** by ensuring a stable business environment and predictable policies.
 - Implement tools like **strategic reserves and forward contracts** to stabilize commodity prices and secure energy needs against global market fluctuations.
- **Fiscal Reforms and Fiscal Discipline:**
 - Maintain fiscal discipline to ensure sustainable public finances. Budget 2024 targets a **fiscal deficit of 4.9% of GDP**, showcasing efforts towards fiscal consolidation.
 - **Enhance tax compliance and broaden the tax base** to boost revenue. Initiatives such as **digital taxation and GST reforms** aim to streamline tax administration and increase collections.
- **Infrastructure Development**
 - Increase public and private investment in **transport, energy, and digital infrastructure**. Budget 2024 allocates significant funds for infrastructure projects under initiatives like **PM GatiShakti**.
 - Focus on smart cities, urban mobility, and affordable housing to support rapid urbanization and enhance living standards.
- **Manufacturing and Industrial Growth:**
 - Strengthen manufacturing through **production-linked incentives (PLI) and make-in-India initiatives** across sectors like electronics, pharmaceuticals, and textiles.
 - **Ease of Doing Business:** Simplify regulatory frameworks, reduce compliance burden, and promote MSMEs to foster entrepreneurship and job creation.
- **Agricultural Reforms and Rural Development:**
 - Implement market reforms through e-Nam, improve agricultural infrastructure, and expand irrigation facilities. Budget 2024 focuses on enhancing farmer incomes through initiatives like **PM-KISAN and promoting agri-tech innovations and the Agriculture Infrastructure Fund (AIF)**

- AIF shall provide a medium - long-term debt financing facility for investment in viable projects for post-harvest management Infrastructure and community
 - Develop rural roads, electrification, and connectivity under schemes like **PM Gram Sadak Yojana (PMGSY)** to uplift rural economies and reduce regional disparities.
- **Employment-linked incentives:** All these schemes announced in Budget 2024 need to be implemented earnestly to enhance employment generation. The **Budget 2024** announced three employment-linked incentive schemes and will allocate **Rs 2 lakh crore for job creation over the next five years**.
 - **Scheme A** includes a **Direct Benefit Transfer of 1-month salary in 3 installments** up to Rs 15,000 to first-time employees registered in EPFO.
 - **Scheme B** revolves around **job creation in manufacturing incentives** that will be provided directly to both employees and employers as per their EPFO.
 - **Scheme C** includes **Support to Employers:** Reimbursement to employers up to 3,000 per month for 2 years towards their EPFO contribution for each additional employee.

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Fiscal Federalism amidst Coalition Politics

*This editorial is based on “**Union Budget 2024: Fiscal balance amid coalition compromises**” which was published in Business Standard on 25/07/2024. The article reviews the first Budget of 18th Lok Sabha, noting its alignment with expectations. It emphasizes long-term goals like achieving “developed-country” status by India’s centenary, while accommodating coalition demands.*

Tag: GS Paper - 2, Federalism, Co-operative Federalism, Centre-State Relations, Dispute Redressal Mechanisms.

Fiscal federalism in India is crucial for maintaining a balance between the center and states’ financial autonomy, ensuring equitable resource distribution. It strengthens democratic governance by promoting local decision-making and accountability, while addressing regional disparities and fostering cooperative federalism.

Envisaging sound **fiscal federalism**, the Indian Constitution has established mechanisms such as shared taxes and grants-in-aid to address regional imbalances, complemented by institutional frameworks like **Finance Commissions** with specific mandates.

Significant reforms including the abolition of the **Planning Commission**, establishment of **NITI Aayog**, constitutional amendments for **GST**, and increased **tax devolution** based on the **Fourteenth Finance Commission** have fundamentally altered fiscal relations between the Union and states.

The **Union Budget for 2024-25**, aims to prioritize achieving “**developed-country**” status by India’s centenary. In this path it is necessary to foster **cooperative federalism** which faces challenges in a coalition democratic system. Thus, recognizing **coalition dynamics**, the budget accommodates demands from key allies crucial for political support.

What are Constitutional Provisions Related to Centre-State Financial Relations?

➤ **Constitutional Framework (Part XII):**

- The **Indian Constitution** delineates comprehensive provisions governing the distribution of **taxes, non-tax revenues, borrowing powers, and grants-in-aid** between the Centre and the States.
- **Articles 268 to 293** specifically address financial relations, outlining the mechanisms for fiscal transactions and allocations.

➤ **Article 269A (Goods and Services Tax - GST):**

- **GST** was introduced by **The Constitution (101st Amendment) Act, 2016**.
- **Article 269A** says that **GST** on supplies in the course of inter-State trade or commerce shall be levied and collected by the Government of India and such tax shall be divided between the Union and the States in the manner as may be provided by Parliament by law on the recommendations of the **Goods and Services Tax Council**.

➤ **Article 275 (Post Devolution Revenue Deficit Grants):**

- Under **Article 275**, the central government exercises discretionary authority to transfer funds to state governments for specific purposes or schemes, ensuring financial support where necessary.

➤ **Article 280 (The Finance Commission):**

- Constitutionally mandated under **Article 280**, the **Finance Commission** plays a pivotal role in recommending the distribution of tax revenues between the **Centre and States**.
- Beyond **tax devolution**, it advises on enhancing state finances, promoting fiscal discipline, and ensuring overall fiscal stability.

➤ **The Seventh Schedule:**

- The **Seventh Schedule** of the Constitution delineates the taxation powers between the Centre and the States:
 - **Parliament** has exclusive authority over taxes listed in the **Union List**.

- **State legislatures** hold exclusive power over taxes listed in the **State List**.
- Both can levy taxes on subjects enumerated in the **Concurrent List**, with residual tax powers vested solely in Parliament.

What are the Challenges Faced by Fiscal Federalism in India?

➤ **Declining Share in Gross Tax Revenue:**

- Despite recommendations from the **14th and 15th Finance Commissions (FCs)** suggesting **42% and 41%** of net tax revenue for States, their actual share of gross tax revenue dwindled to **35%** in 2015-16 and further to **30%** by 2023-24 (Budget Estimates).
- As per budget estimates, for 2024-25, Gross Tax Revenue (GTR) is projected to grow at 11.7% over 2023-24 at **Rs 38.40 lakh crore** (11.8% of GDP). Thus with increasing GTR states share should vary to meet their fiscal needs.

➤ **Erosion of State Tax Autonomy:**

- States have witnessed a decline in their ability to independently set tax rates on revenue sources, particularly evident post the adoption of **value-added tax (VAT)** for intra-state trade.
- This shift along with introduction of GST has curtailed states’ capacity to tailor tax policies to local economic conditions. Further, timely **disbursement of GST compensation dues** has been flagged by states at several occasions.

➤ **Reduction in Grants-in-Aid to States:**

- Financial aid provided to States saw a decrease from **Rs 1.95 lakh crore in 2015-16 to Rs 1.65 lakh crore in 2023-24**.
- Consequently, the combined proportion of statutory financial transfers to the Union government’s gross tax revenue declined from **48.2% to 35.32%**.

➤ **Increasing Tax Collection Under Cess and Surcharge Categories:**

- A significant factor contributing to the decline in States’ share of gross revenue is the inclusion of revenue collected through **cess and surcharge** in the deduction process for net tax revenue.
- This collection, excluding GST cess until June 2022, has notably increased over time.

➤ **Financial Centralisation Concerns:**

- The Union government utilizes **Centrally Sponsored Schemes (CSS) and Central Sector Schemes (CS)** as direct financial transfers to States, influencing their fiscal priorities.

- The allocation for CSS rose from Rs 2.04 lakh crore to Rs 4.76 lakh crore between 2015-16 and 2023-24, spanning 59 CSS.
- This approach compels **States** to commit equivalent financial resources alongside **Union funds**.
- **Issues Surrounding Wealthy vs Less Wealthy States:**
 - **CSS implementation** reveals disparities among States, as wealthier ones can independently fund matching grants, whereas less affluent States must rely on borrowing, increasing their fiscal liabilities.
 - This disparity accentuates **inter-State inequality** in public finances.
- **Larger Financial Powers of Union Govt with Limited Expenditure Responsibilities:**
 - Despite transferring **less than 50% of gross tax revenue to States**, the **Union government** retains a significant fiscal deficit of **5.9% of GDP**.
 - This setup confers substantial financial authority to the Union while limiting its expenditure obligations leaving less room for state allocative.

What is the Impact of Coalition Politics on Fiscal Federalism?

- **Positive Impacts:**
 - **Impact on Central Transfers:** States represented in the coalition may negotiate for more favorable terms in terms of **revenue-sharing and grants**, impacting the overall **fiscal federalism framework**.
 - For instance, along with other announcements an outlay of **Rs 26,000 crore** for various road projects in **Bihar** in **Budget 2024-25** similarly, in addition to other provisions, **Andhra Pradesh** will receive **Rs 15,000 crore** for building new capital.
 - **Enhanced Bargaining Power For States:** Coalition governments often require the support of **regional parties**, which gives states increased bargaining power to negotiate for **larger shares of central transfers** and more autonomy in fiscal management.
 - **Focus on Regional Development:** The **coalition governments** may adopt policies that cater to regional needs and priorities, which may lead to increased focus on more **fine-tuned fiscal policies** that address **local developmental challenges**, thereby promoting balanced regional development.
 - For instance, **Andhra Pradesh Reorganisation Act, 2014**, aiming for development of 2 states thus formed, was passed by parliament due to cooperation of coalition parties at center.

- **Increased Transparency and Accountability:** The need to maintain coalition partners can sometimes lead to greater transparency in **fiscal decisions and accountability** in the use of public funds.
- **Stability and Long-term Planning:** While coalitions can sometimes be unstable, they can also **foster consensus-building and long-term planning** in fiscal matters which can ensure **stability in governance**, allowing for sustained economic growth and development.
- **Negative Impacts**
 - **Fiscal Indiscipline:** The desire to **appease coalition partners** can lead to excessive spending and populist measures, impacting fiscal discipline and macroeconomic stability.
 - **Delayed Decision-Making:** Coalition governments often face challenges in reaching consensus on fiscal matters, leading to **delays in decision-making and implementation of important reforms**.
 - **Uncertainty and instability:** The **fragile nature** of coalition governments can create uncertainty in the fiscal environment, discouraging long-term investments and planning.
 - **Potential for misuse of funds:** The pressure to distribute resources to satisfy coalition partners can sometimes lead to the misuse of funds and corruption.

What Should be the Way Forward?

- **Promoting Competitive Federalism:**
 - Along with **cooperative federalism, competitive federalism** should be promoted.
 - **Benchmarking and performance indicators, incentive-based resource allocation, and investment attraction** should be parameter to promote competitive federalism and fund allocation.
- **Reform the Finance Commission and Tax Sharing Mechanisms:**
 - The **Finance Commission** should be directed to **review tax-sharing principles** in the context of India's evolving fiscal federalism.
 - The divisible pool should be redefined, incorporating IGST fully, and criteria for horizontal devolution should be revised to suit the consumption-based tax system.
- **Enhance the Institutional Framework for Fiscal Federalism:**
 - A formal relationship should be established between the **GST Council and the Finance Commission** to ensure coordinated decision-making on the divisible pool and its distribution.

- The **Inter-State Council** should be empowered to serve as a platform for dialogue and consensus-building between **the Centre and states** on fiscal matters.
- Furthermore, the provisions of the **Fiscal Responsibility and Budget Management (FRBM) Act** should be aligned for both central and state governments to maintain fiscal discipline while accommodating their unique situations that allows flexibility on a state to state basis.
- **Improve Fiscal Transfers and Grants:**
 - The grant mechanism under **Article 275** should be redesigned in light of the **GST** compensation law.
 - **Intergovernmental transfers** should be restructured to promote equity, addressing both **horizontal and vertical fiscal imbalances**.
 - Clear guidelines should be established for the **distribution of central funds, grants, and subsidies** to ensure transparent **fiscal transfers** and **reduce discretionary powers**.
- **Implement Robust Anti-defection Laws:**
 - Strengthen and strictly enforce **anti-defection laws** to discourage political horse-trading and maintain stability in governments, which is crucial for consistent fiscal policies.
 - In absence of such measures there may be skewed fiscal allocation to the state.
- **Strengthen State and Local Government Autonomy:**
 - More fiscal powers should be devolved to **states and local bodies**, providing them with **greater flexibility in revenue generation**, expenditure planning, and borrowing limits.
 - States should be given more control over taxation to enable them to generate revenue according to their local economic conditions and priorities.
- **Promote Cooperative Federalism:**
 - Incentives should be introduced to encourage states to **collaborate and share resources** for regional development initiatives by promoting the spirit of **cooperative federalism**.
 - Regular mechanisms for **dialogue between the central and state governments** should be established to discuss fiscal issues, policy challenges, and potential improvements to the fiscal federalism framework.
- **Address Structural Issues in Fiscal Federalism:**
 - Constitutional reforms should be considered to revisit **Articles 246** and the **Seventh Schedule**, redefining the division of powers and responsibilities between central and state governments.

- The issue of **off-budget borrowings** should be addressed to prevent hidden liabilities and increase transparency in fiscal management.
- **Enhance Capacity Building and Long-term Planning:**
 - The capacity of states in fiscal management should be enhanced through training programs, knowledge-sharing platforms, and technical assistance.
 - **Long-term fiscal policy** stability should be promoted by avoiding frequent changes and ensuring continuity across political transitions.

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India's Skill Development Landscape

*This editorial is based on “**How skilling initiatives will drive economy, bridge gender gap**” which was published in Livemint on 23/07/2024. The article highlights India’s critical need to bridge the unemployment-employability gap to achieve ‘Viksit Bharat’ by 2047, emphasizing substantial investments in education, employment, and skilling initiatives as outlined in the Union Budget 2024-25.*

Tag: GS Paper-2, Human Resource, Government Policies & Interventions, GS Paper-3, Skill Development, Growth & Development

India stands at a critical juncture in its economic journey, with immense potential for growth but facing a significant challenge in **bridging the unemployment-employability gap**. As the world’s **fifth-largest economy**, India’s vision for ‘Viksit Bharat’ by 2047 hinges on effectively skilling its youth to meet the demands of a rapidly evolving job market. The recent **Union Budget 2024-25** has highlighted this priority, allocating substantial funds for education, employment, and skilling initiatives. However, the task ahead is daunting, with nearly **73% of workers aged 15-59 years lacking any formal or informal vocational training**.

To harness **India’s demographic dividend** and **fuel economic growth**, a multi-pronged approach is essential. This includes bolstering institutional support, strengthening industry-academia connections, and leveraging innovative financing solutions like impact bonds. As India navigates this crucial phase, the **success of its skill development efforts** will play a pivotal role in shaping the nation’s future and realizing its economic potential.

Which Emerging Sectors Should India Prioritize for Skilling Efforts?

- **Renewable Energy and Green Technologies:** The **renewable energy sector** stands at the forefront of India's sustainable development agenda, **driven by the ambitious target of 500 GW capacity by 2030.**
 - It promises to create over **3.5 million jobs**, demanding a workforce skilled in solar, wind, and energy storage technologies.
- **Artificial Intelligence and Machine Learning:** **India's AI market**, projected to reach **USD 7.8 billion by 2025**, is reshaping industries and creating new paradigms of work.
 - This digital transformation necessitates a workforce adept in **data analytics, algorithm development, and machine learning.**
 - The **IndiaAI Mission** is a commendable start, but the dynamic nature of AI demands continuous upskilling and reskilling.
- **Internet of Things and Smart Cities:** The convergence of **IoT and smart city initiatives** is driving India towards a more connected, efficient future.
 - With the IoT market set to reach **USD 9.28 billion by 2025** and **plans for 100 smart cities**, the demand for skills in IoT programming, data security, and integrated urban planning is soaring.
 - The **Smart Cities Mission** has catalyzed this growth, but there's a pressing need for multidisciplinary skill development programs.
- **Electric Vehicles and Sustainable Mobility:** India's ambitious goal of **30% electric vehicles by 2030** is set to revolutionize the automotive sector, potentially creating 10 million direct jobs.
 - This transition demands an expertised **workforce in battery technology, charging infrastructure, and autonomous systems.**
- **Biotechnology and Pharmaceutical Sciences:** India's biotech industry, projected to reach **USD 150 billion by 2025**, stands at the cusp of a major breakthrough.
 - The **Covid-19 pandemic** has underscored the critical need for a skilled workforce in **genomics, bioinformatics, and vaccine development.**
 - While the Department of Biotechnology has launched collaborative programs with industry partners, the sector demands a more robust skill development ecosystem.
- **Space Technology and Satellite Communications:** India's **space economy**, set to touch **USD 13 billion by 2025**, is entering a new era with the opening up of the sector to private players.

- This expansion creates a demand for skills in **satellite design, space debris management, and reusable space assets.**
- **Cybersecurity:** With India facing over **18 million cyber-attacks in Q1 2022 alone**, the importance of cybersecurity cannot be overstated.
 - Therefore, India urgently needs professionals skilled in **ethical hacking, network security, and cyber forensics.**
- **3D Printing and Additive Manufacturing:** The India **3D printing** market is anticipated to grow at a high **CAGR of 20.3% from 2023 to 2030.**
 - It is set to revolutionize manufacturing processes across industries. This emerging field demands expertise in **Computer-aided design (CAD) modeling, material science, and quality control** for additive manufacturing.
- **Quantum Computing:** India's commitment to quantum technologies, evidenced by the **₹8,000 crore allocation** to the **National Mission on Quantum Technologies and Applications**, signals a major push into this cutting-edge field.
 - The sector demands highly specialized skills in quantum algorithms, cryptography, and error correction.

What are the Recent Government Initiatives Related to Skill Development?

- **Skill India Mission**
 - **Pradhan Mantri Kaushal Vikas Yojana**
- **SANKALP Scheme**
- **TEJAS Skilling Project**
- **Model Skill Loan Scheme** to be revised to facilitate loans up to ₹7.5 lakh with government-backed guarantees, benefiting 25,000 students annually. (Union Budget 2024-25)

Why are India's Skilling Efforts not Translating into Improved Employment Outcomes?

- **Structural Economic Constraints:** India's economy is characterized by a **large informal sector (around 85-90%)** and a predominance of **micro, small, and medium enterprises (MSMEs).**
 - Many MSMEs lack the resources or incentives to invest in formal skill training resulting in the fact that only **4.4% of the young workforce is formally skilled (Economic Survey 2023-24)**, preferring on-the-job learning.
 - The informal nature of much employment also means that **formal certifications often do not translate into wage premiums or job security**, reducing the perceived value of skill development programs.

- **Demographic and Geographic Disparities:** The **India Skills Report 2024** revealed that employability varies significantly across states.
 - Urban centers demand **high-end tech skills**, while rural areas need more basic and traditional skill sets.
 - **This disparity is not adequately addressed in current skilling models.** Moreover, **internal migration patterns complicate skill mapping and delivery**, as skills acquired in one region may not be relevant in another.
- **Technological Disruption and Skill Obsolescence:** The rapid pace of technological change, particularly in areas like **AI, machine learning, and automation**, is rendering **many traditional skills obsolete faster than the education system can adapt.**
 - According to the **World Economic Forum's 2020 "Future of Jobs Report"**, half of all employees will **need to be reskilled by 2025** due to increased technology adoption
 - This creates a **perpetual catch-up game in skill development.** The challenge is not just to teach new skills but to **instill a mindset of continuous learning** and adaptability, which current programs often fail to address.
- **Misalignment with Higher Education System:** There's a significant **disconnect between the higher education system and vocational training.**
 - As per the **Periodic Labour Force Survey (PLFS) 2022-23**, **only 4.4% of youth aged 15-29 years** received formal vocational/technical training.
 - The **lack of integration between academic degrees and vocational qualifications** creates a dichotomy that devalues skill-based learning.
- **Inadequate Focus on Emerging Gig Economy:** The rise of the **gig economy** and platform-based work (potential to serve up to **90 million jobs**) is changing the nature of employment, requiring a different set of skills including **self-management, digital literacy, and entrepreneurship.**
 - Current skilling programs are still **largely oriented towards traditional employment models** and fail to adequately prepare workers for this new paradigm.
- **Evaluation Model Limitations:** The current funding models for skill development often prioritize **short-term outputs (number of people trained)** over long-term outcomes (**sustainable employment, career progression**).
 - Economic Survey 2022-23 revealed that **1.1 crore people were trained under PMKVY 2.0 but only 21.4 lakh got placed.**

- This creates perverse incentives that compromise the quality and relevance of training.
- **Challenges in Recognition of Prior Learning (RPL):** While RPL has been introduced to recognize informal skills, its implementation faces challenges.
 - The assessment processes are often **not sophisticated enough to accurately capture and certify skills** acquired through informal channels, leading to undervaluation of existing skill sets.

What Measures can be Adopted to Revamp India's Skilling Efforts?

- **Demand-Driven Skill Mapping and Forecasting:** Implement a **robust, real-time labor market information system** that uses big data analytics to forecast skill demands. This system should:
 - Collaborate with **industry associations** to gather **granular, sector-specific data.**
 - Utilize **AI algorithms** to analyze job postings, industry reports, and economic indicators.
 - Produce quarterly skill demand forecasts at national, state, and district levels.
 - **Singapore's SkillsFuture initiative** uses such a system to guide its national skills strategy and can be a role model for India.
- **Modular and Stackable Skill Certifications:** Introduce a system of **modular, stackable certifications** that allow learners to build skills incrementally:
 - Break down complex skill sets into smaller, certifiable modules.
 - Allow learners to **accumulate credits over time**, leading to higher qualifications. Ensure each module has immediate market value.
 - This approach can **increase participation by making skill acquisition more flexible and accessible.**
- **Integration of Vocational Education in Mainstream Schooling:** Embed vocational courses in the school curriculum from the secondary level:
 - Introduce **vocational subjects as electives from 8th grade onwards.**
 - Develop a **credit transfer system between vocational and academic streams.**
 - Ensure vocational teachers have both industry experience and pedagogical training.
 - **Germany's dual education system**, which combines apprenticeships with vocational schooling, could serve as a model.
- **Industry-Led Skill Centers of Excellence:** Establish **sector-specific Skill Centers of Excellence** in partnership with leading companies:

- These centers should be run by industry consortiums with government support.
- They must Focus on high-end, future-ready skills in emerging sectors.
- **Gig Economy Preparedness Initiative:** Launch a dedicated program to prepare workers for the gig economy:
 - Develop courses on **digital platforms, self-management, and financial literacy.**
 - Create a **gig work registry** to formalize and promote gig worker's social security.
 - Partner with platform companies to **co-design relevant skill modules.**
- **Revamped Apprenticeship Model:** Overhaul the apprenticeship system to make it more attractive for both employers and apprentices:
 - Offer **tax incentives to companies** based on the number and quality of apprenticeships.
- **Green Skills Integration Program:** Integrate green skills across all relevant skill development programs:
 - Develop a '**green skills**' add-on module for each sector-specific course.
 - Create specialized courses for emerging green jobs (e.g., **solar panel technicians, waste management specialists**).
 - Partner with environmental organizations for curriculum development and internships.
- **Rural Entrepreneurship through Skill Enhancement (RESE):** Transform **Common Service Centers (CSCs)** into **Digital Seva Skill Hubs**.
 - Provide training in both traditional and modern skills relevant to rural economies.
 - Offer **mentorship, microfinancing, and market linkage support.**
- **Train the Trainer Excellence Program:** Establish a comprehensive program to develop high-quality skill trainers with:
 - **Mandatory industry internships** for all trainers.
 - **Regular refresher courses** to keep trainers updated with industry trends.
 - **Performance-based incentives** for trainers linked to student outcomes.
- **Integrating Skill Development with MGNREGA:** Enhancing MGNREGA by incorporating skill development components
 - Offer skill training as part of the 100 days of guaranteed employment.
 - Focus on **skills relevant to rural development and local industries.**
 - Provide additional incentives for acquiring new skills through this program.



Reasonable Accommodations: A Welfare-Based Approach

*This editorial is based on "**Reasonable accommodations and disability rights**" which was published in The Hindu on 22/07/2024. The article talks about the Legal Framework for Reasonable Accommodations (RAs) and the State's Role in the implementation of the legal framework for persons with disability.*

Tag: GS Paper-2, Issues Related to Disability, Government Policies and Interventions.

The principle of **reasonable accommodations (RAs)** represents a pivotal shift towards inclusivity and equality. It underscores the commitment to integrate **Persons with Disabilities (PwDs)** fully into the **social, economic, and cultural fabric of the nation.**

The principle of **RAs** under the **Rights of Persons with Disabilities (RPwD) Act, 2016**, aims to ensure that Persons with Disabilities (PwDs) can exercise their rights on an equal footing with others.

The Convention on the Rights of Persons with Disabilities (CRPD) provides guidelines for **determining undue burden.** Despite this, many Indian institutions are hesitant to cover the costs of RAs due to financial concerns. Moreover, they often use a **cost-benefit approach**, focusing on efficiency rather than considering the welfare of Persons with Disabilities (PwDs).

So, to embrace a **welfare-based approach** and to address issues concerning reasonable accommodations, the state must **establish clear guidelines for legal and reasonable accommodations.**

What is the Principle of Reasonable Accommodation?

➤ About:

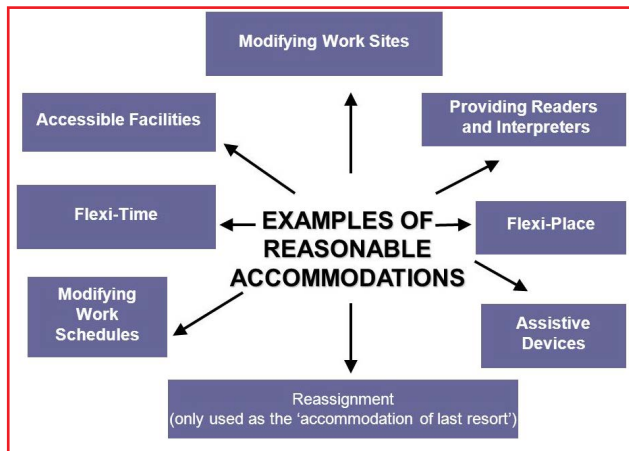
- Reasonable accommodation is a principle designed to **promote equality** and safeguard the rights of individuals. These accommodations may include **physical adjustments like ramps or technological aids** and modifications to job requirements or policies. This principle is chiefly applied in the disability rights sector.

➤ Obligations on State:

- It embodies the obligation of both the **State and private entities** to provide necessary support to individuals with disabilities, ensuring their full and effective participation in society.
 - Without such accommodations, constitutional guarantees of **equality (Article 14), freedom (Article 19), and the right to life (Article 21)** become ineffective for persons with disabilities.

➤ Global Standards:

- According to **Article 2 of the UN Convention on the Rights of Persons with Disabilities (UNCRPD)**, RAs include necessary and appropriate modifications or adjustments that do not impose an undue or disproportionate burden.



What is the Significance of Reasonable Accommodation?

➤ Enabling Equal Participation:

- It is essential for bridging the gap between PwDs and their non-disabled peers. They help ensure that disability does not hinder one's access to **education, employment, or public services**.
 - Example: Providing **ramps and elevators in public buildings** ensures that individuals with mobility impairments can access essential services and facilities on par with others.

➤ Promoting Inclusion:

- RAs foster a culture of inclusion and acceptance. It challenges **discriminatory attitudes and stereotypes** by demonstrating a commitment to creating an environment where everyone feels valued and respected.
 - Example: **Offering sign language interpreters** in educational institutions enables deaf students to participate actively in classroom discussions and learning.

➤ Upholds Human Rights:

- It is a fundamental aspect of human rights, as enshrined in international treaties like the UN Convention on the Rights of Persons with Disabilities (UNCRPD).
 - Example: Providing **assistive technology to visually impaired individuals** allows them to access information and communicate effectively, exercising their right to freedom of expression.

➤ Economic Empowerment:

- RAs in the workplace is crucial for empowering persons with disabilities economically.
 - Example: **Adapting job roles** or providing flexible work arrangements for employees with disabilities can help them maintain employment and achieve career progression.

What are the Major Concepts of Disability In India?

➤ About:

- According to **Census 2011**, there are 2.68 crore persons with disabilities in India, constituting 2.21% of the total population.

➤ Types of Disabilities Under PwD Act, 2016:

- The Rights of Persons with Disabilities (RPwD) Act, 2016, recognizes **21 types of disabilities, including Locomotor Disability, Visual Impairment, Hearing Impairment, Speech and Language Disability, Intellectual Disability, Multiple Disabilities, Cerebral Palsy, and Dwarfism**.

➤ Disability Rights Models:

- **Medical Model:** Focuses on the individual's impairment and its treatment.
- **Social Model:** Views disabilities as a societal issue, advocating for equal rights and integration into society.
- **Human Rights Model:** Builds on the **social model**, emphasizing that individuals with disabilities should have equal enjoyment of all human rights. This model underpins the **Supreme Court's** mandate for both government and private sectors to ensure full participation of PwDs.

➤ Key Legislation

- **RPwD Act, 2016:** Replaces the 1995 Act, aiming to ensure equal opportunities, rights protection, and full participation for PwDs.
- **National Trust Act, 1999:** **National Trust Act**, establishes a body for the welfare of individuals with Autism, Cerebral Palsy, Mental Retardation, and Multiple Disabilities.
- **Rehabilitation Council of India Act, 1992:** The **Rehabilitation Council of India Act** regulates the training and registration of professionals in disability rehabilitation.
- **Mental Health Care Act, 2017:** The **Mental Health Care Act** safeguards the rights and dignity of persons with mental illness.

Disabled Population by Type of Disability (%) India : 2011

Proportion of Disabled Population by Type of Disability

India : 2011 (%)

Type of Disability	Persons	Males	Females
Total	100.0	100.0	100.0
In Seeing	18.8	17.6	20.2
In Hearing	18.9	17.9	20.2
In Speech	7.5	7.5	7.4
In Movement	20.3	22.5	17.5
Mental Retardation	5.6	5.8	5.4
Mental Illness	2.7	2.8	2.6
Any Other	18.4	18.2	18.6
Multiple Disability	7.9	7.8	8.1

Source: C-Series, Table C-20, Census of India 2011

Proportion of Disabled Population by Type of Disability India : 2011 (Persons)



Salient Features The Rights of Persons with Disabilities Bill 2016

Types of Disabilities have been increased from existing 7 to 21

- Blindness
- Low-vision
- Leprosy Cured persons
- Locomotor Disability
- Dwarfism
- Intellectual Disability
- Mental Illness
- Cerebral Palsy
- Specific Learning Disabilities
- Speech and Language disability
- Hearing Impairment (deaf and hard of hearing)
- Muscular Dystrophy
- Acid Attack victim
- Parkinson's disease
- Multiple Sclerosis
- Thalassemia
- Hemophilia
- Sickle Cell disease
- Autism Spectrum Disorder
- Chronic Neurological conditions
- Multiple Disabilities including deaf blindness



What are the Challenges for Institutions in Implementing Reasonable Accommodations?

- **Financial Constraints:**
 - Indian institutions often cite financial constraints as a primary reason for their reluctance to implement **RAs for persons with disabilities (PwDs)**.
 - The burden of compliance with **anti-discrimination legislation**, such as the Rights of Persons with Disabilities (RPwD) Act, 2016, is perceived as a significant financial challenge.
- **Utilitarian vs. Welfare-Based Approaches:**
 - When institutions are solely responsible for the costs of RAs, they tend to adopt a **utilitarian approach** focused on **cost efficiency rather than** a welfare-based perspective.
 - This approach prioritizes **financial considerations over the needs** and rights of PwDs, often leading to inadequate or insufficient accommodations.
- **Prejudices and Misconceptions:**
 - Institutions may be influenced by prejudices and misconceptions that PwDs are less productive or that accommodating them is prohibitively expensive.
- **Undue Burden Defense:**
 - The reliance on the undue burden defence by institutions often reflects a misuse of the legal provisions.
 - Instead of genuinely assessing the difficulty of implementing RAs, institutions may use this defence to avoid the costs, thereby compromising the rights of PwDs.
- **Lack of Awareness and Sensitization:** Many institutions and employers are not fully aware of the requirements or benefits of providing reasonable accommodations. This lack of awareness often leads to non-compliance or minimal efforts to make necessary adjustments.

What are the Initiatives Related to the Empowerment of the Disabled?

- [Unique Disability Identification Portal.](#)
- [DeenDayal Disabled Rehabilitation Scheme.](#)
- [Assistance to Disabled Persons for Purchase/fitting of Aids and Appliances.](#)
- [National Fellowship for Students with Disabilities.](#)
- [Divya Kala Mela 2023.](#)
- [Accessible India Campaign](#)

How can Reasonable Accommodations Be Effectively Implemented?

- **Incentivizing and Sharing Costs:**
 - To incentivise institutions for RAs, a cost-sharing program could subsidize expenses for reasonable accommodations.
 - For instance, the government might cover a significant portion of the costs for structural modifications **needed to accommodate wheelchair users**, helping institutions meet accessibility standards.
 - Offering **tax benefits, subsidies, or deductions** can motivate institutions to proactively provide RAs.
- **Leveraging the National Fund for PwDs:**
 - **The National Fund for PwDs**, established under the Rights of Persons with Disabilities (RPwD) Act, 2016, has substantial but underutilized resources, and utilizing those resources can promote RAs.
 - The fund's corpus should be disbursed judiciously based on well-defined criteria, prioritizing high-impact projects and institutions demonstrating commitment to inclusion.
- **Attitudinal and Behavioral Changes:**
 - Integrate disability studies and awareness into school curricula, and conduct comprehensive training programs for **employers, employees, and the general public** to challenge stereotypes and misconceptions about PwDs.
 - Showcasing successful examples of institutions that have implemented RAs and the positive impact it has had.
- **Legal and Policy Framework:**
 - **Impose stricter penalties for non-compliance** with disability laws. Provide clear guidelines for **determining undue burden to prevent its misuse**.
 - Establish an independent body to monitor compliance with disability laws and provide technical assistance to institutions.

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India's Battle Against Plastic Waste

This editorial is based on "[Plastic mess: On India's waste problem](#)" which was published in The Hindu on 29/07/2024. The article highlights India's significant plastic waste problem, where only a quarter of the annual four million tonnes of plastic waste is recycled, and discusses the challenges and necessary improvements in the Extended Producer Responsibility system to ensure effective recycling and reduce plastic production.

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

India generates approximately **4 million tonnes of plastic waste annually**, with only **a quarter being recycled or treated**. To address this issue, the government implemented the **Extended Producer Responsibility (EPR) rules**, mandating that plastic users are responsible for collecting and recycling their waste. This system operates through an online EPR trading platform, where recyclers receive certificates for recycled plastic that can be purchased by companies falling short of their recycling targets.

However, the EPR system has faced significant challenges. In 2022-23, nearly **3.7 million tonnes of recycled plastic certificates were generated**, but a substantial number were found to be fraudulent. While the market-driven approach shows promise, it has limitations. **Addressing India's plastic waste problem requires not only improving the recycling system but also focusing on reducing plastic production and promoting sustainable alternatives.**

 PET	 HDPE	 PVC	 LDPE	 PP	 PS	 OTHER
POLYETHYLENE TEREPHTHALATE	HIGH-DENSITY POLYETHYLENE	POLYVINYL CHLORIDE	LOW-DENSITY POLYETHYLENE	POLYPROPYLENE	POLYSTYRENE	OTHER
WATER BOTTLES; JARS; CAPS	SHAMPOO BOTTLES; GROCERY BAGS	CLEANING PRODUCTS; SHEETINGS	BREAD BAGS; PLASTIC FILMS	YOGURT CUPS; STRAWS; HANGERS	TAKE-AWAY AND HARD PACKAGING; TOYS	BABY BOTTLES; NYLON; CDS
						

What are the Major Issues Arising from Mismanaged Plastic Waste in India?

- **Choking the Environment:** Plastic waste in India causes severe environmental degradation.
 - It clogs waterways, leading to flooding in urban areas during monsoons.
 - For instance, **Mumbai's 2005 floods** were exacerbated by plastic-clogged drains.
 - **Marine pollution** is another critical issue, with an estimated **0.6 million tonnes** of plastic entering India's oceans annually leading to issues like **Eutrophication** and **Bioaccumulation**
 - Already **88% of marine species** studied have been negatively impacted by plastic pollution and it is estimated that up to **90% of seabirds** and **52% of sea turtles** ingest plastic.

- The **burning of plastic waste**, a common disposal method, releases harmful **dioxins** and **furans**, contributing to **air pollution**.
- **Public Health Concerns:** Plastic waste poses significant health risks to the Indian population.
 - **Microplastics** have been found in drinking water sources and food products, with potential long-term health effects still being studied.
 - The accumulation of plastic waste leads to clogging and potential **breeding grounds for disease vectors like mosquitoes**, contributing to the spread of dengue and malaria.
 - The burning of plastic waste releases carcinogens and other toxic substances, leading to **respiratory issues and other health problems in nearby communities**.
- **Economic Challenges:** The plastic waste problem has significant economic implications for India.
 - According to a FICCI report, India could lose over **USD 133 billion worth** of material value used in **plastic packaging by 2030**.
 - Uncollected plastic packaging waste accounts for **USD 68 billion of this loss**.
- **E-commerce and Packaging Waste:** The rapid growth of e-commerce in India, accelerated by the **Covid-19 pandemic**, has led to a surge in packaging waste.
 - India's e-commerce market is expected to reach **USD 200 billion by 2026**, up from **USD 38.5 billion in 2017**.
 - This growth corresponds with **increased use of plastic packaging materials**, including bubble wrap, air pillows, and polybags.
 - Many of these materials are difficult to recycle and often end up in landfills or as litter.
- **Regulatory and Enforcement Challenges:** While India has implemented various regulations to address plastic waste, enforcement remains a major challenge.
 - The **Plastic Waste Management Rules 2016 (amended in 2022)** ban certain single-use plastics, but implementation is inconsistent across states.
 - The **Extended Producer Responsibility** system faces issues with fraudulent certificates and inadequate monitoring.
 - The **informal nature of much of the recycling sector** makes it difficult to regulate and improve practices.
 - India is among the 12 countries responsible for **60% of the planet's mismanaged plastic waste**.

- **Technological and Infrastructure Gaps:** India faces significant technological and infrastructure deficits in managing plastic waste.
 - Many municipalities **lack modern waste segregation and processing facilities**.
 - Only **60% of the total collected plastic waste** is recycled in India.
 - Advanced recycling technologies for handling multi-layered plastics and other **difficult-to-recycle materials** are not widely available.
 - The lack of a comprehensive waste tracking system makes it difficult to monitor the flow of plastic waste from generation to disposal or recycling.
- **Microplastic Pollution in Agriculture:** The use of **plastic mulch** and the **application of sewage sludge** containing microplastics in agriculture is an emerging concern.
 - Studies have shown that microplastics can accumulate in agricultural soils, potentially affecting soil health, crop yields, and food safety.
 - While comprehensive data for India is lacking, global trends indicate widespread use of plastic in agriculture and **inadequate wastewater treatment**.
- **Biodegradable Plastics Controversy:** The promotion of biodegradable plastics as a solution to plastic waste has created new challenges.
 - **Many so-called biodegradable plastics** require **specific conditions to break down**, which are not met in natural environments or standard waste management systems.
 - Moreover, the mixing of biodegradable plastics with conventional plastics can complicate recycling processes.
 - India lacks **clear standards and certification processes** for biodegradable plastics adds to this issue.

What is the Current Framework Related to Plastic Waste Management in India?

- **Plastic Waste Management Rules, 2016**
 - Mandates steps to **minimize plastic waste generation, prevent littering**, and ensure segregated storage and handover of waste.
 - Extends **responsibility to producers**, importers, and brand owners for both pre-consumer and post-consumer plastic packaging waste under **Extended Producer Responsibility (EPR)**.
 - Increases the minimum thickness of plastic carry bags and sheets to **50 microns**.

- **Expands jurisdiction from municipal areas to rural areas**, with Gram Panchayats responsible for implementation.
- Introduces waste segregation at source for individual and bulk generators.
- **Plastic Waste Management (Amendment) Rules, 2018**
 - Applies phasing out of **multi-layered plastic (MLP)** to those that are non-recyclable, non-energy recoverable, or have no alternate use.
 - Establishes a central registration system by the **Central Pollution Control Board (CPCB)** for producers, importers, and brand owners.
 - It omitted the rule of **explicit pricing of carry bags** mentioned in the 2016 rule.
- **Plastic Waste Management Amendment Rules, 2021**
 - Prohibits **specific single-use plastic items by 2022** due to low utility and high littering potential.
 - Bans **manufacture, import, stocking, distribution, sale, and use of certain single-use plastics**, including **polystyrene**, from 1st July 2022.
 - **Enforces collection and environmental management** of plastic packaging waste through EPR.
 - Increases plastic carry bag thickness from **50 microns to 75 microns** by September 2021 and to **120 microns by December 2022**.
- **Plastic Waste Management (Amendment) Rules, 2022**
 - Introduces **EPR guidelines with mandatory targets for recycling**, reuse of rigid plastic packaging, and use of recycled plastic content.
 - Imposes environmental compensation on those failing to meet EPR targets, based on the polluter pays principle.
 - Provides a framework to strengthen the circular economy of plastic packaging waste.
- **Plastic Waste Management (Amendment) Rules, 2024:**
 - The rules outline specific forms and procedures for registration, reporting, and certification related to plastic waste management and EPR obligations.
 - **Expanded Definitions:**
 - **Importer:** Now includes imports of various **plastic-related materials for commercial use**, beyond just plastic packaging and similar items.
 - **Producer:** Also Encompasses the production of intermediate materials for plastic packaging and contract manufacturing for brand owners.

- Manufacturers of carry bags and commodities from compostable or biodegradable plastics must **obtain certification from the Central Pollution Control Board (CPCB)** before marketing or selling.
 - These items must adhere to mandatory labeling requirements and comply with **Food Safety and Standards Authority of India (FSSAI) regulations** for food contact applications.
 - Manufacturers must **process pre-consumer plastic waste** generated during production and report it to the State Pollution Control Board or Pollution Control Committee.
- Compostable plastics must bear a **label indicating they are only compostable** under industrial conditions.
- Biodegradable plastics must specify the number of days they take to biodegrade and the environment in which they will biodegrade.
- **Mandatory Jute Packaging Act, 2010:** An Act enacted to ensure the **mandatory use of jute packaging** and to make provisions for the prevention of environmental pollution caused by the use of artificial packaging like **plastics** in the supply and distribution of certain products.

Alternatives to Plastics

- **Bagasse:** Made from sugarcane or beet pulp. It is compostable and eco-friendly.
- **Bioplastics:** Plant-based plastics used primarily in food packaging.
- **Natural Textiles:** Includes materials such as cotton, wool, and hemp.
- **Edible Seaweed Cups:** Seaweed grows rapidly, up to **60 times faster than land-based plants**, making it a sustainable option.
- **Algae-Blended Ethylene-Vinyl Acetate:** Utilizes algae to convert air and water pollutants (**ammonia, phosphates, and carbon dioxide**) into plant biomass rich in proteins.
- **Compostable Plastics:** Can be plant-based or fossil fuel-based and degrade through biological processes into CO₂, water, inorganic compounds, and biomass, without leaving toxic residues. For example, **BASF's Ecoflex**.

What Measures can be Adopted for Better Management of Plastic Waste in India?

- **"Trash to Treasure":** Implement a comprehensive circular economy approach to plastic waste management.
- Encourage **design for recyclability in product development**.
- Establish **material recovery facilities** in every major city to efficiently sort and process plastic waste by promoting **4R's: reduce, reuse, recycle, and recover**.
- Incentivize the **use of recycled plastics in manufacturing through tax breaks or subsidies**.
- Create a robust market for recycled plastics by mandating **minimum recycled content in certain products**, driving demand and closing the loop in plastic consumption.
- **Smart Waste, Smart Cities:** Integrate smart technology into waste management systems across urban India.
 - Implement **IoT-enabled smart bins** that can alert authorities when full, optimizing collection routes.
 - Use **AI and machine learning** for better waste sorting and recycling processes.
 - Develop **mobile apps for citizens to report illegal dumping** and locate nearest recycling centers.
- **Greening the Supply Chain:** Strengthen and expand the **Extended Producer Responsibility (EPR) system**.
 - Implement a **graded fee structure** where harder-to-recycle plastics incur higher EPR fees.
 - Introduce a **plastic credit trading system** to incentivize over-achievement of recycling targets.
 - **Extend EPR to cover the informal sector**, providing social security and better working conditions for waste pickers while formalizing their crucial role.
- **Nationwide Awareness and Education Campaign:** Launch a comprehensive, multi-lingual national awareness campaign on **plastic waste**.
 - Integrate plastic waste management into school curricula from primary to higher education.
 - Conduct **regular community workshops** on waste segregation and recycling practices.
 - Use **social media influencers and celebrities** to promote plastic-free lifestyles.
 - Establish a **national plastic waste innovation challenge** to engage youth in finding creative solutions to plastic pollution.
- **"Waste-to-Energy 2.0":** Invest in advanced waste-to-energy technologies for plastics that cannot be recycled.
 - Implement **pyrolysis and gasification plants in outskirts of major cities** to convert plastic waste into fuel or energy.
 - Ensure **strict emissions control and monitoring** for these plants to prevent air pollution.

- Use the energy generated **to power waste management facilities**, creating a self-sustaining system. Continuously research and adopt new technologies for handling difficult-to-recycle plastics.
- **Plastic Footprint:** Introduce mandatory annual **plastic footprint audits for large and medium-sized companies**.
 - Require public disclosure of plastic usage, waste generation, and recycling rates in annual reports.
 - Develop a standardized methodology for **calculating and reporting plastic footprints**.
 - Use this data to inform policy decisions and track progress in plastic waste reduction. Implement a rating system for companies based on their plastic footprint management.
- **Green Procurement:** Implement strict plastic waste reduction criteria in all government procurement policies.
 - Mandate the use of **recycled plastic content** in government-purchased products where feasible.
 - Prioritize **vendors with strong plastic waste reduction** and recycling practices.
 - Use government buildings as role models for **plastic-free buildings**. Extend these procurement policies to state-owned enterprises and encourage adoption by the private sector.
- **Waste-preneurs:** Launch a national incubator program specifically for waste management startups.
 - Provide **seed funding, mentorship, and networking opportunities** for innovative recycling businesses.
 - Create **mini special economic zones** with tax benefits for recycling and upcycling industries.
- **Towards Plastic-Free Farming:** Develop and subsidize **biodegradable alternatives to plastic mulch and greenhouse covers**.
 - Implement a **take-back program for agricultural plastics** like pesticide containers.
 - Promote the use of organic mulch and other sustainable farming practices.
 - Create a certification for **"Plastic-Free Farms"** to add value to their produce. Establish regional centers for recycling and proper disposal of agricultural plastics.
- **Plastic in Road Construction- Paving the Way with Waste:** Expand the use of plastic waste in road construction nationwide.
 - Develop standardized guidelines for the **optimal mix of plastic waste in road materials**.

- Establish regional plastic processing centers to convert waste into **road-ready materials**. Train local construction workers in plastic road-building techniques, creating new green jobs.
- **Thiagarajar College of Engineering in Madurai** has patented a method to create durable tiles and blocks from waste plastic, suitable for use as construction material and can serve as a model.



India's Path to Securing Critical Minerals

*This editorial is based on "[A push for critical minerals](#)" which was published in *The Financial Express* on 27/07/2024. The article highlights India's strategic move in Budget 2024 to exempt customs duties on critical minerals like lithium, crucial for advancing electric mobility and sustainable energy. It underscores the country's efforts to reduce import dependency and support domestic production while enhancing its commitment to environmental goals and energy security*

Tag: GS Paper-1, Mineral & Energy Resources, GS Paper-2, Government Policies & Interventions, GS Paper-3

The [Union Budget 2024-25](#) recognizes **energy security** as a key priority, proposing targeted **customs duty exemptions** for **critical minerals**, including **lithium**. This strategic move underscores India's commitment to accelerating its electric mobility transition and advancing its zero-emission ambitions. As **lithium-ion batteries** remain the most critical and cost-intensive component in **electric vehicles (EVs)**, this exemption aims to lower resource and production costs, incentivize manufacturing, and encourage innovation in electric mobility solutions.

India's heavy reliance on the **import and refinement of lithium and other critical minerals** presents significant challenges. By adopting a **more holistic approach to critical minerals**, India can better align its economic progress with environmental stewardship and strengthen its position in the global transition to sustainable energy and electric mobility.

What are Critical Minerals?

- **About:** Critical minerals are those minerals which are **essential for economic development and national security**.
 - The lack of availability of these minerals or **even concentration of existence, extraction, or processing in a few geographical locations** may lead to supply chain vulnerability and disruption.

➤ Key Characteristics:

- **Essential for Modern Technology:** They are indispensable components in various technologies, from clean energy (**solar panels, wind turbines, electric vehicles**) to electronics, defense, and healthcare.
- **Geopolitical Significance:** Their supply is often concentrated in a **few countries**, making them vulnerable to supply chain disruptions and price fluctuations.
- **Environmental Impact:** Extraction and processing of these minerals can have **significant environmental consequences** if not managed responsibly.

➤ Critical Minerals for India: The **Ministry of Mines** has identified **30 such minerals crucial for India's technological and renewable energy sectors.**

- A Committee was formed to assess and determine these minerals through international studies, inter-ministerial consultations, and empirical analysis.
 - The Committee recommends establishing a **Centre of Excellence for Critical Minerals** to periodically update and strategize the critical minerals list and develop effective value chains.
- **The 30 Critical Minerals for India:** Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, **Lithium**, Molybdenum, Niobium, Nickel, Platinum Group Elements (PGE), Phosphorous, Potash, **Rare Earth Elements (REE)**, Rhenium, **Silicon**, Strontium, **Tantalum**, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium, Cadmium.



Why are these Minerals Considered Critical?

- **Energy Transition and Electric Mobility:** Critical minerals, especially lithium, are crucial for India's transition to clean energy and electric mobility.
 - The country's lithium imports jumped from **Rs 13,673.15 crore** in FY2022 to **Rs 23,171 crore** in FY2023, underlining the growing demand.
 - With India aiming for **30% electric vehicle penetration by 2030 (India's EV Vision)**, secure access to these minerals is vital.
 - The recent customs duty exemption on critical minerals in the **Budget 2024** demonstrates the government's recognition of their importance in accelerating EV adoption and reducing production costs.
- **Space Exploration and Satellite Technology:** India's ambitious space program, including missions like **Gaganyaan**, relies heavily on critical minerals.
 - The **Indian Space Research Organisation (ISRO)** has been expanding its capabilities, with plans for a space station by 2035.
 - Rare earth elements and other critical minerals are essential for manufacturing high-performance magnets, specialized alloys, and advanced electronics used in satellites and spacecraft.
- **Renewable Energy Infrastructure:** Critical minerals are crucial for India's renewable energy targets, including achieving **500 GW of renewable energy capacity by 2030**.
 - Minerals like **indium, gallium, and tellurium are essential for solar PV technology**, while rare earth elements are vital for wind turbines.
 - Securing these resources is not just about meeting climate goals, but also about ensuring energy security and reducing dependence on fossil fuel imports, which could have significant positive impacts on India's trade balance and energy autonomy.
- **Digital Economy and Telecommunications:** As India's Digital Economy expects to reach **1 Trillion Dollar** by 2025, the demand for critical minerals in electronics and telecommunications infrastructure is set to soar.
 - The success of initiatives like Digital India and the rollout of 5G networks heavily depends on minerals such as **gallium, indium, and tantalum**.
- **The Silicon Heart Dependent on Critical Minerals:** Semiconductors, the brains of modern electronics, heavily rely on critical minerals.
 - Elements like **silicon, germanium, and gallium** are fundamental to semiconductor production.

- **India's Semiconductor Mission** aims to boost domestic semiconductor manufacturing, underscoring the critical role of these minerals in achieving technological self-reliance and reducing import dependence.
 - Also, the **National Quantum Mission** and **IndiaAI Mission** heavily rely on Silicon.
- **Geopolitical Influence:** Securing critical minerals enhances India's geopolitical standing and bargaining power.
 - The country's participation in global forums like the **Minerals Security Partnership (MSP)** and bilateral agreements, such as the recent **India-Australia Critical Minerals Investment Partnership**, demonstrate its proactive approach.
 - These initiatives not only secure supply chains but also position India as a key player in global mineral diplomacy.

What are the Major Challenges Related to Critical Minerals for India?

- **India's Import Dependency:** India's heavy reliance on imports for critical minerals poses significant economic and strategic risks.
 - This dependency is particularly concerning given the geopolitical concentration of these resources.
 - China's dominance in processing (**67% of lithium, 73% of cobalt, 70% of graphite, and 95% of manganese**) poses a significant risk to India's supply chain security.
 - This monopolistic control leaves India vulnerable to supply disruptions, price volatility, and potential geopolitical leverage.
- **The Exploration Conundrum:** Despite recent efforts, India's domestic exploration for critical minerals remains in its infancy.
 - The country's geological surveys have identified potential deposits in regions like **Jammu and Kashmir**, but large-scale commercial extraction is yet to materialize.
 - The recent discovery of **5.9 million tonnes of lithium reserves in Jammu and Kashmir**, while promising, requires significant investment and time for development.
 - The slow pace of exploration is exacerbated by challenges such as **complex geology, lack of advanced exploration technologies, and regulatory hurdles**.
- **Missing Links in the Value Chain:** India's limited capacity in **processing and refining critical minerals** presents a significant bottleneck.

- While the country may secure raw materials, the **lack of domestic processing** facilities forces reliance on other countries, primarily China, for refined products.
- This gap in the value chain not **only increases costs but also limits India's ability to capture the full economic potential** of these resources.
- The absence of a robust domestic processing industry also hinders the **development of downstream manufacturing sectors**, such as **battery production and electronics manufacturing**, crucial for initiatives like '**Make in India**' and the **National Electric Mobility Mission Plan**.
- **Balancing Extraction and Ecology:** The extraction and processing of critical minerals often come with significant environmental costs.
 - Mining operations can lead to **habitat destruction, water pollution, and increased carbon emissions**.
 - India, already grappling with environmental challenges, faces the dilemma of balancing its critical mineral needs with ecological preservation.
 - For instance, potential lithium mining in the **ecologically fragile regions of Ladakh** raises concerns about water scarcity and biodiversity loss.
 - An average silicon chip manufacturing facility today can use **10 million gallons of ultrapure water per day**.
 - Developing environmentally sustainable mining practices while meeting the growing demand for these minerals presents a complex challenge for policymakers and industry alike.
- **Price Volatility- A Double-Edged Sword:** The market for critical minerals is characterized by extreme price fluctuations, impacting India's manufacturing costs and competitiveness.
 - **Lithium prices have surged dramatically in recent years**, affecting the economics of electric vehicle production.
 - Price volatility creates uncertainty for investors and industries reliant on these minerals, **hindering long-term planning and investment**.

Net Import Reliance for Critical Minerals of India (2020)

Critical Mineral	Major Import Sources (2020)
Lithium	Chile, Russia, China, Ireland, Belgium
Cobalt	China, Belgium, Netherlands, US, Japan
Nickel	Sweden, China, Indonesia, Japan, Philippines

Vanadium	Kuwait, Germany, South Africa, Brazil, Thailand
Niobium	Brazil, Australia, Canada, South Africa, Indonesia China, South Africa, Australia, France, US
Rhenium	Russia, UK, Netherlands, South Africa, China
Beryllium	Russia, UK, Netherlands, South Africa, China
Tantalum	Australia, Indonesia, South Africa, Malaysia, US
Strontium	China, US, Russia, Estonia, Slovenia
Zirconium (zircon)	Australia, Indonesia, South Africa, Malaysia, US
Graphite (natural)	China, Madagascar, Mozambique, Vietnam, Tanzania
Manganese	South Africa, Gabon, Australia, Brazil, China
Chromium	South Africa, Mozambique, Oman, Switzerland, Turkey
Silicon	China, Malaysia, Norway, Bhutan, Netherlands

Note: The **Mines and Minerals (Development and Regulation) Amendment Act, 2023** introduces key reforms to enhance exploration and mining of critical minerals in India.

- **Omission of Six Minerals from Atomic Minerals:** Lithium-bearing, titanium-bearing, beryllium-bearing, niobium-bearing, tantalum-bearing, and zirconium-bearing minerals are removed from the atomic minerals list to **promote private sector involvement and increase production**.
- **Central Government Auction:** Central Government will **exclusively auction mineral concessions for critical minerals**, with revenues benefiting State Governments.
- **Exploration Licenses:** New exploration licenses will be introduced for deep-seated and critical minerals, aiming to attract foreign direct investment and junior mining companies, enhancing exploration and production capabilities.

What Measures can India Implement to Manage its Critical Minerals Requirements?

- **Critical Mineral Diplomacy:** Forging a **Global Alliances for Resource Security** India should intensify its “critical mineral diplomacy” efforts, establishing strategic partnerships with resource-rich countries.

This could involve:

- Expanding the mandate of **Khanij Bidesh India Limited** to negotiate more government-to-government deals.
- Creating a **Critical Minerals Intelligence Unit** to monitor global trends and opportunities.
- Offering **technical expertise, infrastructure development, or other incentives** to secure preferential access to minerals.
- **Circular Mineral Economy:** Develop a robust circular economy for critical minerals through:
 - Implementing **advanced e-waste recycling technologies** to recover valuable minerals.
 - Creating a **national database of end-of-life products** containing critical minerals.
 - India could set up specialized recycling zones in major cities, equipped with state-of-the-art technologies to extract critical minerals from e-waste, potentially recovering up to **50-60% of rare earth elements** from discarded electronics.
- **Mineral Tech Leap:** Boost technological capabilities in critical mineral extraction and processing through:
 - Establishing a **Critical Minerals Technology Mission**, similar to the successful **space and atomic energy programs**.
 - Offering **tax incentives for R&D investments** in critical mineral technologies.
 - Creating **industry-academia partnerships** focused on developing cutting-edge extraction and processing techniques.
 - Facilitating **technology transfer agreements** with global leaders in mineral processing.
- **GeoMapping Revolution:** Intensify and modernize domestic mineral exploration efforts by:
 - Employing **advanced geological mapping techniques**, including AI and machine learning.
 - Conducting **comprehensive aerial and satellite surveys** of potential mineral-rich areas.
 - Encouraging **private sector participation in exploration** through risk-sharing mechanisms.
 - Streamlining the process for granting exploration licenses.
- **Green Mining Initiative:** Develop sustainable mining practices tailored to India’s unique ecological context:
 - Implementing **strict environmental standards** for critical mineral mining.
 - Developing a comprehensive land rehabilitation program for mining sites.
 - Creating a **sustainability rating system for mining operations**.

- Establish a **“Green Mining Innovation Fund”** to support the development of **water-conserving lithium extraction methods** suitable for arid regions like Ladakh.
- **Skill India for Critical Minerals:** Address the skill gap in the critical minerals sector through:
 - Introducing specialized courses in **critical mineral geology, extraction, and processing in technical institutions**.
 - Establishing vocational training centers in mineral-rich regions.
 - Creating a national certification program for critical mineral professionals.
- **Mineral Processing Parks:** Establish dedicated mineral processing zones to boost domestic capabilities:
 - Offering **tax incentives and simplified regulatory processes** in these zones.
 - Ensuring world-class infrastructure including power, water, and logistics support.
 - Encouraging **co-location of related industries to create synergies**.
- **Mineral-to-Market Corridors:** Create dedicated infrastructure corridors linking mineral-rich areas to processing hubs and markets:
 - Establish **smart logistics hubs** with real-time tracking capabilities.
 - **Integrate renewable energy sources** to power these corridors.
 - Include data connectivity infrastructure for IoT and smart mining applications.
 - For instance, developing a **“Lithium Corridor”** from Ladakh to **manufacturing hubs in Gujarat**, with solar-powered logistics centers and 5G connectivity throughout.

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India's Elderly at the Crossroads

*This editorial is based on “**The other side of demographic dividend: Can we take care of our elderly?**” which was published in The Indian Express on 31/07/2024. The article highlights the rapid ageing of populations in South and East Asia, emphasizing the inadequacies in India's social protection, health care, and pension systems for the elderly, compared to more developed East Asian countries. It calls for policy planning to address the gaps in financial security, health, and social care for older persons in India.*

Tag: GS Paper - 2, Government Policies & Interventions, Issues Related to Elderly Human Resource

India is experiencing a **demographic shift** that demands urgent attention. While much of the public discourse focuses on the country's **youth bulge** and demographic dividend, the rapidly **aging population** needs equal attention. By **2050**, it's estimated that the **proportion of older persons in India will rise to 20.8% from 8.6% in 2011**. This rapid aging, occurring in just 20-30 years compared to a century in Western countries, is outpacing the development of adequate social protection systems for the elderly.

The needs of India's older population are not **receiving sufficient visibility or policy priority**. Unlike some East and Southeast Asian countries, India lacks a **universal public pension scheme**, comprehensive health insurance, or robust social-care provisions for the elderly. Available data highlights significant inequalities in the **availability, accessibility, affordability, and acceptability of services** needed by older persons. These disparities are influenced by factors such as **geographical location, class, caste, gender, and access to formal employment**. As India transitions into an aging society, addressing these gaps in financial security, health services, and social care for the elderly has become a critical imperative.

What are the Major Challenges Faced by Elderly in India?

- **The Pension Predicament:** India's pension system is woefully inadequate for its aging population.
 - Only about **12% of the workforce is covered by formal pension schemes (World Bank)**, leaving the vast majority without financial security in old age.
 - The **National Social Assistance Programme (NSAP)** provides a meager Rs. 200-500 per month to the elderly poor, barely enough for subsistence.
- **Healthcare Hurdles:** The burden of **non-communicable diseases (NCDs)** weighs heavily on India's elderly.
 - According to the **Longitudinal Ageing Survey in India (LASI)**, the majority of those above 60 suffer from NCDs like **diabetes, hypertension, and cardiovascular conditions**.
 - High expenditure on health is impoverishing **55 million Indians annually, says WHO**, with the elderly particularly vulnerable.
 - The **lack of geriatric care facilities** and specialists further compounds this issue, leaving many seniors struggling to manage their health needs.
 - India is home to **1/4th of the world's elderly but gets only 20 geriatricians/year**.

- **The Loneliness Epidemic:** Rapid **urbanization** and changing family structures have left many elderly Indians socially isolated.
 - The **traditional joint family system**, once a source of support and companionship for the elderly, is giving way to nuclear families.
 - This isolation has **severe mental health implications**, with **depression rates among the elderly estimated at 10-20%**.
 - The Covid-19 pandemic exacerbated this issue, highlighting the need for community-based support systems and social engagement programs for seniors.
- **Left Behind in a Tech-Driven World:** As India rapidly digitizes, many elderly citizens find themselves on the wrong side of the digital divide.
 - From **banking services to healthcare appointments**, essential services are increasingly moving online.
 - About **86% of senior citizens** do not know how to use digital technology or computers
 - This **digital illiteracy** not only limits their access to services but also **hampers their ability to stay connected with family and friends**, further deepening their isolation and dependency on others.
- **Elder Abuse:** Elder abuse is a growing concern in India, often hidden from public view. The data provided by **Elders Helpline 1090 and Elderline 14567** has revealed that elder abuse increased by **251% post lockdown**
 - **Financial exploitation, neglect, and even physical abuse** are also prevalent.
 - Despite the **Maintenance and Welfare of Parents and Senior Citizens Act, 2007**, enforcement remains weak.
 - Many cases go unreported due to dependency on abusers, fear of retaliation, or societal stigma, underscoring the need for stronger protective measures and awareness campaigns.
- **Housing Havoc:** Adequate and affordable housing for the elderly is a significant challenge in India.
 - While retirement communities are emerging for the affluent, options for middle and lower-income seniors are limited.
 - Lack of age-appropriate design features, such as **ramps, grab bars, and emergency response systems**, in existing housing stock poses safety risks.
 - The shortage of affordable assisted living facilities further complicates housing options for those requiring regular care.

What are the Major Elderly Care Schemes in India?

- **Department of Social Justice and Empowerment:**
 - **Atal Vayo Abhyudaya Yojana** (umbrella scheme)
 - **Integrated Programme for Senior Citizens (IPSRc):** Establishing homes to improve quality of life for senior citizens by providing shelter, food, medical care, and entertainment.
 - **State Action Plan for Senior Citizens (SAPSRc):** Encouraging states/UTs to create their own action plans for senior citizen welfare.
 - **Rashtriya Vayoshri Yojana (RVY):** Providing physical aids and assisted-living devices to senior citizens.
 - **Livelihood and Skilling Initiatives:** Includes **Senior Able Citizens for Re-Employment in Dignity (SACRED)** and Action Groups Aimed at Social Reconstruction (AGRASR Groups).
 - **Awareness Generation and Capacity Building:** Training, sensitization, and National Helpline for Senior Citizens (Elderline: 14567).
- **Ministry of Rural Development:**
 - **National Social Assistance Programme (NSAP):** Financial assistance to elderly, widows, and disabled persons.
 - **Indira Gandhi National Old Age Pension Scheme (IGNOAPS):** Monthly pension for elderly BPL individuals.
- **Ministry of Health and Family Welfare:**
 - **National Programme for the Health Care of Elderly (NPHCE):** Comprehensive healthcare for elderly at primary, secondary, and tertiary levels.
 - **Primary & Secondary Care:** Geriatric OPD, IPD, physiotherapy, and lab services in **713 districts**.
 - **Tertiary Care: Regional Geriatric Centres (RGCs)** and 2 National Centres for Ageing.
- **Ministry of Finance:**
 - **Atal Pension Yojana (APY):** Pension scheme for individuals aged 18-40, offering guaranteed pension at age 60.
- **Ministry of Housing and Urban Affairs:**
 - **Model Building Bye Laws, 2016:** Standards for elder-friendly environments in buildings and transport.
 - **Urban Bus Specification-II (2013):** Low floor buses for easy access for elderly and disabled.
 - **Pradhan Mantri Awas Yojana:** Priority housing allocation for families with senior citizens on ground or lower floors.
 - **DAY-NULM:** Shelters for urban homeless, including senior citizens.

What is the Recent Development in Health Insurance for the Elderly in India?

The **Insurance Regulatory and Development Authority of India (IRDAI)** has recently lifted the age ceiling for purchasing medical insurance policies, significantly benefiting senior citizens.

IRDAI's New Directions:

- **Removal of Age Barrier:** Individuals above **65 years** can now purchase health insurance policies, removing the previous age restriction.
- **Specialized Products:** Insurers are instructed to develop products catering to specific demographics such as senior citizens, students, children, and maternity.
- **Coverage for Pre-existing Conditions:** Insurers must provide coverage for all pre-existing medical conditions, including cancer and heart failure, as per the Government of India Gazette provisions.
- **Insurance Density and Penetration:** These measures are expected to increase insurance density and penetration in India.
- **Premium Payment Options:** Insurers are required to offer installment payment options for premiums.
- **Travel Policies:** Only general and health insurers are permitted to offer travel insurance policies.
- **AYUSH Treatments:** No cap on coverage for treatments under AYUSH (Ayurveda, Yoga, Naturopathy, Unani, Siddha, and Homeopathy).

What Additional Measures Should be Adopted to Enhance Elderly Care in India?

- **Silver Economy Boost:** Implement a national **"Silver Skills" program** to retrain and employ seniors in sectors like **childcare, traditional crafts, and mentorship roles**.
 - Create **tax incentives for companies hiring workers over 60**, and establish a **government-backed microfinance scheme** specifically for elderly entrepreneurs.
 - For example, **Singapore's successful "WorkPro" scheme**, which provides grants to companies that implement **age-friendly practices**, could be adapted for India. This approach not only provides income for the elderly but also utilizes their vast experience.
- **Tech-Empowered Eldercare:** Launch a nationwide **"Digital Dada-Dadi"** initiative to improve digital literacy among the elderly (considering all measures for digital penetration is taken to the last mile).

- Partner with **tech companies to develop user-friendly apps and devices tailored for seniors**, focusing on health monitoring, social connectivity, and essential services.
- Implement a **subsidized smartphone program** for low-income elderly.
- Additionally, **create a network of "Digital Sahayaks"** - young volunteers who can provide tech support to the elderly in their communities.
- **Community Care Hubs:** Establish formalized **"Varishtha Seva Kendras" (Senior Service Centers)** in every urban ward and rural panchayat.
 - These centers would serve as **one-stop shops for elderly needs**, offering links for health check-ups, legal aid, pension services, and social activities.
 - Modeled after **Japan's successful community-based integrated care system**, these hubs would also coordinate home care services and provide respite care for family caregivers.
 - Involve **local NGOs** in managing these centers to ensure community participation.
- **Geriatric Health Corps:** Create a cadre of **"Geriatric Health Workers"** within the existing **ASHA (Accredited Social Health Activist)** framework.
 - Provide specialized training in elderly care to these workers and equip them with **digital health toolkits** for remote monitoring and basic geriatric assessments.
 - Establish **mobile geriatric clinics** to reach remote areas, and integrate geriatric care modules into medical and nursing curricula to address the specialist shortage.
 - Additionally, the Indian Institute of Science (IISc) Bengaluru has launched **'Longevity India' to study aging-related health issues** and develop interventions for improved elderly care, a significant step.
- **Improving Financial Security Net:** Introduce a **"Senior Citizen Savings Bond"** with higher interest rates to encourage financial planning for old age.
 - Create **specialized health insurance products** for the elderly with lower premiums and wider coverage, including mental health and home care services.
 - For example, **Japan's Long-Term Care Insurance system**, which covers a range of elderly care services, could be adapted to the Indian context.
- **Elder Rights Protection:** Establish dedicated **"Elder Protection Units"** in police stations to handle cases of elder abuse and exploitation.

- Implement a **mandatory reporting system for healthcare providers and bank officials** to flag potential cases of elder abuse.
- Strengthen the **implementation of the Maintenance and Welfare of Parents and Senior Citizens Act** by setting up fast-track courts for elder-related cases and increasing penalties for non-compliance.
- **Age-Friendly Cities:** Develop a national “Age-Friendly City” certification program with guidelines for **accessible public spaces, transportation, and services**.
 - Incentivize cities to implement these guidelines through additional funding and recognition.
 - Key features could include **accessible public toilets, priority seating in public transport, and elderly-friendly parks** with exercise equipment.
- **Elderly Nutrition Mission:** Launch a “**Poshan for Elders**” scheme, extending the principles of the successful child nutrition program to the elderly.
 - This would include **providing fortified meals through community kitchens, nutrition education for caregivers**, and regular health check-ups focusing on nutritional status.
- **Silver Volunteers:** Create a national “**Senior Volunteer Corps**” to engage healthy elderly individuals in community service roles.
 - Provide incentives like health insurance coverage or travel allowances for active volunteers.
 - This approach not only benefits the community but also promotes **active aging and a sense of purpose among the elderly**, as demonstrated by successful programs like the Senior Corps in the US.



Drishti Mains Questions

1. Discuss the challenges and strategic initiatives needed to enhance socio-economic development and connectivity in Northeast India.
2. Discuss the challenges and potential solutions regarding the Minimum Support Price (MSP) in India's agricultural sector, emphasizing the implications for farmers' incomes and national food security.
3. Analyse the factors contributing to the reduction in the rural-urban consumption gap in India. How can targeted policy interventions further mitigate this divide? Discuss with examples.
4. India's burgeoning medical research sector holds immense promise. However, translating potential into reality requires addressing critical roadblocks. Discuss.
5. Discuss the impact of climate change on industrial activity in India and suggest measures to enhance the resilience and sustainability of the industrial sector.
6. What are the significance and challenges of the Indo-French relations? Suggest measures needed to be taken to further improve their relations.
7. Discuss the role of the National Security Advisor in India and highlight recent major concerns related to the office of NSA in India.
8. Discuss the challenges faced by India's job market in keeping pace with economic growth. What long-term policies can be implemented to address these issues?
9. How does a robust opposition contribute to effective governance and accountability? Highlight the challenges faced by opposition parties in fulfilling their constitutional role and suggest measures to strengthen their effectiveness in the Indian political context.
10. Evaluate India's approach to multilateralism. How does this strategy influence its position and role in global geopolitics?
11. What strategic measures can India adopt to ensure a smooth and effective transition to renewable energy while addressing economic and social challenges?
12. "Discuss the strategic measures required to harness India's demographic dividend effectively. How can policies in education, employment, healthcare, and social inclusion be tailored to maximize the potential of India's youthful population?"
13. Discuss the challenges faced by Persons with Disabilities (PwDs) in India and suggest effective measures to empower them, ensuring their full participation in society.
14. Discuss the major causes of flooding in India, differentiating between natural and man-made factors. Assessing the effectiveness of existing flood management strategies, suggest comprehensive solutions to enhance flood resilience in vulnerable regions of the country.
15. Discuss the challenges faced by India's statistical system in accurately measuring key socio-economic indicators like poverty and employment. What reforms are necessary to enhance the credibility and reliability of India's statistical data?
16. Discuss the importance of the blue economy for India and outline the key measures the government can adopt to ensure its sustainable development.

Drishti Mains Questions

17. Discuss the challenges and limitations of large-scale plantation drives as a strategy for forest conservation in India. Suggest alternative approaches that can effectively address these challenges while ensuring sustainable forest management and biodiversity preservation.
18. Evaluate the role of urban governance in achieving sustainable urban development in India. Discuss the key challenges faced and measures needed to enhance the effectiveness of urban governance for inclusive growth and environmental sustainability.
19. What are the critical strategies required to enhance the resilience and robustness of India's Digital Public Infrastructure in the face of technological disruptions and cyber threats?
20. Examine the potential of the services sector in India's growth trajectory. Discuss the key areas of concerns.
21. Discuss the strategic reforms and economic goals essential for revitalizing the Indian economy. How do these reforms aim to address current economic challenges and foster sustainable growth?
22. Examine the role of coalition politics in influencing fiscal federalism in India. Discuss how coalition dynamics shape fiscal policies and resource allocation between the Centre and states.
23. Examine why India's skilling efforts are not translating into improved employment outcomes and suggest measures to bridge this gap.
24. Discuss the concept of reasonable accommodation and its significance in the context of rights for persons with disabilities. Analyze the key challenges faced in implementing reasonable accommodations in India and policy measures that can be taken to address these challenges.
25. Plastic pollution has emerged as a critical environmental challenge. Examine the various dimensions of this issue in India, including its sources and impacts on ecosystems and human health.
26. Discuss the significance of critical minerals for India's economic development. Evaluate the potential risks associated with their supply chain vulnerabilities and propose strategies for mitigating these risks.
27. Examine the implications of India's rapidly aging population on its social and economic systems. What measures can be implemented to ensure comprehensive support for the elderly, considering the current gaps in health care, pensions, and social care?