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Content

India's Rising Role in Global Health Governance

This editorial is based on "The global struggle for a pandemic treaty" which was published in The Hindu on 01/08/2024. The article discusses the failure of WHO member states to finalize a historic Pandemic Agreement and highlights the contentious issues of pathogen access and benefit sharing, technology transfer, and the One Health approach, emphasizing the need for international cooperation and mutual solidarity to improve global pandemic preparedness and equity.

Tag: GS Paper - 2, Health, Important International Institutions, GS Paper - 3, Government Policies & Interventions

The recent **World Health Assembly** marked a significant step forward in global health governance with amendments to the **International Health Regulations and the extension of negotiations for a Pandemic Treaty**. However, the treaty's adoption remains uncertain. The central point of contention lies in the sharing of pathogens and related benefits, with developing countries demanding equitable access to vaccines and diagnostics produced using their genetic resources. Also, while the **One Health approach** gains traction, its implementation faces challenges due to resource constraints in developing countries.

India, as a major player in global health, must actively engage in these negotiations to protect its interests. It should advocate for a strong **Pathogen Access and Benefit Sharing mechanism,** push for technology transfer and intellectual property waivers, and ensure that the **One Health approach** is implemented in the country.

What are the Major Health Challenges Currently Affecting the Globe?

- **Cardiovascular Diseases**: **Cardiovascular diseases (CVDs)** are the leading cause of mortality globally.
  - Low- and middle-income countries are disproportionately affected. Of the **20.5 million CVD-related deaths in 2021**, approximately **80%** occurred in low- and middle-income countries.
  - In India, cardiovascular diseases account for more than **26% of all deaths.**
- **Infectious Diseases:** While **Covid-19** dominated headlines, other infectious diseases continue to pose significant challenges.
  - **Malaria** affects over 200 million people annually, with 94% of cases in Africa.
  - **HIV/AIDS,** though better managed, still affects **39.9 million** people globally.
  - **Tuberculosis** remains a major concern, causing 1.3 million deaths in 2022.
  - India faces challenges with **emerging infections and antimicrobial resistance**, with over 58,000 newborn deaths attributed to drug-resistant infections annually.
    - Also, Tripura state of India **registers 1,500 new HIV/AIDS** cases annually.
- **Mental Health Disorders:** **Mental health disorders affect 1 in 8 people globally**, with depression and anxiety being the most common.
  - Economic costs of mental health conditions are projected to reach **USD 6 trillion by 2030**.
  - Despite the scale of the problem, there's a significant treatment gap, with over **75% of people in low- and middle-income countries receiving no treatment.**
  - In India, an estimated **150 million people** need mental health interventions.
- **Malnutrition and Obesity:** Paradoxically, the world faces simultaneous challenges of undernutrition and obesity.
  - In 2022, 2.5 billion adults were overweight, including 890 million who were living with obesity, while 390 million were underweight.
  - Childhood malnutrition causes **3.1 million under-five child deaths** annually, while childhood obesity has increased tenfold in four decades.
  - This **double burden strains healthcare systems**, particularly in developing countries.
- **Non-Communicable Diseases (NCDs):** NCDs, including **cancer, diabetes, and chronic respiratory diseases,** cause **71% of global deaths annually**.
  - The burden is rising rapidly in low- and middle-income countries, where 85% of premature NCD deaths occur.
  - Modifiable risk factors like **tobacco use, physical inactivity, and unhealthy diet** contribute significantly.
  - India is home to 77 million diabetics, second highest in the world.
    - A World Economic Study estimates that India stands to lose up to USD 4.58 trillion between **2012-2030 due to NCDs**
- **Climate Change and Health:** **Climate change** is increasingly recognized as a major threat to global health.

- **Rising temperatures and extreme weather events** contribute to heat-related illnesses, respiratory diseases, and the spread of vector-borne diseases.
- The World Health Organization estimates that climate change will cause approximately **250,000 additional deaths per year between 2030 and 2050**.
- Air pollution, closely linked to climate change, causes **7 million premature deaths annually.**
  - It caused nearly 1.67 million deaths in India in 2019.

➢ **Water, Sanitation, and Hygiene (WASH)**: Inadequate access to clean water, sanitation, and hygiene facilities poses a significant health risk globally.

- **2.2 billion people** lack access to safely managed drinking water, while **4.2 billion lack safely managed sanitation services.**
- This contributes to the spread of waterborne diseases, with diarrheal diseases alone causing 829,000 deaths annually.
- Poor WASH conditions also exacerbate malnutrition and impede economic development.

➢ **Aging Population and Healthcare**: The global population is aging rapidly, with profound implications for healthcare systems.

- By 2050, **one in six people worldwide will be over 65,** up from one in 11 in 2019.
- This demographic shift increases the prevalence of age-related conditions like **dementia.**
- By 2050, the elderly population in India is projected to rise to 319 million (**19.5% of the total population**).

These major global health challenges highlight the need for coordinated international action and cooperation. However, achieving such coordination is not straightforward, as evidenced by the current lack of global consensus on the Pandemic Treaty.

Why is there a Lack of Global Consensus on the Pandemic Treaty?

➢ **Equity and Access to Medical Countermeasures:** At the heart of the disagreement is the issue of equitable access to **vaccines, treatments, and diagnostics during pandemics**.

- **Low- and middle-income countries (LMICs)** are pushing for guaranteed access to a significant portion **(at least 20%) of these resources**, while high-income countries are reluctant to commit to such binding agreements.
- This reflects the stark **inequities seen during the Covid-19 pandemic**, where wealthy nations secured the majority of vaccine supplies early on.

➢ **Intellectual Property Rights and Technology Transfer:** Another major point of contention is the governance of **intellectual property (IP) rights and technology transfer.**

- LMICs are advocating for **provisions that would facilitate the transfer of technology** and know-how to enable local production of vaccines and treatments.
  - This includes calls for IP waivers during health emergencies.
- High-income countries and pharmaceutical companies argue that strong IP protections are necessary to **incentivize innovation and investment in research and development.**
- They prefer voluntary mechanisms for technology transfer rather than mandatory ones.
- The disagreement extends to the interpretation and use of **TRIPS (Trade-Related Aspects of Intellectual Property Rights) flexibilities,** with LMICs pushing for explicit support of these flexibilities in the treaty.

➢ **Financing and Resource Allocation:** There's significant debate over how to finance pandemic preparedness and response, especially in resource-limited settings.

- LMICs argue for **substantial, predictable funding commitments** from wealthy nations to build and maintain robust health systems.
- High-income countries, while acknowledging the need for support, are **cautious about open-ended financial commitments.**
- The proposed creation of a **Pandemic Fund has been met with mixed reactions**.

➢ **Sovereignty and National Autonomy**: Many countries are concerned about potential infringements on national sovereignty.

- This is particularly evident in discussions about the **World Health Organization's (WHO) authority** during health emergencies.
- Some nations are **reluctant to cede decision-making power** to an international body, fearing it could override national policies or interests.

➢ **One Health Approach and Multisectoral Coordination:** The incorporation of the One Health approach, which recognizes the **interconnection between human, animal, and environmental health,** has met with mixed reactions.

- While many high-income countries strongly support this holistic approach, some LMICs view

it as an additional burden on their already strained resources.

- The challenge lies in operationalizing this approach across different sectors and ensuring that it **doesn't divert resources from immediate health needs in resource-limited settings.**

- **Geopolitical Tensions and Trust Deficit:** Underlying these technical issues are broader geopolitical tensions and a trust deficit between nations.
  - Historical inequities in global health governance, rise of **Bioterrorism**, combined with recent experiences during the Covid-19 pandemic, have heightened suspicions and reinforced north-south divisions.
  - Rebuilding trust and fostering genuine collaboration in this context is a significant challenge.

What Role can India Assume in Leading Global Healthcare Efforts?

- **Pharmaceutical Manufacturing and Supply Chain:** India should focus on **expanding and modernizing its pharmaceutical manufacturing capabilities,** aiming to ensure a stable global supply of affordable medicines and vaccines.
  - Investing in research and development will be crucial to move up the value chain **from generics to novel drug discovery.**
  - The country can lead initiatives to **strengthen global pharmaceutical supply** chains, reducing dependence on any single nation.
  - Leveraging schemes like the **Production Linked Incentive (PLI) for pharmaceuticals** will enhance India's manufacturing prowess.
  - Balancing domestic needs with global commitments while addressing quality concerns will be key to establishing India as the **undisputed "pharmacy of the world."**
- **Digital Health and Telemedicine:** India should capitalize on its digital health initiatives, particularly the **National Digital Health Mission**, to position itself as a leader in health technology.
  - Sharing expertise in developing and implementing large-scale digital health systems with other developing countries can solidify this leadership.
  - The success of **India's CoWIN platform** for Covid-19 vaccine management led to its adoption by several countries in 2022-2023, showcasing India's digital health leadership.
- **Traditional Medicine and Integrative Healthcare:** India should **promote evidence-based research** in traditional medicine systems like **Ayurveda** and their integration with modern healthcare.
  - Leading global efforts in standardizing and regulating traditional medicine practices can establish India as an authority in this field.
  - Leveraging the **WHO Global Centre for Traditional Medicine in Gujarat** can boost these efforts.
- **Affordable Healthcare Models:** India should actively share best practices from implementing **large-scale health insurance schemes like Ayushman Bharat** with the global community.
  - Promoting innovative, low-cost medical devices and healthcare delivery models can position India as a leader in affordable healthcare.
  - The country can spearhead initiatives for **affordable management of non-communicable diseases** in resource-limited settings.
- **Global Health Security and Pandemic Preparedness:** India should leverage its **vaccine manufacturing capabilitie**s and experience in managing infectious diseases to play a central role in global health security.
  - Contributing to **global disease surveillance networks** and early warning systems will be crucial.
  - India can share expertise in managing diseases like **tuberculosis and HIV/AIDS with other nations**.
  - Building on initiatives like the **Quad Vaccine Partnership** will strengthen India's position.
- **Medical Education and Healthcare Workforce:** India should take the lead in **developing global standards for medical education** and training, leveraging its experience in producing a large healthcare workforce.
  - Initiating **global programs for ethical recruitment and brain circulation** rather than brain drain will be crucial.
  - Building on recent reforms like the **establishment of the National Medical Commission** will be important.
- **Promoting Research and Clinical Trials:** India should promote ethical and inclusive clinical trial practices, leveraging its large and diverse population.
  - Leading research on **diseases prevalent in the Global South** can establish India as a key player in global health research.
  - Facilitating global collaborations in medical research, particularly in **genomics and personalized medicine,** will be crucial.

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Reimagining Biodiversity Conservation in India

This editorial is based on "Biodiversity needs a win against oil and gas" which was published in Hindustan Times on 07/05/2024. The article highlights the critical need for prioritizing conservation over development, particularly regarding Vedanta-owned Cairn's drilling proposal in Assam's Hollongapar Gibbon Sanctuary, which threatens the endangered Hoolock Gibbon and regional biodiversity. It underscores the conflict between sustainability goals, such as railway electrification, and the imperative to protect fragile ecosystems.

Tag: GS Paper - 3, Conservation, Environmental Pollution & Degradation, GS Paper - 2, Important International Institutions, Government Policies & Interventions

India stands at a critical juncture in its journey of **development and biodiversity conservation.** As one of the world's megadiverse countries, housing **over 8% of global biodiversity in just 2.4% of the Earth's land area**, India bears a unique responsibility towards nature conservation. Yet, the nation's rapid economic growth, urbanization, and industrial expansion are increasingly placing its rich ecosystems under threat.

This delicate balance between progress and preservation is starkly illustrated by the recent controversy surrounding **Vedanta-owned Cairn's proposal to drill in Assam's Hollongapar Gibbon Sanctuary.** The project threatens the habitat of the endangered Hoolock Gibbon, India's only ape species, encapsulating the broader challenges the country faces in reconciling development needs with biodiversity conservation.

India, as one of the world's **megadiverse countries,** has a crucial role to play in global biodiversity conservation. However, **rapid urbanization, industrial expansion, and resource extraction** are increasingly threatening its rich ecosystems. To address this, India needs to strengthen its environmental impact assessment processes, invest in comprehensive biodiversity mapping, and prioritize the protection of critical habitats.

What is the Significance of Biodiversity for India?

- **Ecological Significance:** India is one of the **17 megadiverse countries.** This rich biodiversity plays a crucial role in maintaining **ecological balance, nutrient cycling, and climate regulation.**
  - For instance, the **Western Ghats, a biodiversity hotspot, influences monsoon patterns** that are vital for agriculture across the country.
  - The mangrove forests of **Sundarbans act as natural barriers against cyclones and tsunamis**, protecting coastal communities.
  - More than **50% of India's cultivated plants** depend on pollinators to produce fruits, seeds and nuts.
- **Economic Significance:** Biodiversity forms the backbone of various economic sectors in India.
  - India's forest biodiversity supports the livelihoods of about **275 million people who depend on forest resources.**
  - Ecotourism, centered around India's diverse flora and fauna, contributes significantly to the economy.
- **Cultural and Traditional Significance:** India's biodiversity is deeply intertwined with its cultural fabric.
  - Many species hold religious or cultural significance, like the **sacred groves that have helped preserve biodiversity** for centuries.
  - Traditional knowledge systems, **particularly in medicine (Ayurveda, Siddha, and Unani),** are built upon the country's rich biodiversity.
- **Scientific and Medicinal Significance:** India's biodiversity offers immense potential for scientific research and drug discovery.
  - The country has already contributed significantly to global medicine, with examples like the **anti-malarial drug derived from the Cinchona tree.**
  - India is home to over 8000 species of medicinal plants. The genetic diversity in India's wild crop relatives is crucial for developing **climate-resilient and high-yielding crop varieties,** essential for future food security.
- **Climate Change Mitigation and Adaptation:** Biodiversity plays a vital role in India's climate change strategies.
  - Forests, which cover about 21.67% of India's geographical area, act as **carbon sinks**, sequestering about 7% of India's total GHG emissions.

What are the Efforts Related to Biodiversity Conservation in India?

- **About**: India is tremendously rich in species and ecosystem diversity. Over **1,03,258 species of fauna** and **55,048 species of flora** have been documented in the **10 biogeographic zones** of the country.

- Considering floral diversity, out of the **55,048 known plant species in India, 12,095 are endemic.**

- **Constitutional and Legal Provisions:**
  - **Article 48A** directs the state to protect and improve the environment and safeguard forests and wildlife, while **Article 51A(g) makes it a fundamental duty of citizens** to protect and improve the natural environment, including forests, lakes, rivers, and wildlife.
  - The **Environment (Protection) Act, 1986** empowers the central government to manage pollution, hazardous substances, and industrial activities, set emission standards, and coordinate with state authorities, **indirectly promoting biodiversity conservation.**
  - The **Biological Diversity Act, 2002** was enacted for conservation of biological resources, managing its **sustainable use and enabling fair and equitable sharing benefits** arising out of the use and knowledge of biological resources with the local communities.
  - In the landmark case of ***Animal Welfare Board of India vs A. Nagaraja & Ors (2014),*** the Supreme Court recognized that **every species has an inherent right to live and shall be protected by law,** emphasizing the constitutional mandate under Article 21 of the Constitution.
  - In the **Mk Ranjit Singh vs. Union of India** case, the Supreme Court affirmed the **right to a healthy environment and protection from climate change,** balancing species conservation with climate action.

- **Major Committees Related to Biodiversity Conservation:**
  - **Madhav Gadgil Committee Recommendations**:
    - 64% of the area under Ecologically Sensitive Area (ESA).
    - No new large dams or polluting industries in sensitive zones.
    - Existing industries to switch to zero pollution by 2016.
    - Establishment of Western Ghats Ecology Authority with statutory powers.
  - **Kasturirangan Committee Recommendations**:
    - 37% of Western Ghats as ESA.
    - Ban on mining, quarrying, and new thermal power projects.
    - Restrictions on hydropower projects and construction.

What are the Key Threats to Biodiversity in India?

- **Habitat Loss- The Vanishing Wilderness:** India's rapid urbanization and agricultural expansion are causing severe habitat loss.
  - Between 2001 and 2020, India lost **1.93 million hectares of tree cover,** equivalent to a 5.2% decrease since 2000.
  - The fragmentation of forests, such as in the **Western Ghats,** threatens endemic species like the **lion-tailed macaque**.
  - Recent projects like the **Mumbai-Ahmedabad bullet train**, cutting through **Thane Creek Flamingo Sanctuary,** exemplify how development often comes at the cost of critical habitats.
- **Invasive Species-The Silent Invaders**: Non-native species are wreaking havoc on India's ecosystems.
  - India's biodiverse ecosystems are threatened by a variety of alien plants like ***Lantana camara*, *Parthenium hysterophorous, Prosopis juliflora***, etc, introduced during British colonization.
    - Lantana alone has pervasively invaded **44% of India's forests.**
  - In the **Andaman Islands,** the invasive **giant African snail** threatens local biodiversity.
  - The recent spread of **Fall Armyworm** has affected maize crops across various Indian states since 2018, highlighting the economic impact of invasive species.
- **Climate Change- The Looming Threat:** Climate change is altering habitats and migration patterns across India.
  - Mangrove forests like Sundarbans are facing the "triple threat" of sea-level rise, lack of mud and squeezed habitats.
  - In the **Himalayas**, warming temperatures are pushing species to higher altitudes, threatening high-altitude specialists like the **snow leopard.**
  - **India's coral reefs**, covering about **5,790 sq km**, face multiple threats due to climate change.
    - The average live **coral** cover in Gulf of Mannar, one of the major coral reef areas in India, dropped from 37% in 2005 to 27.3% in 2021.
- **Human-Wildlife Conflict- The Uneasy Coexistence:** As human settlements expand, conflicts with wildlife intensify.
  - India reports over 500 people and 100 elephant deaths due to human-elephants in a year.

- The recent case of a **tiger being relocated after human conflict in the Ranthambore reserve** highlights the ongoing challenge.

- **Genetic Erosion-The Shrinking Gene Pool**: India's rich agrobiodiversity is under threat from modern agricultural practices.
  - Many farmers have shifted to modern hybrid varieties, leading to the loss of traditional crop varieties.
  - The rice varieties in India have declined from **110,000 in the 1970s to about 6,000 today.**
  - This erosion not only impacts food security but also reduces resilience to pests and climate change.
- **Pollution**: Pollution in various forms is severely impacting biodiversity. The Yamuna river, supporting over 50 fish species, is now **biologically dead for a 22 km stretch in Delhi** due to industrial effluents.
  - **Microplastic pollution** affects many fish species in the River Ganga.
  - Light pollution in coastal areas **disorients nesting sea turtles.**
- **Policy Implementation-The Execution Challenge:** While India has robust environmental laws, their implementation often falls short.
  - The recent controversy over environmental clearance for the **Etalin Hydroelectric Project in Arunachal Pradesh (rejected in its present form)** highlights the gaps in policy implementation.
- **Urban Biodiversity Loss-The Concrete Jungle Effect:** Rapid urbanization is decimating urban ecosystems.
  - India has lost nearly **one-third of its natural wetlands to urbanization**, agricultural expansion and pollution over the last four decades.
  - The decline of **house sparrows in cities (over 80% in some areas)** exemplifies the impact on common species.

What Strategies Can Be Implemented to Improve Biodiversity Conservation in India?

- **Ecosystem-based Management**: India should shift from **species-centric to ecosystem-based conservation.**
  - This involves identifying and protecting entire ecological networks, not just isolated protected areas.
  - For example, the 2018 initiative of declaring 438.904 square kilometers of the area around the Mudumalai Tiger Reserve (MTR) in the Nilgiris as an **eco-sensitive zone (ESZ)** is a step in this direction.
  - **More better implementation would involve:**
    - Integrating mapping into **land-use planning at state and district levels**
    - Providing incentives to local communities for maintaining these corridors
- **Community-led Conservation:** Involving local communities in conservation efforts has shown remarkable success.
  - The **Van Panchayats in Uttarakhand** demonstrate the potential of community-led conservation.
    - A former **Chambal dacoit** has become a **'Cheetah Mitra,'** now raising awareness about cheetahs in **Kuno, Sheopur.**
  - Pamela and Anil Malhotra, a couple from Kerala, have created an inspiring example of **private conservation efforts in India**.
    - In 1991, they purchased 55 acres of abandoned land in Kodagu district, Karnataka, which had been degraded due to human activities.
    - Over three decades, they transformed this barren land into a lush, **300-acre private wildlife sanctuary named SAI (Save Animals Initiative) Sanctuary.**
  - **To scale this approach:**
    - Strengthen and **expand Joint Forest Management Committees**
    - Provide **legal recognition and support to Community Conserved Areas**
    - Develop capacity-building programs for local communities in conservation techniques
- **Green Infrastructure:** Incorporating biodiversity considerations into infrastructure development is crucial.
  - The recent **National Highway Authority of India's guidelines for animal passages** in road projects is a positive step.
  - Further measures could include:
    - **Mandatory biodiversity impact assessments** for all major infrastructure projects
    - Developing **national standards for wildlife crossings** and **green bridges**
    - Promoting **urban biodiversity through green roofs**, vertical gardens, and urban forests
    - Creating a national database of biodiversity-friendly infrastructure solutions
- **Sustainable Agriculture:** Agriculture covers about 60% of India's land area, making it crucial for biodiversity conservation.

- **Other measures can include:**
  - Scaling up successful agro-ecological models like the Zero Budget Natural Farming **in Andhra Pradesh**
  - Providing incentives for crop diversification and maintenance of on-farm biodiversity
  - Creating market linkages for agrobiodiversity products to ensure economic viability

- **Technology-driven Conservation:** Leveraging technology can significantly enhance conservation efforts.
  - India's **use of drones for monitoring tigers in Sundarbans** shows the potential.
  - **Other applications include:**
    - Using satellite imagery and AI for **real-time monitoring of habitat changes and illegal activities**
    - Utilizing eDNA **techniques for non-invasive biodiversity** monitoring in aquatic ecosystems
- **Biodiversity Financing:** Sustainable financing is crucial for long-term conservation efforts. India can explore:
  - **Expanding the Compensatory Afforestation Fund** to include broader biodiversity conservation projects
  - Developing **green bonds specifically for biodiversity conservation** projects
- **Climate-adaptive Conservation:** With climate change impacting biodiversity, adaptive strategies are essential:
  - Conducting **vulnerability assessments of key ecosystems and species**
  - Developing climate-resilient protected area networks
  - Creating and maintaining **climate refugia in different biogeographic zones**
- **Invasive Species Management:** Addressing the issue of invasive species requires a coordinated approach:
  - Establishing a **national invasive species monitoring and early warning system**
  - Strengthening **quarantine measures at ports and borders**
  - Launching public awareness campaigns on the impacts of invasive species
- **Genetic Resource Conservation:** Preserving genetic diversity is essential for future adaptability:
  - **Expanding the network of gene banks** for both wild and domesticated species
  - Implementing **in-situ conservation programs** for crop wild relatives
  - Creating a digital database of India's genetic resources
  - Promoting research on **genomics for conservation of threatened species**

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Navigating the Ethical Frontier of Artificial Intelligence

This editorial is based on "AI needs cultural policies, not just regulation" which was published in The Hindu on 01/08/2024. The article highlights that to advance AI responsibly, we must balance regulation with promoting high-quality, ethical data, including digitizing and sharing cultural heritage. This approach will ensure more inclusive and effective AI systems by enhancing transparency and access.

Tag: GS Paper-3, Artificial Intelligence, GS Paper - 1, Effects of Globalization on Indian Society.

Artificial Intelligence (AI), which is the ability of machines to **mimic human intelligence**, promises to transform industries and enhance human capabilities through its advanced data processing and predictive abilities. **However, as AI becomes more integral to daily life, its ethical implications demand urgent attention**. The technology's potential to perpetuate biases, infringe on privacy, and cause job displacement raises significant concerns. Additionally, the rapid pace of AI development often outstrips existing regulatory frameworks, complicating issues of accountability and responsible use.

The ethical debate around AI encompasses various applications, from automated decision-making in critical sectors to its role in creative fields. Addressing these concerns requires a collaborative approach involving policymakers, technologists, and ethicists. Developing robust ethical guidelines, ensuring transparency, and safeguarding privacy are essential steps. As AI continues to evolve, navigating its ethical frontier is crucial to maximise its benefits while minimising risks and aligning its use with societal values.

What is Artificial Intelligence (AI)?

- **About:**
  - **AI** refers to the capability of a computer or robot controlled by a computer to perform tasks that typically require **human intelligence and judgment.**

- While no AI can handle the full range of tasks an average human can, some AI systems excel at specific tasks.

➢ **Characteristics & Components:**

- The key feature of AI is its **ability to reason and take actions** that maximise the likelihood of achieving a particular goal.
- **Machine Learning (ML)** is a subset of AI, and **Deep Learning (DL)** techniques facilitate automatic learning by processing large volumes of unstructured data, such as text, images, or video.

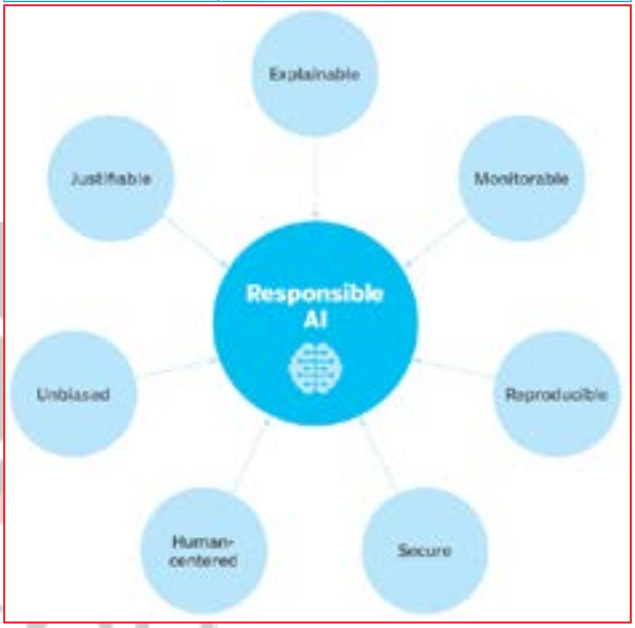
What is Ethical AI?

➢ **About:**

- Ethical AI, also **known as Moral or Responsible AI**, refers to the development and deployment of AI systems in a manner that aligns with ethical principles, societal values, and human rights.
- It emphasizes the responsible use of AI technology to ensure that it benefits individuals, communities, and society as a whole, while minimizing potential harms and biases.

➢ **Key Aspects of Ethical AI:**

Principle	Description
Transparency and Explainability	AI systems should be designed and implemented so that their operations and decision-making processes are understandable and explainable to users and stakeholders. This promotes trust and accountability.
Fairness and Bias Mitigation	Ethical AI aims to mitigate biases and ensure fairness in AI algorithms and models to prevent discrimination against certain individuals or groups based on factors like race, gender, ethnicity, or socioeconomic status.
Privacy and Data Protection	Ethical AI upholds individuals' right to privacy and advocates for the secure and responsible handling of personal data, ensuring consent and compliance with relevant privacy laws and regulations.
Accountability and Responsibility	Developers and organizations deploying AI systems should be accountable for the outcomes of their AI technologies. Clear lines of responsibility and mechanisms for addressing and rectifying errors or harmful impacts are essential.
Robustness and Reliability	AI systems should be robust, reliable, and perform consistently across different situations and conditions. Measures should be in place to handle adversarial attempts to manipulate or subvert the AI system.
Benefit to Humanity	AI should be developed and used to enhance human well-being, solve societal challenges, and contribute positively to society, economies, and the environment.



What are the Ethical Concerns Associated with AI?

➢ **Deepfakes and Misinformation Concern:** The increasing sophistication of AI-generated **deepfakes** poses a significant threat to the spread of **misinformation and disinformation**.

- For instance, the creator of the viral deep fake video featuring an actor admitted to the police that the video was made to boost the number of followers on an Instagram channel. **This demonstrates a lack of ethics in the use of such technologies**.

➢ **Algorithmic Bias: AI systems** can perpetuate or **amplify existing societal biases** if trained on biased data leading to discriminatory outcomes.

- For example, when researchers asked Stable Diffusion (a generative AI model) to generate images of a poor person, the **people depicted often appeared to be Black.**
- Also, a **United Nations Educational, Scientific and Cultural Organization (UNESCO) study** found that

Large Language Models (LLMs) exhibit significant gender bias, homophobia, and racial stereotyping.
    - For instance, women were disproportionately associated with domestic roles and terms like "home" and "family," whereas men were more often linked to "business" and "career."
- **Challenges of Primary Source Representation:** AI systems often **rely on secondary sources, predominantly in English**, and miss out on primary sources like archival documents and oral traditions.
    - Neglecting primary sources **can result in the underrepresentation or misrepresentation of certain societies and cultures**. This oversight often leads to biases being embedded in the data used to train AI models.
    - Accessing and digitizing the primary literacy sources could enhance AI's understanding of diverse cultures and histories but remains largely untapped.
- **Data Privacy:** The collection and use of **personal data** for AI development raises concerns about **privacy infringement and misuse.** Also, the increasing reliance on AI for surveillance purposes can lead to **mass surveillance and erosion of civil liberties.**
    - For instance, generative AI tools that are trained on data scraped from the internet might retain personal details about individuals, including information about their family and friends leading to **potential identity theft or fraud.**
- **Black Box Problem:** Many AI models are **complex and difficult to understand**, making it challenging to explain their **decision-making processes.** This lack of **transparency can hinder accountability.**
    - For instance, **self-driving cars** face complex ethical dilemmas, such as deciding who to prioritise in an accident scenario.
- **Liability Issue:** Determining who is responsible when an AI system causes harm is a complex **legal and ethical challenge**.
    - For example, Air Canada was held liable for a **negligent misrepresentation** made to a customer by one of its chatbots in a case that highlights broader risks businesses must consider when adopting AI tools.
- **Automation and Unemployment:** The potential for AI to automate jobs raises concerns about **job displacement and economic inequality.** The rapid pace of AI development can lead to **economic disruption and challenges** for industries and workers.
    - For instance, according to the World Economic Forum, around **85 million jobs** may be lost to AI by 2025. Such a scenario may lead to an increase in **economic inequality.**
- **Data Ownership:** The ownership of data generated by individuals is a complex **legal and ethical issue.** As AI systems increasingly rely on user-generated content, questions arise about who owns the data and how it can be used. It also raises concerns on **copyright and intellectual property rights**.
    - For instance, the **creation of art using AI** raises questions about copyright ownership and the potential for **plagiarism and copyright infringement.**
- **Autonomous Weapons:** The development of autonomous weapons raises questions about the role of humans in decision-making and the potential for unintended consequences. The use of **lethal force by autonomous systems** presents **complex ethical and security dilemmas.**
- **Digital Divide:** Unequal access to AI technology can exacerbate existing social inequalities.
    - For instance, with **internet penetration at around 52%** of the total population in India, discriminate use of AI could further lead to **widening of the digital divide and benefits of AI.**
- **Environmental Ethics:** The development and deployment of AI technologies have environmental impacts, raising questions about sustainability and ethical responsibility.
    - In its latest annual environment report, Google noted a **17% rise in electricity use by data centers in 2023**, a trend expected to persist as **AI tools become more widely deployed and used**.

What Steps Have Been Taken to Address Ethical Concerns of AI?

- **At International Level:**
    - **Global Alliance for Social Entrepreneurship:** At the **World Economic Forum 2024** in Davos, the **Schwab Foundation's Global Alliance for Social Entrepreneurship** launched a new initiative on **AI for Social Innovation**, co-initiated by **Microsoft**.
        - This initiative, involving major tech and ecosystem leaders, **aims to promote the use of AI for positive social impact**, showcase successful applications, and develop responsible implementation guidelines.
    - **EU AI Act:** The European Union has come up with the **first comprehensive AI regulation** (**EU AI Act)** that aims to govern the risks of AI systems and **protect fundamental rights** of EU citizens.

- Countries like **China, Canada, and Singapore** have introduced their own AI regulations or guidelines.

❍ **Example of California: Lawmakers of California** have advanced a bill requiring AI companies to test their systems and implement safety measures to prevent misuse, such as attacks on the electric grid or aiding in chemical weapon creation.

❍ **Effects by Tech Gaints: Microsoft, Meta, Google, Amazon and Twitter** are among the companies that have formed responsible AI teams, who advise on the safety of consumer products that use artificial intelligence and oversee their alignment with ethical standards, and foster accountability.

❍ **UK AI Safety Summit:** The 2023 UK AI Safety Summit focused on addressing the safety and security aspects of AI, emphasizing the need for international cooperation.

➢ **At National Level:**

❍ **Advisory on AI Models:** The Ministry of Electronics and Information Technology (MeiTY) issued an advisory on AI models and deepfakes in 2024, under Information Technology Rules 2021.

❍ **IndiaAI Mission:** The IndiaAI mission aims to foster AI innovation by creating a robust ecosystem through strategic public-private partnerships.

- It will enhance computing access, data quality, and indigenous AI capabilities, attract top talent, support startups, and promote ethical, impactful AI for responsible, inclusive growth in India's AI sector.

❍ **Responsible AI for Youth:** The government has launched a National Program for the youth namely, 'Responsible Artificial Intelligence (AI) for Youth'.

❍ **National Strategy on AI:** In 2018, NITI Aayog released the National Strategy on Artificial Intelligence (NSAI), which outlined a roadmap for safe and inclusive AI adoption across five public sectors in India.

- The strategy introduced the "**AI for All**" mantra as a benchmark for future AI development and emphasised ensuring the responsible use of AI.

Other Initiatives Related to AI

- Global INDIAai Summit
- Global Partnership on Artificial Intelligence (GPAI) Summit
- Artificial Intelligence Safety Summit 2023
- Artificial Intelligence Mission
- US India Artificial Intelligence Initiative

What Should be the Road Ahead?

Addressing the ethical challenges of AI requires a **multidisciplinary approach involving policymakers, technologists, ethicists, and civil society**. Key steps include:

- **Develop and Implement Ethical Frameworks:** Create **comprehensive ethical guidelines and regulations** at national and international levels to govern AI development and deployment.
- **Enhance Diversity and Inclusivity:** Ensure that AI development teams are diverse to reduce biases and foster inclusive design. For example, accessing and digitizing the primary literary sources could enhance AI's understanding of diverse cultures and histories but remains largely untapped.
- **Digitising Cultural Heritage.** It can provide AI with a rich and diverse dataset, transforming our understanding of history and safeguarding cultural artifacts. This effort could benefit smaller companies and the open-source AI community by democratizing access to data and fostering global innovation.
- **Adopt Best Practices:** Follow established best practices for transparency, fairness, and accountability in AI systems.
- **Promote Transparency and Explainability:** Design AI systems that provide clear and understandable explanations for their decisions and actions.
- **Implement Algorithmic Audits:** Regularly assess AI systems for **fairness and bias** through audits to maintain accountability.
- **Strengthen Privacy and Data Protection:** Adopt strong data privacy measures and ensure secure handling of personal and sensitive information. Also, obtain explicit **consent from individuals** before collecting or utilizing their data.
- **Invest in AI Ethics Education and Training:** Integrate ethics courses into AI and computer science curricula and offer ongoing ethics training for AI professionals.
- **Raise Public Awareness:** Educate the public about AI technologies, their benefits, risks, and ethical implications.
- **Establish Accountability and Oversight Mechanisms:** Develop regulatory bodies to monitor AI systems and ensure compliance with ethical standards.
- **Implement Accountability Measures:** Define clear lines of responsibility for AI decisions and outcomes, and address violations through legal and regulatory frameworks.

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Balanced Approach to GM Crops

This editorial is based on "Need for pragmatism, not ad hocism, on GM" which was published in Hindustan Times on 24/07/2024. The article brings into focus the Supreme Court's split decision on GM mustard and underscores the critical need for a comprehensive national biosafety policy for genetically modified crops in India.

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

The Supreme Court has recently put a temporary **hold on the cultivation of genetically modified (GM) mustard.** The court was divided in its opinion on whether to allow the release of GM mustard. Despite the differing views on GM mustard, the court unanimously agreed that India urgently needs a **clear and comprehensive policy to regulate genetically modified organisms**. This policy should ensure the safe and responsible development and use of GM technology in agriculture while also addressing potential risks.

While caution is essential when introducing new technologies, the **government's indecision on GM crops has hampered agricultural progress** and food security. The absence of clear regulations has also led to uncertainties about the GM content in imported food products. To address these challenges, India must adopt a **science-based approach,** establishing rigorous safety protocols and monitoring systems for GM crops and food items.

What are Genetically Modified Crops?

- **About:** Genetically modified crops are plants whose DNA has been altered using genetic engineering techniques.
  - This process involves introducing new genes or modifying existing ones to produce desired traits.
- **Global Adoption and Use:**
  - **Introduction**: GM crops were first introduced in the USA in **1994** with the **Flavr Savr tomato,** which had been genetically modified to slow tomato's ripening process, delaying softening and rotting.
  - **Current Status**: Recent data from the **International Service for the Acquisition of Agri-biotech Applications (ISAAA)** shows that more than 18 million farmers in **29 countries**, including India**,** planted over 190 million hectares (469.5 million acres) of GMO crops in 2019.
- **GM Crops in India**
  - **Approved Crop**: Bt cotton is the only GM crop approved for cultivation in India.
    - **Cultivation Area**: Grown on approximately 11 million hectares.
  - **Research and Trials**: Other crops such as **mustard, chickpea, pigeonpea and sugarcane** are in various stages of research, field trials and deliberations.
  - **Regulatory Framework in India**: Governed by the "Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms, Genetically Engineered Organisms or Cells" (Rules, 1989) under the Environment (Protection) Act, 1986.
    - Competent authorities notified under Rules, 1989:

What are the Benefits of Genetically Modified Crops?

- **Battling Pests and Diseases:** Genetically modified crops can be engineered to resist pests and diseases, reducing the need for chemical pesticides.
  - For example, Bt cotton **produces its own insecticide,** effectively controlling bollworm infestations.
    - This not only increases yield but also decreases the environmental impact of farming.
    - In India, the adoption of Bt cotton has led to **significant increases in cotton production**, making the country a leading global producer.
    - This pest resistance can be particularly crucial in regions **where crop losses due to pests are a major concern.**
- **Weather-Proof Farming:** GM crops can be designed to withstand extreme weather conditions, a critical advantage in the face of climate change.
  - Drought-tolerant maize varieties, for instance, can maintain yields under water-stressed conditions.
  - This resilience can help ensure food security in regions prone to erratic rainfall or prolonged dry spells.

- In countries like **Kenya**, drought-tolerant maize has shown promise in improving yields during dry seasons.

- **Nutritional Powerhouses- Fighting Hidden Hunger:** Biofortification through genetic modification can enhance the nutritional value of crops.
  - **Golden Rice, enriched with beta-carotene,** aims to address Vitamin A deficiency in developing countries.
  - Other examples include **iron-rich rice and zinc-fortified wheat.**
  - These nutritionally enhanced crops have the potential to combat malnutrition and **micronutrient deficiencies**, particularly in regions where diversified diets are challenging to achieve.
- **Green Revolution 2.0:** GM crops often boast higher yields and improved resource efficiency.
  - Herbicide-tolerant crops allow for more effective weed control, reducing competition for nutrients and water.
  - Crops modified for **enhanced photosynthesis or nitrogen use** can produce more with less input.
    - For example**, research on C4 rice aims to significantly increase rice yields.**
  - These advancements could be crucial in meeting the growing global food demand while minimizing the expansion of agricultural land, thereby protecting natural habitats.
- **Eco-Friendly Farming- Reducing Agriculture's Footprint**: GM crops can contribute to more sustainable farming practices.
  - Herbicide-tolerant crops often enable no-till farming, which reduces soil erosion and carbon emissions.
  - Insect-resistant crops reduce **insecticide use,** benefiting non-target organisms and improving overall ecosystem health.
- **Shelf-Life Superstars:** GM technology can be used to develop crops with extended shelf life, significantly reducing post-harvest losses.
  - The **FlavrSavr tomato,** though no longer in production, was an early example of delayed ripening.
  - Extended shelf life could also reduce the carbon footprint associated with frequent **transportation and refrigeration of perishables.**
    - This could be particularly impactful in developing countries where lack of **refrigeration and poor transportation infrastructure** lead to significant food waste.
- **Crops as Medicine Factories:** Plants can be genetically modified to produce vaccines, antibodies, and other pharmaceutical compounds.
  - This approach, known as **"biopharming,"** could potentially reduce the cost and increase the accessibility of certain medicines.
  - For instance, research is ongoing on **producing edible vaccines in crops like bananas and potatoes**.
  - While still largely in the research phase, this technology holds promise for revolutionizing vaccine and drug production.
- **Phytoremediation Champions:** Some GM plants are being developed for their ability to absorb and concentrate specific pollutants from the soil, a process known as **phytoremediation**.
  - Plants have been modified to better absorb heavy metals or break down organic pollutants.
  - For example, **modified poplars** have shown enhanced ability to clean up contaminated sites.

Why has India not Approved Commercial Cultivation of any GM Crop Since Bt Cotton?

- **Regulatory Hurdles and Policy Inconsistency:** India's regulatory framework for GM crops has been marked by complexity and frequent changes, creating an uncertain environment for approval.
  - The **Genetic Engineering Appraisal Committee (GEAC),** responsible for approving GM crops, has often been caught between scientific recommendations and political pressures.
  - For instance, in 2009**, GEAC recommended the commercialization of Bt brinjal,** but the then-environment minister **imposed a moratorium,** citing the need for more studies and public consultations.
  - This pattern of scientific bodies giving approvals followed by political intervention has created a **regulatory deadlock.**
- **Public Opposition and Activist Influence:** Strong opposition from environmental groups, farmer organizations, and some scientists has significantly influenced the GM crop debate in India.
  - These groups have raised concerns about **biosafety, biodiversity loss, and socio-economic impacts** on small farmers.
  - The case of **GM mustard**, **which received GEAC approval in 2017** but remains unapproved for commercial cultivation due to ongoing legal challenges, exemplifies this influence.

- **Economic and Trade Considerations:** India's position on GM crops is also influenced by economic and trade factors.
  - There are concerns that widespread adoption of GM crops could **affect India's agricultural exports,** particularly to GM-sensitive markets like Europe.
  - Moreover, the experience with Bt cotton, while increasing yields, has raised issues **about seed prices and market concentration.**
  - The dominance of multinational companies in the GM seed market has led to concerns about **seed sovereignty and the impact on domestic seed companies.**
- **Political and Federal Complexities:** India's federal structure adds another layer of complexity to GM crop approvals.
  - While the **central government sets overall policy**, **agriculture is a state subject,** allowing state governments to have significant say in agricultural decisions.
    - This has led to situations where states have banned GM crop trials even after approvals.
    - For instance, in 2018 states including **Rajasthan, Madhya Pradesh, Bihar and Delhi, Punjab, West Bengal and Kerala** had stated their opposition to GM mustard.

What are the Major Challenges Related to Genetically Modified Crops?

- **Environmental Concerns:** GM crops raise significant ecological questions. There's concern about potential gene flow to wild relatives, which could create **"superweeds" resistant to herbicides**.
  - The impact on non-target organisms is another worry, while Bt crops reduce overall pesticide use, they may affect beneficial insects.
  - Moreover, there's debate about **whether GM crops contribute to biodiversity loss by promoting monoculture farming**.
- **Health and Safety Uncertainties:** While numerous studies have found **GM foods safe for consumption**, concerns persist about potential long-term health effects.
  - Critics argue that **current safety assessments may not capture subtle or long-term impacts.**
    - There are worries about the potential for new allergens or changes in nutritional content.
  - For example, the **StarLink corn controversy in 2000**, where a GM corn variety approved **only for animal feed entered the human food supply**, highlighted the challenges in preventing cross-contamination.
- **Socio-Economic Impacts:** The adoption of GM crops can have complex socio-economic repercussions.
  - While they can **increase yields and farmer incomes,** as seen with Bt cotton in India, there are **concerns about market concentration** and farmer dependence on seed companies.
  - The **high cost of GM seeds and associated inputs** can be prohibitive for small-scale farmers.
  - The global dispute over GM crop patents, exemplified by cases like **Monsanto's legal battles with farmers**, highlights issues of **intellectual property rights in agriculture.**
- **Regulatory Challenges:** Establishing effective regulatory frameworks for GM crops is complex.
  - Different countries have varying approval processes and labeling requirements, creating trade complications.
  - The **EU's stringent regulations contrast** with the **U.S.'s more permissive approach,** leading to trade disputes.
  - Developing countries often lack resources for comprehensive biosafety regulations.
  - The challenge of monitoring and enforcing regulations, especially in regions with porous borders, adds to the complexity.
- **Ethical and Cultural Considerations:** GM crops raise ethical questions about the extent of human intervention in nature.
  - There are concerns about **"playing God"** and the moral implications of crossing species barriers.
  - The issue of GM crops also intersects with **broader debates about food sovereignty** and the **right of communities to determine their own food systems.**
    - These ethical dimensions add layers of complexity to the scientific and economic considerations surrounding GM crops.
- **Coexistence and Contamination Issues:** Managing the coexistence of GM and non-GM crops presents practical challenges.
  - Cross-pollination can lead to **unintended presence of GM material in non-GM or organic crops.**
  - In 2013, an Oregon farmer found **unauthorized GM wheat in his field**, leading to temporary import bans by some countries.
  - Establishing effective segregation practices throughout the supply chain is complex and costly.

- This issue is particularly problematic for organic farmers, **who risk losing certification if their crops are contaminated.**

- **Resistance Development:** The evolution of resistance in target pests and weeds poses a significant threat to the long-term efficacy of GM crops.
  - **Bt cotton,** initially highly effective against bollworms, has seen **decreased efficacy in some regions** due to pest resistance.
  - Similarly, the widespread **use of glyphosate-resistant crops has led to the emergence of glyphosate-resistant weeds** in many areas.
  - This creates a **"technological treadmill"** where farmers become dependent on ever-evolving GM technologies to maintain yields.

What Measures can be Adopted to Promote the Balanced Use of GM crops in India?

- **Transparent Trials-Sowing Seeds of Trust:** Implement a system of **transparent, publicly accessible field trials for GM crops**.
  - Establish an online portal where all **trial data and results are published in real-time.**
  - Encourage independent scientists and stakeholders to observe and verify trials.
  - This transparency can help build public trust and provide a robust evidence base for decision-making.
- **Biotech Bridges-Fostering Public-Private Partnerships:** Create a framework for collaborative research between **public institutions and private companies.**
  - This can help **balance profit motives with public interest** and ensure that GM technology addresses local agricultural needs.
  - Establish **clear guidelines for sharing intellectual property and benefits.** Such partnerships can leverage private sector innovation while maintaining public oversight.
  - This approach can also help in **developing GM crops specifically tailored to Indian agricultural conditions** and nutritional needs.
- **Green Gene Bank-Preserving Agricultural Heritage:** Establish a comprehensive **national gene bank** to preserve indigenous crop varieties.
  - Allocate funding for **collection, documentation, and storage of traditional seeds.**
  - This initiative can **safeguard biodiversity while allowing for GM crop development.**
  - By preserving genetic diversity, this measure **addresses concerns about genetic erosion** and maintains options for future crop development.
- **Farmer-First Policies-Empowering the Grassroots:** Develop policies that **prioritize small and marginal farmers in GM crop adoption.**
  - Create farmer committees at district levels to participate in decision-making processes.
  - Provide comprehensive training and **support systems for farmers adopting GM technology**.
  - Implement **insurance schemes to protect farmers against potential failures of GM crops**.
  - This approach ensures that the interests of the most vulnerable agricultural communities are central to GM crop policies.
- **Eco-Impact Assessments-Cultivating Environmental Harmony:** Mandate **long-term environmental impact studies** before approving any GM crop.
  - Establish a network of **ecological observatories to monitor impacts on local ecosystems**.
  - Develop protocols for **assessing effects on non-target organisms** and biodiversity.
  - Implement a system of **periodic reviews** to assess cumulative environmental impacts.
- **Nutritional Navigation-Targeting Hidden Hunger:** Focus GM crop research on **addressing specific nutritional deficiencies prevalent in India.**
  - Collaborate with health experts to identify key nutrients needed in different regions.
  - Develop **biofortified crops tailored to local dietary habits** and deficiencies.
  - Implement **pilot programs to assess the effectiveness** of these nutritionally enhanced GM crops.
  - This targeted approach can demonstrate tangible health benefits of GM technology, **potentially increasing public acceptance.**
- **Regulatory Reboot-Streamlining with Science:** Overhaul the regulatory framework to create a **clear, science-based approval process for GM crops.**
  - Establish an **independent biotechnology regulatory authority** with representation from various stakeholders.
  - Implement **time-bound decision-making processes** to avoid indefinite delays.
  - Develop clear guidelines for risk assessment and management.
  - This streamlined, transparent regulatory system can boost confidence in the approval process and **encourage responsible innovation.**

- **Label Logic-Empowering Consumer Choice:** Implement a comprehensive, **easy-to-understand labeling system for GM products.**
  - Develop clear guidelines for what constitutes a GM product requiring labeling.
  - Launch public awareness campaigns to **educate consumers about GM labeling**.
  - Establish **strict penalties for non-compliance** with labeling regulations.
  - This measure respects **consumer rights to information and choice**, potentially alleviating concerns about unknowingly consuming GM products.
- **Coexistence Corridors-Balancing Diverse Farming Practices:** Develop guidelines and infrastructure for the **coexistence of GM and non-GM crops.**
  - Establish buffer zones and **isolation distances to prevent cross-pollination**.
  - This approach allows for agricultural diversity while minimizing conflicts between different farming systems.
- **Harmonizing International Standards:** Actively participate in international forums to develop harmonized standards for GM crops.
  - Work towards establishing **mutually recognized safety assessment procedures with major trading partners**.
  - Contribute to the development of **global best practices in GM crop regulation and trade.**
  - This engagement can help address trade-related issues and promote a more cohesive global approach to GM crop governance.
  - By taking a leadership role, India can **ensure its interests and concerns are reflected in international GM crop policies.**

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From Crisis to Cooperation: India's Role in South Asia

This editorial is based on "With Bangladesh in turmoil, why India should exercise caution" which was published in The Indian Express on 06/08/2024. The article highlights the need for India to navigate the shifting political landscape in Bangladesh with sensitivity, balancing support for democratic processes while safeguarding its strategic and economic interests.

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

The evolving **geopolitical landscape in South Asia** underscores the need for India to adapt its approach towards its neighboring countries with prudence and pragmatism. The recent upheaval in **Bangladesh**, resulting in the resignation of Prime Minister of Bangladesh and the Bangladesh Army's interim governance, highlights the **volatility of regional politics** and the imperative for India to support the democratic aspirations of its neighbors while maintaining strategic relationships. The parallels with **Nepal's 2006 movement for multi-party democracy** remind us that India's diplomatic stance should align with the popular will, fostering stability and positive engagement.

As regional dynamics continue to evolve, India's commitment to fostering peace, stability, and development in its neighborhood will not only secure its **own strategic interests** but also contribute to the broader **goal of regional harmony and prosperity.**

Why India's Neighbourhood is Facing Continuous Political and Economic Turmoil?

- **Military Interference in Civilian Governance:** Many countries in South Asia have a history of military coups and interventions, undermining democratic institutions.

- **Pakistan has experienced direct military rule** for nearly half its existence since independence.
- The **2021 military coup in Myanmar,** where the military (Tatmadaw) seized power, detaining civilian leaders sparked widespread civil unrest.
- In Bangladesh, the military has intervened multiple times, most notably in **2007-2008**.
- These interventions often **lead to political instability, human rights violations, and economic disruptions**.

➢ **Economic Vulnerabilities and External Dependencies:** Sri Lanka's economic crisis in 2022 is a stark example, with external debt reaching all time high.

- Bangladesh's dependence on the garment industry which accounts for **80% of its exports**, makes it vulnerable to global garment demand fluctuations.
- The Maldives' tourism sector contributes about **28% to its GDP,** exposing it to external shocks like the **Covid-19 pandemic,** which caused its economy to contract.
- Pakistan's external debt stood at **USD 130.6 billion by the end of 2022**, with China holding about **30% of it**, creating potential for economic leverage.

➢ **Geopolitical Competitions and External Influences:** China's investments in Pakistan's infrastructure through the **China-Pakistan Economic Corridor (CPEC)** have significantly increased Beijing's influence.

- In Sri Lanka, the **handover of Hambantota Port to China** on a 99-year lease due to debt issues exemplifies how economic dependencies can translate into strategic concessions.
- Nepal's balancing act between India and China is evident in infrastructure projects like the **Pokhara International Airport, built with Chinese assistance.**

➢ **Climate Change and Environmental Challenges:** The **Maldives**, with **80% of its land less than 1 meter above sea level,** faces an existential threat from rising sea levels.

- Bangladesh, according to the World Bank, could have **13.3 million internal climate migrants** by 2050.
- In 2022, Pakistan experienced catastrophic floods affecting millions of people and causing high economic loss.
- Nepal's glaciers are retreating at rates of **10 to 60 meters per year**, threatening water security for millions.

➢ **Legacy of Colonial Structures and Fragile Institutions:** The **Radcliffe Line, hastily drawn in 1947**, created numerous border disputes, including the ongoing India-Pakistan conflict over Kashmir.

- Bangladesh's creation in 1971 further exemplifies the instability of colonial borders.
- According to the **Economist Intelligence Unit's Democracy Index 2020,** most South Asian countries fall into **"flawed democracy" or "hybrid regime" categories**, highlighting political instability rooted in fragile institutions.

➢ **Demographic Pressures and Socio-Economic Disparities:** India's neighborhood has a significant youth population.

- In Pakistan, **approximately 64% of the population is under 30,** creating significant pressure to generate jobs and prevent them from being drawn towards extremist ideologies.
- Youth unemployment rates are high: **20.5% in Nepal (2022), 24.74% in Sri Lanka.**

What are the Current Major Challenges that India Faces in its Neighborhood?

➢ **Pakistan:** The India-Pakistan relationship remains strained, with continued tensions over **Kashmir and cross-border terrorism**.

- Recent developments include **Pakistan's economic crisis**, political instability and ongoing negotiations with the IMF.
- The country's growing closeness to **China through the China-Pakistan Economic Corridor** poses strategic challenges for India.
- The recent terrorist attacks in the **Reasi district of Jammu,** allegedly sponsored by Pakistan, have exacerbated the issue.

➢ **Bangladesh:** Bangladesh is experiencing significant political upheaval with the current Prime Minister's resignation **amid protests.**

- This change could potentially affect the **positive trajectory of India-Bangladesh relations** developed over the past decade.
- Key issues include managing shared water resources, particularly the **Teesta River agreement,** addressing **illegal migration,** and maintaining economic cooperation.
  - Concerns about illegal migration**, particularly from Bangladesh, have long been raised by Indian states such as Assam**.

- In August 2024, a regional party expressed concern about an increase in immigration due to unrest in Bangladesh and unfenced stretches of the border.
- There are apprehensions that the influx of illegal migrants could reduce the Assamese people to a minority in their own state, similar to what happened in Tripura and Sikkim.
    - The potential military rule in Bangladesh could exacerbate these issues, including **increasing migration pressures and minority concerns**.
- **Nepal:** Nepal's political landscape remains complex, with **frequent changes in government affecting policy consistency.**
    - The country's **growing economic ties with China,** including through the Belt and Road Initiative, are a concern for India.
    - Border disputes, particularly the **Kalapani issue,** continue to be a source of tension.
    - However, cultural and people-to-people ties remain strong, and there's potential for enhanced cooperation in hydropower and infrastructure development.
- **Sri Lanka**: Sri Lanka is slowly recovering from its severe economic crisis, with India playing a crucial role in **providing economic assistance** and India was the first country to hand-over its letter of support for financing and debt restructuring of Sri Lanka to the International Monetary Fund **.**
    - The Katchatheevu island issue and ill treatment of Tamil minorities and the implementation of the **13th Amendment to Sri Lanka's Constitution** continue to be important issues in bilateral relations.
- **Maldives:** The recent election of Pro-China President has led to a shift in Maldives' foreign policy, with calls for reducing Indian military presence in the country highlighted by the **Indian-out Campaign.**
    - This presents a **challenge to India's strategic interests in the Indian Ocean region.**
- **Myanmar:** The **military coup in Myanmar** and subsequent civil unrest have created complex challenges for India.
    - The Rohingya refugee influx into India's northeastern states and the potential for increased Chinese influence in a destabilized Myanmar are significant concerns.
    - While India has strategic and economic interests in Myanmar, including **countering insurgency in its Northeast** and implementing connectivity projects through its Act-East Policy, it must balance these with concerns over human rights and democracy.
- **Bhutan:** While India-Bhutan relations remain strong, **Bhutan's efforts to diversify its foreign relations** and reduce economic dependence on India present new dynamics.
    - The unresolved Doklam issue **involving Bhutan, India, and China** remains a strategic concern.
    - India continues to be Bhutan's principal development partner, but there's a need to update the relationship to reflect Bhutan's evolving aspirations.
- **Afghanistan:** The **return of the Taliban** to power has reshaped the geopolitical landscape, but India has managed to maintain cordial relations through humanitarian assistance and hosting the Afghanistan cricket team.
    - However, India's significant investments in Afghanistan's development remain at risk as its strategic influence has waned.

How has India Remained Resilient Despite History of Neighboring Political and Economic Turmoil?

- **Robust Constitutional Framework and Institutional Strength:** India's democracy is anchored in its **comprehensive Constitution,** which has withstood numerous challenges since 1950.
    - The Constitution's basic structure doctrine, established in the landmark ***Kesavananda Bharati case (1973),*** safeguards the essence of the constitution.
    - India's independent judiciary, exemplified by **crucial interventions like the 2G spectrum case verdict (2012)** canceling **122 telecom licenses,** acts as a strong check on executive power.
        - Additionally, the **separation of power** among the executive, legislature, and judiciary ensures a balanced and accountable governance structure.
    - The Election Commission of India has consistently **conducted free and fair elections**, managing the world's largest democratic exercise.
    - These institutions, despite occasional controversies, have shown resilience in upholding democratic norms.
- **Vibrant Civil Society and Free Press:** India boasts a dynamic civil society and media landscape that actively participates in democratic discourse.
    - The Right to Information Act (2005) has empowered citizens to demand accountability, with over 4800 RTI applications being filed every day.

- Civil society movements have significantly influenced policy, as seen in the **Jan Lokpal movement** leading to anti-corruption legislation.
- India's press faces challenges of political biases but remains largely free and diverse, with over 100,000 registered publications.
- The digital revolution has further democratized information access, with India having over **759 million internet users as of 2022.**

➢ **India's Apolitical Armed Forces and Civilian Control:** India's armed forces have consistently maintained their **apolitical stance,** respecting civilian authority since independence.

- Unlike some neighboring countries, **India has never experienced a military coup.**
- The principle of **civilian control is deeply ingrained**, with the President as Supreme Commander and policy decisions made by elected representatives.
- The **armed forces' focus on national security rather than political power is evident** in their crucial role during natural disasters, such as the **2013** Uttarakhand floods rescue operations and current rescue operations in **Wayanad**, reinforcing their commitment to serving the nation under civilian leadership.

➢ **Federal Structure and Decentralization:** India's federal system allows for power distribution and regional autonomy, crucial for managing a diverse nation.

- The 73rd and 74th Constitutional Amendments (1992) strengthened local governance.
- The Goods and Services Tax (GST) implementation in 2017, despite initial challenges, showcased cooperative federalism.
- India's federal structure allows for special provisions to accommodate unique regional needs.
  - **Article 371** of the Constitution provides special status to several Northeastern states, respecting their distinct cultural identities.
  - The reorganization of Jammu and Kashmir in 2019, while controversial, was carried out through constitutional means.
  - The creation of new states like **Telangana (2014)** in response to regional demands showcases the system's flexibility.
- States' autonomy in various sectors allows for policy experimentation and localized governance, as seen in **Kerala's successful Covid-19 response or Gujarat's economic policies.**

➢ **Political Alternation and Multiparty System:** India's democracy has demonstrated the **peaceful transfer of power multiple times,** a key indicator of democratic health.

- The **2014 election** resulted in a shift in leadership, while the **2024 elections** saw a robust democratic exercise with **no single party securing a clear majority.**

➢ **Economic Liberalization and Middle Class Growth:** India's economic reforms since **1991 have contributed to democratic stability** by fostering a growing middle class and reducing poverty.

- The middle class, estimated to be about **350 million strong, acts as a stabilizing force in democracy**.

➢ **Managing Divergent Interests and Separatist Tendencies:** India's democracy draws strength from its cultural diversity, with the **Constitution recognizing 22 official languages** and numerous affirmative action policies.

- The reservation system, despite controversies, has increased representation of marginalized communities.
- India has shown remarkable ability to address regional aspirations and separatist movements within its democratic framework.
  - Examples include the **2015 Naga Peace Accord** and the tripartite agreement with **Tripura's NLFT in 2019**.
- India's approach of **negotiation and political integration,** rather than solely military solutions, has been crucial in maintaining unity amid diversity.

What Measures can India take to Enhance Relations with its Neighbors?

➢ **Connectivity Catalyst-Bridging Borders, Building Bonds:** India should accelerate its connectivity initiatives like the Bangladesh-Bhutan-India-Nepal (BBIN) Motor Vehicles Agreement and the India-Myanmar-Thailand Trilateral Highway**.**

- India could establish **more Integrated Check Posts (ICPs)** along its borders, similar to the successful **ICPs with Nepal and Bangladesh**.
- Additionally, expanding digital connectivity through projects like the **South Asian Satellite** can foster regional integration.
- These initiatives would position **India as a facilitator of regional prosperity,** countering the **narrative of it being a regional hegemon**.

- **Economic Empowerment- From Aid to Trade:** India should transition from an **aid-centric approach to a trade and investment-focused strategy**.
  - Implementing a **Neighborhood First Economic Zone** with preferential trade terms could stimulate regional economic integration.
  - Establishing joint economic zones, like the **successful India-Bangladesh border haats**, across other borders would boost local economies.
  - This approach would **create mutual economic dependencies,** reducing the appeal of adversarial policies among neighbors.
- **Cultural Confluence-Soft Power Surge:** Leveraging its rich cultural heritage, India should expand initiatives like the **Indian Council for Cultural Relations (ICCR)** scholarships and establish more Indian cultural centers in neighboring countries.
  - Promoting **cross-border tourism through initiatives like the Buddhist Circuit** can enhance people-to-people connections.
  - India could also increase its **capacity to host students from neighboring countries in its premier institutions**.
  - Bollywood and India's other regional cinema could be strategically promoted to foster cultural understanding.
- **Disaster Diplomacy-United in Adversity:** Given the region's vulnerability to natural disasters, India should take the lead in establishing a **South Asian Disaster Response Force**.
  - This could involve shared early warning systems and coordinated response mechanisms.
  - India's **expertise in space technology** could be utilized to develop a regional satellite-based disaster management system.
  - This approach would **position India as a responsible regional leader,** fostering goodwill through practical assistance in times of crisis.
- **Multilateral Mediation-Revitalizing Regional Forums:** India should work towards **reinvigorating SAARC** focusing on non-controversial areas like **climate change, public health, and education** to build consensus.
  - Encouraging **Track II diplomacy and think tank collaborations** can help in resolving contentious issues.
  - By championing **multilateralism**, India can **dispel fears of its dominance** and create a more cooperative regional environment.
- **Green Diplomacy- Eco-Allies:** With climate change posing an existential threat to many countries in the region, India should spearhead a **South Asian Green Alliance.**
  - This could involve sharing clean technologies, joint research on climate-resilient agriculture, and **coordinated positions in global climate negotiations.**
  - India could offer its neighbors preferential access to its **emerging green hydrogen and solar technology sectors.**
  - This green diplomacy would position India as a **responsible stakeholder in regional ecological security.**
- **Sports Solidarity-Uniting Through Athletic Endeavors:** India could take the lead in reviving and expanding the **South Asian Games**, potentially including more sports and cultural events.
  - Establishing a **South Asian Sports Development Fund** could help improve sports infrastructure across the region.
  - India could offer its **world-class training facilities and coaches to athletes from neighboring countries**.
  - Organizing **more bilateral and multilateral cricket series**, given the sport's popularity in the region, could foster people-to-people connections.
  - This sports diplomacy would create positive engagement opportunities and showcase **India's soft power.**

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India's Quest for Nutritional Security

This editorial is based on "Counting the 'poor' having nutritional deficiency" which was published in The Hindu on 07/08/2024. The article brings into focus the findings from the Household Consumption Expenditure Survey (HCES) 2022-23 by the National Sample Survey Office, detailing the calorific intake of different expenditure classes in India and highlighting the need for targeted nutritional schemes for the poorest sections to ensure adequate nourishment.

Tag: GS Paper - 2, Issues Relating to Poverty & Hunger, Issues Related to Children, Issues Related to Women, Government Policies & Interventions

The **National Sample Survey Office's** recent **Household Consumption Expenditure Survey (HCES) 2022-23** provides crucial insights into India's poverty and nutrition landscape. Using this data, an analysis was

conducted to estimate poverty levels based on calorie intake and expenditure. The study found that the average daily per capita calorie requirement for a healthy life is **2,172 kcal in rural India** and **2,135 kcal in urban India**. However, the **poorest 10% of the population falls far short of these requirements**, with average daily intakes of only 1,564-1,764 kcal in rural areas and 1,607-1,773 kcal in urban areas.

Based on the analysis, which considers both food and non-food expenditures, an estimated **17.1% of the rural population** and **14% of the urban population** can be classified as **"poor" or "deprived."** The stark nutritional deficiency among the poorest segments of society highlights the **urgent need for targeted nutritional schemes**. While the government has implemented various welfare programs aimed at food security, there is a pressing need for initiatives specifically designed to **improve the nutritional status of the most vulnerable populations**, enabling them to lead healthier lives.

What is Nutritional Security?

- **Nutritional security** refers to a state where a set of individuals have access to **adequate, safe, and nutritious food** that meets their dietary needs and food preferences for an active and healthy life.
  - It encompasses **not only the availability and accessibility of food** but also its **quality and the ability of individuals to utilize it** effectively to maintain good health.

Why is Nutritional Security Necessary Alongside Food Security?

- **Holistic Health Outcomes:** Nutritional security goes beyond mere calorie intake, focusing on the quality and diversity of nutrients consumed.
  - While food security ensures availability and access to sufficient calories, **nutritional security addresses the body's need for a balanced intake of macro and micronutrients.**
  - This underscores the fact that calorie sufficiency alone does not guarantee optimal health outcomes.
- **Economic Productivity:** Nutritional security directly impacts economic productivity. Malnutrition leads to reduced **work capacity, increased healthcare costs, and lost productivity due to illness.**
  - The short-term economic cost of micronutrient malnutrition in India amounts to **0.8% to 2.5% of the gross domestic product.**
  - Ensuring nutritional security, therefore, is not just a health imperative but an **economic necessity**, contributing to a more productive workforce and reduced healthcare burden.
- **Cognitive Development and Education:** Adequate nutrition, especially in early childhood, is crucial for cognitive development and educational outcomes.
  - Studies show that children who receive proper nutrition in their **first 1000 days have higher IQs, better school performance**, and higher earning potential as adults.
  - By focusing on nutritional security alongside food security, societies can enhance **human capital development** and break intergenerational cycles of poverty and malnutrition.
- **Resilience to Diseases**: Nutritional security plays a vital role in building resilience against diseases.
  - A well-nourished population is better equipped to fight infections and recover from illnesses.
  - The **Covid-19 pandemic** has highlighted this aspect, with studies showing that individuals with pre-existing conditions often linked to poor nutrition (such as **obesity, diabetes**) were at higher risk of severe outcomes.
  - Ensuring nutritional security is thus a key strategy in public health, reducing the burden on healthcare systems and improving overall population health.
- **Biodiversity and Nutrition:** Nutritional security promotes dietary diversity, which in turn supports biodiversity conservation.
  - The FAO reports that of the 6,000 plant species cultivated for food, but **just 9 account for 66% of total crop production.**
  - Focusing on nutritional security encourages the cultivation and consumption of a wider variety of foods, **including neglected and underutilized species.**
  - This not only improves **nutritional outcomes but also enhances agricultural biodiversity,** ecosystem resilience, and cultural food heritage preservation.

Why does India Persistently Face Nutritional Challenges?

- **Economic Disparity-The Wealth-Nutrition Gap:** Despite India's economic growth, wealth distribution remains highly uneven.
  - The **2022 World Inequality Report** shows that the top **10% of Indians hold 57% of the national income.**

- Poorer households struggle to afford diverse, nutrient-rich diets, often relying on cheap, calorie-dense but nutrient-poor foods (as highlighted by **Bennett's Law).**
  - This economic disparity indirectly translates to nutritional inequality.
- The recent HCES 2022-23 data corroborates this, showing that the **poorest 10% consume far below the recommended daily calorie intake**, highlighting the persistent link between poverty and malnutrition.

➢ **The Green Revolution's Mixed Legacy:** India's agricultural policies, largely shaped by the Green Revolution, have prioritized **staple crop production (mainly wheat and rice)** over diverse, nutrient-rich crops.

- While this approach has **ensured food security in terms of calorie availability**, it has inadvertently led to **micronutrient deficiencies.**
- The Global Hunger Index 2023 **ranks India 111th out of 125 countries**, indicating that food abundance alone does not solve nutritional challenges.
- Recent initiatives like the **promotion of millets (**2023 was the International Year of Millets**)** are steps in the right direction, but a more comprehensive overhaul of agricultural policies is needed to address nutritional diversity.

➢ **Climate Change-The Looming Threat to Nutritional Security:** Climate change poses a significant threat to India's food security and nutrition.

- **Erratic weather patterns**, increased frequency of droughts and floods, and rising temperatures affect crop yields and nutritional quality.
- The Global Climate Risk Index 2021 ranked India as the **7th most affected country by climate change** impacts.
- These environmental stresses not only reduce food availability but also increase food prices, making nutritious diets even more unaffordable for vulnerable populations.

➢ **The Knowledge Gap:** Despite improvements in literacy rates, nutritional awareness remains low in many parts of India.

- **Lack of knowledge about balanced diets,** the importance of dietary diversity, and proper infant and young child feeding practices contribute to poor nutritional outcomes.
- The Annual Status of Education Report (ASER) 2022 shows that while school enrollment has improved, learning outcomes remain suboptimal.
- This **education-nutrition nexus is critical**, as better-educated individuals are more likely to make informed dietary choices and break intergenerational cycles of malnutrition.
  - India is indeed becoming more literate, but the ability to decipher food labels, as highlighted by the recent controversy surrounding the **removal of the "health drink" tag from Bournvita**, underscores a significant gap in nutritional literacy.

➢ **Healthcare Infrastructure- The Missing Link in Nutrition:** India's healthcare system, particularly in rural areas, often **struggles to provide adequate nutritional interventions** and support.

- The **Covid-19 pandemic** exposed and exacerbated these weaknesses.
- While schemes like the **National Health Mission** have improved healthcare access, the National Family Health Survey-5 shows that only **77% of children are fully immunized,** indicating gaps in basic health services.

➢ **Urbanization-The Double-Edged Sword:** Rapid urbanization in India presents both opportunities and challenges for nutrition.

- While urban areas often have better access to diverse foods, they also face issues of **food deserts, over-reliance on processed foods, and sedentary lifestyles.**
- The Economic Survey 2023-24 highlighted that social media, screen time, **sedentary habits, and unhealthy food** are a lethal mix that can undermine public health and productivity and diminish India's economic potential.

➢ **Policy Implementation-The Gap Between Intent and Impact:** India has numerous nutrition-focused policies and programs, such as the Poshan Abhiyaan **(**National Nutrition Mission**)**.

- However, the implementation of these policies often falls short due to **bureaucratic inefficiencies, corruption, and lack of coordination** between different government departments.
- Poshan Abhiyaan fell short of its goals and one of the main reasons for this is the **underutilization of funds in many cases.**

- Mid-Day Meal's egg distribution faced challenges due to religious sensitivities, resulting in its rollout.

- **Food Safety and Quality-The Overlooked Dimension:** Food safety issues significantly impact nutritional outcomes in India.
  - **Adulteration, contamination, and poor food handling** practices not only pose health risks but also reduce the nutritional value of food.
  - A report from the **Food Safety and Standards Authority of India (FSSAI)** in Karnataka revealed that almost **22% of pani puri samples** sold in the state did not meet quality standards.
- **Food Loss and Waste:** India loses a significant portion of its food production due to inadequate storage, transportation, and processing facilities.
  - The UN estimates that more than 40% of food produced in India is wasted before it reaches the consumer.
  - This not only represents a loss of potential nutrition but also **drives up food prices, making nutritious diets less affordable.**

What Steps have been Taken by the Government of India to Address Nutritional Challenges?

- Mission Poshan 2.0
- Integrated Child Development Services (ICDS) Scheme
- Pradhan Mantri Matru Vandana Yojana (PMMVY
- Mid-Day Meal Scheme
- Scheme for Adolescent Girls (SAG)
- Mother's Absolute Affection (MAA)
- Poshan Vatikas

What Measures can India Adopt to Bridge the Nutrition Gap?

- **Nutrition-Integrated Social Safety Nets:** Enhance existing social welfare programs by integrating comprehensive nutrition components.
  - For instance, expand the **Public Distribution System (PDS)** to include a wider variety of **nutrient-rich foods like pulses, millets, and fortified oils.**
  - Introduce nutrition education sessions as a **prerequisite for receiving benefits under schemes like MGNREGA**.
  - Implement a **"Nutrition Credit System"** within the PDS, where beneficiaries earn additional points for choosing healthier food options, which can be redeemed for health-related services or products.
- **Targeted Nutrition Coupon Program:** To tackle malnutrition, India could implement a **Targeted Nutrition Coupon Program**.
  - This initiative would provide customized **food coupons to individuals and families identified as malnourished or at high risk.**
  - The coupons would be redeemable for specific nutrient-rich foods at local markets and from farmers, **adapting to seasonal availability.**
  - By providing immediate nutritional support and empowering beneficiaries to make healthier food choices, this approach aims to break the cycle of poverty and malnutrition.
- **Transforming Educational Institutions into Nutrition Hubs:** Revamp the Mid-Day Meal Scheme into a comprehensive "**School Nutrition Program**."
  - This would include not just providing balanced meals but also **establishing school gardens**, integrating nutrition education into the curriculum, and conducting regular health check-ups and nutrition assessments for students.
  - Introduce **"Sports and Nutrition Report Cards"** alongside academic reports to engage parents in their children's physical and nutritional well-being.
- **Nutri-Preneur Program**: Launch a "Nutri-Preneur" program to support and incubate businesses focused on improving nutrition.
  - This could include **start-ups developing innovative fortified food products,** companies creating low-cost nutrition testing kits, or enterprises establishing efficient cold chains for fresh produce.
  - Provide seed funding, mentorship, and market linkages to these nutrition-focused entrepreneurs.
  - Create a special **"Nutrition Innovation Fund"** to finance promising projects in this space, potentially through a public-private partnership model.
- **Behavioral Economics for Nutrition**: Apply behavioral economics principles to nudge people towards healthier food choices.
  - This could include **redesigning food packaging to make nutritional information more prominent and understandable,** placing healthier options at eye level in stores.
  - Collaborate with marketing experts to create compelling public health campaigns that make nutritious eating aspirational.
- **Integrated Nutrition Surveillance System**: Establish an Integrated Nutrition Surveillance System that collects real-time data on nutritional indicators across the country.

- This could leverage **existing health infrastructure, Anganwadi centers, and mobile technology for data collection.**
- Use advanced analytics and machine learning algorithms to predict nutritional trends and potential crisis areas.
- Implement a **"Nutrition Emergency Response Protocol"** that triggers immediate interventions when certain nutritional thresholds are breached in any region.
- This system would enable rapid, data-driven responses to evolving nutritional challenges.

➢ **Fortification Plus- Enhancing Staple Foods:** Expand and strengthen the national food fortification program.
- Focus on fortifying staple foods like **rice, wheat flour, and edible oils** with essential micronutrients such as **iron, folic acid, and vitamin A**.
- This approach leverages existing food distribution channels to improve nutritional intake without significantly altering dietary habits.

➢ **Nutri-Smart Agriculture:** Introduce a "Nutri-Smart Agriculture" initiative that incentivizes farmers to cultivate more diverse, nutrient-dense crops.
- Revamping MSP towards nutritional crops that include **subsidies for growing biofortified varieties, support for crop rotation systems** that improve soil health and nutrient content, and **market linkages for lesser-known but nutritious indigenous crops.**
- Implement a **"Nutrition Extension Service"** alongside existing agricultural extension services to educate farmers on nutrition-sensitive farming practices.

➢ **Community Nutrition Champions**: Establish a nationwide network of **"Community Nutrition Champions"** that can consist of ASHA workers-trained local volunteers who act as **nutrition educators.**
- They would conduct regular nutrition awareness sessions, cooking demonstrations using **locally available nutritious ingredients**, and provide personalized nutrition counseling.
- This peer-to-peer approach can effectively overcome cultural barriers and promote sustainable dietary changes at the grassroots level.

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Securing India's Interests in the Middle East

This editorial is based on "A widening war in the Middle East" which was published in The Indian Express on 07/08/2024. The article highlights the escalating conflict in the Middle East, driven by recent assassinations of Iranian proxy leaders, with no significant political outcomes despite the intense violence and widespread social and economic repercussions for both Israel and Iran.

Tag: GS Paper - 2, Bilateral Groupings & Agreements, Groupings & Agreements Involving India and/or Affecting India's Interests, Effect of Policies & Politics of Countries on India's InterestsInternational Treaties & Agreements

The **Middle East** remains a region of profound significance for the world, and India is no exception. The recent escalation between **Israel and Iran-backed forces,** characterized by a vicious cycle of violence and retaliation, underscores the region's complex dynamics. This prolonged instability not only destabilizes the region but also **has global repercussions, including oil price volatility and heightened geopolitical tensions.**

Given its strategic location, energy security interests, and growing economic ties, India has a vital stake in a **stable Middle East.** The region remains a crucial source of energy for India, while also being a significant market for its goods and services. India must therefore actively engage with all key stakeholders, pursuing a **balanced and independent foreign policy.**

What is the Significance of the Middle East for India?

➢ **Energy Security and Trade Ties:** The Middle East is of paramount importance to India's energy security.

- The region supplies **India's crude oil and natural gas requirements**, making it a critical source of fuel for India's rapidly growing economy.
- As per **World Energy Outlook 2021 of IEA,** the current share of India in global primary energy consumption is **6.1%** and is likely to increase to about **9.8%** under stated policy scenarios by 2050.
  - Countries like **Saudi Arabia, Iraq, and the UAE** are major energy partners for India.
- Disruptions in the region's energy supply or fluctuations in global oil prices have a **direct impact on India's economic performance and inflation levels**.

➢ **Counter-Terrorism Cooperation:** The Middle East has been a historical safe haven for various terrorist organizations, including **al-Qaeda, ISIS, and their affiliates,** which pose a significant threat to India's national security.

- India has been collaborating with countries in the region, such as the **UAE, Saudi Arabia, and Israel,** to enhance intelligence sharing, coordinate counter-terrorism efforts, and disrupt the financing and logistics of these terrorist groups.
  - Over the last 10 years, India has imported **USD 2.9 billion in military equipment** from Israel, according to SIPRI.
  - **Saudi Arabia** has recently committed to strengthening their partnership with India to fight terrorism by sharing intelligence and cutting off terror funding.
- This cooperation has **aided India in foiling several terrorist plots** and **dismantling extremist networks** that have targeted Indian interests both at home and abroad.

➢ **Diaspora and Remittance Flows:** The Middle East hosts a significant Indian diaspora.

- More than **66% of India's 1.34 crore Non-Resident Indians (NRIs)** live in the United Arab Emirates, Saudi Arabia, Kuwait, Qatar, Oman and Bahrain.
- These expatriate communities not only contribute to the local economies but also serve as a **crucial source of remittances for India**.
- The welfare and security of this diaspora is a key concern for India, and it has taken various measures to protect them as seen in recent **India's Former Navy veterans case in Qatar.**

➢ **Cultural and Civilizational Linkages:** The Middle East shares deep cultural, civilizational, and historical ties with India, dating back to ancient maritime trade routes.

- Today, these linkages are reflected in the **shared architectural heritage, culinary traditions, and the vibrant exchange of art, literature,** and scholarship between India and the region.
- Recent initiatives like the **India-Arab League media symposium** and the **BAPS Hindu Mandir in Abu Dhabi** have aimed to further strengthen these cultural connections.

➢ **Regional Connectivity and Infrastructure:** India has been actively involved in developing regional connectivity and infrastructure projects in the Middle East, which can have significant implications for its economic and strategic interests.

- For instance, India's participation in the **Chabahar port project in Iran,** the **International North-South Transport Corridor (INSTC) and India-Middle East-Europe Economic Corridor** are aimed at enhancing India's access to Central Asia and Europe through the Middle Eastern landmass.
- These initiatives can boost India's trade, expand its regional influence, and reduce its dependence on Pakistan for access to Afghanistan and beyond.

➢ **Multilateral Engagement and Global Influence:** India's active engagement with the Middle East also allows it to exercise its influence within multilateral forums like the **United Nations, the Organization of Islamic Cooperation (OIC), and the Arab League.**

- India's ability to navigate these complex regional dynamics and build coalitions can enhance its global standing and bargaining power on issues of strategic importance, such as **climate change financing, and reform of international institutions like UNSC.**
  - It can also help in resolving domestic issues like **bolstering India's position on the Kashmir issue** through collaboration with like-minded OIC countries.

Why does the Middle East Consistently Remain a Region of Persistent Conflict and Instability?

➢ **Geopolitical Rivalries and Proxy Conflicts:** The Middle East is a hotbed of geopolitical rivalries between regional and global powers, including **Iran, Saudi Arabia, Israel, Turkey, and the United States.**

- These rivalries often manifest through **proxy conflicts,** where countries support non-state actors or opposing factions to advance their strategic interests.
- For instance, conflict in Yemen, where **Iran-backed Houthi rebels** are fighting the **Saudi-led coalition,** is a prime example of how these geopolitical

tensions can escalate into protracted and devastating wars.

- The **lack of a clear balance of power** and the tendency of external actors to intervene in local conflicts have perpetuated instability in the region.

- **Protracted Conflicts and Unresolved Disputes:** The Middle East is characterized by numerous protracted conflicts, such as **Israeli-Palestinian conflict**, which have resisted resolution for decades.
  - These conflicts are often exacerbated by the involvement of external actors, the **rigidity of the parties' positions,**and the lack of a comprehensive, inclusive, and just peace process.
  - Resolutions like the **Abraham Accords**, which normalized relations between **Israel, the UAE, and Bahrain**, are now facing setbacks, reversing earlier progress.
- **Sectarian Divides and Identity Politics:** The Middle East is characterized by deep-seated sectarian divides, particularly between **Sunni and Shia Muslims**, which have fueled numerous conflicts and power struggles.
  - These sectarian tensions have been exploited by **political actors to mobilize support, consolidate power,** and marginalize opposing groups.
  - The **rise of identity-based movements,** such as **Arab nationalism** and **Islamism**, has also contributed to the region's political fragmentation and the emergence of radical ideologies.
  - The **Syrian civil war,** where the conflict has taken on a distinct sectarian character, is a prime example of how these identity-based divisions can escalate into violent confrontations.
- **Authoritarian Regimes and Lack of Democratization:** Many countries in the Middle East are governed by authoritarian regimes that prioritize regime security over the well-being of their citizens.
  - These regimes often rely on repressive measures, such as **crackdowns on dissent, political imprisonment, and the suppression of civil liberties,** to maintain their grip on power.
  - The lack of genuine democratic reforms and accountable governance has fueled popular discontent, leading to uprisings and revolutions, such as the **Arab Spring in 2011.**
  - The failure to address the root causes of these uprisings, including **economic inequality, corruption, and political marginalization,** has perpetuated the cycle of instability in the region.
- **Resource Scarcity and Environmental Challenges:** The Middle East is facing severe environmental challenges, including **reduced oil resources, water scarcity, desertification, and the impacts of climate change.**
  - These resource constraints have the potential to exacerbate existing tensions and fuel new conflicts over the control and distribution of limited resources.
  - For example, the dispute over the construction of the **Grand Ethiopian Renaissance Dam on the Nile River** has raised tensions between **Egypt, Sudan, and Ethiopia**.

How can India Strengthen its Relationship with the Middle East?

- **Balanced and Nuanced Foreign Policy Approach:** India's ability to maintain balanced and nuanced relations with key players in the Middle East is a valuable asset.
  - By **avoiding the temptation to take sides in the region's geopolitical rivalries**, India can establish itself as a neutral mediator and promoter of dialogue, as demonstrated during the **Israel-Hamas conflict**, where India **condemned the terrorist attacks on Israel while also supporting a two-state solution for Palestine.**
  - Also, India's recent efforts to **maintain open channels of communication with Iran,** even in the face of US sanctions, demonstrate its commitment to this balanced foreign policy approach.
- **Enhancing Economic Engagement and Interdependence:** Strengthening economic ties and interdependence can be a crucial element of **India's Middle East strategy.**
  - By expanding **trade, investment, and energy cooperation,** India can create shared incentives for regional stability and peaceful coexistence.
  - Initiatives like the **India-UAE Comprehensive Economic Partnership Agreement** can serve as models for developing mutually beneficial economic relationships.
  - Additionally, India can leverage its vast diaspora in promoting **Unified Payment Interface in the region** to deepen its digital foothold and influence in the Middle East.
- **Strengthening Defense and Security Cooperation:** India can deepen its defense and security cooperation with key partners in the Middle East.

- This can involve joint military exercises and the **co-development of defense technologies.**
- By positioning itself as a reliable security partner, India can contribute to regional stability, deter aggression, and build trust among its Middle Eastern counterparts

- **Middle East as Link Between the Global North and Global South:** India's position as a leading voice of the Global South **can enable it to play a mediating role between the Middle Eastern countries** and the traditional Western powers.
  - By advocating for the interests of developing nations, championing the reform of global governance structures, and fostering **South-South cooperation,** India can help bridge the divide and create more inclusive platforms for dialogue and negotiation.
  - This can involve India's enhanced engagement with the **Organization of Islamic Cooperation,** and other regional bodies to amplify the concerns of the Middle Eastern countries and promote a more equitable global order.
- **Promoting Mutual Tourism:** India can urge like minded Middle Eastern countries to leverage its vast tourism market to promote **mutual tourism between the Middle East and India.**
  - This can involve collaborative marketing campaigns, such as the recent **"Visit Saudi" advertisements** featured during the **Indian Premier League (IPL),** which capitalized on the shared interests and aspirations of the two regions.
  - India can also **streamline visa processes and develop tailor-made tourism packages** to cater to the preferences of Middle Eastern travelers, further strengthening the tourism and hospitality linkages between the two regions.
- **Strengthening Disaster Management and Humanitarian Assistance:** India can position itself as a reliable partner in the **Middle East for disaster management and humanitarian assistance,** building on its existing capabilities and experience.
  - This can include coordinating with regional organizations and national authorities to develop **early warning systems, enhance emergency response capabilities**, and provide rapid relief during natural disasters or complex humanitarian crises.
  - Operation Dost in Turkey and Syria is a prime example of India's rapid humanitarian assistance.

Conclusion

The Middle East remains a region of vital importance for India, with deep **historical, cultural, and economic ties**. By leveraging its **position as a leading voice of the Global South,** India can play a constructive role in **bridging the divide between the Middle Eastern countries and the traditional global powers**, while also addressing shared challenges like terrorism and climate change.

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Navigating India's Path to a $30 Trillion Economy by 2047

This editorial is based on "Powering up to get to the $30-trillion economy point" which was published in The Hindu on 07/08/2024. This article highlights India's goal of becoming a $30 trillion economy by 2047 requires overcoming the middle-income trap by boosting low-skilled manufacturing, enhancing female labor participation, and avoiding protectionist policies. Leveraging infrastructure improvements and fostering a market-driven economy are crucial for sustained growth.

Tag: GS Paper-3, Industrial Growth, Infrastructure, Employment, Mobilization of resources.

Commentary on India's economic growth often displays a hint of premature triumphalism. Despite India's impressive 7%-plus GDP growth rate and its status as the fastest-growing large economy globally, there is an ongoing belief in the inevitability of India's economic ascent. However, historical precedents show that many countries have reached a similar stage but failed to achieve developed nation status. To realize the government's vision of a $30-trillion economy by 2047, India must maintain **rapid economic growth** through liberal economic policies and harness the potential of the private sector.

As India eyes its **centenary of independence in 2047**, the vision of transitioning from a developing to a developed economy is both a challenge and an opportunity. With a diverse and dynamic economic landscape, India must leverage its strengths while addressing significant challenges to achieve this goal. Here's a detailed roadmap, enriched with recent data and projections, outlining how India can become a developed economy by 2047.

What are Challenges in Achieving Developed Economy Status by 2047?

- **Poverty and Inequality:**
  - From Independence until 1991, India's poverty rate remained around 50% despite socialist policies aimed at poverty reduction. Making it
  - However, post-liberalization (1991-2011), poverty dropped to about 20%, lifting 350 million people out of poverty.
- **Middle-Income Trap:**
  - According to the World Bank **definition**, the middle-income trap refers to a situation whereby a **middle-income country** is failing to transition to a **high-income economy** due to rising costs and declining competitiveness.
  - India risks falling into the middle-income trap, where countries fail to transit from middle-income to high-income status.
  - Out of 101 middle-income economies in 1960, only 23 had reached high-income status by 2018.
  - There are apprehensions that while moving on its path to developed economy, the Indian economy may fall in the **Middle Income Trap**. After reaching a per capita income of USD 5,000-6,000, it will not move fast.
- **Aging Population:**
  - India's population, currently approximately 1.4 billion, is **expected to reach its peak of 1.64 billion** by 2048 before decreasing to 1.45 billion by 2100.
  - As a result, India will face the challenges associated with an aging population, including increasing healthcare expenses, growing pension obligations, and potential labor shortages.
- **Stagnated Agriculture:**
  - Agriculture sector employs around **46% of India's population** and **contributes just around 16.5% in India's GDP.**
  - However, due to **ineffective land reforms, unscientific practices, lack of institutional credit flows and climate vagaries** it has remained stagnant and a low productive sector.
- **Lacking Manufacturing Sector:**
  - According to the Economic Survey 2023-24, the manufacturing sector employs only 11.4% of India's workforce.
  - Also, manufacturing sectors faced challenges due to **high input costs and fluctuating demand.**
- **Poor Logistics:**
  - The **Economic Survey 2022-23** indicates that logistics costs in India range from **14-18% of GDP**, higher than the global benchmark of 8%. Also, India ranks **38th** in the Logistics Performance Index (LPI) 2023.
- **Joblessness and Disguised Unemployment:**
  - India's high-growth years (2000-10), driven by the IT services boom, yet, **46% of the labor force** is still engaged in agriculture, contributing only 18% to GDP, with low productivity and under-employment issues.
  - Also, according to CMIE, the unemployment rate in India rose sharply to **9.2%** in June 2024 from 7% in May 2024.
- **Labor Force Dynamics:**
  - **Female** labor force participation stands at a mere 37%, though it has improved from 26% in 2019. This is low compared to other rapidly growing nations.
- **Global Economic Slowdown:**
  - The **global economic slowdown, volatile commodity prices, geopolitical tension and tightening financial conditions** are hindering India's economic investment development by dampening exports, increasing import costs, and recruitment and financing for development projects.

What Key Measures Have Been Taken by the Government?

- **Increase in CAPEX:** Increased **capital expenditure by 28.2%** YoY in FY24, focusing on infrastructure development and boosting private sector participation.
- **Credit Growth:** Credit disbursal by Scheduled Commercial Banks reached Rs 164.3 lakh crore, growing by 20.2%, indicating in expenditure. Also, **Gross Non-Performing Assets (GNPA) ratio** improved to 2.8%, a 12-year low.
- **Infrastructure Development:**
  - According to the **Economic Survey 2023-24** construction pace of **National Highways** has increased from 11.7 km per day in FY14 to 34 km per day by FY24.
    - Also, Gati Shakti scheme **or National Master Plan for multi-modal connectivity plan**, is being implemented with the aim of coordinated

planning and execution of infrastructure projects to bring down logistics costs.

- **National Monetisation Pipeline (NMP):** It envisages an **aggregate monetisation potential of Rs 6-lakh crore** through the leasing of core assets of the Central government in sectors such as roads, railways, power, oil and gas pipelines, telecom, civil aviation etc, over a four-year period (FY 2022-25).
- **Digital India Initiative:** It aims for national empowerment, elevating living standards and fostering transparency through **digital infrastructure development**.
- **National Education Policy and Skill India Mission:** The government has been implementing these initiatives for providing **quality education and skilling** the demography of the country.
- **Providing Direct Benefit:** Direct Benefit Transfer (DBT) **and** Jan Dhan Yojana enhanced fiscal efficiency and reduced leakages, thus enhancing expenditure capacity of people.
- **Promoting Sustainability and Climate Resilience:** India through **Panchamrit targets** and several schemes like Solar Mission,and National Wind-Solar Hybrid Policy is undertaking sustainable economic development.

What will be Challenges for India as a Developed Country?

- **Economic Vulnerability:**
  - Developed economies are more **integrated into global financial systems** and markets, making them more vulnerable to international economic fluctuations.
    - For example, **developed countries** faced more economic shocks during the subprime crisis of 2007-08 and after Covid-19 slowdown.
  - As India progresses, it will experience increased exposure to global financial crises, trade disruptions, and shifts in international commodity prices.
- **Increased ClimateVulnerability:**
  - As a developed nation, India will face heightened **pressure to address climate-related issues.** This includes managing the impact of climate change on infrastructure, agriculture, and public health.
  - With its diverse geography, **India is susceptible to a range of climate risks**, including severe flooding, heatwaves, and cyclones, which can affect economic stability and quality of life.
- **Job Growth Plateau:**
  - In developed economies, job creation can sometimes lag behind economic growth due to **automation, shifting industry needs, and demographic changes.** India will need to address the potential for stagnant job creation as it industrializes and modernizes.
  - Rapid technological advancements and structural changes in the economy may lead to **skill mismatches**, where available jobs do not align with the skills of the workforce.
- **Deglobalization:**
  - Deglobalization refers to the trend of **reducing reliance on global trade and investment,** often characterized by increased protectionism and trade barriers. This can impact India's export-oriented sectors and global supply chains.
  - Changes in global trade policies and shifting geopolitical dynamics can create uncertainties for international investments and trade relations.

What Should be the Way Forward?

- **Developing Industrial Clusters:** The government must enhance its efforts to improve infrastructure by developing industrial clusters with comprehensive support systems.
  - A cluster-led model, where regulations are relaxed in specific areas, can create a favorable environment for manufacturing.
  - Additionally, the government should avoid imposing high tariffs that could disadvantage local manufacturers and impede export competitiveness.
- **Maintain Growth Momentum:** India's real GDP grew by an impressive 8.2% in FY24, surpassing 8% in three out of four quarters. This strong growth trajectory must be maintained to achieve developed economy status.
- **Addressing the Middle-Income Trap and Ensuring Growth:** To avoid the middle-income trap, India needs a market-led economy that supports private enterprise with minimal government interference. The focus should be on enhancing the **'ease of doing business'** and continuing economic reforms.
  - According to the World Bank's World Development Report 2024 policies need to move to **'3i' strategy-investment, infusion, and innovation** to skip middle income trap.

- South Korea is a standout example in all three phases of the 3i strategy and its path to development.

- **Expand Infrastructure:** There is a need to continue to invest in transport, urban development, and digital infrastructure. The increased pace in National Highways construction and new airport terminals reflects a positive trend.
  - There is a need to boost rural and urban connectivity through schemes like **Pradhan Mantri Gram Sadak Yojana.**
- **Advancing Financial Sector and Monetary Stability:** There is a need to continue to enhance banking sector health and financial intermediation, supported by the **Insolvency and Bankruptcy Code.**
- **Focus on Skill Development and Employment:** Address skill gaps by investing in education and vocational training, aiming for improved employment outcomes and higher workforce participation.
  - Studies suggest that a country can significantly benefit from **increased female participation in the workforce.** The **IMF** suggests that aligning India's female labour force participation rate with that of men could **boost India's GDP by 27%.**
- **Unleashing Demographic Dividend**: To unlock the potential of India's working-age population, there is a need for low-skilled, employment-intensive manufacturing sector jobs similar to the strategies used by the '**Asian Tigers**' like South Korea and Vietnam.
- **Diversify and Expand:** Continue to support growth in key industries such as **pharmaceuticals and electronics.** Leverage India's strengths in services to further expand global market share.
- **Foster Innovation:** Encourage the growth of start-ups and the gig economy, which are essential for driving new business models and technological advancement.
- **Green Transition:** Accelerate investments in clean energy and sustainable practices. Address the projected increase in energy needs by continuing to expand renewable energy sources.

Conclusion

As India aims to be a developed country by 2047, it needs to ensure **holistic development** rather than just focusing on economic growth. This means addressing not only the economic factors but also **social, environmental, and institutional factors**. India can ensure holistic development by:

- **Investing in human capital** through better education, healthcare, and skill development to improve the quality of life.
- **Promoting sustainable and equitable growth** that reduces income inequality and provides opportunities for all.
- **Integrating environmental considerations** into its development plans to address climate change, biodiversity loss, and resource depletion.
- **Strengthening democratic institutions**, governance, and the rule of law to ensure inclusive and transparent decision-making.
- **Fostering a diversified economy** that creates employment opportunities in various sectors, not just relying on a few industries.

By taking a comprehensive approach, India can achieve a balanced and sustainable development that enhances the overall well-being of its citizens.

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India's Quest for Universal Health Coverage

This editorial is based on "Reducing the poor's health burden" which was published in The Indian Express on 09/08/2024. The article highlights a positive trend in reducing poverty-induced health shocks and improving healthcare access in India but emphasizes the need to address ongoing disparities and the rise of non-communicable diseases to achieve universal healthcare.

Tag: GS Paper - 2, Health, Central Sector Schemes, Issues Relating to Development, Welfare Schemes

The analysis of the recent **Household Consumption Expenditure Survey (HCES 2022-23)** reveals a positive

trend in the country's battle against poverty-induced health shocks. From **2011-12 to 2022-23**, there was an increase in the proportion of households incurring **hospitalization expenses**, indicating better access to healthcare. More importantly, the financial burden of hospitalization on these households has decreased, with the share of health expenditure in monthly household spending dropping from **10.8% to 9.4%** for those **experiencing hospitalization.**

However, the road to **universal healthcare** is still fraught with obstacles. Disparities in **healthcare access, quality, and overall affordability** continue to plague many regions. The emergence of **non-communicable diseases** as a growing health burden demands focused attention. India must sustain its momentum, building upon the successes of schemes like **Ayushman Bharat** while addressing these persisting issues to ensure a healthier future for all its citizens.

What are the Current Major Issues Related to India's Healthcare Sector?

- **Misaligned Priorities-The Infrastructure-Outcome Gap:** While India has made strides in healthcare infrastructure, outcomes have not kept pace.
  - The National Health Mission has increased the number of health centers, but nearly **80% of public health facilities in India** do not meet the minimum essential standards.
  - The **CAG report 2023** reveals that under Ayushman Bharat, **patients marked as 'dead' are still receiving treatment,** and 9.85 lakh Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (PMJAY) beneficiaries are linked to the same mobile number.
  - The focus on **quantity over quality** has led to a situation where more Indians have **access to health facilities, but the care received often falls short.**
  - This misalignment of priorities is evident in the persistently high maternal mortality rate, which stood at **103 as per UN MMEIG 2020 report**, despite increased institutional deliveries.
- **The Digital Divide:** The Covid-19 pandemic accelerated India's adoption of telemedicine, with the government's **eSanjeevani platform crossing 200 million consultations in early 2024.**
  - However, this digital leap has inadvertently widened the **healthcare gap**. While urban, tech-savvy populations benefit, **rural areas with poor internet connectivity and low digital literacy are left behind.**
  - Nearly **45% of the rural population** did not have access to the internet as of 2023,highlighting the uneven access to digital health services.
- **The Brain Drain and Skill Mismatch:** India's healthcare system continues to grapple with a severe shortage of qualified professionals.
  - Although, the **doctor-population ratio** in the country stands at **1:834** which is better than the WHO standard of 1:1000, but it's not even in all healthcare fields.
    - For example, India is home to 1/4th of the world's elderly however it only **gets 20 geriatricians/year.**
  - Furthermore, there's a mismatch between medical education and primary care needs, with fewer new medical graduates opting for **careers in family medicine or rural healthcare.**
- **The Out-of-Pocket Expense Trap:** Despite initiatives like **Ayushman Bharat**, which aims to provide healthcare to 500 million Indians, out-of-pocket expenses remain a major barrier to healthcare access.
  - More than 17% of Indian households incur catastrophic levels of health expenditures every year, a **March 2022** report by the **World Health Organization found.**
- **Preventive Healthcare-The Neglected Public Health Approach:** India's healthcare system remains largely reactive rather than preventive.
  - While **communicable diseases are declining**, non-communicable diseases (NCDs) are on the rise, accounting for **63% of all deaths in India.**

- The lack of emphasis on **health education, lifestyle interventions**, and early screening programs has led to a surge in preventable conditions.
- The **Economic Survey 2023-24** highlights that social media, screen time, sedentary habits, and unhealthy food together pose a serious threat to public health, productivity, and India's economic potential.

➢ **Quality of Care-The Credibility Crisis:** The quality of healthcare services in India varies widely, with concerns about **substandard care, medical negligence, and lack of standardization.**

- Poor care quality leads to more deaths than insufficient access to healthcare, **1.6 million Indians** died due to poor quality of care in 2016 more than those who died from lack of access to healthcare.
- The **absence of a robust regulatory framework for private healthcare providers,** who account for a major chunk of outpatient care, exacerbates this issue.
- Scandals, such as the **2017 case of overcharging and medical negligence at a prominent Delhi hospital**, have further eroded public trust in the healthcare system.

➢ **Mental Health-The Neglected Crisis:** Mental health remains a severely neglected aspect of India's healthcare system.

- Close to **60 to 70 million people** in India suffer from common to severe mental disorders.
  - It is alarming to know that India is the world's suicide capital with over **2.6 lakh cases of suicide in a year.**
- Despite the implementation of the **Mental Healthcare Act 2017,** which guarantees the right to mental healthcare, there's a critical shortage of mental health professionals.
  - India has only **0.75 psychiatrists per 100,000 people**, compared to the desirable ratio of 3 per 100,000.
  - The **Covid-19 pandemic** has further exacerbated mental health issues, with studies reporting increased rates of anxiety and depression.

➢ **Pharmaceutical Industry Issues:** India's pharmaceutical industry, often called the **"pharmacy of the world,"** plays a crucial role in global healthcare.

- However, the industry faces challenges such as quality control issues, **over-dependence on China for active pharmaceutical ingredients (APIs),** and stringent price controls.
- In 2023, the World Health Organization issued a warning against the use of two India-made cough syrups linked to the deaths of at least **20 children in Uzbekistan.**

What are the Major Initiatives Related to Healthcare in India?

➢ **Ayushman Bharat:** This flagship program aims to achieve universal health coverage and consists of two main components:

- **Pradhan Mantri Jan Arogya Yojana (PM-JAY):** Provides health insurance coverage of ₹5 lakh per family per year for secondary and tertiary care hospitalization.
- **Health and Wellness Centers:** Aims to establish 150,000 centers to provide comprehensive primary healthcare.

➢ **National Health Mission (NHM):** An umbrella program that includes:

- National Rural Health Mission (NRHM)
- National Urban Health Mission (NUHM)
- Focuses on improving healthcare infrastructure, reducing maternal and infant mortality, and enhancing access to quality healthcare services in rural and urban areas.

➢ **National Digital Health Mission (NDHM):** Aims to create a digital health ecosystem with unique health IDs for all citizens, digitized health records, and a registry of doctors and health facilities.

➢ **Pradhan Mantri Swasthya Suraksha Yojana (PMSSY):** Focuses on correcting regional imbalances in healthcare by:

- Setting up new AIIMS (All India Institute of Medical Sciences) institutions
- Upgrading existing government medical colleges

➢ **Mission Indradhanush:** A vaccination program aimed at increasing immunization coverage among children and pregnant women, targeting those who are partially vaccinated or unvaccinated.

➢ **Janani Suraksha Yojana (JSY):** A safe motherhood intervention under the NHM, promoting institutional delivery among poor pregnant women by providing cash assistance.

➢ **Pradhan Mantri Bharatiya Janaushadhi Pariyojana (PMBJP):** Aims to provide quality medicines at affordable prices through dedicated retail outlets known as Janaushadhi Kendras.

➢ **National Mental Health Program (NMHP):** Focuses on providing accessible and affordable mental healthcare services, including the treatment and prevention of mental disorders.

What Measures can India Adopt to Revamp its Healthcare Sector?

- **Bridging the Urban-Rural Divide:** India can leverage **mobile health (mHealth) technologies** to bridge the urban-rural healthcare gap.
  - Implementing a nationwide network of mobile health units equipped with telemedicine facilities, diagnostic tools, and essential medications could significantly improve rural healthcare access.
  - These units can be supported by **ASHA Workers and Common Service Centres.**
  - Successful models like the **Mobile Medical Units in Tamil Nadu** can be scaled nationwide.
- **Strengthening Primary Health Care:** Revitalizing India's primary healthcare system is crucial for overall health improvement.
  - The government should focus on upgrading and fully staffing all **150,000 Health and Wellness Centres** promised under the Ayushman Bharat scheme by 2025.
  - These centers should offer a comprehensive range of services, including NCD management, mental health support, and preventive care.
  - Implementing **a family physician model**, where each center has a dedicated doctor responsible for a defined population, can ensure continuity of care and reduce the burden on secondary and tertiary facilities.
- **Public-Private Partnerships-Synergizing for Success:** India can harness the potential of public-private partnerships (PPPs) to improve healthcare delivery.
  - The government should create a robust framework for **PPPs in healthcare, focusing on areas like hospital management, diagnostic services, and specialized care.**
  - Successful models like the Rajasthan government's partnership with **Narayana Health for cardiac care** can be replicated across states.
- **Digital Health Ecosystem-Interoperability for Impact:** Building a comprehensive, interoperable digital health ecosystem is essential for improving healthcare efficiency and accessibility.
  - The government should **expedite the implementation of the Ayushman Bharat Digital Mission**.
  - Developing standardized **Electronic Health Records (EHRs)** and ensuring their adoption across public and private healthcare providers is crucial.
  - Implementing a **nationwide Health Information Exchange (HIE)** can facilitate seamless data sharing, reducing duplicate tests and improving care coordination.
- **Boosting Indigenous Research and Development-Made in India, for India:** Enhancing India's healthcare R&D capabilities is vital for developing context-specific, cost-effective solutions.
  - The government should increase healthcare R&D spending to 2.5% of GDP.
  - Establishing a **network of biomedical research parks,** similar to the successful **Made-in-Thailand Medical Innovation,** can foster collaboration between academia, industry, and healthcare providers.
- **Enhancing Healthcare and Pharmaceutical Standards:** Implementing robust quality control measures and accreditation systems for healthcare and pharmaceutical facilities is essential.
  - This involves **setting and enforcing stringent standards for patient safety, clinical outcomes**, and healthcare management.
  - Regular audits, transparent reporting mechanisms, and a system of rewards and penalties can drive quality improvement.
  - Encouraging **patient feedback and involving them in healthcare decision-making** can further enhance the quality of care.

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India's Research and Development Landscape

This editorial is based on "Perfunctory panacea: On the Rashtriya Vigyan Puraskar" which was published in The Hindu on 12/08/2024. The article highlights the revamp of India's scientific awards, introducing the Rashtriya Vigyan Puraskar (RVP) to replace the Shanti Swarup Bhatnagar awards, while emphasizing that enhancing funding and support for researchers is crucial for advancing science beyond mere recognition.

Tag: GS Paper - 3, Indigenization of Technology, IT & Computers, Space Technology, Robotics, Artificial Intelligence

The recent announcement of the **Rashtriya Vigyan Puraskar (RVP)** marks a significant shift in India's approach to recognizing scientific excellence. Replacing the long-standing **Shanti Swarup Bhatnagar (SSB) awards,** the RVP introduces a new framework for

honoring scientists across various career stages and disciplines. While this change aims to streamline and elevate the **stature of scientific awards in India**, it also raises questions about the effectiveness of such recognition in addressing the **fundamental challenges faced by the country's research community.**

Despite the government's efforts to boost scientific recognition**, India's R&D landscape continues to grapple with significant hurdles**. The focus on awards and honors may be overshadowing the pressing need for **increased budgetary allocations, improved research infrastructure, and a more conducive environment** for scientific inquiry. As India aspires to compete on the global stage of scientific innovation, it becomes crucial to address these underlying issues that hinder the progress of its research ecosystem.

What are India's Recent Major R&D Achievements in Science and Technology?

- **Biotechnology**: India's biotechnology sector demonstrated its prowess during the **Covid-19 pandemic** with the rapid development and production of indigenous vaccines.
  - **Covaxin, developed by Bharat Biotech** in collaboration with ICMR, showcased India's capability in vaccine research and development.
  - The country's ability to manufacture vaccines at scale not only supported its own vaccination drive but also contributed to global vaccine supply through initiatives like **Vaccine Maitri.**
- **Renewable Energy:** India has made remarkable progress in renewable energy research, particularly in solar and green hydrogen technologies.
  - The country has achieved **record-low solar power costs** and is pioneering **floating solar projects like Kayamkulam Floating Solar Power Plant, Kerala**.
  - These advancements are crucial for India's ambitious renewable energy targets and its goal of becoming a net-zero emissions country by 2070.
- **Agriculture:** India has been making strides in agricultural biotechnology to enhance crop resilience and productivity.
  - **Indian Council of Agricultural Research** has developed **109 high-yielding, climate-resilient and biofortified varieties of 61 crops.**
  - These innovations are crucial for ensuring food security and sustainable agriculture in the face of climate change.
- **5G and 6G Technology:** India has been actively working on developing indigenous 5G technology and preparing for 6G.
  - The **Centre for Development of Telematics (C-DOT)** has successfully developed and tested a completely indigenous **5G NSA Core**.
    - The Department of Telecommunications (DoT) is implementing the **"Digital Communications Innovation Square (DCIS)" Scheme** to advance indigenous 5G and emerging technologies by translating research into practical technology.
  - Nokia established a **6G Lab at its Bangalore center** to spearhead research in next-generation wireless technology.
  - These efforts aim to position India as a leader in telecommunications technology and reduce dependence on foreign vendors.
- **Space Exploration**: India's space program achieved a historic milestone with **Chandrayaan-3's successful soft landing** on the Moon's south pole region in August 2023.
  - This made **India the fourth country** to achieve a lunar landing and the first to reach the Moon's south pole.
  - The mission demonstrated India's growing capabilities in **space exploration,** including precision landing technology and lunar rover operations.
  - It also paved the way for future lunar exploration and **potential resource utilization missions.**
  - **Indian Space Policy 2023** and **Indian National Space Promotion and Authorisation Centre (IN-SPACe)** is a significant step in this direction.
- **Quantum Technology**: India has made significant strides in quantum technology research with the establishment of the **I-Hub Quantum Technology Foundation (I-Hub QTF) at IISER Pune.**
  - **The National Quantum Mission** and other initiatives aim to develop quantum computers, quantum communication systems, and quantum sensors, positioning India as a potential leader in this cutting-edge field.
- **Supercomputing:** India has made significant strides in supercomputing with the development of **PARAM Siddhi-AI**, one of the most powerful supercomputers in the world.
  - It's being used for advanced research in artificial intelligence, scientific simulations, and big data analytics.
  - The **National Supercomputing Mission** has also led to the installation of high-performance computing systems in multiple institutions across the country, boosting research capabilities in various fields.

- **Genomics:** The GenomeIndia Project, launched in 2020, aims to sequence 10,000 Indian genomes to create a reference database for the Indian population.
  - This project is crucial for personalized medicine and understanding genetic diversity in India.
  - Indian researchers actively contributed to global efforts in genome sequencing of the SARS-CoV-2 virus, helping track mutations and variants.
  - The **Indian SARS-CoV-2 Genomics Consortium (INSACOG)** played a key role in this effort, sequencing thousands of samples by mid-2021.
- **Nanotechnology:** Indian researchers have made significant progress in nanotechnology, particularly in developing novel nanomaterials.
  - For instance, scientists at IIT Madras developed a **nano-coated magnesium alloy** that can be used for biodegradable implants, potentially revolutionizing orthopedic treatments.
  - IFFCO Nano Urea **(liquid)** is the **world's first Nanofertilizers** which has been notified by Fertilizer Control Order (FCO, 1985), Government of India.
  - Another team at IISc Bangalore designed a novel **hydrogel** to remove microplastics from water.
- **Robotics and Automation:** India has made significant progress in robotics, particularly in healthcare applications.
  - For instance, researchers at **IIT Madras** have launched India's first indigenously developed Polycentric Prosthetic Knee called **"Kadam"**.
  - These innovations demonstrate India's growing capabilities in integrating robotics and AI for practical applications.

Why India Still Lags Behind Research and Developments?

- **Funding Famine- The Resource Crunch in R&D:** India's investment in R&D remains critically low compared to glob al standards.
  - As of 2021, India spent just **0.7% of its GDP on R&D**, significantly below the global average of 1.8% and far behind countries like **Israel (4.9%) and South Korea (4.6%).**
  - This underinvestment translates to **fewer grants, outdated equipment, and limited resources for researchers.**
  - The private sector's contribution to R&D in India is also low at about **37% of total R&D expenditure**, in contrast to the global trend, where business enterprises typically contribute over **65% of R&D.**
- **Brain Drain:** India continues to face a significant brain drain, with many top researchers and scientists leaving for better opportunities abroad.
  - A report by US-based think tank Centre for Security and Emerging Technology stated that approximately **87% of Indian nationals** who completed **STEM PhD programmes in the US** between 2000 and 2015 were still living in the country
  - This exodus deprives India of its brightest minds, hindering the growth of a robust domestic research ecosystem.
  - The **lack of competitive salaries, limited research funding**, and inadequate infrastructure at home contribute to this ongoing challenge.
- **Bureaucratic Bottlenecks- Red Tape Strangling Innovation:** The Indian research landscape is often mired in bureaucratic processes that slow down progress.
  - Complex **procurement procedures, delayed fund releases, and excessive paperwork** create significant hurdles.
  - For instance, it takes an average of 6-12 months to import specialized scientific equipment in India, compared to 1-2 months in many developed countries.
- **Disconnected Curricula and Industry Needs:** India's education system often fails to nurture research skills and innovation mindset at early stages.
  - Economic Survey 2023-24 stated that about one in two graduates are not yet readily employable straight out of college.
  - The disconnect between **academic curricula and industry need**s results in a shortage of skilled researchers.
  - Moreover, the **emphasis on rote learning over critical thinking** and problem-solving in schools hampers the development of research aptitude from an early age.
- **Publish or Perish-Quantity Over Quality in Research Output:** While India's research output has grown, concerns about quality persist.
  - India was the world's **third-most-prolific publisher of research papers in 2022**, but it was ranked only **153rd for the number of citations it received per paper.**

- **Gender Gap in STEM**: India faces a significant gender disparity in scientific research. A study conducted by UNESCO found that only **35% of STEM students in higher education in India are women.**
  - This underrepresentation is even more pronounced in leadership positions.
  - This gender gap **not only deprives the field of diverse perspectives** but also represents a massive untapped talent pool that could significantly boost India's research capabilities.
- **Intellectual Property Conundrum:** India's performance in intellectual property creation remains subpar compared to its research output.
  - According to the Indian Patent Office**, 58,503 patent applications were filed in India in 2020–2021**, significantly lower than China or the US.
  - More critically, the patent grant rate in India is much less as compared to countries like Japan and the US.
  - This low patent output not only reflects gaps in applied research but also results in missed economic opportunities from potential commercialization.
- **Interdisciplinary Divide:** Indian research often suffers from a lack of interdisciplinary collaboration.
  - This silo mentality hampers innovation, especially in emerging fields like **AI, biotechnology, and nanotechnology,** which require integration of multiple disciplines.
  - For instance, while India has strong individual departments in computer science and biology, the field of **bioinformatics lags due to limited interdepartmental collaboration.**
  - This lack of cross-pollination of ideas significantly limits India's ability to tackle complex, multifaceted research challenges.

What Measures can India take to Enhance its R&D Capabilities?

- **Fund to Flourish:** Increase public R&D spending from the current **0.7% to at least 2% of GDP**.
  - Implement tax incentives for private companies investing in R&D, offering tax deduction on R&D expenditure.
  - Create a national research foundation to **fund high-risk, high-reward projects.**
  - Establish a sovereign innovation fund to support startups and research-intensive SMEs.
  - These measures would significantly enhance the financial ecosystem for research and innovation in India.
- **Brain Gain Initiative**: Launch a "**Reverse Brain Drain" program** offering competitive salaries and research grants to attract Indian scientists working abroad.
  - Implement a **"Flexi-Return" policy allowing researchers** to split time between Indian and foreign institutions.
  - Establish a **"Global Indian Scientist Network**" to facilitate collaborations and knowledge transfer. These steps would help India reclaim its intellectual capital and boost its research capabilities.
- **Industry-Academia Bridge:** Mandate that **2% of CSR funds be allocated to joint research projects** with academic institutions.
  - Establish sector-specific "Innovation Clusters" bringing together industry, academia, and startups.
  - Implement **a "Researcher-in-Residence" program** for faculty to work in industry and vice versa.
  - Create a national portal for industry to post research problems and academia to offer solutions. These initiatives would strengthen the industry-academia linkage and drive more applied research.
- **Quality Quest:** Introduce a national research integrity office to monitor and promote ethical research practices.
  - Implement a **tiered journal ranking system** to incentivize publication in high-impact journals.
  - Establish mandatory research methodology and scientific writing courses for all **PhD students**.
  - Create a national mentorship program pairing early-career researchers with eminent scientists. These steps would help improve the overall quality and impact of Indian research output.
- **STEM for All:** Launch a **"Women in STEM" scholarship** program.
  - Implement gender-sensitive policies including extended maternity leave and childcare support in research institutions.
  - Create **research positions reserved for scientists** for women.
  - Establish a national network of STEM outreach centers in rural and semi-urban areas. These measures would help create a more diverse and inclusive research ecosystem in India.

- **Innovation Incubators:** Establish technology business incubators in universities with a focus on deep-tech startups.
  - Implement a **"Lab to Market" grant program** funding the commercialization of research outcomes.
  - Create a **national IP bank** to facilitate easier licensing of patents to industry.
  - Launch an **"Innovation Challenge" series** with substantial prizes for solving key national problems.
    - These initiatives would help translate more research into marketable innovations and economic value.
- **Global Research Connect:** Establish joint research centers with top global universities in priority areas like AI, quantum computing, and biotechnology.
  - Launch an **"International Research Fellowship"** program funding Indian researchers annually for overseas projects.
  - Create a "**Global Science Diplomacy**" initiative to forge research partnerships aligned with foreign policy objectives.
  - Implement fast-track visas for international researchers coming to India. These measures would significantly boost India's participation in global scientific endeavors.
- **Upgrading Research Infrastructure:** Launch a "Research Infrastructure Modernization" program.
  - Establish **national research facilities in frontier areas like particle physics, gene editing, and advanced materials.**
  - Create a national research cloud computing platform accessible to all accredited researchers. Implement a shared equipment program to optimize utilization of high-end scientific instruments. These steps would provide Indian researchers with world-class facilities to conduct cutting-edge research.
- **Interdisciplinary Nexus:** Establish **Centers of Interdisciplinary Research Excellence** focusing on complex national challenges.
  - Implement a **"Discipline Hopping"** fellowship for researchers to work in fields outside their primary expertise.
  - Create interdisciplinary PhD programs combining STEM with humanities and social sciences.
  - Launch an **"Convergence Research"** grant program specifically for projects spanning multiple disciplines.

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Strengthening India's Cyber Defence

This editorial is based on "Disinformation, AI and 'cyber chakravyuh'" which was published in The Hindu on 13/08/2024. The article highlights the rising threat of AI and cyberattacks in 2024, emphasizing the need for increased vigilance and coordinated global action to combat these emerging digital dangers, especially in democratic nations. It also underscores the importance of addressing AI-enabled disinformation and the growing risk of cyber fraud in daily life.

Tag: GS Paper - 2, Government Policies & Interventions, GS Paper - 3, Cyber Security, Cyber Warfare, Challenges to Internal Security Through Communication Networks

The year **2024** has ushered in a new era of **digital threats**, with **Artificial Intelligence (AI)** and its various manifestations, including **Generative AI and Artificial General Intelligence (AGI),** at the forefront of security concerns. The potential for digital attacks, disinformation campaigns, and cyber threats remains high. The recent **global disruption caused by a Microsoft Windows software** update glitch serves as a stark reminder of the vulnerabilities in our interconnected digital infrastructure.

For India, as with the rest of the world, the threat landscape is evolving rapidly. From AI-enabled **deep fakes to sophisticated cyber attacks** targeting critical infrastructure, the challenges are multifaceted and growing in complexity. The rise in cyber fraud affecting ordinary citizens, including phishing attempts, identity theft, and financial scams, underscores the need for heightened awareness and robust cybersecurity measures. As we navigate this new digital reality, it is imperative for both the public and private sectors in India to **prioritize cybersecurity,** invest in advanced protective measures, and foster a culture of digital vigilance to safeguard national security and individual privacy.

What are the Current Major Cyber Threats that India is Facing?

- **The Ransomware Rampage:** India witnessed an increase in ransomware attacks recently with the healthcare sector being particularly vulnerable.
  - Security software maker Quick Heal stated it has detected over **48000 instances of the WannaCry ransomware attack in India.**
  - The attack on the **All India Institute of Medical Sciences (AIIMS) Delhi** in November 2022.
    - There were at least 6,000 attempts to hack the server of the **Indian Council of Medical Research (ICMR).**

- **Phishing Paradox:** India recorded over 79 million phishing attacks in 2023. The finance sector bore the brunt, accounting for the majority of all phishing attacks.
  - Examples include the **Phishing Campaigns** targeting State Bank of India users , where fraudsters sent fake SMS messages to millions of customers, attempting to steal their banking credentials.
  - This trend underscores the importance of user education and advanced email security solutions.
- **The Cloud Conundrum:** As India rapidly adopts cloud technologies, with the overall **Indian Public Cloud Services (PCS)** market expected to reach **USD 24.2 billion by 2028,** cloud security threats have become a major concern.
  - In 2023, a significant data breach at Air India exposed the **personal data of 4.5 million passengers**, attributed to a compromise in its cloud service provider's systems.
  - This incident highlights the need for robust cloud security strategies, including proper configuration, access management, and continuous monitoring.
- **The IoT Invasion:** With India's IoT market projected to reach **USD 9.28 billion by 2025,** the **security of Internet of Things (IoT) devices** has become a critical issue.
  - Researchers discovered a vulnerability in **millions of smart meters** deployed across India, potentially allowing hackers to manipulate power consumption data.
  - This discovery emphasizes the need for stringent security standards and regular updates for IoT devices in both consumer and industrial settings.
- **The Supply Chain Siege:** India's digital supply chains faced unprecedented attacks in 2023, with a rampant increase in software supply chain vulnerabilities.
  - The **SolarWinds-like attack** on the IT services giant in 2023 is a prominent example.
  - This incident exposed the **cascading effect of supply chain attacks and highlighted the need for rigorous vendor risk management** and software integrity verification processes across Indian industries.
- **The Crypto Crimes Wave:** According to a report published by 'Broadband India Forum' Cryptocurrency theft grew with roughly $3.2 billion worth stolen in 2021, a 516% increase compared to 2020.
  - The infamous **WazirX Crypto Heist** which compromised **45% of WazirX's crypto assets**, has highlighted significant vulnerabilities highlighted the vulnerabilities in digital asset platforms.
  - This trend calls for stronger regulations, enhanced cybersecurity measures for crypto exchanges, and increased user awareness about safe crypto practices.
- **The Deepfake Dilemma:** India witnessed a **230% increase in deepfake videos in 2023,** with political misinformation campaigns leading the charge.
  - The viral deep fake video of a prominent Indian politician making inflammatory statements during the **2024 election campaign** caused significant social unrest.
  - This incident highlights the urgent need for deepfake detection technologies, stricter content moderation policies, and public awareness campaigns about digital media literacy.
- **Lack of Cybersecurity Professionals:** India faces a severe shortage of skilled cybersecurity professionals, **leaving organizations vulnerable to cyber threats.**
  - India has a shortage of **8 lakh cybersecurity professionals**. This shortage is particularly acute in emerging technologies like AI and cloud security.
  - The lack of expertise hampers the implementation of robust cybersecurity measures and incident response capabilities, making it a critical threat to India's overall cybersecurity posture.
- **The Honey Trap Hazard: Honey trapping** has emerged as a significant cyber threat in India, particularly targeting government officials, military personnel, and high-profile individuals.
  - This method involves creating fake social media profiles, usually of attractive individuals, to lure targets into compromising situations or divulging sensitive information.
  - In 2023, the Indian Army reported a dramatic increase in honey trapping attempts on its personnel compared to the previous year.
  - Another **DRDO senior technical officer was detained in 2023** on suspicion of giving information about **India's missile testing to a Pakistani intelligence operative.**

What are the Key Government Initiatives Related to Cybersecurity in India?

- **National Cyber Security Policy:** The policy outlines objectives and strategies to protect **cyberspace information and infrastructure, develop capabilities to prevent and respond to cyber attacks,** and minimize damages through coordinated efforts

across institutional structures, people, processes, and technology.

- **Indian Cyber Crime Coordination Centre (I4C):** To provide a comprehensive and coordinated framework for law enforcement agencies to tackle cyber crimes.
  - Components:
    - National Cyber Crime Threat Analytics Unit
    - National Cyber Crime Reporting Portal
    - National Cyber Crime Training Centre
    - Cyber Crime Ecosystem Management Unit
    - National Cyber Crime Research and Innovation Centre
    - National Cyber Crime Forensic Laboratory Ecosystem
    - Platform for Joint Cyber Crime Investigation Team
- **Computer Emergency Response Team - India (CERT-In):** An organization under the Ministry of Electronics and Information Technology (MeitY) responsible for collecting, analyzing, and disseminating information on cyber incidents, as well as issuing alerts on cybersecurity threats.
- **Cyber Surakshit Bharat Initiative:** To raise awareness about cyber crimes and implement safety measures for **Chief Information Security Officers (CISOs)** and frontline IT staff across all government departments.
- **Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Centre):** Launched in 2017, this **center aims to create a secure cyberspace by detecting botnet infections** in India and notifying users to enable the cleaning and securing of their systems to prevent further infections.
- **National Critical Information Infrastructure Protection Centre (NCIIPC):** Established to protect **Critical Information Infrastructure (CII)** in sectors such as power, banking, telecom, transport, government, and strategic enterprises.
  - CII is defined as a computer resource whose destruction would have a debilitating impact on national security, economy, public health, or safety.
- **Defence Cyber Agency (DCyA)**A tri-service command of the Indian Armed Forces responsible for handling cybersecurity threats.
  - The DCyA has the capability to conduct cyber operations, including hacking, surveillance, data recovery, encryption, and countermeasures against various cyber threat actors.
- **Digital Personal Data Protection Act 2023**: This landmark legislation aims to protect the digital personal data of individuals in India and regulate the collection, storage, processing, and sharing of such data.
  - **Key features:**
    - Establishes a Data Protection Board of India to enforce compliance
    - Requires explicit consent for data collection and processing
    - Mandates data fiduciaries to implement reasonable security safeguards

What Measures can India Adopt to Bolster its Cybersecurity?

- **Cyber Fusion Centers:** Establish regional **Cyber Fusion Centers** to facilitate real-time threat intelligence sharing between public and private sectors.
  - Implement **advanced AI and machine learning systems** for predictive threat analysis.
  - Create a **centralized incident response team** capable of rapid deployment to address major cyber incidents.
  - Conduct **regular joint cyber exercises i**nvolving multiple stakeholders to test and improve coordination.
- **Digital Literacy Crusade:** Launch a nationwide **digital literacy campaign targeting all demographics,** with a focus on cybersecurity awareness.
  - Integrate cybersecurity education into school curricula from secondary to higher education levels.
  - Develop a mobile app providing real-time cybersecurity tips and threat alerts to citizens.
  - Conduct **regular cyber hygiene workshops** in rural areas using local languages and relatable scenarios.
  - Partner with **popular social media influencers** to spread cybersecurity awareness among youth.
- **Strengthening Current Data Protection Framework:** India should strengthen the existing Digital Personal Data Protection Act 2023 by incorporating provisions for **regulating AI powered breaches of personal data, imposing stricter penalties for breaches,** and enforcing **rigorous implementation and scrutiny**.
  - Enhancing the current act will address emerging threats without duplicating legislative efforts.
- **Secure-by-Design Initiative:** Promote a 'Secure-by-Design' approach in software and hardware development across industries.
  - Establish a **national cybersecurity product certification program** to ensure adherence to security standards.

- Offer **grants and funding for startups** focusing on developing innovative cybersecurity solutions.
- Create a **dedicated R&D fund for quantum-resistant cryptography** to prepare for future threats.

- **AI-Powered Cyber Defense:** Invest in developing AI-powered cybersecurity solutions tailored to India's unique threat landscape.
  - Implement machine learning algorithms for **anomaly detection in network traffic and user behavior.**
  - Develop AI-driven threat hunting capabilities to proactively identify and neutralize emerging cyber threats.
- **Supply Chain Fortification:** Implement a comprehensive supply chain risk management framework for **both hardware and software procurement.**
  - Conduct regular **security assessments of third-party vendors and service providers.**
  - Develop a national database of trusted suppliers and mandate its use in government and critical sector procurements.
  - Implement **blockchain technology for enhanced traceability** and integrity in digital supply chains.
- **Cloud Citadel-Securing India's Digital Sky:** Establish a national cloud security framework with stringent compliance requirements for all cloud service providers.
  - Implement **mandatory encryption for all data stored in the cloud**, addressing vulnerabilities like those in the Air India breach.
  - Create a **Cloud Security Operations Center** to monitor and respond to threats across public cloud services.
- **Deepfake Defense**: Implement strict content verification protocols for all major social media platforms operating in India.
  - Create a **rapid response team** to address viral deepfakes during critical periods like elections.
  - Launch a public awareness campaign on identifying and reporting deepfakes.
- **The Cyber Warrior Initiative:** India should launch a comprehensive **"Cyber Warrior Initiative"** to address the critical shortage of cybersecurity professionals.
  - This program would involve partnering with universities to develop specialized cybersecurity curricula, establishing a **national cybersecurity scholarship program, and creating a cyber reserve force.**
  - Implementing a national certification program and offering tax incentives to companies investing in employee cybersecurity training would further strengthen the workforce.

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Supreme Court's Role in Upholding Civil Liberties

This editorial is based on "The top court as custodian of liberties" which was published in The Hindu on 13/08/2024. This article highlights the Supreme Court of India's recent decision to grant bail in Delhi excise policy case, emphasizing that "liberty is an intrinsic part" of constitutionalism, highlights its role in upholding individual rights and ensuring timely justice. The ruling critiques the criminal justice system's delays and the problematic use of stringent laws, reaffirming that bail should be the rule rather than the exception.

Tag: GS Paper-2, Fundamental Rights, Judicial Review, Separation of Powers, Judgments & Cases, Judiciary.

On August 9, **the Supreme Court (SC)** ruled that a speedy trial is a fundamental right under **Article 21** of the Constitution, holding that long incarceration without trial, even under stringent laws like the **Prevention of Money Laundering Act (PMLA)**, violates this right. The Court's ruling, which emphasizes that "liberty is an intrinsic part" of constitutionalism, reinforces the principle that bail should be the rule rather than the exception, reflecting its commitment to ensuring a **fair and timely trial** as a fundamental right under **Article 21**.

In its judgment, the Court not only addressed the specific bail case but also responded to broader concerns about the **delays and inefficiencies** inherent in the criminal justice system, particularly under stringent laws like the PMLA. By highlighting the excessive delays and the problematic application of such laws, the Court called for a reconsideration of how justice is administered, aiming to protect **civil liberties** against procedural excesses.

Ultimately, the ruling serves as a reminder of the Court's pivotal role in upholding justice and reinforcing **democratic values**, urging a shift towards a justice system that respects individual rights and counters systemic inefficiencies.

The Supreme Court, while revered as the **guardian of the Constitution**, has faced increasing scrutiny in recent years. Contemporary political and constitutional commentators have raised concerns about various aspects of its functioning, questioning its independence, consistency, and effectiveness.

Supreme Court of India

- Following India's independence in 1947, **the Constitution of India** was adopted on **26th January 1950**. **The Supreme Court of India** was established shortly thereafter, with its inaugural session held on **28th January 1950**.
- The Indian constitution provides for a provision of **the Supreme Court** under **Part V (The Union) and Chapter 6 (The Union Judiciary)**.
- **Articles 124 to 147** in **Part V** of the Constitution deal with the organization, independence, jurisdiction, powers and procedures of the Supreme Court.
- **The Indian constitution under Article 124(1)** states that there shall be a **Supreme Court of India** constituting of a **Chief Justice of India (CJI)** and, until Parliament by law prescribes a larger number, of not more than seven other Judges.
  - At present the top court has a sanctioned strength of **34 judges**.
- The Jurisdiction of the **Supreme Court of India** can broadly be categorized into original jurisdiction, appellate jurisdiction and advisory jurisdiction. However, there are other multiple powers of the Supreme Court.
- The rulings issued by the Supreme Court are **authoritative and binding** on all courts within India.
- The Court possesses the **power of judicial review**, enabling it to invalidate legislative and executive actions that violate constitutional provisions, disrupt the balance of power between the Union and the States, or infringe upon the **fundamental rights** guaranteed by the Constitution. Thus, the Supreme Court of India is the **guarantor of the civil liberties** in India.

Which Provisions Make the Supreme Court The Guardian of Civil Liberties?

- **Constitutional Provisions:**
  - **Article 13:** This provision ensures that any law that contravenes or takes away the **Fundamental Rights** is deemed void. The Supreme Court can adjudicate whether any law is unconstitutional or violates civil liberties.
  - **Article 32:** This article grants the **right to constitutional remedies**, allowing individuals to approach the Supreme Court directly for the enforcement of Fundamental Rights. It makes the Supreme Court the protector of Fundamental Rights and civil liberties.
  - **Article 136:** This provision grants the Supreme Court special powers to grant special leave to appeal from any judgment, decree, or order of any court or tribunal, which includes matters related to civil liberties.
    - **SLP (Special Leave Petition):** This is a petition to the Supreme Court seeking permission to appeal against lower court decisions on significant legal issues.
  - **Article 142:** This article empowers the Supreme Court to pass any order or decree necessary for doing **complete justice** in any cause or matter, including safeguarding civil liberties and fundamental rights.
- **Other Tools:**
  - **Writs:** These are legal orders from higher courts to enforce Fundamental Rights or direct public authorities. **Habeas Corpus, Mandamus, Prohibition, Certiorari, and Quo Warranto** are writs available to enforce civil liberties.
  - **PIL (Public Interest Litigation):** These are petitions filed to address issues affecting the public and ensure justice on matters of broader social concern.
  - **Judicial Review:** This is the power of courts to assess the constitutionality of laws and government actions, ensuring they comply with the Constitution.
- **Various Doctrines:**
  - **Basic Structure:** The **Basic Structure Doctrine** is a principle established by the Supreme Court which asserts that certain fundamental features of the Constitution cannot be altered or destroyed by amendments.
    - This doctrine ensures that amendments to the Constitution must not affect its essential framework, such as democracy, secularism, and the rule of law. It was formalized in the case **Kesavananda Bharati v. State of Kerala (1973)**.
  - **Doctrine of Severability:** This doctrine states that if a part of a law is found to be unconstitutional, that part can be severed from the rest of the law, which will remain valid if it can function independently.
    - It helps to invalidate only the unconstitutional portions of a law, preserving the remainder of the legislation.
  - **Doctrine of Eclipse:** According to this doctrine, if a law infringes on Fundamental Rights, it becomes void or "eclipsed" to the extent of the infringement but does not become null and void altogether. It

remains inoperative as long as it contravenes **Fundamental Rights** but can be revived if the inconsistency is removed.

- This doctrine provides that laws infringing on Fundamental Rights are not completely invalidated but are suspended until they are aligned with the Constitution.

- **Doctrine of Substantive Due Process:** This doctrine extends beyond mere procedural fairness to include the protection of certain fundamental rights as **substantive rights**, ensuring laws do not violate the core essence of Fundamental Rights.
  - It protects individual freedoms and ensures laws affecting such freedoms are just, fair, and reasonable.
- **Doctrine of Colorable Legislation**: The doctrine of colourable legislation is a legal principle that prevents the government from using its legislative authority in an unconstitutional way. It's also known as the "Fraud on the Constitution". It means that things that can't be done directly also can't be done indirectly.

What are Some Instances Where the Supreme Court has acted as the Guardian of Civil Liberties??

- **Delhi Excise Policy Case (2024):**
  - In this recent judgment, the Supreme Court reaffirmed that the **right to a speedy trial** is a fundamental right under **Article 21**.
    - However, the Right of Speedy Trial was declared as a fundamental right by a Constitutional Bench of the Supreme Court in Kartar Singh vs. State of Punjab (1994).
  - This decision emphasized that prolonged incarceration without trial is a violation of civil liberties, particularly in the context of stringent laws like the **Prevention of Money Laundering Act (PMLA)**.
- **Arnab Goswami vs The State of Maharashtra (2020):**
  - The judgment underscored the **right to liberty and a speedy trial**, emphasizing that personal liberty cannot be compromised through arbitrary or excessive legal measures.
  - It reiterated the constitutional principle that **bail** is the norm and incarceration an exception, a principle articulated by **Justice V.R. Krishna Iyer in 1977**.
  - This aligns with the **right to a fair and speedy trial** under Article 21 of the Indian Constitution.
- **Navtej Singh Johar vs. Union of India (2018):**
  - The Supreme Court **decriminalized consensual homosexual acts** by striking down **Section 377** of the Indian Penal Code.
  - This landmark decision affirmed the rights of the LGBTQ+ community, highlighting the Court's commitment to upholding individual dignity and privacy against discriminatory laws.
- **Justice K.S. Puttaswamy vs. Union of India (2017):**
  - **The Supreme Court** recognized the **right to privacy as a fundamental right** under the Constitution.
  - The judgment emphasized that privacy is intrinsic to the **dignity of individuals** and must be protected against arbitrary state actions, thereby expanding the scope of civil liberties in India**.**
- **Shreya Singhal v. Union of India (2015):**
  - **The Supreme Court** struck down **Section 66A of the Information Technology Act**, which criminalized offensive or menacing online content.
  - The Court ruled that this provision violated the fundamental right to freedom of speech and expression under Article 19(1)(a) of the Constitution.
- **Lalita Kumari vs. Government of Uttar Pradesh (2014):**
  - **The Supreme Court** ruled that the police are **obligated to register an FIR** (First Information Report) upon receiving a complaint of cognizable offenses.
  - This decision reinforced the right of individuals to have their grievances addressed by law enforcement, ensuring prompt action and protection of civil liberties.
- **Lily Thomas vs. Union of India (2013):**
  - The court declared that a lawmaker convicted of a crime punishable with imprisonment for two years or more would be disqualified from holding office immediately upon conviction, irrespective of the pendency of an appeal.
  - This judgment was a significant step towards enhancing the **credibility and accountability** of elected representatives.
- **Gaurav Jain vs. Union of India (1997):**
  - In this case, the Supreme Court addressed the rights of women and children in the context of prostitution.
  - The court determined that women in the flesh trade should be seen as victims of **socio-economic hardships** rather than offenders, and that both

they and their children deserve **dignity, protection, and the opportunity** to reintegrate into society without stigma.

- **Maneka Gandhi vs. Union of India (1978):**
  - This case expanded the scope of **Article 21**, which guarantees the **right to life and personal liberty**. The Supreme Court ruled that this right is not limited to mere existence but includes the **right to live with dignity**.
  - The judgment emphasized that any law depriving a person of their liberty **must be fair, just, and reasonable**, thereby strengthening procedural safeguards.
- **Kesavananda Bharati vs. State of Kerala (1973):**
  - In this landmark case, **the Supreme Court** established the **Basic Structure Doctrine**, asserting that certain fundamental features of the Constitution, including the **protection of civil liberties**, cannot be altered by amendments.
  - The Court held that the **fundamental rights** enshrined in the Constitution form part of its basic structure, which must be preserved.
- **A.K. Gopalan vs. State of Madras (1950):**
  - In this early case, the Supreme Court tackled the issue of **preventive detention**. Although the decision initially upheld the validity of preventive detention laws, it set the stage for later rulings that would address and narrow the scope of such laws to better align with fundamental rights.
- **Romesh Thappar v. State of Madras (1950):**
  - The Supreme Court of India ruled that a government order banning the entry and circulation of a newspaper in Madras violated the **fundamental right to freedom of speech and expression** under **Article 19(1)(a) of the Constitution** and held that freedom of the press was an essential part of the right to freedom of speech and expression.
  - It emphasized that the state cannot impose arbitrary bans on the press, thereby reinforcing the protection of civil liberties and limiting government power over free expression.

What are Challenges Associated With Functioning of the Supreme Court?

- **Implementation of Judgments:**
  - Critics have raised concerns about the **implementation and enforcement** of the Supreme Court's judgments. In some cases, despite clear directives from the Court, the execution of its orders has been slow or inadequate.
  - **Constitutional experts** argue that without robust implementation frameworks, the impact of the **Court's decisions** can be diminished, leading to frustration among litigants and diminishing the **rule of law**.
  - Also, there is **no uniformity** in application of various principles upheld by the supreme court for **securing civil liberties**.
  - The lack of **doctrinal consistency** across benches leads to **confusion and unpredictability** in legal outcomes.
- **Case Delays and Pendency:**
  - Another significant issue facing the Supreme Court is the enormous backlog of cases, leading to significant delays in justice delivery.
    - As per **National Judicial Data Grid**, around **4.4 Crore** cases are pending in Indian courts out of this more than **1 crore** cases are **civil suits**.
  - The delays in adjudication not only undermine public confidence in the judiciary but also adversely affect the lives of litigants. The lack of **doctrinal consistency** across benches leads to confusion and unpredictability in legal outcomes.
- **Master of The Roster Issue:**
  - Several critics including judges have criticized the concept of '**master of the roster,**' which grants the CJI the exclusive power to form benches and allocate cases, arguing that it should not imply the CJI's superiority over other justices.
  - They believe that traditional conventions guiding roster management have been ignored, leading to selective and potentially biased case assignments by the CJI.
- **Judicial Overreach and Activism:**
  - One of the most frequent criticisms of **the Supreme Court** is its perceived **judicial overreach and activism**.
  - Critics argue that the Court has occasionally encroached upon the domain of the legislature and executive, thereby disrupting the balance of power among the three branches of government.
  - Such activism risks undermining the principle of separation of powers and may lead to accusations of judicial authoritarianism.
- **Appointments and Transparency Issues:**
  - The process of appointing judges to the Supreme Court has also been a focal point of criticism. **The National Judicial Appointments Commission (NJAC) Act**, intended to reform the appointment process, was struck down by the Supreme Court in 2015.

- Lack of transparency and thoroughness, and the lack of clear standards for assessing suitability of judges further erode trust in the **collegium's** integrity.

➢ **Independence of Judiciary:**

- The independence of the judiciary is a fundamental principle in India, guaranteed by the Constitution through provisions like **Article 50 and Article 124(2)**, which aim to separate judicial functions from executive influence.
- Despite these safeguards, challenges such as judicial appointments, procedural delays, and corruption pose threats to this independence.

The Bangalore Principles of Judicial Conduct

➢ The Bangalore Principles of Judicial Conduct aim to set ethical standards for judges.

➢ They provide a framework for regulating judicial behavior and offer guidance on maintaining judicial ethics.

➢ The Principles recognize six core values: **independence, impartiality, integrity, propriety, equality, and competence and diligence**.

- **Independence:** Judges must make decisions free from external pressures or influences, ensuring their judgments are based solely on the law.
- **Impartiality:** Judges must be unbiased and fair, treating all parties equally and deciding cases based on evidence and legal principles.
- **Integrity:** Judges must act honestly and ethically, maintaining high standards of truthfulness and transparency.
- **Propriety:** Judges should conduct themselves in a manner that upholds the dignity of their office, both inside and outside the courtroom.
- **Equality:** Judges must treat everyone equally, ensuring that no one is unfairly discriminated against and that justice is administered fairly.
- **Competence and Diligence:** Judges must have the necessary legal expertise and handle cases with care and thoroughness, ensuring timely and well-considered decisions.

➢ The principle defines these values and details the expected conduct for judges to effectively practice each value.

What Should be Way Forward?

➢ **Strengthening Implementation Frameworks:**

- Develop clear, **enforceable guidelines** for the implementation of Supreme Court judgments to ensure that directives are acted upon promptly and effectively.
- Establish **monitoring mechanisms** to track the execution of orders and address non-compliance issues.

➢ **Reducing Case Backlog:**

- Increase the number of judges and court staff to expedite case processing and reduce the backlog.
- Implement technology-driven solutions like e-filing and case management systems to streamline procedures and enhance efficiency.
  - For instance, the Government of India has launched the **e-Courts Integrated Mission Mode Project** in the country for computerization of District and subordinate courts with the objective of improving access to justice using technology.

➢ **Ensuring Doctrinal Consistency:**

- Foster uniform application of legal principles by promoting cross-bench dialogue and standardizing judicial approaches to reduce variability in rulings.
  - For example, applying the recent ruling of SC, fair and timely trial as a fundamental right under Article 21, should be applied for speedy trial of several other pending cases.
- Encourage the development of comprehensive guidelines to ensure consistency in judicial decisions.

➢ **Addressing Judicial Overreach:**

- Reinforce the separation of powers by clarifying the boundaries of judicial intervention in legislative and executive matters.
- Promote judicial restraint and emphasize adherence to constitutional limits to avoid accusations of overreach and maintain balance among government branches.

➢ **Improving Appointments and Transparency:**

- Revise the Collegium system to enhance transparency and accountability in the judicial appointment process.
- Consider reforms to establish clearer standards for evaluating judicial candidates and ensure a more transparent selection process.

➢ **Protecting Judicial Independence:**

- Uphold constitutional safeguards by addressing threats to judicial independence, including addressing concerns related to appointments, procedural delays, and corruption.
- Promote ongoing dialogue between the judiciary, executive, and legislative branches to strengthen the independence and integrity of the judicial system.

Conclusion

The independence of the judiciary is often hailed as the cornerstone of a democratic polity. In India, this principle is enshrined in the Constitution, with provisions guaranteeing the judiciary's freedom from executive and legislative interference.

However, the judiciary's independence has faced challenges over the years. There have been instances of alleged executive overreach and attempts to influence judicial decisions.Despite these challenges, the Indian judiciary has demonstrated its courage and commitment to upholding the Constitution. Landmark judgments on issues such as fundamental rights, electoral reforms, and corruption have solidified its position as a guardian of constitutional rights.

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Charting a Sustainable Future for Andaman and Nicobar

This editorial is based on "How a wildlife sanctuary in the Great Nicobar Island was made to vanish" which was published in The Indian Express on 14/08/2024. The article brings into focus the alarming reality of environmental mismanagement and legal maneuvering that threatens the delicate ecosystems of India's coastal zones, particularly in the Andaman and Nicobar Islands.

Tag: GS Paper - 2, Government Policies & Interventions, Issues Related to SCs & STs, GS Paper - 3, Growth & Development, Environmental Pollution & Degradation

The Great Nicobar Island Project, centered around a **Rs 42,000 crore** transshipment port in Galathea Bay, exemplifies the tension between development ambitions and environmental conservation in India. Despite the **area's rich biodiversity,** including nesting sites for **endangered sea turtles and the endemic Nicobar megapode**, as well as coral colonies and mangroves, authorities have pushed forward with the project through a series of controversial decisions. These include **denotifying a wildlife sanctuary, granting environmental clearance despite clear violations,** and reclassifying the area's coastal regulation zone status.

This case highlights diluting **environmental regulations to accommodate large-scale development projects.** The process involved questionable administrative maneuvers, potential conflicts of interest in review committees, and a disregard for scientific evidence and conservation imperatives. As India pursues its development goals in the Andaman and Nicobar Islands, this episode raises serious concerns about the long-term environmental costs and the integrity of India's environmental protection framework. It underscores the need for a **more balanced approach** that genuinely considers ecological preservation alongside economic aspirations.

What is the Significance of Andaman and Nicobar Islands for India?

- **Blue Economic Gateway:** The islands are at the crossroads of **major shipping routes**, offering immense potential for India's blue economy initiatives.
  - The proposed transshipment port in Great Nicobar, aims to leverage this strategic location.
  - It could potentially handle **4 million TEUs (Twenty-foot Equivalent Units) annually,** rivaling major ports like Singapore.

- The islands' rich marine biodiversity also **presents opportunities in fisheries, aquaculture, and marine biotechnology,** contributing significantly to India's economic growth.

- **Ecological Treasure Trove:** The Andaman and Nicobar archipelago is a biodiversity hotspot, home to over 9,100 species of fauna.
  - Coral reefs are stretched over an area of 11,000 sq km in the Andamans while the Nicobars have 2,700 sq km under coral reefs.
  - Notable species like the **leatherback turtle and Nicobar megapode** find their nesting grounds here.
  - This unique ecosystem not only supports scientific research but also positions India as a key player in global biodiversity conservation efforts.
- **Geopolitical Leverage:** The islands significantly extend India's strategic reach into Southeast Asia, serving as a **fulcrum for its Act East policy**.
  - They lie just **90 nautical miles from Indonesia** offering India a gateway for diplomatic, economic, and military engagement with ASEAN countries.
  - The **tri-service Andaman and Nicobar Command**, established in 2001, enhances India's ability to project power and conduct joint operations in the region, countering China's 'String of Pearls' strategy.
- **First Responder in the Bay of Bengal:** Given their location, the islands play a crucial role in disaster management for the entire Bay of Bengal region.
  - They serve as an **early warning system for tsunamis and cyclones,** with the **Indian National Centre for Ocean Information Services (INCOIS)** operating key monitoring stations here.
  - During the **2004 Indian Ocean tsunami,** these islands were instrumental in coordinating relief efforts.
    - The proposed infrastructure developments aim to enhance this capability, positioning India as a reliable first responder in regional humanitarian crises.
- **Energy Security:** The Andaman offshore basin is estimated to hold significant **hydrocarbon reserves.**
  - Developing these resources could substantially boost India's energy security, reducing dependence on imports.
  - The islands' **potential for renewable energy,** particularly **ocean thermal energy conversion and tidal power,** also presents opportunities for sustainable development and energy innovation.
- **Cultural Melting Pot:** The Andaman and Nicobar Islands are home to six indigenous tribes, including the **Sentinelese**, one of the world's last uncontacted peoples.
  - This unique cultural diversity presents both a responsibility and an opportunity for India to showcase its commitment to preserving indigenous ways of life.
  - The islands' **multicultural society, blending influences from mainland India, Myanmar, and colonial history,** offers a microcosm of India's cultural diplomacy and inclusive development model.

What are the Major Challenges Related to Andaman and Nicobar Islands?

- **Paradise in Peril-Environmental Degradation**: The Andaman and Nicobar Islands face an acute dilemma between p**reserving their unique biodiversity and pursuing economic growth.**
  - The proposed Rs 42,000 crore transshipment port in Great Nicobar threatens critical habitats.
    - The **denotification of the Galathea Bay Wildlife Sanctuary in 2021** to accommodate this project exemplifies the prioritization of development over conservation.
  - This trend, if continued, could lead to **irreversible ecological damage,** potentially impacting **biodiversity and climate regulation.**
- **Geopolitical Chessboard:**The islands' strategic location, while advantageous, places them at the **center of Indo-Pacific geopolitical tensions.**
  - China's growing presence in th**e Indian Ocea**n, evidenced by its **"String of Pearls" strategy,** poses significant security challenges.
  - The proximity to the **Malacca Strait**, through which about **40% of India's trade passes,** adds to the strategic complexity.

- **Infrastructure Deficit:** Despite their strategic importance, the islands suffer from a **severe infrastructure deficit**.
  - Only **38 out of 572 islands are inhabited**, with limited connectivity between them.
  - The capital, **Port Blair**, is **over 1,200 km from the mainland,** complicating logistics and resource allocation.
- **Cultural Crossroads:** The indigenous tribes of the Andaman and Nicobar Islands, including the **Jarawa, Onge, and Sentinelese,** face existential threats from modernization and outside contact.
  - The population of the Great Andamanese has dwindled from **5,000 in the 1850s to just 59 individuals in 2021**.
  - The construction of the **Andaman Trunk Road through Jarawa territory** has led to increased interactions and potential exploitation.
- **Tourism Tightrope:** Tourism is a major economic driver for the islands, with visitor numbers growing continuously.
  - While this brings economic benefits, it also **strains local resources and ecosystems.**
  - The islands face challenges in developing sustainable tourism infrastructure, managing waste, and protecting sensitive areas.
- **Climate Vulnerability:** The islands are at the forefront of climate change impacts, facing threats from **sea-level rise, increased cyclone intensity, and changing precipitation patterns**.
  - The **Intergovernmental Panel on Climate Change (IPCC)** warns of potential submergence of low-lying areas by 2050.
  - In **2010**, a mass coral bleaching event, driven by sea surface temperature anomalies and the **El Nino Southern Oscillation (ENSO)**, resulted in the loss of nearly **70**% of live coral in **South Button Island, Havelock Island, North Bay, Chidiyatapu, and Redskin Island.**
- **Natural Disaster Hotspot:** The Andaman and Nicobar Islands are located in a **seismically active zone V,** making them highly susceptible to earthquakes and tsunamis.
  - The **devastating 2004 Indian Ocean tsunami,** which severely impacted the islands, highlights this vulnerability.
  - In **2009, a 7.5 magnitude earthquake struck near Port Blair**, causing significant damage and demonstrating the ongoing seismic risk.
  - The islands' location and topography also make them prone to landslides, particularly during monsoon seasons.

What Steps can India take Concerning the Andaman and Nicobar Islands?

- **Sustainable Infrastructure Development:** Implement a comprehensive sustainable infrastructure plan that prioritizes **renewable energy, water conservation, and eco-friendly waste management.**
  - Focus on developing solar and wind power installations to reduce dependency on diesel generators.
  - Introduce **rainwater harvesting systems and desalination plants** to address water scarcity.
  - Establish a **robust waste management system** with emphasis on recycling and composting.
  - Ensure all new construction adheres to green building standards, incorporating local materials and traditional designs adapted for climate resilience.
- **Enhanced Coastal and Marine Protection:** Strengthen the existing marine protected area network by **increasing no-take zones** and **implementing stricter enforcement measures**.
  - Invest in advanced monitoring technologies like **underwater drones and satellite imaging** to combat illegal fishing and protect endangered species.
  - Develop **community-based conservation programs**, engaging local fishers in sustainable practices and marine ecosystem monitoring.
  - Implement a **comprehensive coral restoration program,** combining artificial reefs wit**h active replanting of resilient coral species.**
  - Establish a dedicated marine research center to study and preserve the unique biodiversity of the islands' waters.
- **Cultural Sanctuaries- Preserving Indigenous Heritage:** Create buffer zones around **territories of indigenous tribes** to prevent encroachment and unwanted contact.
  - Develop **culturally sensitive healthcare programs** that combine modern medicine with traditional practices, respecting indigenous knowledge.
  - Establish an **Indigenous Knowledge and Culture Center** to document and preserve traditional languages, customs, and ecological knowledge.
  - Implement strict regulations on **tourism near indigenous areas, with heavy penalties for violations.**
  - Provide legal and administrative support to indigenous communities to assert their rights and participate in decision-making processes affecting their lands.

- **Green Tourism-Ecotourism and Sustainable Visitor Management:** Develop a comprehensive ecotourism strategy that **limits visitor numbers based on carrying capacity studies** of each island.
  - Implement a **certification program for eco-friendly accommodations** and tour operators, incentivizing sustainable practices.
  - Create immersive, educational experiences focusing on the **islands' unique ecosystems and cultures,** promoting conservation awareness.
- **Disaster Resilience-Fortifying Against Nature's Fury:** Develop a multi-hazard early warning system integrating **seismic, tsunami, cyclone, and landslide alerts**, ensuring rapid dissemination to all inhabited islands.
  - Implement **strict building codes and land-use regulations** that account for seismic activity, storm surge, and landslide risks, retrofitting existing critical infrastructure.
  - Create a network o**f disaster-resistant shelters and evacuation routes** across the islands, with regular community drills and awareness programs.
  - Invest in creating **disaster resilient infrastructure** and **nature-based solutions like mangrove restoration and coral reef protection** to act as natural buffers against storms and tsunamis, while also enhancing biodiversity.
- **Adaptive Strategies for Climate Change:** Implement a comprehensive climate change adaptation plan, including **sea-level rise mapping and vulnerability assessments** for all inhabited islands.
  - Develop **nature-based coastal defense systems**, combining mangrove restoration with engineered solutions like **permeable sea walls**.
  - Introduce **climate-resilient agriculture practices,** promoting **salt-tolerant crop varieties** and water-efficient farming techniques.
  - Establish an **early warning system for extreme weather events**, coupled with community-based disaster preparedness programs.
  - Create a **dedicated climate change research station** to monitor local impacts and develop tailored adaptation strategies.
- **Island Connectivity-Sustainable Transportation Network:** Develop an **integrated, sustainable transportation system** combining **electric ferries, solar-powered water taxis, and eco-friendly land transport options.**
  - Implement a smart traffic management system to optimize vehicle flow and reduce emissions in urban areas.
- **Blue Economy Boost:** Develop sustainable aquaculture projects, focusing on native species and employing circular economy principles to minimize waste.
  - Invest in **seaweed farming as a sustainable industry** that also contributes to carbon sequestration and provides alternative livelihoods.
  - Establish a **marine biotechnology research** center to explore potential pharmaceutical and industrial applications of the islands' marine biodiversity.
  - Promote sustainable fishing practices through training programs, gear modernization, and market incentives for responsibly caught seafood.
- **Leveraging Technology for Island Development:** Expand **high-speed internet connectivity to all inhabited islands,** enabling remote work opportunities and improved access to education and healthcare.
  - Implement **IoT-based environmental monitoring systems** for real-time tracking of air and water quality, wildlife movements, and ecosystem health.

India's Uniform Civil Code Conundrum

This editorial is based on "Call for a new 'secular' civil code" which was published in Hindustan Times on 07/05/2024. The article brings into picture the necessity of a Uniform Civil Code (UCC) to eliminate religious-based discrimination and promote equality, as emphasized by the Indian Prime Minister in his Independence Day speech.

Tag: GS Paper - 2, Fundamental Rights, Directive Principles of State Policy, Issues Related to Women

The **Uniform Civil Code (UCC)** has been a longstanding and complex issue in India's legal and social landscape**.** The UCC aims to **replace the current system** where different religious communities follow their own personal laws in matters such as **marriage, divorce, inheritance, and adoption.** Proponents argue that a UCC would promote national integration, gender justice, and equality before the law, while critics express concerns about preserving religious and cultural diversity.

The concept of a UCC has been part of India's constitutional framework since independence, included as a **Directive Principle of State Policy**. However, its implementation has been a subject of debate and controversy for decades. The discussion around UCC touches on sensitive issues of **religious freedom,**

minority rights, and the balance between uniform civil law and India's diverse cultural traditions.

What is Uniform Civil Code?

- The **Uniform Civil Code** refers to a single set of laws governing personal matters such as **marriage, divorce, adoption, inheritance, and succession** for all citizens of India.
- The concept of UCC is mentioned in **Article 44 of the Indian Constitution** as a **Directive Principle of State Policy,** which states that the state shall endeavor to secure a uniform civil code for citizens throughout the territory of India.
  - However, it's important to note that this is not a legally enforceable right but a guiding principle for the state.

What is the Constitutional History and Key Judicial Pronouncements Related to Uniform Civil Code in India?

- **The Initial Debates:**
  - **Sub-Committee on Fundamental Rights:** Tasked with drafting fundamental rights for the Constitution. **Ambedkar, Munshi, and Minoo Masani** included UCC in their drafts.
  - **Division of Rights:** The Sub-Committee split fundamental rights into justiciable and non-justiciable categories. UCC was placed in the **non-justiciable section.**
    - **M.R. Masani, Hansa Mehta, and Amrit Kaur** opposed this, arguing that personal laws based on religion hindered national unity.
    - They advocated for UCC as a justiciable right.
- **Constituent Assembly Debates:**
  - **Draft Article 35:** Introduced by Ambedkar, which later became **Article 44, placed UCC in the Directive Principles**, making it non-mandatory.
    - Muslim leaders like **Ismail Sahab and Pocker Sahib Bahadur** argued that UCC violated religious freedom and would cause disharmony.
  - **Defense of UCC:**
    - **K.M. Munshi**: Advocated UCC for national unity and secularism, noting even Hindu communities' concerns.
    - **Alladi Krishnaswami Aiyyar:** Argued UCC would promote harmony and questioned why there was no protest against the existing common criminal code.
    - **Ambedkar:** Emphasized UCC's optional nature and its inclusion in the Directive Principles as a compromise.
- **Key Judicial Pronouncements on UCC**
  - **1985 - Shah Bano Case:** The Court upheld a Muslim woman's right to maintenance, linking UCC to national integration.
  - **1985 - Jorden Diengdeh Case:** Highlighted inconsistencies in divorce laws and called for UCC for legal uniformity.
  - **1995 - Sarla Mudgal Case**: Strongly favored UCC, especially for the majority Hindu population, questioning the delay in its implementation.
  - **1996 - Pannalal Bansilal Pitti Case:** Acknowledged India's pluralism and argued for gradual implementation of UCC.
  - **2000 - Lily Thomas Case:** The Supreme Court emphasized the significance of UCC in terms of succession.
  - **2003 - John Vallamattom Case:** Struck down discriminatory provisions in Christian personal law, reiterating the need for UCC.
  - **2014 - Shabnam Hashmi Case:** Linked the **Juvenile Justice Act to UCC,** emphasizing the need for secular laws.
  - **2017 - Shayara Bano Case:** Addressed **triple talaq**, reigniting the UCC debate but **separating it from the issue of human rights.**

What are the Arguments in Favour of Uniform Civil Code?

- **Equality Under the Law-Breaking Down Religious Barriers:** A UCC would ensure equal rights and treatment for all citizens, **regardless of their religious background**.
  - This aligns with **Article 14 of the Indian Constitution**, which guarantees equality before the law.
  - A UCC would standardize marriage laws, promoting gender equality and religious neutrality.
  - The recent implementation of UCC in Uttarakhand, which bans polygamy and standardizes the marriage age at 21 for all, serves as a model for potential national implementation.
- **Empowering Women-Challenging Patriarchal Norms** Many personal laws have been criticized for being discriminatory towards women.
  - A UCC could address issues like **triple talaq, unequal inheritance rights, and child marriage**.
  - **NFHS-5** estimates show that **23.3% of women in the 20-24 age** bracket were married before they were 18, highlighting the need for uniform marriage laws.
    - A UCC could potentially **reduce this figure.**

- **Simplifying the Legal System- Streamlining Personal Laws:** India's current system of multiple personal laws based on religion creates a complex legal landscape.
  - A UCC would simplify this system, making it **easier for courts to administer justice and for citizens to understand their rights.**
  - Personal law disputes account for a significant portion of civil cases, contributing to **judicial backlog**. A unified code could potentially reduce this burden and streamline legal processes.
- **National Integration-Fostering a Unified Indian Identity:** Proponents argue that a UCC would promote national integration by emphasizing citizenship over religious identity in civil matters.
  - This aligns with the **idea of "constitutional patriotism" advocated by scholars like Jürgen Habermas.**
  - The successful implementation of a **common criminal code (Indian Penal Code) across all communities** serves as a precedent for how a unified law can function in a diverse society like India.
- **Modernization and Social Reform:** A UCC could be an opportunity to reform outdated practices across all communities and align personal laws with contemporary social values.
  - For instance, the legalization **of same-sex relationships by the Supreme Court in 2018** highlights the need for modernized personal laws.
  - A UCC could potentially address issues like **LGBTQ+ rights in marriage, adoption, and inheritance**, which are currently not uniformly recognized under various personal laws.
- **International Alignment-Keeping Pace with Global Trends:** Many countries with diverse populations have successfully implemented unified civil codes.
  - Turkey's adoption of a **secular civil code in 1926** serves as an example.
  - Adopting a UCC could **align India with international human rights standards,** potentially improving its standing on global indices like the **Global Gender Gap index,** which is currently **129th out of the 146 countries.**

What are the Arguments Against the Uniform Civil Code?

- **Cultural Preservation- Safeguarding India's Diverse Heritage:** India's pluralistic society is characterized by a rich **blend of cultural and religious practices,** many of which are protected under personal laws.
  - Critics argue that a **UCC could erode this diversity,** leading to cultural homogenization.
  - For instance, the **unique matrilineal inheritance system of the Khasi tribe in Meghalaya,** could be at risk.
- **Religious Freedom-Balancing Secularism and Faith:** Opponents of UCC argue that it could infringe on the **right to religious freedom guaranteed by Article 25 of the Constitution.**
  - They contend that personal laws are an integral part of religious practice for many communities.
  - A 2021 Pew Research Center survey found that **84% of Indians consider religion very important in their lives**, underscoring the potential resistance to changes in religiously-influenced personal laws.
- **Minority Rights-Protecting Vulnerable Communities:** There are concerns that a UCC could **disproportionately affect minority communities**, potentially leading to a sense of marginalization.
  - Critics point to the **recent implementation of UCC in Uttarakhand,** which faced opposition from minority groups who felt their customs were not adequately considered.
  - India's minority population, comprising about **19.3% of the total population (2011 Census),** fears that a UCC might be influenced more by majority practices, potentially diluting their cultural identity.
- **Practical Implementation- Overcoming Logistical Hurdles:** Critics argue that creating a UCC that satisfies all communities in a diverse country like India is practically impossible.
  - The **Law Commission's 2018 report concluded that a UCC is "neither necessary nor desirable at this stage,"** citing the country's diversity.
  - The challenge is evident in the fact that even within Hindu law, which was codified in the 1950s, **there are still regional variations.**
  - For instance, the **Hindu Succession (Kerala Amendment) Act, 2015,** provides for different inheritance rules in Kerala.
- **Federalism Concerns-State vs. Centre Authority:** The implementation of a nationwide UCC could potentially **infringe upon the federal structure of India**.
  - **Personal laws fall under the Concurrent List of the Constitution,** allowing both state and central governments to legislate on them.
  - Critics argue that a centrally imposed UCC could **undermine state autonomy**. The recent UCC implementation in **Uttarakhand**, while a state

initiative, has raised questions about how a national UCC would interact with state-specific laws and customs.

- **Economic Impact-Hidden Costs of Legal Overhaul:** The implementation of a UCC would require a massive overhaul of the legal system, potentially incurring significant costs.
  - This includes **retraining legal professionals, updating legal databases**, and potentially increasing the **court burden during the transition period.**
  - With India's judiciary already facing a backlog of over **47 million cases,** critics argue that the resources required for UCC implementation could be better used in addressing existing judicial inefficiencies.

What Should be the Way Forward?

- **Inclusive Dialogue- Building Consensus Through Consultation**: The way forward for **UCC must involve extensive, nationwide consultations** with diverse stakeholders.
  - This should include **religious leaders, legal experts, civil society organizations, and representatives** from various communities.
  - The process should be **transparent, with clear communication of proposed changes and their implications**.
  - Public debates and discussions should be encouraged to build awareness and gather diverse perspectives.
    - This inclusive approach could help address concerns and build a broader consensus, potentially reducing resistance to implementation.
- **Phased Implementation-A Gradual Approach to Change:** Rather than an abrupt overhaul, a **phased implementation of UCC could be more feasible** and less disruptive.
  - This could start with **areas of broad agreement**, such as **standardizing the legal age of marriage, equal rights to female or inheritance rights.**
  - Subsequent phases could address more contentious issues. This gradual approach allows for **adjustments based on feedback and real-world outcomes**. It also provides time for communities to adapt and for the legal system to prepare for changes.
- **Constitutional Safeguards- Protecting Minority Rights:** Any UCC implementation should include **robust constitutional safeguards to protect minority rights and cultural practices.**
  - This could involve creating a **body to oversee UCC implementation and address grievances.**
  - Clear mechanisms should be established for communities to seek exemptions for specific practices that **do not conflict with fundamental rights.**
  - This approach can help balance the goals of uniformity and cultural preservation, addressing a key concern of UCC critics.
  - A **just civil code** is more important than the uniform civil code.
- **Evidence-Based Reform-Learning from State-Level Initiatives:** The way forward should involve careful study of existing state-level initiatives related to personal law reforms.
  - For instance, the **outcomes of Goa's civil code (in place since Portuguese rule)** and **Uttarakhand's recent UCC implementation** should be analyzed.
  - This evidence-based approach can inform the design of a national UCC, highlighting successful strategies and potential pitfalls.
    - It can also provide concrete data to support or modify arguments for and against UCC.

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Revamping Mental Healthcare in India

This editorial is based on "Mental health of medical students can no longer be ignored" which was published in The Indian Express on 19/08/2024. The article outlines the major problems in India's mental healthcare system and suggests strategies to tackle mental health issues affecting all segments of the population.

Tag: GS Paper - 2, Government Policies & Interventions, Health, Issues Related to Children

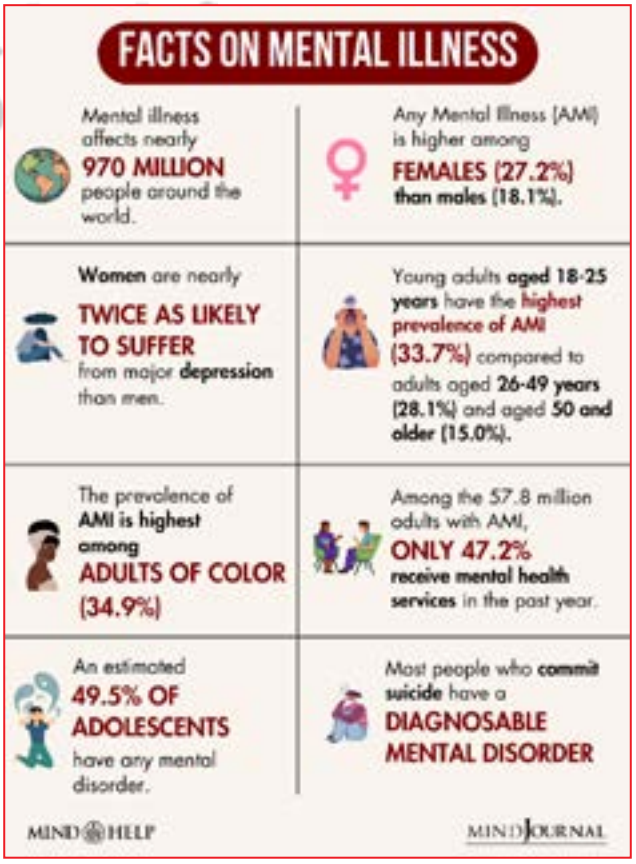
Recently, the National Medical Commission set up a Task Force to address the mental health and well-being of medical students after 122 students have committed suicide in the past five years. An online survey by the Commission revealed that 27.8% of undergraduate medical students have mental health issues, and 31.3% of postgraduate students have had suicidal thoughts. This shows that mental health is a serious concern and needs a well-planned policy.

What is Mental Health?

- **About:** According to the World Health Organization (WHO), mental health is a state of mental well-being

that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community.

- **Good Mental Health**: Good mental health is marked by emotional stability, resilience, self-esteem, and the ability to cope with stress effectively. It also involves maintaining positive relationships and a balanced perspective on life.
- **Mental Health Conditions:** Mental health conditions include mental disorders and psychosocial disabilities as well as other mental states associated with significant distress, impairment in functioning, or risk of self-harm.
  - A mental disorder is characterized by a clinically significant disturbance in an individual's cognition, emotional regulation, or behaviour.
- **Common Types of Mental Disorders:**
  - **Anxiety Disorders**:
    - Characterized by excessive fear and worry and related behavioral disturbances.
    - In 2019, 301 million people were living with an anxiety disorder including 58 million children and adolescents.
  - **Depression :**
    - Characterized by persistent feelings of sadness, hopelessness, and a lack of interest or pleasure in activities.
    - In 2019, 280 million people were living with depression, including 23 million children and adolescents.
  - **Bipolar Disorder :**
    - People with bipolar disorder experience alternating periods of depression and mania.
    - During depressive episodes, they may feel persistently sad or lose interest in activities. Manic episodes are marked by elevated mood, increased energy, talkativeness, racing thoughts, and impulsive behavior.
    - Individuals with bipolar disorder have a higher risk of suicide.
  - **Post-Traumatic Stress Disorder (PTSD) :**
    - Developed after exposure to a traumatic event, PTSD involves persistent reliving of the trauma through flashbacks or nightmares and heightened arousal.
  - **Schizophrenia :**
    - A severe mental disorder characterized by distorted thinking, perceptions, and emotions. It affects how a person thinks and behaves, often leading to a disconnect from reality.
    - Schizophrenia affects approximately 24 million people or 1 in 300 people worldwide.
  - **Eating Disorders:**
    - Eating disorders, such as anorexia nervosa and bulimia nervosa, involve abnormal eating and preoccupation with food as well as prominent body weight and shape concerns.
    - The symptoms or behaviours result in significant risk or damage to health, significant distress, or significant impairment of functioning
  - **Disruptive Behaviour and Dissocial Disorders:**
    - Disruptive behaviour and dissocial disorders are characterised by persistent behaviour problems such as persistently defiant or disobedient to behaviours that persistently violate the basic rights of others or major age-appropriate societal norms, rules, or laws.
  - **Neurodevelopmental Disorders:**
    - Neurodevelopmental disorders are behavioural and cognitive disorders, that arise during the developmental period and involve significant difficulties in the acquisition and execution of specific intellectual, motor, language, or social functions.
    - Neurodevelopmental disorders include disorders of intellectual development, autism spectrum disorder, and attention deficit hyperactivity disorder (ADHD) amongst others.



How Prevalent are Mental Health Disorders in India?

- **National Mental Health Survey (2015-16):**
  - A countrywide National Institute of Mental Health & Neurosciences (Nimhans) study has revealed that at least 13.7 % of India's general population has been projected to be suffering from a variety of mental illnesses, and 10.6% of this requires immediate intervention.
- **Suicide Rates:**
  - India has the dubious distinction of having the highest number of suicides in the world. According to a **National Crime Records Bureau (NCRB)** report, 1.71 lakh people died by suicide in 2022 in India.
  - The suicide rate has increased to 12.4 per 1,00,000 in the country.
- **Depressive Disorders:**
  - India is facing a serious mental health crisis, with an estimated 56 million people suffering from depression and 38 million from anxiety disorders, according to a report by the **World Health Organisation.**

What are the Key Challenges Faced by the Mental Healthcare System in India?

- **Low Policy Priority**:
  - Mental health has historically been a low priority for Indian policymakers.
  - Despite an estimated need of over **Rs 93,000 crore** for mental health, the government allocated only **Rs 600 crore in 2019** and **Rs 1,000 crore** in the latest budget, with a majority of funds going to tertiary institutions.
- **Inadequate Mental Health Infrastructure**:
  - The healthcare infrastructure dedicated to mental health is severely lacking. There are not enough mental health professionals, hospitals, or facilities to meet the growing demand.
  - India has **0.75 Psychiatrists per 100,000 population**, while the desirable number is anything above **3 Psychiatrists per 100,000.**
- **High Treatment Costs**:
  - The cost of mental health services in private healthcare settings is prohibitive for many.
  - According to the recently conducted **National Mental Health Survey (NMHS)**, the treatment gap for any mental disorder in India was reported to be as high as **83%**
  - As many as **20%** of Indian households become poor as a result of spending money for treatment of mental illnesses.
- **Challenges in Policy Implementation**:
  - A common issue in India's policymaking is the gap between what is needed and what is feasible.
  - The **National Mental Health Policy of 2014** and the **Mental Health Act of 2017** aimed to prioritize mental health, but there is a lack of clarity on implementation, resource allocation, and timelines.
- **Urban-Rural Divide**:
  - Mental health services are concentrated in urban areas, leaving rural populations with limited or no access to care. This geographical disparity exacerbates the mental health crisis in rural regions.
- **Stigma and Discrimination**:
  - Mental health issues are often stigmatized in India, leading to social discrimination. This discourages individuals from seeking help and exacerbates their conditions.
- **Lack of Awareness and Education**:
  - There is a significant lack of awareness about mental health, leading to misconceptions and neglect. Educational initiatives are insufficient in promoting mental health literacy.

What Steps Has the Government Taken to Improve Mental Health?

- National Mental Health Programme (NMHP)
- Mental HealthCare Act 2017
- National Institute of Mental Health and Neurosciences (NIMHANS)
- National Tele Mental Health Programme
- NIMHANS and iGOT-Diksha Collaboration
- Ayushman Bharat – HWC Scheme
- Kiran Helpline
- MANAS Mobile App

What Should be the Way Forward to Improve Mental Healthcare in India?

- **Increase Funding for Mental Health:** Allocate a higher percentage of the total health budget to mental health services. Given the significant mental health challenges faced by daily wage earners and other vulnerable groups, investing more in mental health infrastructure is crucial.
  - For the current financial year **(FY 2024-25)**, the health budget has amounted to around **2% of the**

total budget and the mental health budget is **approximately 1%** of the total health budget

- **Expand Facilities**:
  - Develop more mental health facilities, including community health centers and emergency care units, to cover underserved areas.
  - Enhance access to mental health services in rural and remote areas through mobile health units and telemedicine.
- **Support Economic Stability:**
  - Promote employment guarantee programs like the Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS) to provide job security and financial stability to daily wage earners.
  - Ensure that social security measures are accessible to all, including informal workers.
- **Ensure effective implementation of National Policies and Acts :**
  - Ensure effective implementation of the policy, which aims to integrate mental health into general healthcare and provide quality care.
  - Establish robust systems for collecting and analyzing data on mental health conditions to inform policy decisions and resource allocation.
- **Training and Capacity Building :**
  - Provide specialized training for primary care doctors, nurses, and community health workers on mental health issues to improve early detection and intervention.
  - Increase the number of mental health professionals, including psychiatrists, psychologists, and social workers, through educational programs and incentives.
- **Learning Lessons from Combating HIV-AIDS**:
  - India's success in combating HIV-AIDS offers valuable lessons for addressing mental health.
  - Effective strategies included evidence-based interventions, community involvement, and active participation from various stakeholders.hallenges in India's mental healthcare system
- **Collaboration and Partnerships:**
  - Collaborate with non-governmental organizations (NGOs), healthcare providers, and community organizations to expand mental health services and outreach to marginalized communities.
  - Organizations like **Banyan (Tamil Nadu), Sangath(Goa),** and the **Centre for Mental Health Law and Policy (Pune)** have made significant contributions to mental health through innovative and evidence-based strategies.
- **Promote Awareness and Recognition:**
  - Implement proactive policies to improve mental health recognition and awareness, especially among vulnerable sections of society.
  - This may involve conducting mental health awareness campaigns and training programs to reduce stigma and encourage early intervention.

Conclusion

To enhance mental healthcare in India, it is crucial to prioritize mental health through increased funding, integration of services into primary care, and the use of technology to expand access. While the recent task force focusing on medical student mental health is a positive development, more comprehensive measures are needed. Addressing mental health is essential for upholding the fundamental human right to health and advancing SDG 3 on **'good health and well-being'**

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The State of Youth Employment in India

This editorial is based on "The crisis of youth unemployment" which was published in The Hindu Business Line on 20/08/2024. The article highlights India's severe youth employment crisis, marked by high unemployment and underemployment among the educated, especially young women, and calls for urgent policy reforms.

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

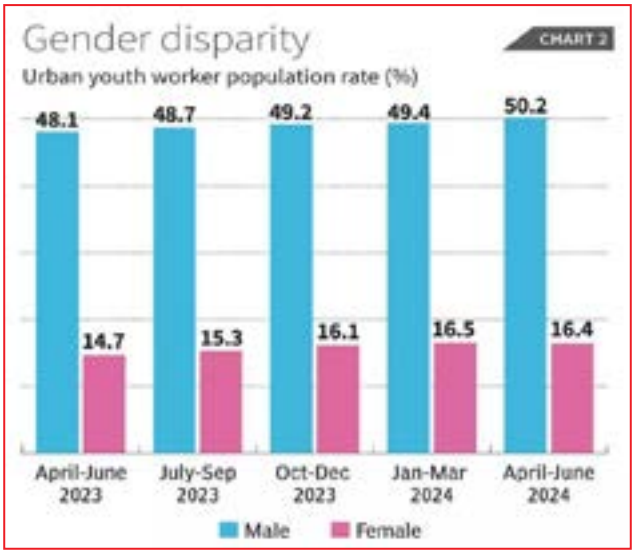
India's anticipated demographic dividend has deteriorated into a severe **demographic disaster** as the country faces an **unprecedented youth employment crisis.** Despite higher educational attainment among the youth, job opportunities remain scarce, resulting in high unemployment rates, particularly among urban youth and young women.

Recent data from **the** Periodic Labour Force Survey reveals that the employment scenario for youth remains dire, with a **worker-population rate** for youth **40%** lower and an unemployment rate nearly **three times** that of older age groups.

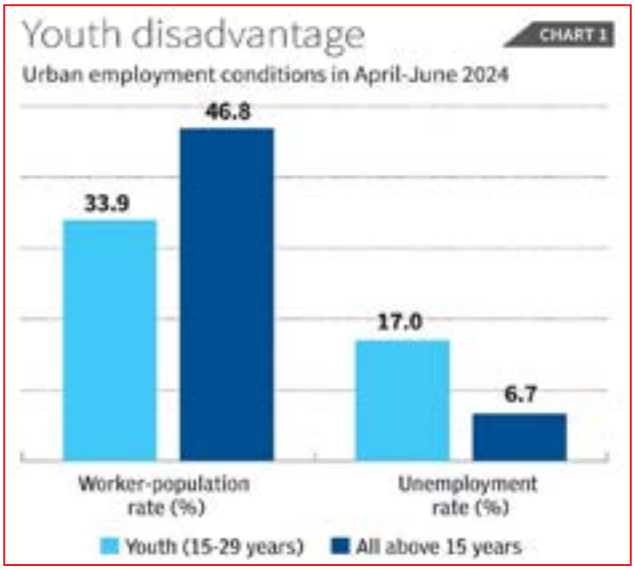
The situation is worsened by a notable **mismatch between educational qualifications and available job opportunities,** with highly educated individuals, particularly women, experiencing the highest unemployment rates. Addressing this issue necessitates a thorough investigation to develop effective solutions.

What are the Current Trends of Youth Employment in India?

- **Youth Unemployment Crisis:**
  - **High Youth Unemployment Rates:** Unemployment rates among youth (ages 15-29) remain significantly higher than those for the general population. In 2022, the unemployment rate for urban youth was 17.2%, compared to 10.6% in rural areas.
    - The situation is particularly severe for young women, with an unemployment rate of **21.6% versus 15.8% for young men.**
  - **Education Impact:** Higher educational attainment among youth is paradoxically linked to higher unemployment rates. For instance, in 2022, the unemployment rate was **18.4% for those with secondary education** or higher, and **29.1% for graduates,** compared to just 3.4% for illiterate individuals.
  - **NEET (Not in Employment, Education, or Training) Rates:** A significant proportion of young people are **neither employed, nor in education, nor in training.**
    - According to the India Employment Report 2024, **one in every three** youngsters falls under the NEET category as on 2022.
      - The women in the NEET category are almost five times more than their male counterparts.
- **Gender Disparity:**
  - **Work Participation Rates:** Urban male youth have work participation rates more than **three times higher than their female counterparts**.
  - **Unemployment Rates for Women:** Young women face consistently higher unemployment rates than young men, averaging around **50% higher**. For example, 34.5% of female graduates were unemployed in 2022, compared to 26.4% of their male peers.
    - Educated young women experience the highest unemployment rates, with 34.5% of female graduates unemployed.



- **Regional Variations**
  - **Disparities Across States:** Employment conditions vary significantly across different states. High unemployment rates and low work participation are particularly prevalent in states such as **Bihar, Uttar Pradesh, Jammu and Kashmir, Uttarakhand, Rajasthan, Odisha, Kerala, Himachal Pradesh, and Assam.**
    - Moreover, there is a clear positive relation, indicating an increase in unemployment rates in highly urbanised States. This explains the high degree of unemployment in States like Goa and Kerala — both highly urbanised — and low unemployment in States like U.P., Jharkhand and Madhya Pradesh.
- **Urbanised States have smaller agrarian and agrarian-dependent sectors** and hence have a relatively smaller source of informal jobs available.



What is the Potential of India's Demographic Dividend?

- **Youth Population:** India has a significant demographic advantage, with over 50% of its population under the age of **25 and more than 65% below 35 years old**. This creates a large pool of potential workers who can contribute to economic growth and productivity.
  - **Workforce Growth:** The working-age population in India is expected to increase by about 200 million people by 2030, adding to the economic potential of the country.
- **Innovation and Entrepreneurship:** According to the Global Entrepreneurship Monitor (GEM) 2023, India has a robust startup ecosystem, with over 70,000 startups recognized, many of which are led by young entrepreneurs.
  - **Startup Growth:** Government initiatives like Startup India have supported the creation of over 80,000 startups since its launch in 2016, fostering a culture of innovation among the youth.
- **Digital Economy:** The IT and digital services sector in India contributes about **8% to the GDP, employing over 4.5 million people.** The rise of digital platforms has created numerous job opportunities in IT, e-commerce, and digital content creation.
- **Internet Penetration:** As of 2024, India has over **800 million internet users**, indicating a vast digital market and potential job opportunities for the tech-savvy youth.
- **Global Competitiveness:** India ranks **43rd out of 63 countries in the World Economic Forum's Global Competitiveness Index 2023,** reflecting the growing skills and potential of its workforce to enhance global competitiveness.
  - **IT Outsourcing:** India remains a leading global hub for IT outsourcing, contributing around 55% of the global market share in IT services, largely due to its skilled and young workforce.

What is Unemployment?

- **About:**
  - Unemployment refers to the condition where individuals capable of working are actively seeking employment but are unable to secure suitable jobs.
- **Measurement of Unemployment:** The unemployment in the country is commonly calculated using the formula:
  - **Unemployment rate =** [Number of Unemployed Workers / Total Labour Force] x 100.
    - Here, the **'total labour force'** includes the employed and the unemployed. Those who are neither employed nor unemployed — students, for example— are not considered a part of the labour force.
- **Types of Unemployment:**
  - **Structural Unemployment:** Rooted in mismatches between the skills possessed by the workforce and the requirements of available positions, this form of unemployment highlights systemic issues within the labour market.
  - **Cyclical Unemployment:** Tied to economic cycles, this type escalates during economic downturns and diminishes during periods of expansion, showcasing the sensitivity of job availability to macroeconomic conditions.
  - **Frictional Unemployment/Transitional Unemployment:** Also called transitional unemployment, arising from the natural transition between jobs, this type reflects the temporary period individuals spend searching for new employment opportunities.
  - **Underemployment:** While not strictly unemployment, this concept pertains to individuals employed in positions that underutilize their skills or provide insufficient working hours, contributing to a sense of economic inefficiency.
  - **Hidden Unemployment:** Refers to individuals who are not actively seeking employment due to discouragement or other factors but could potentially enter the job market if conditions improve.
  - **Disguised Unemployment:** It arises because more labourers work in the factory/land than are required. Hence productivity i.e., production per unit of labour will be less.
- **Causes of Unemployment:**
  - **Population Size:** High population increases job market competition, necessitating effective economic and job creation strategies.
  - **Skills Mismatch:** Workers' skills often do not match job market needs, highlighting the need for better education and vocational training.
  - **Informal Sector Dynamics:** The large informal sector complicates unemployment tracking; formalizing this sector can improve employment data accuracy.

- **Policy Implementation Challenges:** Even effective policies may struggle with execution; aligning policies with real-world conditions is crucial.
- **Global Economic Factors:** Global trade and geopolitical issues affect employment; policies should build economic resilience against external factors.

What are the Implications of Youth Unemployment?

- **Economic Implications:**
  - **Inefficiency in Resource Utilization:** High youth unemployment represents a significant loss of potential economic output. Educated and skilled young individuals who remain unemployed or underemployed do not contribute to the economy, leading to inefficiencies in resource utilization.
  - **Lower Economic Growth:** Persistent unemployment hampers economic growth. With a substantial segment of the population not contributing productively, the economy faces slower growth rates and reduced overall productivity.
  - **Increased Dependency Ratios:** Prolonged unemployment can result in a higher dependency on family resources, increasing the financial burden on households and potentially leading to greater poverty levels.
  - **Decreased Purchasing Power:** Unemployed youth have **lower disposable income,** which reduces their spending power and affects overall consumer demand. This reduction in consumption can impact businesses and economic growth.
- **Social Implications:**
  - **Social Unrest and Instability:** High levels of youth unemployment can lead to social unrest and instability. Frustration over a lack of job opportunities can manifest in protests, strikes, and other forms of civil unrest.
- **Long-Term Implications:**
  - **Skills Mismatch and Skills Erosion:** Prolonged unemployment can lead to skills erosion as the workforce's abilities become outdated. This skills mismatch makes it harder for unemployed youth to re-enter the job market.
  - **Reduced Employability:** A lack of relevant experience and skills development during periods of unemployment can further reduce employability and career prospects for young individuals.

Government's Initiatives Related to Employment

- 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
- Support for Marginalised Individuals for Livelihood and Enterprise (SMILE).
- PM-DAKSH (Pradhan Mantri Dakshta Aur Kushalta Sampann Hitgrahi).
- Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).
- Start-Up India Scheme.
- Rozgar Mela.
- Indira Gandhi Urban Employment Guarantee Scheme- Rajasthan.
- Direct Benefit Transfer Scheme.
- Pradhan Mantri Mudra Yojana.

What Steps Should Be Taken to Improve Youth Employment?

- **Expansion of Public Employment Opportunities:** Develop urban-specific public employment schemes similar to MGNREGA (as it is limited to rural areas only), targeting infrastructure and service sectors. Consider strategies to revive and expand public sector job opportunities, ensuring better job security.
- **Remote Work Opportunities:** Encourage companies to leverage technology and offer remote work arrangements. This expands job opportunities for individuals living outside major cities and promotes a better work-life balance.
- **Inclusion Growth and Gender Equality:** Implement policies promoting gender equality and empowerment, ensuring equal access to education and employment.
  - 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.
- **Enhanced Skill Matching:** Revise **educational curricula** and **vocational training programs** to better match industry needs. Foster collaborations between educational institutions and industry to ensure training programs are relevant.
- **Promotion of Entrepreneurship and Infrastructure Investment:** Provide tax breaks, subsidies, and access to funding for young entrepreneurs.

- **Youth Outreach Programs:** Develop specialized outreach programs to inspire and support young entrepreneurs. These should include mentorship, access to capital, and business development services tailored to the needs of young entrepreneurs.
- **Capacity Building:** Implement effective programs to build entrepreneurial capacity among youth, including training in business management, financial literacy, and innovation.

- **Youth-Focused Social Security:** Develop social security safety nets specifically for young people to ensure financial stability during job transitions.
- **Digital and Gig Economy Integration:** Develop policies to provide job security, social security benefits, and fair wages for gig workers. Expand training in digital skills to prepare youth for the growing tech sector.
- **Improved Policy Implementation:** Strengthen mechanisms for monitoring the effectiveness of employment schemes and policies. Establish **feedback mechanisms** to continually adapt and improve policies based on **real-world outcomes.**
  - **Make in India, Digital India, and Skill India:** Continue to support and scale up successful initiatives like Make in India, Digital India, and Skill India, which are aimed at boosting employment and skill development among youth.

Conclusion

India has the largest youth population in the world which is poised to increase further in the coming decade. More than 65% of India's population is below the age of 35 years. It is indeed vital to utilise this demographic dividend and channel the youth and their creative energies for nation-building. For this it is essential that the economy supports the increase in the labour force and the youth have the appropriate education, skills, health awareness and other enablers to productively contribute to the economy and Nation building.

■■■

Addressing Women's Safety in India

This editorial is based on "Kolkata rape and murder: When the law fails women" which was published in The Indian Express on 21/08/2024. This article talks about the brutal rape and murder of a young doctor revealing persistent failures in India's legal system. Urgent reforms are needed to impose stricter penalties and expedite trials to prevent a culture of impunity and better protect women.

Tag: GS Paper-1, Social Empowerment, Women's Issues, GS Paper-2, Gender, Issues Related to Women, Government Policies & Interventions.

Crime against women in India remains a pervasive and deeply concerning issue, challenging the nation's progress towards gender equality **and social justice**. The brutal rape and murder of a doctor in Kolkata highlights the current inadequacies in enforcing women safety measures. Despite legislative measures and growing awareness, the incidence of violence against women continues to be alarmingly high, as evidenced by the National Crime Records Bureau's annual reports. From domestic violence and sexual assault to dowry-related crimes and human trafficking, women in India face a wide spectrum of threats to their **safety, dignity, and well-being.**

The roots of this persistent problem lie deep within India's **complex social fabric**, where **patriarchal norms, economic disparities, and cultural practices** often intersect to perpetuate gender-based violence. While urban areas have seen increased reporting and awareness, rural regions still grapple with underreporting due to social stigma and lack of access to support systems.

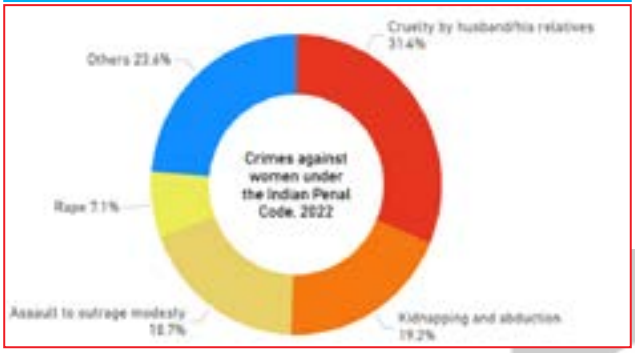
Addressing this complex problem requires not only enforcing existing laws more effectively but also adopting a multifaceted approach that includes community engagement, enhanced support systems, and comprehensive data analysis to create a safer and more equitable environment for women.

What are the Statistics on Women's Safety?

- **Overall Statistics:** According to the **National Crime Records Bureau's (NCRB) 2022 report**, a total of **4,45,256 cases** of crimes against women were registered across India in 2022, marking a 4% increase from the previous year, which translates to nearly 51 FIRs every hour.
  - The rate of crimes against women per lakh population stood at **66.4**, while the filing charge sheet rate was recorded at **75.8**.
- **Types of Crimes:** The majority of crimes against women were categorized as **cruelty by husband or relatives,** making up 31.4% of cases.
  - **Kidnapping and abduction** of women constituted **19.2%**, assault with intent to **outrage modesty** accounted for **18.7%**, and **rape** was reported in **7.1%** of cases.
  - Incidents of **sexual violence against women** peaked at nearly 39,000 in 2016, and in 2018 on an average one woman was raped every 15 minutes across the country.

- India has seen over 400 cases of **sexual harassment at work** every year since 2018, with an average of 445 cases being reported yearly.
- **Juveniles** were involved in 86 cases of rape, 68 cases were of outraging the modesty of women.

➢ **State-wise Data: Delhi** had the **highest rate of crimes against women**, with a rate of 144.4 per lakh population and 14,247 cases reported in 2022.
- **Uttar Pradesh** registered the **highest number of cases**, with 65,743 FIRs, followed by Maharashtra, Rajasthan and West Bengal.



What are the Challenges in Addressing Crime Against Women?

➢ **Patriarchal Societal Norms:** Patriarchal values that view women as subordinate contribute to a culture of violence.
- For instance, **Khap Panchayats** often enforce rigid gender norms and endorse practices that undermine women's autonomy.

➢ **Exploitation at Workplace:** Despite the enactment of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013, India continues to grapple with rampant cases of sexual harassment and exploitation of women in various work environments.
- The NCRB data reveals an average of over 400 cases of sexual harassment at work being reported annually.
- The recent report of **Justice Hema Committee** on examining workplace conditions in Malayalam film industry reveals a pervasive culture of sexual exploitation in the industry, highlighting severe **gender disparities** in pay and inadequate workplace protections, including ineffective internal complaints committees.

➢ **Lack of Safe Public Spaces: Unsafe public spaces** increase women's vulnerability to crime. The lack of safe and **well-lit streets**, and **inadequate public transport**, can lead to harassment and assaults.
- For instance, the infamous **2012 Delhi gang rape** incident occurred in a poorly lit area of the city, highlighting the dangers of inadequate public safety measures.

➢ **Insufficient Infrastructure and Resources:** Many areas lack the necessary infrastructure, such as **functional police stations**, **forensic labs, and emergency services**, **to handle and investigate** crimes effectively.

➢ **Weak Law Enforcement and Judicial Systems:** Inefficiencies in the legal system can prevent effective justice.
- For instance, the delay in the trial of **Nirbhaya's case** and the initial leniency towards the accused reflect systemic issues within law enforcement and the judiciary.
- Similarly, the **low conviction rate** in cases of sexual assault and domestic violence demonstrates the shortcomings in enforcing laws. Eg. the NCRB data shows the **conviction rate for rape** ranged from **27 to 28%** in the 2018-2022 period.

➢ **Systemic Issues:** Corruption within the legal and law enforcement systems can impede efforts to combat crimes against women, as bribery and misconduct may lead to mishandling or dismissal of cases.
- For example, in several rape cases, as allegedly happened in recent **Badlapur sexual assault case**, police delay FIR filing.

➢ **Social Stigma and Victim Blaming:** Victim-blaming attitudes discourage women from reporting crimes.
- In cases where women are assaulted or raped, they often face **stigma and blame** from their communities or even from law enforcement agencies.
- For instance, politicians often make **irresponsible and loose comments** on rape incidents and victims, sometimes trivializing the severity of the crimes or placing undue blame on the survivors.

➢ **Gender inequality & Cultural Attitudes:** Disparities in **education, employment opportunities, and decision-making power and traditional beliefs and practices** contribute to women's vulnerability.
- For instance, in some communities, practices like **child marriage** and restrictions on women's mobility are common, reflecting deep-rooted patriarchal attitudes. Also, the **dowry system** has led to numerous cases of dowry deaths and domestic violence.

➢ **Lack of Education and Awareness:** Limited education about **women's rights and legal protections** can leave women unprotected.

- Traditional beliefs and limited access to education can deter women from reporting crimes or seeking justice, as seen in cases where victims of domestic violence remain silent due to ignorance.

- **Economic Dependency:** Women who are economically dependent on male family members may find it difficult to escape abusive situations.
  - For example, many women in lower-income families face financial dependency on their husbands, which can trap them in **abusive relationships**.
- **Domestic Violence:** Domestic violence often leads to more severe crimes. Women who experience domestic abuse may also suffer from sexual assault or murder.
- **Technological and Cyber Threats:** With the rise of digital platforms, women face new forms of **harassment and abuse online**. **Cyberbullying, stalking, and the non-consensual sharing of intimate images** are increasingly common issues that require updated legal and technical solutions.
- **Substance Abuse:** Substance abuse is linked to increased violence against women. Instances of violence often involve perpetrators under the influence of **alcohol or drugs**.
- **False Allegation:** Registering **fake rape cases** can seriously undermine the credibility of genuine victims. When people hear about false accusations, they may doubt the truthfulness of real cases. This can deter victims from coming forward, leading to fewer convictions and a greater sense of injustice.

What are Various Frameworks and Initiatives?

- **Legal Framework:**
  - **The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013:** Framed on the basis of Vishakha Guidelines of the Supreme Court, this act aims to create a safe working environment for women.
    - It mandates the creation of **Internal Complaints Committees** (ICCs) in organizations with over 10 employees, defines sexual harassment, and sets procedures for filing and investigating complaints.
    - The Act provides a comprehensive framework to prevent and address sexual harassment at work, ensuring protection and redressal for women.
  - **Criminal Law (Amendment) Act, 2013:** Also known as the **Nirbhaya Act**, it strengthened penalties for sexual offenses, introduces the death penalty for repeat rape offenders, and enhances provisions for the protection of survivors, including stricter definitions and punishments for crimes such as rape, stalking, and harassment.
    - The act defined new terms such as **stalking and voyeurism** as crimes with the minimum sentence of rape changed from seven to ten years.
    - Additionally, the **Criminal Law (Amendment) Act, 2018**, was enacted to impose stricter penalties, including the death penalty for the rape of a girl under 12 years of age. The Act also requires that investigations and trials be completed within **two months** each.
  - **The Protection of Children from Sexual Offences Act (POCSO):** Passed in 2012, it comprehensively deals with the issue of sexual offences against children. POCSO not only provides for the punishments for offences, but also sets out a system for support of victims and improved methods for catching offenders.
  - **The Prohibition of Child Marriage Act, 2006:** This legislation aims to prevent **child marriages**, which disproportionately affect young girls, by setting the legal age of marriage at 18 for women and 21 for men.
  - **The Protection of Women from Domestic Violence Act, 2005:** This landmark legislation provides a comprehensive definition of domestic violence and offers civil remedies to protect women from abuse within the home.
  - **The Indecent Representation of Women (Prohibition) Act of 1986:** It prohibits the indecent representation of women in various forms, including advertisements, publications, writings, paintings, figures or in any other manner and for matters connected therewith or incidental thereto.
  - **The Immoral Traffic (Prevention) Act (ITP) of 1956:** It aims to prevent the commercialization of vices and trafficking of women by outlining the legal framework that prohibits running brothels and soliciting, while recognizing the legality of engaging in prostitution itself.
- **Judicial Interventions:**
  - **Joseph Shine vs. Union of India (2018):** This judgment **decriminalized adultery**, striking down a colonial-era law that was often used to control women's sexuality and reinforce patriarchal norms.

- **Independent Thought vs. Union of India (2017):** In this ruling, the Supreme Court c**riminalized marital rape** for girls under 18, addressing a significant loophole in child protection laws.
- **Laxmi vs. Union of India (2014):** This case highlighted the issue of **acid attacks on women**, prompting the Supreme Court to direct both central and state governments to regulate acid sales and improve compensation and medical treatment for acid attack survivors.
- **Delhi Gang Rape Case (Nirbhaya Case) (2012):** The brutal gang rape and murder of a young woman in Delhi in 2012 sparked widespread protests and calls for stricter and more effectively implemented laws. This case led to significant amendments in India's criminal laws, introducing harsher penalties for sexual offenses.
- **Lillu vs. State of Haryana (2013):** The Supreme Court held that the two-finger test violates the rape survivor's right to privacy, physical and mental integrity and dignity.
- **CEHAT vs. Union of India and others (2003):** The Supreme Court had given several directions regarding s**ex selection and sex selective abortion** and for proper implementation of the **Pre-Natal Diagnostic Techniques Act 1994** by stating that female foeticide is a heinous act and an indicator of violence against women.
- **Vishakha and others vs. State of Rajasthan (1997):** This landmark Supreme Court judgment established the "**Vishakha Guidelines**" to prevent sexual harassment of women at the workplace, providing a framework for employers to address and prevent such harassment.
- **Other Cases:** In some cases like **Delhi Domestic Working women's Forum vs. Union of India** the Supreme Court held that rape is a severe **violation of fundamental human rights**, infringing upon the victim's most cherished rights, such as the right to life and privacy guaranteed under **Article 21** of the Constitution. Court responded by providing compensation to rape survivors.

➢ **Government Initiatives:**

- **Nirbhaya Fund:** The Government established the **Nirbhaya Fund** to support projects enhancing the safety and security of women. **The Ministry of Women and Child Development** serves as the nodal authority for reviewing and recommending proposals and schemes for funding under this fund.
- **One Stop Centres and Women Helplines:** T**he Ministry of Women and Child Development** has introduced **One Stop Centres** to provide integrated support to women affected by violence and a scheme for the **Universalisation of Women Helplines** to offer 24-hour emergency and non-emergency assistance.
- **Mahila Police Volunteers:** It involves the deployment of **Mahila Police Volunteers** in States/UTs, who serve as **intermediaries between the police and the community**, providing assistance to women in distress.
- **Swadhar Greh Scheme: The Ministry of Women and Child Development** administers the scheme, aimed at assisting **women facing challenging circumstances** who require institutional support for their rehabilitation. The scheme provides shelter, food, clothing, healthcare, and ensures economic and social security to help these women live with dignity.
- **Working Women Hostel Scheme:** The Government implements this scheme to offer safe and conveniently located housing for working women. The scheme also aims to provide day care facilities for their children, where feasible, in urban, semi-urban, and rural areas with employment opportunities for women.
- **Beti Bachao Beti Padhao(BBBP):** The scheme aims to prevent **gender biased sex selective elimination**, to ensure survival and protection of the girl child and to ensure **education** and participation of the girl child.
- **Investigation Tracking System for Sexual Offences:** In 2019, the **Ministry of Home Affairs (MHA)** launched the "**Investigation Tracking System for Sexual Offences**" to assist States and Union Territories in monitoring and tracking time-bound investigations in sexual assault cases, as mandated by the **Criminal Law (Amendment) Act, 2018.**
- **Emergency Response Support System (ERSS):** It provides a single emergency number (112) and computer-aided dispatch of field resources to distress locations.
- **Safe City Projects:** It is an initiative of the **Ministry of Home Affairs**, in collaboration with the **Ministry of Women and Child Development** under the **Nirbhaya Fund**, aimed at creating a safe, secure, and empowering environment for women and girls in public spaces.
- **Awareness Programs:** The Government conducts **awareness programs and publicity campaigns** on women's rights through workshops, cultural events, seminars, training programs, and media advertisements.

What Should be the Way Forward?

- **Strengthening Implementation:** Existing laws and policies need to be implemented more effectively. This requires better training of law enforcement personnel, streamlining judicial processes, and ensuring accountability at all levels.
- **Fast-Track Courts:** Establish fast-track courts and enhance punishment for grave cases like rape, as recommended by **Justice Verma Committee**. Increase women's representation in the judiciary.
- **Gender Sensitization:** Comprehensive **gender sensitization programs** should be introduced in schools, colleges, and workplaces to address the root causes of gender-based violence and discrimination.
- **Enhanced Police Training:** Improve training for police officers to handle gender-based violence cases more sensitively and effectively. This includes better evidence collection, victim support, and case documentation.
  - For example, implementing specialized police units like **SHE Teams**, a division of Telangana Police, for enhanced safety and security of women.
- **Improved Survivor Support Systems:** Expand and enhance **support systems** for survivors of violence, including **counseling services, rehabilitation programs, and economic assistance** to help them rebuild their lives.
- **Economic Empowerment:** Promote women's economic independence through **education, skill development, and employment opportunities**. Financial autonomy can reduce women's vulnerability to violence and exploitation.
- **Technology Utilization:** Leverage technology for **better reporting and tracking of crimes** against women. This could include user-friendly mobile apps for reporting crimes and AI-powered systems for data analysis.
- **Increased Women's Representation:** Boost the **representation of women in law enforcement and the judiciary** to bring diverse perspectives and potentially improve the handling of gender-based violence cases.
- **Regular Impact Assessments:** Conduct periodic evaluations of existing schemes and policies to assess their effectiveness and make necessary adjustments.
- **Media Responsibility:** Encourage **responsible reporting** of crimes against women in the media, focusing on systemic issues rather than sensationalism.

Recent Instructions of Union Ministry of Health and Family Welfare for Safety of Healthcare Professionals & Patients

- In response to the recent rape and murder mishap in Kolkata, the **Union Ministry of Health and Family Welfare** has directed all Central Government-run hospitals and major health institutes to enhance their security measures to address vulnerabilities while ensuring accessibility and safety for **healthcare professionals and patients.**
- The ministry's instruction outlines 12 key recommendations, including the **installation of high-resolution CCTV cameras, setting up control rooms for emergency response**, and **ensuring secure duty rooms and transport for female health professionals.**
- It emphasizes the need for **well-trained security guards**, **restricted access to sensitive areas**, and **comprehensive emergency plans**.
- Additionally, the instructions call for **improved lighting**, **regular security training for staff**, and **coordination with local police and emergency services**.

Conclusion

The persistent challenge of crimes against women in India demands a **comprehensive, multi-pronged approach** to address this deeply entrenched societal problem. The grim statistics presented in the NCRB report serve as a sobering reminder that more needs to be done to ensure the safety and dignity of women in India.

The road ahead requires a steadfast **commitment from all stakeholders** to work in tandem towards creating a **safer and more equitable environment for women**. This endeavor must focus on proactive interventions that tackle the underlying social, cultural, and economic factors that perpetuate gender-based violence. Strengthening the **implementation of existing laws, enhancing gender sensitization programs, and providing comprehensive support services** for survivors are crucial steps.

Ultimately, the fight against crimes targeting women in India requires a sustained, concerted, and compassionate response from all corners of society. By working towards a future where women's rights and safety are inviolable, India can make meaningful progress towards achieving true gender equality and social justice.

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Lateral Entry in Bureaucracy and the Reforms Needed

This editorial is based on "Lateral entry in UPSC will further distance marginalised from centres of power" which was published in The Indian Express on 21/08/2024. The article brings into focus the government's cancellation of lateral entry due to the lack of reservation quotas for SCs and STs, emphasizing the ongoing tension between merit and social justice in government recruitment.

Tag: GS Paper - 2, Role of Civil Services in a Democracy, Government Policies and Interventions

What is Lateral Entry in Indian Bureaucracy?

- **About**: Lateral entry into bureaucracy refers to the process of hiring experts from the **private sector, academia, or public sector undertakings (PSUs)** for specific roles in the government.
  - This is in contrast to the traditional method of filling these positions through internal promotions within the government.
  - These appointments are typically made at the levels of **Joint Secretary, Director, or Deputy Secretary.**
- **Purpose:**
  - To bring in **specialized knowledge** and expertise to address complex governance and policy challenges.
  - To infuse **fresh perspectives** and innovative approaches into government functioning.
- **Appointment Process:**
  - Candidates are hired on contracts, usually ranging from **three to five years.**
  - Extensions may be granted based on performance.
  - Specific academic qualifications and relevant professional experience are required.
- **Eligibility:**
  - Typically, candidates need at least 15 years of relevant experience in their field.
  - Requirements can vary depending on the **specific post, seniority, and job profile.**

What is the History of Lateral Entry Recruitments in India?

- **Early Instances (1950s onwards):**
  - Lateral entry has been practiced since the time of Prime Minister Jawaharlal Nehru.
  - Notable examples include **IG Patel,** who started at the **International Monetary Fund** and later became **RBI Governor,** and **Manmohan Singh**, who was a professor of international trade at the **Delhi School of Economics**, was appointed as **Economic Adviser** to the **Ministry of Commerce in 1971.**
- **Formal Recommendations (2005):**
  - The **Second Administrative Reforms Commission (ARC)**, chaired by **Veerappa Moily**, formally recommended lateral entry.
  - The aim was to bring in **specialized knowledge** that traditional civil services might lack.
- **NITI Aayog Proposal (2017):**
  - **NITI Aayog** released a **three-year Action Agenda** proposing lateral entry at middle and senior management levels in the central secretariat.
  - This was echoed by the **Sectoral Group of Secretaries on Governance.**
- **Formal Recruitment Drives (2018-2023):**
  - The central government advertised for lateral entry positions, **initially only for Joint Secretary roles.**
    - Over 6,000 applications were received.
  - In 2019, **9 candidates were appointed** to various Ministries and Departments.
    - Further rounds were announced in 2021 and two more in May 2023.
  - As of August 2024, a total of **63 appointments** through lateral entry have been made over the past **5 years,** with **57 lateral entrants actively serving**.

What are the Benefits of Lateral Entry in Indian Bureaucracy?

- **Infusion of Specialized Expertise:** Lateral entry brings in domain experts with deep industry knowledge, addressing skill gaps in the bureaucracy.
  - For instance, the **appointment of R.V. Shahi as Power Secretary in 2002** led to significant electricity reforms.
    - His private sector experience in **power generation** proved **invaluable in tackling complex sectoral challenges.**
  - Similarly, **Bimal Jalan's expertise in economic policy** and **Vijay Kelkar's experience in fiscal reforms** have made substantial impacts in their respective areas.
    - **Bimal Jalan** is credited with managing India effectively during the East Asian financial crisis, strengthening its balance of payments, and driving extensive financial sector reforms.

- The **Kelkar Task Force** on indirect tax reforms, chaired by **Vijay Kelkar,** suggested the introduction of a **national-level GST.**

- This influx of specialized knowledge can **accelerate policy formulation and implementation in critical areas** like emerging technologies, climate change, and digital economy, where traditional civil servants may lack up-to-date expertise.

➢ **Enhanced Innovation and Efficiency**: Private sector professionals often bring a **results-oriented approach** and **innovative problem-solving skills** to government operations.

- Their experience with cutting-edge technologies and management practices can streamline processes and improve efficiency.
- For example, **lateral entrants in the Ministry of Electronics & Information Technology** could bring insights on **AI implementation or cybersecurity** measures that are current with global best practices.
  - **Unique Identification Authority of India (UIDAI) and ONDC are the brainchild of Nandan Nilekani**, the Co-Founder of Infosys Limited.
- This **cross-pollination of ideas** can lead to more **agile and responsive governance**, potentially reducing bureaucratic red tape and improving service delivery to citizens.

➢ **Bridge Between Public and Private Sectors:** Lateral entrants can serve as effective bridges between government and industry, **facilitating better public-private partnerships and policy alignment.**

- Their understanding of both sectors enables them to **craft more pragmatic and implementable policies.**
- This can be particularly beneficial in areas like **urban development or infrastructure,** where public-private collaboration is crucial.
- By bringing in professionals who understand market dynamics, the government can design more **effective incentives and regulations,** potentially leading to increased private sector participation in national development initiatives.

➢ **Global Perspective and Best Practices:** Professionals from multinational corporations or international organizations can bring a global perspective to policy making.

- This is increasingly important as India aims to enhance its **global economic and diplomatic standing**.
- For instance, in areas like climate change policy or international trade negotiations, **their insights could be invaluable.**
- This global outlook can potentially improve India's competitiveness and its ability to navigate complex international agreements and partnerships.

➢ **Enhancing Policy Implementation:** Lateral entrants with hands-on industry experience can bridge the gap between policy formulation and implementation.

- Their **practical knowledge of sector-specific challenges** and operational realities can lead to more feasible and effective policies.
- For instance, a **professional from the renewable energy sector** joining the Ministry of New and Renewable Energy could provide invaluable insights into the practical challenges of **scaling up solar or wind power.**
- This could result in more **realistic targets, better-designed incentives, and more effective regulatory frameworks**, ultimately accelerating India's transition to clean energy and meeting climate goals more efficiently.

➢ **Mitigating Bureaucratic Inertia:** Lateral entry can serve as an antidote to **bureaucratic inertia and groupthink** that sometimes plagues long-standing institutions.

- Fresh perspectives from diverse backgrounds can challenge entrenched practices and stimulate innovative thinking.
- For example, **a lateral entrant in the Ministry of Agriculture** might bring new ideas about **precision farming or agri-tech solutions** that traditional bureaucrats might not have considered.
- This influx of new ideas can shake up complacent departments, fostering a more **proactive and forward-thinking approach to governance**.
- Also, the presence of external professionals can create **healthy competition,** motivating career bureaucrats to upskill and perform better.
- It **challenges the status quo** and can lead to a more dynamic and performance-oriented work culture.

➢ **Facilitating Major Economic Reforms:** Lateral entrants can play a crucial role in **designing and implementing complex economic reforms.**

- Their understanding of market dynamics and global economic trends can be invaluable in crafting policies that balance growth with social equity.

- For instance, during **India's 1991 economic liberalization**, technocrats like **Montek Singh Ahluwalia**, who had experience with international financial institutions, played key roles.
- Their expertise could help navigate the intricacies of digital economy regulations, or sustainable finance, positioning India more advantageously in the global economy.

What are the Challenges Related to Lateral Entry in Indian Bureaucracy?

- **The Reservation Conundrum:** The absence of reservations in lateral entry positions has sparked significant controversy.
  - Lateral entries are excluded from the reservation system due to the **"13-point roster" policy,** which allocates job openings based on the quota percentage for **SC, ST, OBC, and EWS groups**, calculated as a fraction of one hundred.
  - **As per the Department of Personnel and Training (DoPT)**, each lateral entry post is considered a **"single post cadre,"** exempting it from reservation policies.
  - The recent cancellation of 45 lateral entry positions in August 2024 due to reservation concerns highlights the gravity of this issue.
  - This challenge strikes at the heart of **India's social justice framework,** potentially undermining decades of efforts to ensure representation of marginalized communities in decision-making roles.
- **Cultural Misalignment and Integration Hurdles:** Lateral entrants from the private sector may face significant challenges **adapting to the unique culture and working style of government bureaucracy.**
  - The stark differences in **pace, decision-making processes, and organizational hierarchy** can lead to friction and inefficiency.
  - For instance, a lateral entrant accustomed to **quick decision-making** might struggle with the **multi-layered approval** processes typical in government.
  - This cultural mismatch could result in **frustration, reduced effectiveness, and potentially high turnover rates** among lateral entrants, undermining the very purpose of bringing in external expertise.
- **Resistance from Career Bureaucrats:** The introduction of lateral entrants often faces **resistance from career bureaucrats** who may view it as a threat to their career progression and established power structures.
  - This resistance can manifest in various forms, from **non-cooperation to active sabotage** of initiatives led by lateral entrants.
  - The perception that **outsiders are being parachuted** into coveted positions can create a hostile work environment, hampering collaboration and effective governance.
  - This internal friction could **potentially negate the benefits of bringing in fresh perspectives and expertise.**
- **Accountability and Performance Evaluation Challenges:** Establishing effective accountability mechanisms for lateral entrants poses a significant challenge.
  - Unlike career bureaucrats who are **subject to established performance evaluation** systems, lateral entrants on short-term contracts may not fit neatly into existing frameworks.
  - There's a **risk of creating a dual system within the bureaucracy,** potentially leading to inequities and resentment.
  - Moreover, evaluating the long-term impact of a lateral entrant's contributions within their limited tenure is challenging, **making it difficult to justify the disruption to the traditional system.**
- **Potential for Conflict of Interest:** Lateral entrants from the private sector may bring with them potential conflicts of interest, **especially if they return to their former industries after their government tenure.**
  - This revolving door between government and industry can **raise ethical concerns and public trust issues.**
  - For example, a former executive from a tech company serving in a regulatory role and then returning to the industry might face **accusations of favoring their former sector.**
  - Establishing robust ethical guidelines and **cooling-off periods** is crucial but challenging to implement effectively.
- **Short-Term Focus vs. Long-Term Governance:** Lateral entrants, typically appointed on 3-5 year contracts, may **prioritize short-term, visible achievements** over long-term structural improvements.
  - This short-term focus could lead to policy inconsistencies and **lack of continuity in governance.**
  - For example, a lateral entrant might push for quick policy changes that show immediate results but may **not be sustainable in the long run.**
  - This approach could clash with the need for consistent, long-term policy-making essential for

tackling complex national challenges like **poverty alleviation or climate change adaptation.**

- **Scaling and Sustainability Concerns** While lateral entry has shown promise in limited numbers, scaling this approach to a significant portion of the bureaucracy poses substantial challenges.
  - The current system, with **63 lateral appointments over five years**, represents a tiny fraction of the bureaucracy.
  - Expanding this significantly would require a **massive overhaul of recruitment, training, and integration processes.**
  - There are also concerns about the sustainability of relying heavily on external talent rather than developing internal capabilities.

What are the Major Reforms Needed in Indian Bureaucracy?

- **Meritocracy Makeover-Overhauling Recruitment and Promotion:** The **2nd Administrative Reforms Commission (2008)** emphasized the need for a merit-based system, stating, "the constitution of a **Central Civil Services Authority** is necessary to ensure autonomy and objectivity in senior appointments."
  - Introduce **regular assessment centers for promotions**, focusing on leadership and domain expertise.
  - Establish an **independent Civil Services Board** to oversee appointments and transfers, reducing political interference.
  - This reform would ensure that the most capable individuals occupy key positions, enhancing bureaucratic efficiency and effectiveness.
- **Specialization Synergy-Nurturing Expertise in Governance:** There should be a deliberate attempt to develop and nurture specialization in the civil services.
  - Create specialized cadres within the bureaucracy for sectors like **technology, finance, and healthcare.**
  - Implement a system of mandatory domain specialization after 10 years of service.
  - Establish partnerships with **top universities for continuous professional education of civil servants**.
  - This approach would create a more skilled and adaptable bureaucracy, capable of addressing complex governance challenges in an increasingly specialized world.
- **Work Culture Transformation:** To improve work culture and productivity in government departments, the **2nd ARC recommends reducing hierarchical structures**, modernizing offices, and empowering officers with more decision-making authority.
  - It also calls for a leaner, more efficient government by **abolishing the outdated 'babu' culture.**
- **Performance Paradigm-Result-Oriented Accountability:** The **Hota Committee (2004)** suggested, "A performance-based appraisal system should be put in place, replacing the present system of confidential reports."
  - Implement a **360-degree feedback mechanism for performance evaluation.**
  - Introduce key performance indicators (KPIs) for all senior positions, linked to departmental goals.
  - Establish a system of performance-linked incentives and fast-track promotions.
  - This reform would shift the focus from process to outcomes, enhancing the overall efficiency and effectiveness of governance.
- **Digital Transformation-Leveraging Technology for Governance:** Implement a nationwide e-governance platform integrating all government services.
  - Introduce AI and data analytics for **evidence-based policy-making and implementation**.
  - Establish a **Chief Digital Officer position** in every ministry to drive digital transformation. This reform would enhance transparency, reduce corruption, and improve service delivery to citizens.
- **Reinforcing Accountability:** The **2nd Administrative Reforms Commission** emphasizes the need for a multi-dimensional approach to accountability in public services.
  - It recommends two intensive reviews for government servants—**one at 14 years to assess strengths and shortcomings**, and another at **20 years to determine fitness for continued service**.
  - If an officer is found unfit after 20 years, their service should be discontinued, with future employment contingent on the outcome of these reviews.
- **Depoliticization of Civil Services**: To maintain the political neutrality and impartiality of the civil services, the 2nd ARC recommends including this aspect in the **Codes of Ethics for both ministers and public servants**.
  - It also stresses the need for transparent recruitment processes and adherence to the Supreme Court's directives to protect civil servants from political interference.

Conclusion:

Lateral entry into the Indian bureaucracy can introduce fresh expertise and innovation but also faces challenges like **reservation, cultural misalignment, resistance from career bureaucrats, and conflicts of interest.** Its success depends on balancing innovation with tradition, integrating lateral entrants fairly, and preserving the strengths of the existing system. If implemented well, it could enhance the civil service's diversity and responsiveness to India's governance challenges.

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Reviving Eastern India for a Developed Nation

This editorial is based on "The eastern states have a big role in India's development aim" which was published in Mint on 20/08/2024. This article highlights that India's eastern states lag in economic and social development despite their potential. Accelerating their growth is crucial for India to achieve its 2047 economic goals, requiring urgent efforts to address regional disparities and improve socioeconomic conditions.

Tag: GS Paper-2, Federalism, Co-operative Federalism, GS Paper-3, Industrial Policy, Industrial Growth, Infrastructure, Inclusive Growth.

India's journey towards becoming a developed nation by 2047 hinges significantly on the performance of its **eastern states**. The region, comprising **Andhra Pradesh, West Bengal, Odisha, Bihar, and Jharkhand**, stands at a critical juncture in the country's economic narrative. The concept of **beta convergence** suggests that poorer regions should grow faster than richer ones over time. This theory has not played out as expected in India's eastern states. Despite their rich mineral resources, strategic locations, and vast potential, these states have historically lagged behind in economic development, presenting both a challenge and an opportunity for India's growth aspirations. This divergence highlights the need for **targeted interventions and policies.**

As India strides towards becoming a **global economic powerhouse**, the development of these eastern states becomes imperative. The region's economic upliftment is essential for balanced national growth and reducing regional disparities. With their vast agricultural base, mineral wealth, and emerging industrial potential, the eastern states are poised to contribute significantly to the country's development trajectory. However, overcoming the persistent issues of poverty, **low literacy rates, and inadequate infrastructure** is essential to unlocking this potential.

What are the Challenges that have Limited Development of Eastern States?

- **Economic Factors:**
  - **Underdeveloped Industrial Sector:** These states have struggled to establish a robust industrial base, primarily due to **historical neglect, lack of investment, and inadequate infrastructure**.
    - This underdevelopment has led to **limited job opportunities** in the formal sector and stunted economic diversification, forcing a large portion of the population to rely on low-productivity agricultural and informal sectors.
  - **Freight Equalisation Policy(1952):** It aimed to encourage factories to be built anywhere in India by subsidizing mineral transportation costs.
    - This policy had **detrimental effects on the eastern states** of India by reducing incentives to establish industries near mining areas, thereby encouraging the development of factories farther away and adversely affecting the economic prospects of these states.
  - **Low Social Progress:** Social Progress Index (SPI) Rankings shows that no state from the eastern region ranks among the high tiers of **social progress** (Tier 1 and Tier 2).
    - **Andhra Pradesh, West Bengal, and Odisha** rank in Tiers 4 and 5, indicating lower middle and low social progress.
    - **Bihar and Jharkhand** rank in Tier 6, representing very low performance in social progress.
  - **Aspirational Districts:** Analysis of 112 Aspirational Districts shows that the majority of districts in **Bihar and Jharkhand** rank among the **bottom 20 nationwide**.
    - These findings highlight ongoing **socio economic difficulties** in these states and reveal substantial disparities within the eastern region.
  - **Labor Market Issues:** Most eastern states reported a labor force participation rate(LFPR) above 60% for the population aged 15-59 in 2022-23.
    - Whereas Bihar's LFPR stood at only 50.9%, indicating **lower workforce engagement**.
  - **Workforce Quality:** Over **83% of the workforce** in these states falls into the **semi-skilled** category.

- This suggests a **predominance of low-skilled labor** that may struggle to drive productivity and economic growth.

❍ **Agriculture Dependence:** A high reliance on agriculture, often characterized by **low productivity and outdated farming practices**, has hindered economic growth and income stability in these states.

- The agricultural sector's vulnerability to **climate variations and market** fluctuations further exacerbates economic instability.

➢ **Social & Human Development Issues:**

❍ **Low Literacy Rates:** Particularly in states like **Bihar and Jharkhand**, persistently low literacy rates have impeded skill development and workforce quality.

- This educational deficit has created a **vicious cycle of low-skilled labor, reduced productivity, and limited economic opportunities.**

❍ **NITI Aayog SDG India Index 2023-24: Bihar,** with a score of 57 points, **was the lowest performer,** followed by **Jharkhand** with 62 points.

❍ **High Poverty Rates:** Persistent poverty has **hindered social mobility and economic progress**.

- High poverty rates have trapped large segments of the population in a **cycle of low education, poor health, and limited economic opportunities**, making it difficult to break out of **intergenerational poverty.**

➢ **Historical & Geographical Factors:**

❍ **Colonial Legacy:**The eastern states of India bear the lasting impact of **exploitative colonial policies** that systematically stunted their **industrial growth and economic development.**

- British rule focused on extracting resources from these regions without investing in long-term development, creating a foundation of **economic backwardness** that has persisted long after independence.

❍ **Geographical Isolation:** The challenging terrain of many areas in these states, including dense forests, mountainous regions, and extensive river systems, has resulted in poor connectivity.

- This geographical isolation has significantly **limited access to markets and resources**, hindering economic integration with more developed regions of the country.

❍ **Vulnerability to Natural Disasters:** The eastern states are particularly susceptible to frequent natural disasters **such as cyclones, floods, and droughts.**

- **For example**, the states of **West Bengal and Odisha** regularly face severe cyclones, such as furious cyclone Amphan in 2020, while **Bihar** frequently experiences devastating floods.
- These recurring calamities have **repeatedly disrupted development efforts and economic activities**, destroying infrastructure and livelihoods, and necessitating constant rebuilding rather than progressive development.

➢ **Governance & Political Challenges:**

❍ **Political Instability:** Frequent changes in **government and policy directions** have disrupted long-term development planning in many of these states.

- This instability has led to inconsistent policies, abandoned projects, and a lack of continuity in development efforts.

❍ **Competitive Federalism:** Competitive federalism has been detrimental for poor states in India by exacerbating existing inequalities. Richer states, with better infrastructure and resources, attract more investments and skilled labor, leaving poorer states struggling to compete.

- This leads to a widening gap in development, as poorer states face challenges in funding essential services and attracting economic opportunities.

❍ **Corruption and Bureaucratic Inefficiency:** Widespread corruption **and administrative inefficiencies** have hampered the effective implementation of development programs.

- These issues have diverted resources from intended beneficiaries, reduced the impact of public spending, and **deterred private investment.**

❍ **Naxalite Insurgency:** In some areas of the eastern states, the Naxalite insurgency has severely disrupted governance and development efforts.

- This ongoing conflict has created **security challenges, deterred investment, and diverted government resources** from development to security measures.

What is the Current Economic Landscape of the Eastern States?

➢ **GDP Overview:** The combined **GDP** of the eastern region reached **USD 579 billion** in 2022-23, up from **USD 185 billion** in 2011-12. The region's share of India's total GDP has remained stagnant at around **17%** during this period.

- This growth rate falls short of what is needed to propel India towards its development goals.

➢ **Growth Projections:** If the eastern region grows at an annual rate of **9%**, it could reach an output of around **USD 5 trillion** by 2047.
- However, if the growth rate remains at a more modest **5%**, its GDP would only reach about **USD 1.8 trillion** by the same year.
- This highlights the need for immediate policy changes to align the region's growth with the national goal.

What Steps have been Taken by the Government for the Development of the Eastern States?

➢ **Purvodaya- Development of the Eastern Region:** Announced in **Budget 2024-25**, the **Purvodaya initiative** aims to transform eastern states of **Bihar, Jharkhand, West Bengal, Odisha, and Andhra Pradesh** into a growth engine for the nation through:-
- **Industrial Development:** The **Amritsar Kolkata Industrial Corridor** will include the creation of an industrial hub in **Gaya**, blending cultural heritage with modern economic development under the model of "**Vikas bhi Virasat bhi**" (Development along with Heritage).
- **Road Connectivity Projects:** Numerous **road connectivity projects** will be implemented to **enhance infrastructure and boost economic activities** in the region.
  - These include the **Patna-Purnea Expressway, Buxar-Bhagalpur Expressway, and spurs to Bodhgaya, Rajgir, Vaishali, and Darbhanga**, as well as an additional 2-lane bridge over the **River Ganga at Buxar**.
- **Power and Infrastructure Projects:** Major investments will be directed towards power projects, such as a new **2400 MW** power plant at **Pirpainti in Bihar**.
  - Additional infrastructure developments will include **new airports, medical colleges, and sports facilities** across Bihar.

➢ **Andhra Pradesh Reorganization Act:** The government remains dedicated to upholding the commitments outlined in the **Andhra Pradesh Reorganization Act**. Major initiatives announced in Budget 2024-25 include:
- **Special financial aid** for capital development through multilateral development agencies, amounting to Rs 15,000 crore in the current financial year.
- Ensuring the timely completion of the **Polavaram Irrigation Project** to support farmers and enhance food security in the state.
- Investments in infrastructure for the Kopparthy node on the **Visakhapatnam-Chennai Industrial Corridor** and the Orvakal node on the **Hyderabad-Bengaluru Industrial Corridor**.
- **Grants** allocated for the backward regions of Rayalaseema, Prakasam, and North Coastal Andhra.

➢ **Pradhan Mantri Janjatiya Unnat Gram Abhiyan:**
- It aims to improve the **socio-economic conditions** of tribal communities in **tribal-majority villages and aspirational districts**, covering over 63,000 villages, and 5 crore tribal people.
- This scheme will ensure **socio-economic development** of the tribal population of eastern states.

➢ **Bringing Green Revolution to Eastern India (BGREI):** It is a sub scheme of **Rashtriya Krishi Vikas Yojana (RKVY)** and is being implemented in seven eastern states namely **Assam, Bihar, Chhattisgarh, Jharkhand, Odisha, Eastern Uttar Pradesh and West Bengal**.
- The program provides farmers with support for rice and wheat demonstrations, seed production, nutrient and soil management, pest control, training, farm machinery, irrigation, site-specific activities, and post-harvest marketing.

➢ **Urja Ganga Gas Pipeline Project:** The project is committed to provide clean fuel to the people of eastern states of **Bihar, Jharkhand, West Bengal and Odisha**.

➢ **Controlling Naxalism:** With the effective implementation of **SAMADHAN Doctrine** and **Rehabilitation Policy,** the number of **left-wing extremism** related violent incidents have come down by **76%** in 2022 in comparison to 2010.

What Strategies should be Employed to Develop the Eastern States?

➢ **Economic Growth Initiatives:** The eastern states require **targeted investments** in infrastructure to improve connectivity and facilitate economic activities. Policies to attract **private sector investments** and promote industrialization are necessary.
- Enhancing connectivity through projects like the **Eastern Dedicated Freight Corridor** can facilitate the movement of goods and reduce transportation costs, making the region more attractive for industrial investments.

- Additionally, states like **Odisha and Jharkhand**, rich in minerals, could benefit from policies promoting **value-added industries**, such as setting up steel plants and refineries close to mining areas.

- **Social Development Focus:** Comprehensive **skill development programs** are crucial for improving the quality of the workforce in the eastern states. Initiatives to improve social indicators, particularly in health and education, are essential.
  - States like **Bihar and West Bengal** have seen positive outcomes from such programs, but more needs to be done to ensure that the local workforce can meet the demands of emerging industries.
  - Additionally, improving social indicators in health and education is vital. Initiatives like the **Ayushman Bharat scheme** and expanding the reach of **Sarva Shiksha Abhiyan** can address health and educational disparities, ensuring that the population is healthy and well-educated.
- **Labor Market Improvements:** Measures to increase **labor force participation**, especially among women, are needed. The promotion of **entrepreneurship and small businesses** can create more **employment opportunities**.
  - **For instance**, West Bengal's successful implementation of microfinance programs, with help of the **Association of Microfinance Institutions in West Bengal**, has empowered women to start small businesses, leading to improved family incomes and greater financial independence.
  - Encouraging entrepreneurship through programs like **Start-Up India** and providing access to credit for small businesses can create more employment opportunities. This approach has proven effective in states like Bihar, where initiatives to support **small-scale industries** have led to significant job creation.
- **Cooperative Federalism:** By fostering **collaboration between the central and state** governments, resources and expertise can be more effectively allocated to address regional disparities.
  - This approach encourages **shared responsibilities** in policy implementation, infrastructure development, and socio-economic programs, ensuring that Eastern states receive the necessary support to overcome challenges.
- **Governance and Policy: Strengthening local governance structures** is crucial to ensure effective implementation of development programs. Collaborative efforts between state and central governments are necessary to address regional imbalances.
  - **The Krushak Assistance for Livelihood and Income Augmentation (KALIA)** scheme is a program by the **Government of Odisha** to help farmers grow their agriculture, increase their income, and relieve their debt.
  - Similarly, the **Kanyashree Prakalpa scheme**, launched by the **West Bengal** government in 2013, exemplifies good governance and effective policy by aiming to enhance the educational and economic status of girls from economically disadvantaged backgrounds.
- **Addressing Regional Disparities:** State governments in the eastern region must intensify their efforts to **address regional disparities** and promote equitable development. This includes implementing policies to improve social indicators and boost economic growth.
  - The state governments in the Eastern region need to implement policies that promote equitable development.
  - Bihar's efforts to improve social indicators through the **Bihar Vikas Mission** have led to notable improvements in education and healthcare.
- **Realizing Potential:** The eastern states have the opportunity to become engines of growth, driving the nation towards its goals. Their vast mineral resources, strategic locations, and untapped potential position them uniquely to contribute significantly to India's economic transformation.
  - The Eastern states have the potential to become significant drivers of India's economic growth. The rich mineral resources of **Jharkhand and Odisha** offer opportunities for developing industries like **steel, aluminum, and cement**, which can contribute to the nation's industrial output.
- **Boosting MSMEs:** Promoting MSMEs in the eastern states of India can be advanced by enhancing access to financing and credit facilities, coupled with comprehensive support in technology and skill development.
  - Additionally, fostering a conducive business environment through streamlined regulations and improved infrastructure will further boost MSME growth and sustainability in the region.

Conclusion

As India moves forward, the development of its eastern states must be prioritized. Their vast **natural resources, strategic locations, and untapped human**

potential position them uniquely to become the new growth engines of the Indian economy. By fostering **inclusive growth, bridging regional disparities, and unleashing the latent potential** of these states, India can ensure a more balanced and sustainable path to becoming a developed nation.

The coming decades will be critical for the eastern states to bridge the development gap and align their growth trajectories with national objectives. Their success will be instrumental in shaping India's future, making the eastern states' development not just a regional aspiration but a **cornerstone of India's march towards developed nation status**.

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Shaping the Future of India's Space Sector

This editorial is based on "Since Chandrayaan-3, what has India's space programme been up to?" which was published in The Hindu on 23/08/2024. The article highlights India's remarkable advancements in space exploration over the past year, including successful missions like Chandrayaan-3, Aditya L1, and Gaganyaan, while also addressing the strategic roadmaps for future endeavors and the growing role of private players in the space sector.

Tag: GS Paper - 3, Space Technology, Achievements of Indians in Science & Technology

India's Space Sector has experienced significant growth and achievements over the past year, marking a new era of innovation and exploration. From the successful Chandrayaan-3 lunar landing to the launch of the Aditya L1 Solar Mission, ISRO has demonstrated its capabilities on the global stage. The organization has also made strides in its Gaganyaan human spaceflight program, conducted **critical tests for reusable launch vehicles,** and expanded its satellite portfolio with missions like XPoSat **and** INSAT-3DS**.** Furthermore, the country has laid out ambitious roadmaps for lunar exploration and human spaceflight, including plans for an **Indian space station by 2035.**

In recognition of these milestones, India is celebrating National Space Day **on 23rd August**, a testament to the nation's growing prowess in space technology. However, despite these impressive accomplishments, India needs to work even more diligently to fully realize its potential in the space sector. While ISRO has made progress in research and development, there is a pressing need to **accelerate the commercialization of space technologies** and foster a robust private space industry. The transfer of operational responsibilities to NewSpace India Limited (NSIL) and the emergence of private players like **Agnikul Cosmos and Skyroot Aerospace** are steps in the right direction, but more needs to be done to create a thriving ecosystem of space startups and businesses.

What are the Current Major Developments in India's Space Sector?

- **Advancements in Space Science Missions:** Following the success of **Chandrayaan-3,** ISRO has been actively pursuing other scientific missions.
  - The Aditya-L1 solar observatory, launched in September 2023, completed its first orbit around the L1 point in July 2024 and has already contributed to solar storm studies.
  - The **X-ray Polarimeter Satellite (XPoSat)**, launched in January 2024, is advancing India's capabilities in space-based astronomy.
- **Gaganyaan Mission Progresses:** ISRO is making significant strides in its human spaceflight program, **Gaganyaan.**
  - In 2023, the **agency successfully conducted the first abort test (TV-D1)** of the crew escape system.
    - Four astronaut candidates have been selected and are undergoing rigorous training.
  - The **first uncrewed Gaganyaan mission is expected in late 2024**, with the crewed mission planned for 2025.
- **Commercialization and Privatization Push: NewSpace India Limited (NSIL)** is taking a more active role in commercializing ISRO's technologies.
  - In May 2024, **NSIL took over all commercial activities related to Indian Remote Sensing satellite data** and products.
  - In March 2024, **Agnikul Cosmos** successfully launched its SoRTeD-01 vehicle, marking a milestone for private space ventures in India.
- **Next-Generation Launch Vehicle Development:** ISRO is actively working on its Next Generation Launch Vehicle (NGLV) to enhance payload capacity and reduce launch costs.
  - The NGLV is designed to be a **three-stage vehicle powered by semi-cryogenic, liquid, and cryogenic engines.**
  - Concurrently, ISRO is developing a **semi-cryogenic engine for the LVM-3 rocket,** with successful pre-burner ignition tests conducted in May 2024.
  - These developments are crucial for India to compete in the heavy-lift launch market and support future ambitious space missions.

- Also, the government approved the **Indian Space Policy 2023** that states that the Indian Space Research Organisation (ISRO), as the national space agency will focus primarily on the **research and development of new space technologies** and applications and on expanding the human understanding of outer space.

➢ **Expanding International Collaborations:** India is strengthening its space diplomacy and international partnerships.

- **NSIL signed an agreement with SpaceX** to launch the **GSAT-20/GSAT-N2** satellite, showcasing a pragmatic approach to utilizing international launch capabilities.
- India's collaboration with **NASA for the NISAR mission**, expected to launch in early 2025, demonstrates growing technical cooperation with global space leaders.
- Additionally, Indian astronaut candidates are set to **receive training in the U.S.,** potentially leading to an **Indian presence on the International Space Station.**

What are the Major Issues Related to the Indian Space Sector?

➢ **Limited Private Sector Participation:** Despite recent policy reforms, India's space sector remains heavily dominated by government entities.

- Private companies account for a minor share in India's **USD 78 billion space economy**.
- The lack of a comprehensive regulatory framework and **limited access to ISRO's facilities** have hindered private sector growth.
- While startups like **Skyroot Aerospace and Agnikul Cosmos** have made progress, they face challenges in scaling up.

➢ **Insufficient Funding and Resource Allocation:** India's **space budget,** while growing, remains modest compared to global leaders.

- In 2023-24, ISRO's budget was approximately **USD 1.7 billion,** less than NASA's budget (**USD 25.3 billion**).
- This limited funding affects ISRO's ability to pursue multiple ambitious projects simultaneously.
- For instance, the development of the **Gaganyaan human spaceflight program** has faced delays partly due to resource constraints.
- The lack of **sustained, substantial funding** also impacts long-term projects like the development of **advanced propulsion systems and next-generation launch vehicles,** potentially limiting India's competitiveness in the global space market.

➢ **Brain Drain and Talent Retention:** The Indian space sector faces a significant challenge in retaining top talent.

- Significant number of aerospace engineering graduates from top Indian institutes seek opportunities abroad or in other sectors.
- The lack of **competitive salaries, limited research opportunities, and bureaucratic hurdles** in government organizations contribute to this brain drain.
- While ISRO has a dedicated workforce, it **struggles to compete with global tech giants** and **international space agencies** in attracting and retaining specialized talent, particularly in emerging fields like **artificial intelligence and quantum technologies applied to space.**

➢ **Technological Gaps in Certain Areas:** Despite impressive achievements, India lags in some critical space technologies.

- For example, India is yet to master reusable launch vehicle technology (despite efforts like **Pushpak reusable launch vehicle**), while companies like **SpaceX** have made it commonplace.
- In satellite technology, India is still catching up in areas like **high-throughput satellites** and advanced earth observation capabilities.
- These gaps limit India's competitiveness in the global commercial space market, where cutting-edge technology often determines market share.

➢ **Limited International Collaboration and Market Access**: While ISRO has collaborative agreements with over **60 countries,** the depth and scale of these collaborations often fall short of their potential.

- **India's share in the global space economy remains under 2%,** despite having the capability to launch satellites cost-effectively.
- Geopolitical factors, such as India's non-membership in the **Missile Technology Control Regime until 2016,** have historically limited technology transfers and market access.
- Although improving, India's ability to attract major **international space projects** and secure a larger share of the global commercial launch market remains constrained by factors like **limited global marketing and stringent regulatory environments in potential partner countries.**

➢ **Inadequate Space Infrastructure and Ground Facilities:** India's space infrastructure, while improving, still lags behind global standards.

- The country has only **one major launch site at Sriharikota**, limiting launch frequencies and flexibility.
- The lack of a **dedicated deep space network** hampers India's ability to conduct complex interplanetary missions.

- **Underdeveloped Domestic Supply Chain**: The Indian space sector suffers from an **underdeveloped domestic supply chain** for critical components and materials and heavy imports.
  - During FY 2021-22, items worth **₹2,114.00 crore** were imported whereas an amount of only **₹174.9 crore** was generated from exports
  - This dependency on imports not **only increases costs but also poses risks to program schedules** and national security.
  - The lack of a robust ecosystem of suppliers for specialized materials like **composites, high-grade alloys, and electronic components** hinders the growth of both ISRO and private space companies.
- **Regulatory Hurdles and Policy Gaps**: Despite recent reforms, India's space sector still grapples with regulatory complexities.
  - The absence of a comprehensive **Space Activities Act** creates uncertainty for private players.
  - The lack of clear policies on crucial aspects like **on-orbit servicing and space resource utilization** puts India at a disadvantage in emerging space markets.
- **Limited Focus on Space Sustainability and Debris Management:** India's approach to space sustainability and debris management has been relatively passive.
  - India aims to achieve debris free space missions by 2030 but the country has not yet implemented a comprehensive space debris mitigation strategy.
  - The **2019 ASAT test,** which created hundreds of debris pieces, highlighted this gap.
  - A total of **82 rocket bodies** from Indian launches were placed in orbit till 2023.
    - The upper stage of PSLV-C3 underwent an accidental break-up in 2001 and generated 371 debris.
    - 52 PSLV-C3 debris were still in orbit till the end of 2023.
- **Insufficient Academia-Industry-Government Collaboration:** The synergy between academic institutions, industry, and government agencies in the space sector remains suboptimal.
  - Only about **0.4% of India's patents** come from academia-industry collaborations.
  - The lack of a structured framework for technology transfer from research institutions to industry hampers innovation.
  - ISRO's engagement with universities, while improving, is still limited in scope and scale.

What Measures can be Adopted to Enhance India's Space Sector?

- **Accelerate Private Sector Integration**: Implement a **'Space Sector Transformation Program'** to fast-track private participation.
  - Establish a **one-stop-shop for space-related licenses** and approvals, reducing bureaucratic hurdles.
  - Create **'Space Enterprise Zones'** with tax incentives and simplified regulations to attract investment.
  - Develop a **public-private partnership model** for sharing ISRO's facilities and expertise with private entities.
- **Talent Retention and Development Initiative**: Introduce a **'Space Talent Retention Scheme'** offering competitive salaries and research grants to top aerospace graduates.
  - Implement a **'Space Sabbatical Program'** allowing ISRO scientists to work in private companies or foreign space agencies for skill enhancement.
  - Create an **'Aerospace Innovators'** program to identify and nurture young talent from schools and colleges. Develop exchange programs with leading global space agencies and companies for knowledge transfer and skill development.
- **Technology Leap-frog Strategy**: Launch a **'Next-Gen Space Tech Mission'** focusing on critical areas like reusable launch vehicles, quantum communication, and AI in space.
  - Establish '**Advanced Space Technology Centers'** in partnership with global tech giants to accelerate innovation in key areas.
  - Implement a **'Space Tech Transfer Program'** to adapt defense and other high-tech innovations for space applications.
  - Create a **'Space Patent Pool'** to facilitate sharing of intellectual property among Indian space entities.
- **Expand International Collaborations Strategically**: Develop bilateral **'Space Bridges'** with key countries for joint missions, technology exchange, and market access.
  - Create a '**South Asian Space Alliance'** to leverage regional cooperation and expand India's space influence.

- Implement a **'Space Diplomacy Initiative'** using space capabilities for international development and disaster management.
- Actively participate in forming international space laws and policies to ensure India's interests are represented.

➢ **Enhance Space Infrastructure and Facilities:** Develop more spaceports on the **eastern coast** to increase launch capabilities and flexibility.
- Establish a network of **'Mini Space Centers'** across the country for testing, assembly, and specialized research.
- Create a state-of-the-art **Deep Space Network** with multiple ground stations for enhanced deep space mission capabilities.
- Develop a **'National Space Cloud'** for efficient data storage, processing, and distribution of space-based information.

➢ **Strengthen Domestic Supply Chain:** Launch a '**Space Component Indigenization Mission**' to achieve **maximum localization in critical components by 2030**.
- Establish '**Space Technology Parks**' in key industrial clusters to foster a robust supplier ecosystem.
- Introduce **preferential procurement policies for domestically manufactured space components** to boost local production.

➢ **Streamline Regulatory Framework**: Enact a comprehensive **'Indian Space Activities Act'** to provide legal clarity and support for all space activities.
- Implement a '**Fast-Track Approval System'** for space projects, with a maximum 6-month timeline for all clearances.
- Develop clear policies on emerging areas like **space tourism, debris removal, and on-orbit servicing.**

➢ **Prioritize Space Sustainability:** Implement a **'National Space Debris Management Plan'** with clear guidelines and enforcement mechanisms.
- Establish more **'Space Situational Awareness Center'** equipped with advanced tracking and monitoring capabilities.
- Allocate dedicated funding for **developing active debris removal technologies and missions**.
- Introduce mandatory '**End-of-Life Management Plans' f**or all Indian satellites and launch vehicles.

➢ **Foster Academia-Industry-Government Synergy**: Create **'Space Technology Incubation Centers'** in universities, co-managed by ISRO and industry partners.
- Establish a **'National Space Research Consortium'** to coordinate and fund collaborative projects across sectors.
- Launch an annual '**India Space Innovation Challenge**' with substantial grants for breakthrough ideas.

Conclusion

India's space sector has experienced substantial growth in recent years, highlighted by the successful **Chandrayaan-3 mission and the launch of Aditya L1**. However, to fully realize its potential, India must address challenges such as fostering a robust private space industry, enhancing international collaboration, and investing in critical technologies. By overcoming these obstacles, India can position itself as a major player in the global space economy and contribute to the advancement of human knowledge and exploration.

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The Future of India-US Partnership

This editorial is based on "Whether it is President Trump or President Harris, US-India relations must continue on an upward arc" which was published in The Indian Express on 26/08/2024. The article highlights India's unique ability to maintain and strengthen its relationship with the US across different administrations, while also addressing the challenges in immigration, trade, and geopolitical alignments. It emphasizes the need for India to leverage its strategic advantages, such as strong diaspora ties and its role in the Indo-Pacific, to navigate these complexities and adapt to an increasingly multipolar world.

Tag: GS Paper - 2, Bilateral Groupings & Agreements, Effect of Policies & Politics of Countries on India's Interests, Indian Diaspora, Groupings & Agreements Involving India and/or Affecting India's Interests

India stands in a unique position as it faces the potential political changes in the **United States. Unlike** many American allies, India has successfully strengthened its relationship with the US under both **Republican and Democratic administrations**, establishing itself as a key partner across various domains including trade, technology, and security.

While the **India-US partnership** has seen consistent growth over the past two decades, challenges persist in areas such as **immigration, trade policies, and geopolitical alignments,** particularly concerning **Russia and China.**

As India navigates these complexities, it must leverage its strategic advantages, including its robust engagement with US policymakers, strong diaspora connections, and growing importance in the Indo-Pacific region, to further strengthen and adapt this crucial relationship in an increasingly multipolar world.

How India and US Relations Evolved Over Time?

- **From Estrangement to Engagement-The Cold War Thaw:** During the Cold War, India and the US found themselves on opposite sides, with **India pursuing non-alignment and India's major rival of the time Pakistan aligning with the US.**
  - The relationship began to thaw in the 1990s with **India's economic liberalization and the end of the Cold War.**
  - A significant turning point came with **President Bill Clinton's visit to India in 2000,** marking the first presidential visit in more than 20 years.
  - This period saw the beginning of strategic dialogues and increased economic cooperation.
  - The signing of the **Next Steps in Strategic Partnership (NSSP) in 2004** further solidified the growing ties.
- **Nuclear Breakthrough-A New Era of Trust:** The **2008 Civil Nuclear Agreement** marked a watershed moment in India-US relations.
  - This deal effectively **ended India's nuclear isolation** and recognized it as a responsible nuclear power.
  - The agreement paved the way for **India's integration into the global nuclear order,** despite not being a signatory to the **Non-Proliferation Treaty.**
  - It also led to increased cooperation in defense and high-technology sectors. The deal's implementation, completed in 2008, **demonstrated the US commitment to elevating India's global stature.**
- **Defense Ties- From Buyer to Partner:** India-US defense cooperation has grown exponentially since the early 2000s.
  - From being a peripheral buyer, in 2016, the US designated India as a Major Defense Partner.
    - In 2018, India was elevated to **Strategic Trade Authorization tier 1 status,** which allowed India to receive **licence-free access to a wide range of military and dual-use technologies** regulated by the US's department of commerce.
  - The signing of foundational agreements like **LEMOA (2016)**, **COMCASA (2018),** and **BECA (2020)** has enabled deeper military cooperation.
  - Joint exercises like **Malabar and the establishment of the 2+2 Ministerial Dialogue in 2018** have further strengthened strategic ties.
- **Economic Synergy-Beyond Trade to Strategic Cooperation:** Economic relations have been a key driver of the India-US partnership.
  - The bilateral trade between India and the US stood at **USD 118.28 billion in 2023-24**.
  - The US is now India's largest trading partner and a significant source of FDI.
  - Cooperation has expanded beyond trade to areas like **clean energy, digital economy, and healthcare.**
  - The launch of initiatives like the **US-India Strategic Clean Energy Partnership (SCEP) in 2021** and collaboration in Covid-19 vaccine production showcase the evolving nature of economic ties.
- **Collaborating in the Digital Age:** Technology cooperation has emerged as a cornerstone of India-US relations in the 21st century.
  - The two countries have established multiple forums for collaboration in emerging technologies like **AI, quantum computing, and 5G.**
  - The **US-India Science and Technology Endowment Fund**, established in **2009**, has fostered innovation and entrepreneurship.
  - Recent initiatives like the **US-India Artificial Intelligence Initiative** and the **Critical and Emerging Technology Initiative (iCET) launched in 2022** underscore the strategic importance of tech cooperation in bilateral ties.

- **Geopolitical Alignment-Partners in the Indo-Pacific:** The rise of China has brought India and the US closer in their strategic outlook.
  - The revival of the **Quadrilateral Security Dialogue (Quad)** involving **India, US, Japan, and Australia**, signifies this alignment.
  - India's inclusion in the **US Indo-Pacific strategy** reflects the growing convergence.
  - Joint statements emphasizing a "**free and open Indo-Pacific"** and initiatives like the **Supply Chain Resilience Initiative** demonstrate the depth of geopolitical cooperation.

What are the Major Areas of Friction in India-US Relations?

- **Trade Tensions-Navigating Economic Choppy Waters:** Despite growing bilateral trade, economic frictions persist between India and the US.
  - Key issues from the US end include India's trade surplus **(USD 36.74 billion in 2023-24),** market access barriers, and intellectual property rights concerns.
  - The US has criticized **India's data localization policies** and **e-commerce regulations**, while India has objected to **US tariffs on steel and aluminum.**

- The removal of India from the **Generalized System of Preferences (GSP) in 2019** and ongoing disagreements at the WTO over agricultural subsidies further complicate trade relations.

- **Strategic Autonomy vs. Alliance Expectations:** India's policy of strategic autonomy often clashes with US expectations of closer alignment.
  - This is evident in **India's stance on Russia-Ukraine War,** including its refusal to condemn Russian actions in Ukraine and its **continued purchase of Russian military equipment** (like the S-400 missile system) **and oil** (Russia being India's major supplier).
  - The **US's CAATSA sanctions** threat looms over India's defense choices.
  - Similarly, India's participation in groupings like **BRICS and SCO,** which include US adversaries, sometimes creates friction.
  - Balancing these divergent interests while maintaining a strong partnership remains a significant challenge for both nations.
- **Technology Transfer and Defense Cooperation:** While defense ties have improved dramatically, issues persist in technology transfer and joint production.
  - India seeks advanced technologies and greater technology sharing, but **US export control regulations often limit such transfers.**
  - The lag in implementing agreements like COMCASA and BECA due to Indian concerns about information security also impacts deeper defense cooperation.
  - Recent initiatives like the **Defense Technology and Trade Initiative (DTTI)** aim to address these issues, but progress has been slower than anticipated.
- **Human Rights and Democratic Values:** US concerns over human rights issues in India, including **religious freedom, press freedom, and treatment of minorities,** occasionally strain bilateral relations.
  - The US Commission on International Religious Freedom's recommendations to designate India as a **"country of particular concern" in 2020 and 2021** highlight these tensions.
  - India views such criticisms as **interference in internal affairs.** Balancing strategic partnership with **values-based diplomacy** remains a challenge, as evidenced by muted US responses to controversial Indian policies like the **revocation of Article 370 in Kashmir.**
- **Visa and Immigration:** Immigration policies, particularly those affecting Indian tech workers and students, have been a persistent irritant.
  - Changes to **H-1B visa rules** have caused concern in India.
  - The backlog for employment-based green cards, disproportionately affecting Indians, remains a major issue.
    - More than **1 million Indians** are waiting for highly skilled immigrant visas.
- **Climate Change and Energy:** While both countries are committed to addressing climate change, **differences persist over the pace and scale of action.**
  - The US pushes for more **ambitious emission reduction targets,** while India emphasizes its **development needs and calls for greater financial support** from developed nations.
  - Disagreements over issues like **carbon border taxes** and the **phasing out of coal or phasing down** highlight the challenges.
- **Intellectual Property Rights:** Intellectual property rights (IPR) protection remains a contentious issue in India-US relations.
  - The US has consistently placed India on its **Priority Watch List in the Special 301 Report,** citing concerns over patent laws, copyright piracy, and trademark infringement.
  - India's use of **compulsory licensing for pharmaceuticals** and its stance on agricultural patents have been particular points of friction.
  - While India has made efforts to strengthen its IPR regime, including the **National IPR Policy in 2016,** differences in approach to innovation and access to technology persist.

How can India Further Enhance its Relations with the US?

- **"Make in India" Meets "Buy American":** India can propose joint manufacturing initiatives that align with **both countries' economic goals.**
  - This could focus on sectors like **electronics, pharmaceuticals, and defense equipment.**
  - Implementing a **fast-track approval process for such joint ventures** and **creating special economic zones tailored for US companies** could make this initiative attractive.
  - This approach could potentially create a win-win situation, addressing US concerns about job creation while boosting India's manufacturing capabilities.
- **Green Energy Corridor**: India can propose a bilateral **Green Energy Corridor,** focusing on joint development and production of renewable energy technologies.

- This could include collaborative **research on solar, wind, and hydrogen technologies,** joint ventures for manufacturing green energy equipment, and shared projects for sustainable urban development.
- By leveraging **US technological expertise and India's scale**, this initiative could accelerate both countries' clean energy transitions.
- Offering preferential market access for jointly developed green technologies could make this partnership economically viable while addressing climate change concerns.

➢ **Digital Democracy Initiative:** India can initiate a Digital Democracy Initiative with the US, focusing on developing shared norms and technologies for an **open, secure internet.**

- This could include joint efforts in **cybersecurity, countering disinformation, and promoting digital literacy.**
- Collaborative projects to develop **privacy-preserving technologies** and open-source digital public goods could be key components.
- By aligning digital governance approaches, India can address US concerns about its tech policies while asserting its role in shaping global digital norms. This initiative could also include joint programs to bridge the digital divide in both countries.

➢ **Skills Passport Program:** India can propose a **Skills Passport Program** to address US labor shortages while providing opportunities for Indian workers.

- This program would involve **standardized skill certification recognized by both countries,** streamlined visa processes for certified workers, and joint training programs.
- Focusing on sectors with **high demand in the US, such as healthcare, IT, and advanced manufacturing**, could make this initiative mutually beneficial.
- Including provisions for knowledge transfer and return migration could address brain drain concerns while facilitating circular migration.

➢ **Strategic Resource Partnership:** India can offer to become a key partner in securing and diversifying **US supply chains for critical resources.**

- This could involve **joint exploration and production of rare earth elements,** collaborative research on alternative materials, and coordinated stockpiling of strategic resources.
- By leveraging its **geological resources and manufacturing capabilities**, India can position itself as a reliable alternative to China in critical supply chains.
- Implementing fast-track environmental clearances and offering fiscal incentives for such projects could accelerate this partnership.

➢ **Pandemic Preparedness and Beyond:** Building on the cooperation during the Covid-19 pandemic, India can propose **a comprehensive Health Security Alliance.**

- This could include **joint vaccine development and production facilities,** collaborative research on emerging infectious diseases, and shared early warning systems for potential pandemics.
- Extending this to areas like **telemedicine,** medical device development, and health data analytics could create a robust, multifaceted partnership.
- Offering **reciprocal recognition of medical qualifications** and streamlined approval processes for joint medical research could further strengthen this alliance.

➢ **Space Commercialization Consortium:** India can initiate a **Space Commercialization Consortium with the US**, focusing on joint development of commercial space technologies and services.

- This could include collaborative projects in **small satellite development, space-based internet services**, and space tourism technologies.
- By combining **ISRO's cost-effective approach with NASA's advanced capabilities,** this consortium could accelerate space commercialization.
- Offering preferential launch services for joint projects and creating a shared regulatory framework for commercial space activities could make this partnership attractive to both countries.

➢ **AgriTech Innovation Hub:** India can establish an AgriTech Innovation Hub in partnership with the US, focusing on developing and deploying advanced agricultural technologies.

- This could include joint research on **climate-resilient crops, precision farming techniques,** and AI-driven pest management systems.
- By combining US agricultural research capabilities with **India's diverse agro-climatic zones,** this hub could accelerate innovations in food security.
- Offering field testing opportunities in India for jointly developed technologies and creating farmer exchange programs could enhance the practical impact of this initiative.

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Revolutionizing India's Food Processing Landscape

This editorial is based on "Attracting global anchor firms in food processing" which was published in The Hindu Business Line on 26/08/2024. The article underscores India's food processing sector's untapped potential, with stagnant agri-exports and slow progress in key initiatives, highlighting both challenges and opportunities.

Tag: GS Paper - 2, Government Policies & Interventions, GS Paper - 3, Food Processing

India's food processing sector stands at a critical juncture, with significant potential for growth and export expansion. Despite the government's efforts to prioritize agricultural development, including a substantial budget allocation of **₹1.52 lakh crore in 2024-25**, the country's **agri-exports have been underperforming.** With **only 25% of agricultural exports** being processed or value-added products, a figure that has remained stagnant for a decade. India lags behind the global average and competitors like China. This gap presents both a challenge and an opportunity for the Indian food processing industry.

The implementation of the Production Linked Incentive Scheme for the Food Processing Industry (PLISFPI), has been slow, with **only 10% of allocated funds utilized halfway through its timeline.** India needs to do better in this sector to realize its full potential and compete effectively in the global market.

What is Food Processing?

- **About:** Food processing involves the methods and techniques used to **transform raw plant and animal materials into edible products.**
  - It encompasses a wide range of operations from simple preservation to complex industrial methods.
- **Levels of Processing:**
  - **Primary processing:** Basic cleaning, grading, and packaging of agricultural products.
  - **Secondary processing**: Converting ingredients into edible products (e.g., milling wheat into flour).
  - **Tertiary processing:** Creating ready-to-eat foods (e.g., baking bread from flour).
- **Key Objectives:**
  - **Preservation:** Extending shelf life of food products
  - **Safety**: Eliminating harmful microorganisms and contaminants
  - **Quality enhancement**: Improving taste, texture, and nutritional value
  - **Convenience**: Creating easy-to-prepare or ready-to-eat products
  - **Value addition:** Increasing economic value of raw agricultural produce

What are the Key Factors Driving the Growth of the Food Processing Sector in India?

- **Demographic Dividend Drives Demand**: India's large and growing population, coupled with rising incomes and urbanization, is fueling demand for processed foods.
  - With **65% of the population under 35 years old**, changing lifestyles and food preferences are reshaping the market.
  - The Indian processed food market is expected to grow from **USD 263 billion** in 2019-20 to **USD 470 billion by 2025.**
    - This growth is evident in the increasing popularity of **ready-to-eat meals**.
- **Digital Revolution- From Farm to Phone to Plate:** The rapid digitalization of India's food supply chain is transforming the sector.
  - **E-commerce platforms and food delivery apps** have expanded market access for processed food products.
  - The government's Digital India initiative has also facilitated direct **farmer-processor connections**, reducing intermediaries.
  - **Ninjacart**, a B2B fresh produce supply chain company, directly connects **vegetables and fruit farmers directly with businesses,** showcasing the potential of digital integration in the food processing ecosystem.
- **Government Policies-Catalyzing Growth:** Supportive government policies have been crucial in driving the food processing sector.
  - The **Production Linked Incentive Scheme for Food Processing Industry (PLISFPI)**, launched in 2021, allocated ₹10,900 crore to boost domestic manufacturing and exports.
  - The 100% FDI allowance in food processing through the automatic route has attracted significant foreign investment.
  - For example, **Nestlé announced plans to invest ₹5,000 crore in India by 2025,** focusing on capacity expansion and new product development in the processed food segment.

- **Innovation-The Flavor of Success:** Product innovation is a key driver, with companies constantly introducing new offerings to meet evolving consumer preferences.
  - The focus on **health-conscious and functional foods** has led to a surge in innovative products.
  - For instance, ITC's 'Farmland' frozen foods range, which emphasizes **preservative-free, minimally processed products,** saw a rapid growth in FY 2023-24.
  - The incorporation of traditional Indian ingredients in modern formats, such as **GAIA's millet-based snacks**, has also gained traction.
- **Agri-Tech-Sowing Seeds of Processing:** The integration of technology in agriculture is indirectly boosting the food processing sector.
  - Agri-tech startups raised over **USD 706 million** in funding in 2023, indicating strong growth potential.
  - Companies like **CropIn**, which uses AI and satellite monitoring to improve crop yield and quality, are partnering with food processors to ensure consistent supply of high-quality raw materials.
  - This technological intervention is particularly crucial for **contract farming arrangements,** which are becoming **increasingly popular among food processing companies** to secure their supply chains.

What are the Major Issues Related to the Food Processing Sector in India?

- **Fragmented Supply Chain-The Broken Link**: India's food processing sector suffers from a highly fragmented supply chain, leading to inefficiencies.
  - With over **86% of farmers being small and marginal,** aggregation of produce becomes a significant challenge.
  - This fragmentation results in multiple intermediaries, each adding to the cost without proportionate value addition.
  - Farmers in India realize just about **30-35% value to their produce vis-à-vis 65-70%** in the developed economies.
  - The lack of direct farmer-processor linkages not only affects the quality of raw materials but also **impacts the final product's cost competitiveness** in both domestic and international markets.
- **Infrastructure Deficit-The Cold Reality:** Despite recent investments, India's cold chain infrastructure remains inadequate.
  - India is the second-largest producer of fruits **and vegetables globally**. However, **25-30% of these products are lost or damaged** each year due to inadequate transportation and distribution infrastructure.
  - This deficit leads to post-harvest losses estimated at **₹92,651 crore annually,** according to the Ministry of Food Processing Industries.
  - The current pace of development and uneven geographical distribution of facilities continue to pose significant challenges for processors, especially in rural and semi-urban areas.
- **Regulatory Labyrinth: Tangled in Red Tape**: The complex and often overlapping regulatory framework governing the food processing sector in India creates significant operational challenges.
  - Food processors must navigate regulations from **multiple bodies including FSSAI, Agricultural and Processed Food Products Export Development Authority, Bureau of Indian standards (BIS), and state-level agencies.**
  - This regulatory maze not only increases compliance costs but also creates uncertainty, especially for SMEs.
  - Lack of a **single-window clearance system** and frequent changes in regulations further exacerbate these challenges, impacting both domestic operations and export competitiveness.
- **Skills Gap-The Missing Ingredient:** The food processing sector faces a critical shortage of skilled workforce across various levels.
  - Despite the sector's potential to generate employment, the **lack of specialized training programs** and industry-academia collaboration leads to a significant skills mismatch.
  - **Only 3%** of India's workforce in food processing has formal training. This skills gap not only affects product quality and innovation but also **hampers the adoption of new technologies.**
  - The shortage is particularly acute in areas like **food safety management, quality control, and R&D,** crucial for meeting international standards and driving export growth.
- **Capital Crunch-Starved for Funds:** Access to capital remains a significant challenge for the **food processing sector**, particularly for MSMEs.
  - The high risk perception associated with the sector due to **seasonality, perishability of raw materials,** and market volatility leads to stringent lending norms and higher interest rates.
  - This capital crunch limits investments in technology upgradation, capacity expansion, and R&D, crucial for enhancing competitiveness and product innovation.

- **Quality Conundrum-The Standards Struggle:** India's food processing sector grapples with inconsistent quality standards, impacting both domestic consumption and export potential.
  - Despite FSSAI regulations, implementation remains a challenge, especially among smaller processors.
    - This quality inconsistency not only poses health risks but **also erodes consumer trust.**
  - In the export market, frequent rejections due to quality issues significantly hamper India's reputation and market access.
    - European Union food safety authorities found contamination in **527 products** linked to India between **September 2020 and April 2024**
  - The lack of harmonization between Indian and international standards further complicates export efforts, limiting the sector's global competitiveness.
- **Packaging Paradox-Wrapped in Challenges:** While packaging innovations drive growth, they also present significant challenges.
  - The food packaging industry, growing at **13-15% annually,** faces issues of sustainability and cost.
  - In India, flexible and rigid packaging together constitute **59% of total plastic consumption** due to which environmental concerns are mounting.
  - The government's push for sustainable packaging (e.g., **the ban on single-use plastics)** is forcing rapid changes, but the industry struggles to find cost-effective alternatives.
  - It creates a significant challenge for processors in balancing sustainability with affordability.
- **Market Volatility-The Price Rollercoaster:** Extreme price fluctuations in agricultural commodities pose a significant risk to food processors.
  - **India's agricultural market**, characterized by seasonal production and climate vulnerabilities, experiences frequent price shocks.
  - For instance, **tomato prices soared by 400% in mid-2023** due to adverse weather conditions, severely impacting processors of tomato-based products.
  - Such volatility makes it challenging for processors to maintain consistent pricing and quality, affecting both domestic market stability and export commitments.

What are the Key Government Initiatives Related to the Food Processing Sector?

- Inclusion of **food and agro-based processing units,** along with cold chain infrastructure, as priority sectors under Priority Sector Lending (PSL) norms.
- **100% Foreign Direct Investment (FDI):** Automatic route approval for the food processing sector.
- **Special Food Processing Fund:** Establishment of a ₹2,000 crore fund with the National Bank for Agriculture and Rural Development (NABARD).
- Pradhan Mantri Kisan Sampada Yojana
- Pradhan Mantri Formalisation of Micro Food Processing Enterprises Scheme
- Production Linked Incentive (PLI) Scheme for the food processing industry

What Measures Can Be Adopted to Enhance the Food Processing Sector in India?

- **Food-Cluster Development:** Implement a comprehensive cluster development approach, focusing on **creating integrated food processing zones.**
  - These clusters should be strategically located **near major agricultural production areas** and connect seamlessly with transportation networks. Incorporate shared infrastructure like **cold storage, quality testing labs, and effluent treatment plants** to reduce individual setup costs.
  - Encourage ancillary industries within these clusters, such as **packaging and logistics, to create a complete ecosystem.**
  - This approach can reduce operational costs by 25-30%, improve resource utilization, and enhance the competitiveness of small and medium processors, while also addressing rural-urban disparities in the sector.
- **Tech-Driven Supply Chain- From Soil to Shelf:** Invest in a technology-driven, end-to-end supply chain management system.
  - Implement **blockchain technology for traceability**, ensuring food safety and building consumer trust.
  - Integrate IoT sensors for real-time monitoring of storage conditions and transportation.
  - Develop **AI-powered demand forecasting models to reduce wastage** and optimize inventory.
  - Encourage the use of **drones (leveraging Drone-Didi Scheme) and satellite imaging for crop monitoring**, enabling processors to predict yields and plan accordingly.

- **Financial Re-engineering of the Food Processing Sector:** Develop a specialized financial framework for the food processing sector.
  - Introduce **sector-specific credit schemes** with flexible repayment terms aligned with crop cycles.
  - Implement a **credit guarantee fund** to encourage banks to lend to small and medium processors.
  - Incentivize private equity and venture capital investments in **food-tech startups through tax benefits.**
- **Quality Standardization:** Implement a comprehensive quality standardization program across the food processing value chain.
  - **Harmonize Indian standards with global norms like Codex Alimentarius** to boost export potential.
  - Introduce a tiered certification system for **processors, incentivizing higher standards** with easier market access and financial benefits.
  - Establish mobile quality testing labs to reach remote areas and small processors.
  - Integrate **quality parameters into the e-NAM platform**, enabling quality-based pricing of agricultural produce.
- **Regulatory Streamlining-Cutting the Red Tape:** Implement a comprehensive regulatory overhaul to simplify and streamline processes.
  - Establish a **single-window clearance system** for all food processing related approvals, reducing the current average setup time from 6-8 months to 2-3 months.
  - Develop a unified digital platform **integrating all regulatory bodies (FSSAI, APEDA, BIS)** for real-time updates and compliance tracking.
- **Sustainable Processing-Green from Farm to Fork:** Develop a comprehensive sustainability framework for the food processing sector.
  - Introduce a **tiered green certification system for processors based on their environmental impact**, water usage, and waste management practices.
  - Provide fiscal incentives for adopting renewable energy sources and water recycling technologies in processing units.
  - Promote the development and adoption of **biodegradable packaging materials through R&D grants and tax incentives**.
- **Export Ecosystem-Global Flavors, Local Roots:** Create a robust export-oriented ecosystem for processed foods.
  - Establish dedicated **export zones with plug-and-play infrastructure** and single-window clearance for export documentation.
  - Develop country-specific strategies focusing on **product customization, packaging, and marketing** to suit different international markets.
  - Implement a comprehensive market intelligence system providing real-time data on **global demand, price trends, and regulatory changes**.
  - With 90% of PLISFPI funds still unutilized, India should **prioritize attracting major food processing firms to enhance growth.**
    - This strategy, akin to Apple's success in electronics, which saw exports soar from under **USD 3 billion in 2020 to USD 15.6 billion in 2023** and created over 400,000 jobs in India, could drive similar achievements in the food processing sector.
- **R&D Acceleration- Innovate to Elevate:** Boost research and development in the food processing sector through a multi-pronged approach.
  - Establish a network of **Food Innovation Labs** in partnership with leading academic institutions and industry players.
  - Introduce a weighted tax deduction on **R&D expenses for food processing** companies to encourage private sector investment in innovation.
  - Create a national database of traditional food processing techniques and support their scientific validation and scale-up.

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Navigating India's E-commerce Crossroads

This editorial is based on "E-commerce has done more good than harm" which was published in Hindu Business Line on 25/08/2024. The article highlights the rapid growth of India's e-commerce industry, which, while empowering consumers and small businesses, also raises concerns about potential disruptions to traditional retail.

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

The **Indian e-commerce industry** is experiencing rapid growth, with projections estimating it will reach **USD 350 billion by 2030**. However, this expansion has sparked significant debate. Recently, India's Commerce Minister has expressed concerns that the **rise of e-commerce could disrupt traditional retail**, potentially harming small businesses, a concern that may seem belated given the government's previous support for the sector.

Conversely, e-commerce has empowered **consumers by offering a wider range of choices, efficient delivery systems, and improved return policies**. It has also enhanced access to products in smaller towns and strengthened logistics infrastructure. Many small businesses are adapting by leveraging online platforms, leading to increased sales and employment opportunities. E-commerce has disrupted traditional distribution models, **enabling smaller Indian brands to compete more effectively with established players.** This evolving landscape promotes a consumer-centric market, reducing the likelihood of predatory practices taking root.

What is E-Commerce?

- **About:** E-commerce, short for electronic commerce, refers to the buying and selling of goods or services using the internet, and the transfer of money and data to execute these transactions.
- **Types of E-Commerce**
  - **Based on Parties Involved**
    - **Business-to-Consumer (B2C):** Amazon selling products to individual customers
    - **Business-to-Business (B2B):** Wholesalers selling to retailers through online platforms
    - **Consumer-to-Consumer (C2C):** Individuals selling on platforms like eBay or OLX
    - **Consumer-to-Business (C2B):** Freelancers offering services to companies on platforms like Upwork
    - **Business-to-Government (B2G):** Companies bidding for government contracts online
  - **Based on Platform**
    - **Social Commerce:** Leveraging social media platforms for e-commerce (e.g., Facebook Marketplace)
    - **Mobile Commerce (M-Commerce):** Transactions conducted through mobile devices
    - **Local Commerce:** Online platforms connecting local buyers and sellers (e.g., Nextdoor)

What are the Major Growth Drivers of E-commerce in India?

- **Digital Revolution-Smartphones and Internet Penetration:** India's digital landscape has transformed dramatically, fueling e-commerce growth.
  - India will have **1 billion smartphone users by 2026** with rural areas driving the sale of internet-enabled phones.
  - In the case of India, the average cost of 1GB of mobile internet data is among the lowest globally, at just **Rs 13.98,** this has brought millions online.
  - This digital accessibility has made **online shopping a reality for millions, especially in Tier 2 and 3 cities.**
  - Also, the Open Network for Digital Commerce (ONDC) initiative, aims to democratise digital commerce,
- **Rise of Digital Payments-UPI and Beyond:** The surge in digital payments has been a key enabler for e-commerce.
  - Unified Payment Interface **(UPI)** transactions clocked a new high in value in May 2024 by processing **14.04 billion** transactions worth **Rs 20.45 trillion**.
  - The ease of digital transactions, coupled with initiatives like BHIM has reduced the reliance on cash-on-delivery.
  - This shift has not **only simplified online purchases** but also broadened the customer base for e-commerce platforms.
- **Evolving Consumer Behavior-Convenience and Choice:** Changing lifestyles and increasing time scarcity have tilted consumer preferences towards the convenience of online shopping.
  - E-commerce platforms offer unparalleled product variety, Amazon India alone lists **over 170 million products.**
  - This vast selection, combined with **competitive pricing and doorstep delivery**, has made e-commerce an attractive option for urban and rural consumers alike.
- **Logistics and Last-Mile Delivery Innovation:** Improvements in logistics have been pivotal for e-commerce expansion.
  - India's logistics market, valued at **USD 250 billion in 2021**, is expected to grow to **USD 380 billion by 2025.**
  - E-commerce-focused logistics players like **Delhivery** and Ecom Express have revolutionised last-mile delivery.

- Innovations like **hyperlocal delivery (Dunzo, Swiggy Instamart)** have reduced delivery times to as little as 10-30 minutes in some cities.

- **Rise of Social Commerce and Live Shopping: Social commerce** is emerging as a significant trend, blending social media with e-commerce.
  - Platforms like **Meesho** have tapped into the power of social networks for product discovery and sales.
  - **Live shopping,** popularised by platforms like **Flipkart's Shopsy and YouTube's integrated shopping features**, is expected to be a **USD 4-5 billion market in India by 2025.**
  - This trend is particularly appealing to young, digitally-native consumers and is driving impulse purchases and engagement.
- **Personalisation and AI-Driven Recommendations:** Advanced data analytics and AI are enhancing the online shopping experience through personalisation.
  - E-commerce giants like Amazon report that **35% of their sales come from personalised recommendations.**
  - AI-powered chatbots handle **30-40% of customer queries on major platforms.**
  - These technologies not only improve customer satisfaction but also drive higher conversion rates and average order values.
- **Vernacular Approach and Voice Commerce:** Catering to India's linguistic diversity has opened up new markets for e-commerce.
  - Voice-based shopping, supported by platforms like **Amazon's Alexa and Google Assistant,** is gaining traction.
  - According to a report by the **Internet and Mobile Association of India, 57%** of internet users prefer to access the internet in Indian languages, presenting a massive opportunity for voice and vernacular e-commerce solutions.

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

- **Predatory Pricing-The Race to the Bottom:** Allegations of predatory pricing have dogged major e-commerce players.
  - In 2020, the **Competition Commission of India (CCI)** ordered a probe into Amazon and Flipkart for deep discounting practices.
  - For instance, during the 2022 festive season, e-commerce sites offered discounts up to **80% on electronics.** While beneficial for consumers in the short term, this practice raises concerns about long-term market health and fair competition.
- **Data Privacy- The Double-Edged Sword of Personalisation:** As e-commerce platforms collect vast amounts of user data for personalised experiences, concerns about data privacy and security have intensified.
  - **High-profile data breaches,** like the alleged **Domino's India** breach affecting **180 million orders in 2021,** underscore the risks.
  - Balancing personalisation with privacy remains a significant challenge for the industry.
- **Counterfeit Conundrum:** The proliferation of counterfeit products on e-commerce platforms poses a major threat to brand integrity and consumer trust.
  - A 2018 LocalCircles survey found that **38% of consumers had received fake products** from e-commerce sites.
  - In 2022, a **Parliamentary panel** recommended stricter penalties for e-commerce firms selling counterfeit goods.
  - The challenge lies in effectively policing millions of listings without stifling legitimate sellers.
- **The Small Retailer Squeeze:** The rapid growth of e-commerce giants has put immense pressure on **India's 63 million small retailers**.
  - In FY23, about **1.5-2.5 million MSMEs** were selling products online, making up **only 2-3% of total MSMEs.**
  - Government initiatives like **Open Network for Digital Commerce (ONDC)** aim to level the playing field, **but small retailers still struggle to match the tech prowess** and economies of scale of e-commerce behemoths.
- **Last-Mile Logistics-The Rural Reach Riddle:** While e-commerce has made significant inroads, reaching India's vast rural population remains challenging.
  - Poor road infrastructure, lack of proper addresses, and limited warehousing facilities in remote areas **inflate delivery costs**.
  - Innovations like **Amazon's I Have Space program** and **Flipkart's partnership with kiranas** have helped, but reaching the last mile profitably in a country where **65% of the population is rural** remains a formidable challenge.
- **The Environmental Cost of Convenience:** The e-commerce boom has raised significant environmental concerns.
  - The **packaging waste** generated by online orders is staggering, India generated **3.4 million tonnes of plastic waste in 2019-20,** with e-commerce being a major contributor.

- The carbon footprint of last-mile deliveries, especially with the rise of quick commerce, is substantial.

- **The Gig Economy Grapple:** The e-commerce boom has fueled the growth of the gig economy, particularly in logistics and delivery services.
  - While offering flexible employment, quick commerce has raised concerns about **worker rights, job security, and safety,** particularly with its promise of 10-minute deliveries.
  - **Gig workers** are typically **isolated** and lack the ability to unionise or collectively bargain for better working conditions and remuneration.
  - This power imbalance makes it difficult for them to advocate for their rights or negotiate better terms with the platforms they work for.
- **The Influencer Impact:** The growing role of influencer marketing in e-commerce has raised concerns about authenticity and disclosure.
  - The issues of undisclosed paid partnerships, and misleading product endorsements have come under scrutiny.
  - Advertising Standards Council of India (ASCI) reported that **30% of influencer posts** it analysed violated disclosure guidelines.
  - Balancing the power of influencer marketing with maintaining consumer trust and regulatory compliance presents an ongoing challenge for the e-commerce sector.

What are the Government Initiatives Related to the E-Commerce Sector in India?

- **Foreign Direct Investment (FDI) in E-Commerce:** The government has allowed 100% FDI in the e-commerce marketplace model, particularly in B2B transactions.
- **Government e-Marketplace (GeM) Portal:** Launched in August 2016 by the Ministry of Commerce and Industry, the GeM portal promotes transparent and efficient public procurement, with procurement crossing ₹2 lakh crore in FY23.
- **Open Network for Digital Commerce (ONDC):** Introduced in 2022, ONDC aims to democratise e-commerce by providing equal opportunities for MSMEs to thrive in digital commerce.
- **Consumer Protection (E-commerce) Rules 2020:** These rules mandate **e-commerce platforms** to display the country of origin and disclose product listing parameters to ensure transparency for consumers.
- **Equalisation Levy Rules 2016 (Amended in 2020):** These rules impose a 2% tax on foreign e-commerce operators selling goods or services in India, ensuring fair taxation of digital businesses.
- **RBI Guidelines on Payment Aggregators and Gateways:** In 2020, the Reserve Bank of India issued guidelines for payment aggregators and payment gateways, crucial for e-commerce transactions.
  - These guidelines mandate licensing for payment aggregators, **impose stricter operational and governance requirements,** and enhance customer grievance redressal mechanisms.
- **National E-Commerce Policy:** The forthcoming National E-Commerce Policy, initially proposed in 2018, seeks to enhance sector growth and boost exports, with a draft released in 2019.

What Measures can be Adopted Related to the E-Commerce Sector in India?

- **Leveling the Playing Field of Small Retailers:** Launch a nationwide **"Digital Kirana"** initiative to equip small retailers with digital tools and skills.
  - Partner with established e-commerce players to **create dedicated "local seller" sections on their platforms**, highlighting nearby small businesses.
  - Provide **subsidised access to e-commerce enablement platforms,** digital payment systems, and inventory management software.
  - Implement a tiered commission structure on e-commerce platforms, **with lower rates for small sellers to boost their competitiveness.**
- **ONDC Acceleration-Democratizing Digital Commerce:** Fast-track the implementation of the ONDC initiative across all major cities.
  - Provide **financial incentives for early adopters,** both sellers and technology providers, to boost participation.
  - Launch a nationwide awareness campaign to educate consumers and businesses about **ONDC's benefits and usage.**
- **Streamlining the E-commerce Ecosystem:** Formulate a comprehensive, **forward-looking e-commerce policy** that provides clear guidelines on FDI, data localisation, and cross-border trade.
  - Establish a **dedicated e-commerce regulatory body** to oversee compliance, address grievances, and promote fair competition.

- Simplify GST compliance for **e-commerce transactions**, potentially introducing a single-point GST collection mechanism for marketplaces.

- **Last-Mile Innovation Fund-Bridging the Rural-Urban Divide:** Create a government-backed **"Last-Mile Innovation Fund"** to support startups and existing players in developing cost-effective rural delivery solutions.
  - Offer **tax incentives for companies investing in rural logistics** infrastructure, including **micro-warehouses and digital addressing systems.**
  - Partner with India Post to leverage its extensive rural network for e-commerce deliveries, potentially creating a **"rural e-commerce assistant"** role within post offices.
- **Green E-commerce Push:** Implement a mandatory **"Green Rating"** system for e-commerce packaging, incentivizing the use of eco-friendly materials.
  - Introduce **tax benefits for e-commerce companies** adopting electric vehicles for last-mile delivery.
  - Launch a "**Circular E-commerce**" initiative, promoting refurbished goods marketplaces and incentivizing product repair and recycling.
- **Consumer Protection Enhancement:** Strengthen the e-commerce dispute resolution mechanism by establishing **dedicated online consumer courts for faster grievance redressal**.
  - Implement a **blockchain-based product verification system** to combat counterfeits, starting with high-value and commonly faked items.
  - Mandate **clear disclosure of pricing components**, including base price, discounts, and platform fees, to enhance pricing transparency.
- **Inclusive Gig Economy Framework:** Develop a **comprehensive social security scheme** for e-commerce gig workers, including health insurance and retirement benefits.
  - Implement a **"Portable Benefits"** system allowing gig workers to accumulate benefits across multiple platforms.
  - Establish **minimum wage guidelines for gig workers** based on local cost of living and task complexity.
  - Launch a "**Gig Worker Upskilling Program**" to help delivery personnel and other gig workers transition to higher-skilled roles in the e-commerce ecosystem.

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Rise of India's Carbon Marketplace

This editorial is based on "Establishing a carbon market" which was published in The Hindu on 29/08/2024. The article highlights India's transition from energy efficiency targets under the PAT scheme to establishing its own carbon market, balancing climate goals with its development priorities, particularly in hard-to-abate industries like iron and steel.

Tag: GS Paper - 3, Conservation, Renewable Energy, Government Policies & Interventions, Achievements of Indians in Science & Technology

As the **world's** third-largest emitter, India faces the dual challenge of meeting its climate objectives while sustaining its developmental aspirations. The recent announcement by the Finance Minister to shift **"hard to abate" industrie**s from energy efficiency targets to emission targets marks a pivotal change in policy. This shift recognizes the limitations of the existing Perform, Achieve, and Trade (PAT) scheme, which has primarily focused on relative energy efficiency.

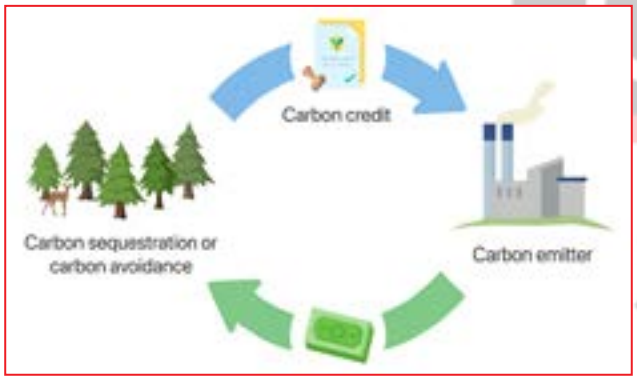
The move towards establishing an Indian Carbon Market offers a significant opportunity. Although India is not obligated to mandatory emission reductions under its Nationally Determined Contributions **(NDCs),** this step signals a strong commitment to exploring market-based solutions for curbing emissions. However, crafting a **carbon market** that effectively aligns with India's development priorities while ensuring substantial emission reductions will require strategic and nuanced planning.

What is the Carbon Market?

- **About**: Carbon markets are market-based mechanisms **designed to reduce greenhouse gas emissions** by creating a financial incentive for individuals and organizations to reduce their carbon footprint.
  - They operate on the **principle of cap-and-trade,** where a government or regulatory body sets a cap on the total amount of greenhouse gas emissions allowed within a specific jurisdiction.
- **Types of Carbon Markets:**
  - **Compliance Markets:** These markets are mandatory, requiring **regulated entities to purchase carbon credits to offset their emissions**. Often, these entities are large industrial polluters.

- **Voluntary Markets**: These markets are voluntary, allowing individuals, businesses, and organizations to **purchase carbon credits to offset their emissions beyond regulatory requirements.**
  - India is a significant exporter of carbon credits into the decentralized voluntary market, with its credits worth between **USD 200-300 billion** per year and accounting for **17% of the global supply in 2022.**

- **Carbon Credits:** They represent a reduction in greenhouse gas emissions that can be traded. **One carbon credit equates to one ton of carbon dioxide equivalent (tCO2e)** reduced or avoided.
  - Carbon credits can be generated through various activities, such as:
    - Implementing **energy-efficient technologies,** reducing waste, or transitioning to renewable energy sources.
    - Preventing deforestation or **promoting reforestation.**



- **Carbon Taxes:** They are **direct levy on the emission of greenhouse gases**. This means that polluters pay a tax based on the amount of greenhouse gases they emit.
  - Carbon taxes generate **revenue for the government**, which can be used to fund climate mitigation and adaptation projects or reduce other taxes.
- **Global Trends in Carbon Markets:** As of August 2023, 74 carbon pricing mechanisms have been identified worldwide, in either the form of **carbon taxes** or **emissions trading schemes (ETS).**
  - In 2023, carbon pricing revenues reached a record **USD 104 billion**, according to the World Bank's annual **"State and Trends of Carbon Pricing 2024"** report.

What are the Current Government Initiatives Related to the Carbon Market in India?

- **Carbon Credits Trading Scheme (CCTS):** Building on the **Electricity Conservation Act, 2001, and the Environment (Protection) Act, 1986**, India launched the CCTS to reduce GHG emissions by trading carbon credit certificates.
  - The compliance segment of CCTS will commence in **2025-26**, allowing non-obligated entities to participate and trade carbon credit certificates (CCCs).
- **Other Existing Schemes:** The **Perform, Achieve and Trade (PAT) scheme** and the **Renewable Energy Certificates (REC) system** are existing market-based emission reduction schemes in India.
- **Monitoring and Verification:** The **Bureau of Energy Efficiency (BEE)** and the **National Steering Committee for Indian Carbon Market (NSCICM)** are responsible for ensuring the integrity of the carbon credits through rigorous monitoring, reporting, and verification processes.

What are the Advantages of Implementing a Carbon Tax?

- **Incentivizing Green Innovation:** A carbon tax creates a strong financial incentive for businesses to reduce their **carbon footprint**, spurring innovation in **clean technologies.**
  - In India, where the renewable energy sector is growing rapidly, a carbon tax could accelerate this trend.
  - For instance, after implementing a carbon tax, British Columbia saw a **6.1% reduction in emissions** in sectors covered by the tax.
  - In India, it would also account for an estimated **15% of CO_2 reductions (compared with baseline levels)** from G20 countries.
    - Applied to India, this could lead to significant **advancements in solar, wind, and energy storage technologies,** potentially positioning India as a global leader in clean tech innovation.
- **Revenue Generation for Climate Adaptation:** Carbon taxes can generate substantial revenue for governments to invest in climate adaptation and mitigation efforts.
  - In India, where climate change impacts are already severe, this could be crucial.

- The International Monetary Fund estimates that carbon taxes could raise typically **1–2% of GDP** for **a USD 35 a ton tax in 2030.**
- This funding could be directed towards **flood protection infrastructure, drought-resistant agriculture**, and other critical adaptation measures, helping to safeguard India's most vulnerable populations against climate impacts.

- **Improving Public Health**: By reducing fossil fuel consumption, a carbon tax can significantly **improve air quality and public health**. This is particularly relevant for India, where **air pollution is a major concern.**
  - As per the recent IMF Fiscal Monitor, a carbon tax of USD 50 per tonne of CO2 in just the G20 countries can prevent **6,00,000 premature air pollution** deaths annually by 2030.
  - The resulting reduction in healthcare costs and improved productivity could provide a substantial boost to India's economy, potentially offsetting the initial economic impact of the tax.
- **Consumption Consciousness:** Carbon taxes can play a crucial role in raising awareness about the carbon footprint **of different products and services**, thereby influencing consumer behavior.
  - In India, where consumer awareness about climate change is growing but still limited, a carbon tax could serve as an educational tool.
  - By making **carbon-intensive products more expensive**, it could nudge consumers towards more **sustainable choices.**
  - This shift could have **ripple effects across the economy,** encouraging businesses to offer more **low-carbon options** and accelerating the **overall transition to a sustainable economy.**

What are the Major Challenges Related to Carbon Taxation in India?

- **Economic Impact on Industries:** Implementing a carbon tax could significantly impact India's industrial sector, particularly energy-intensive industries like **steel, cement, and textiles.**
  - While it would incentivize cleaner production methods, it might also increase production costs in the short term.
  - This could potentially **affect India's global competitiveness in these sectors,** necessitating careful policy design to balance environmental goals with economic growth.
- **Regressive Nature-Burden on Lower-Income Groups:** Carbon taxes can be regressive, disproportionately affecting lower-income groups **who spend a larger proportion of their income on energy.**
  - Considering that India has the largest number of poor worldwide at 22.8 crore (Global MPI 2022), this is a critical concern.
  - A poorly designed carbon tax could lead to **increased energy and transportation costs,** potentially exacerbating economic inequality.
- **Limited Scope:** According to the World Economic Forum**,** Carbon taxes, while effective in reducing CO2 emissions from fossil fuels, have a limited scope.
  - They may not **adequately address other significant greenhouse gases** like **methane**, which is emitted in large quantities from agricultural activities.
  - For instance, **methane's warming potential is significantly higher than CO_2,** making it a major contributor to climate change.
  - To comprehensively address greenhouse gas emissions, additional policies and regulations specifically targeting methane and other non-CO_2 gasses are essential.
- **The Informal Sector Conundrum:** India's large informal sector, which accounts for **about 90% of the workforce**, poses significant challenges for carbon tax implementation.
  - **Tracking and taxing emissions from small, unregistered businesses** is extremely difficult and could inadvertently exempt them from a carbon tax, potentially **undermining its effectiveness and creating market distortions.**
- **Inter-State Disparities:** India's federal structure adds another layer of complexity to carbon taxation.
  - Different states have **varying levels of industrialization, energy mix, and fiscal capacities.**
  - A uniform national carbon tax could disproportionately affect **coal-producing states like Jharkhand and Chhattisgarh.**
- **Carbon Leakage:** Carbon leakage, where emissions-intensive industries relocate to **jurisdictions with laxer environmental regulations**, is a significant concern.
  - For India, which is striving to become a global manufacturing hub through initiatives like **'**Make in India**',** this risk is particularly acute.
- **International Trade Implications:** As more countries implement carbon pricing mechanisms, India's exports could face challenges in markets with stricter environmental standards.

- The European Union's proposed Carbon Border Adjustment Mechanism, for instance, could significantly impact Indian exports.
- India's steel sector faces significant challenges due to the EU's carbon border tax, which could cost up to **USD 8 billion in exports to the EU.**

What Measures can India Adopt for Effective Establishment of Carbon Market?

- **Phased Implementation-The Gradual Greening:** India could adopt a phased approach to carbon taxation, starting with **a low rate and gradually increasing it over time.**
  - This would allow industries to adapt and invest in cleaner technologies without sudden economic shocks.
  - The government could announce a **clear schedule of rate increases**, providing certainty for businesses to plan their investments.
  - Sectors could be brought under the tax regime in stages, b**eginning with the most carbon-intensive industries**.
  - This approach would also allow time for the development of supporting infrastructure and policies, such as green energy alternatives and energy efficiency programs.
- **Border Carbon Adjustments- Leveling the Global Playing Field:** To address carbon leakage concerns and protect domestic industries, **India could consider implementing border carbon adjustments (BCAs).**
  - This would involve applying a **carbon price to imported goods based** on their embedded emissions, leveling the playing field for domestic producers.
  - This measure would need to be carefully designed to **comply with WTO rules and India's international trade commitments.**
- **Technology Transfer Incentives-Bridging the Innovation Gap:** The carbon tax could be coupled with strong incentives for technology transfer and **adoption of clean technologies, particularly for** small and medium enterprises **(SMEs).**
  - A portion of the tax revenue could fund a "**Clean Tech Adoption Fund**" providing low-interest loans or grants for green technology investments.
- **Green Lanes for Carbon-Conscious Industries:** Implement a tiered regulatory system that offers **expedited approvals and incentives for industries** demonstrating significant **carbon reduction efforts.**
  - This "**Green Lane" approach** could include faster environmental clearances, priority in government tenders, and access to low-interest green financing.
  - By creating **tangible benefits for carbon-conscious businesses**, India can accelerate the adoption of cleaner technologies across sectors.
  - This measure balances **economic growth with environmental responsibility,** encouraging industries to voluntarily embrace carbon reduction without imposing blanket regulations.
- **Carbon Credit Cooperative for SMEs:** Establish a cooperative framework enabling **small and medium enterprises (SMEs)** to collectively participate in the carbon market.
  - This system would **allow smaller businesses to pool their emission reduction efforts**, collectively generate carbon credits, and share the benefits.
  - By lowering the barrier to entry for SMEs, India can **broaden participation in the carbon marke**t and drive innovation in emission reduction at the grassroots level.
- **Carbon Tech Incubators for Homegrown Solutions:** Launch a network of specialized incubators focused on developing indigenous carbon reduction technologies.
  - These incubators would provide **funding, mentorship, and testing facilities for startups** working on innovative solutions in areas like **carbon capture, energy efficiency, and renewable energy.**
  - By fostering a robust ecosystem of homegrown climate tech, India can reduce dependence on imported technologies and create solutions tailored to its unique environmental and economic context.
- **Green Finance Revolution:** India could establish a robust green finance ecosystem to support its carbon market.
  - This could include **green bonds, sustainability-linked loans, and climate risk insurance products**.
  - A national green investment bank could be created to catalyze private investment in low-carbon projects.
- **Integration with Existing Schemes:** India's new carbon market should be integrated with existing schemes like PAT and REC for policy coherence.
  - This could involve **creating conversion mechanisms between different types of credits.**
  - A common trading platform could be developed to **enhance liquidity across schemes.**
  - Gradually, these schemes could be merged into a comprehensive national carbon market.

Conclusion:

India is at a pivotal moment, where establishing a **carbon market can effectively balance its climate goals with economic development**. By strategically designing this market, integrating existing schemes, and encouraging innovation, India can position itself as a global leader in sustainable growth. As India moves towards a **low-carbon future,** now is the time to act decisively and lead the way in creating a resilient**, climate-conscious economy.**

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Building a More Inclusive Financial System

This editorial is based on "PM Jan Dhan Yojana Has Accelerated Financial Inclusion, Reduced Inequalities" which was published in The India Express on 28/08/2024. This article highlights that the Pradhan Mantri Jan Dhan Yojana (PMJDY) has boosted financial inclusion in India with over 53 crore accounts and higher average balances, while reducing social issues and economic leakages. Future efforts should focus on enhancing the financial ecosystem, expanding products, and ensuring consumer protection.

Tag: GS Paper-3, Banking Sector & NBFCs, Inclusive Growth, GS Paper-2, Self Help Groups (SHGs), E-Governance, Government Policies & Interventions.

Financial inclusion has emerged as a crucial aspect of **economic development**, aiming to provide accessible, affordable, and effective financial services to all individuals, particularly those from **marginalized and low-income** backgrounds. In a country of over 1.3 billion people, with diverse geographic, economic, and social landscapes, ensuring **universal access to financial services** presents both immense challenges and opportunities.

Financial inclusion goes beyond mere access to bank accounts; it encompasses a comprehensive suite of services including **savings, credit, insurance, and digital payment solutions** tailored to meet the needs of all segments of society.

The push for financial inclusion in India has gained significant momentum over the past decade, driven by a combination of **government initiatives, technological advancements, and innovative business models**. From the ambitious Pradhan Mantri Jan Dhan Yojana (PMJDY) to the revolutionary Unified Payments Interface (UPI), India has witnessed a transformative journey in its financial landscape. These efforts aim not only to provide basic financial services but also to empower individuals and businesses, **reduce poverty, formalize the economy**, and drive inclusive economic growth.

As India continues to navigate this path, understanding the multifaceted nature of **financial inclusion**, its progress, challenges, and future directions becomes crucial for policymakers, financial institutions, and citizens alike.

What is Financial Inclusion?

- **Financial Inclusion:** It is the process of ensuring access to appropriate **financial products and services** needed by **vulnerable groups** such as weaker sections and low-income groups at an affordable cost in a fair and transparent manner by mainstream institutional players.
- **Scope of Financial Inclusion:** The scope of financial inclusion encompasses a wide range of financial services, including basic **banking services** (savings and checking accounts), **credit facilities**, insurance products, **investment** options, pension schemes, **payment** and remittance services and **financial advisory services**.
- **Key Components of Financial Inclusion:** The main components of **financial inclusion** are:
  - **Access to Financial Services:** Ensuring that financial services such as **banking, insurance**, and **credit** are available to everyone. This involves the establishment of physical banking outlets in underserved areas and the provision of digital financial services.
  - **Affordability:** Financial products and services should be priced to be **accessible for all segments of society**. High costs can be a significant barrier, particularly for low-income groups.
  - **Financial Literacy:** Educating individuals about financial products, services, and management is essential. Financial literacy empowers people to make informed decisions about their finances, including saving, investing, and managing credit.
  - **Usage:** Beyond access, it's crucial that individuals **actively use financial services** to achieve financial stability and growth. This includes engaging with banking services, utilizing credit responsibly, and taking advantage of insurance products.

What is the Importance of Financial Inclusion?

- **Economic Empowerment:** By providing access to **formal financial services**, individuals and small businesses gain the tools to manage their finances effectively, save for future needs, and access credit for growth opportunities.
  - This empowerment can lead to increased economic activity and productivity at both micro and macro levels.
- **Poverty Reduction:** Access to financial services can serve as a powerful tool for **poverty alleviation**.
  - **Savings accounts** provide a safe place to save money, reducing vulnerability to economic shocks while **credit facilities** can enable **investments in education, healthcare, or small businesses**, creating pathways out of poverty.
- **Formalization of the Economy:** Bringing more individuals and businesses into the **formal financial system** reduces the size of the **shadow economy**.
  - This transition enhances transparency, **improves tax collection**, and enables more effective economic policy implementation.
- **Enhanced Financial Stability:** A broader base of depositors and borrowers can contribute to a more **stable financial system** by diversifying risks and reducing the impact of economic shocks on any single segment of the population.
- **Improved Government Service Delivery:** **Direct benefit transfers(DBT)** and other government schemes can be more **efficiently and transparently** implemented through formal financial channels, reducing leakages and ensuring that benefits reach the intended recipients.
- **Gender Equality:** Financial inclusion can play a significant role in **promoting gender equality** by providing women with independent **access to financial services**, enhancing their **economic autonomy** and decision-making power within households and communities.
- **Digital Transformation:** The push for financial inclusion often goes hand-in-hand with **digital innovation**, driving the adoption of new technologies that can have spillover effects in other sectors of the economy.
- **Social Inclusion:** Access to financial services can enhance an individual's sense of **dignity and social inclusion**, particularly for **marginalized groups** who have historically been excluded from the **formal economy**.

What is the Current State of Financial Inclusion in India?

- **Overall Progress:** Since the introduction of the **Pradhan Mantri Jan Dhan Yojana (PMJDY)**, India has made significant strides in **financial inclusion**.
  - The percentage of adults with **formal financial accounts** has surged from approximately 50% in 2011 to over **80%** in 2024.
- **Account Statistics:** As of August 2024, the total number of PMJDY accounts stands at **53.13 crore**. This is a remarkable increase from the 14.7 crore accounts recorded in March 2015.
- **Banking Sector Involvement:** **Public sector banks** have played a crucial role in the PMJDY initiative, managing about 78% of the accounts opened under the scheme.
- **Gender Distribution:** Out of the total PMJDY accounts, **29.56 crore (55.6%)** are held by women.
- **Rural and Semi-Urban Areas:** About **66.6% of PMJDY accounts** are in **rural and semi-urban regions**, reflecting the scheme's focus on underserved areas.
- **Digital Transaction:** **National Payments Corporation of India (NPCI)** data shows that compared with June, the volume of **UPI** transactions grew by 3.95% in July, while the value of transactions increased by 2.84%.

What are Financial Inclusion Initiatives in India?

- **Pradhan Mantri Jan Dhan Yojana (PMJDY):** Launched in 2014, **Pradhan Mantri Jan Dhan Yojana (PMJDY)** is **National Mission for Financial Inclusion** to ensure access to financial services, namely, **banking/savings & deposit accounts, remittance, credit, insurance, pension** in an affordable manner.
  - **Key features** of the scheme include **zero balance accounts** that eliminate the need for a minimum deposit, **accident insurance coverage** of up to Rs 1 lakh for financial protection in case of accidental death or disability, and **overdraft facilities** up to

Rs 10,000 to assist eligible account holders during emergencies.

- **Micro-Insurance and Micro-Pension Schemes:** The government has introduced **low-cost insurance and pension schemes** to reach underserved populations:
  - **Pradhan Mantri Suraksha Bima Yojana (PMSBY):** It offers **accidental death and disability insurance** with an annual premium of Rs 20 for Rs 2 lakh coverage.
  - **Atal Pension Yojana (APY):** A pension scheme for the unorganized sector, offering a guaranteed monthly pension of Rs 1,000 to Rs 5,000 after age 60.
- **Other Financial Inclusion Initiatives:**
  - **Pradhan Mantri Vaya Vandana Yojana (PMVVY)**: This **pension scheme** is designed for **senior citizens** aged 60 and above and guarantees return on investment for a fixed period.
  - **Pradhan Mantri Mudra Yojana (PMMY)**: PMMY facilitates **easy access to credit** for small and micro enterprises by providing loans up to Rs 20 lakh to non-corporate, non-farm small/micro enterprises, promoting entrepreneurship and job creation.
  - **Stand Up India Scheme**: This initiative **supports SC/ST and women entrepreneurs** by providing loans between Rs 10 lakh and Rs 1 crore for setting up greenfield enterprises. It aims to foster inclusive growth and financial independence.
  - **Venture Capital Fund for Scheduled Castes (SCs)**: The fund provides financial assistance to SC entrepreneurs to help them start and grow businesses.
  - **Varishtha Pension Bima Yojana (VPBY)**: It is a scheme for the benefit of senior citizens aged **60 years and above**.
  - **Sukanya Samriddhi Yojana**: The Sukanya Samriddhi Scheme is a government savings program for parents of girl children, aimed at encouraging savings for their education and marriage expenses.
- **JAM Trinity:** The **JAM Trinity**, comprising **Jan Dhan** (bank accounts), **Aadhaar** (biometric ID), and **Mobile** (digital access), is a framework designed to enhance financial inclusion in India.
  - This combination aims to improve **financial inclusion**, enable **direct benefit transfers**, and enhance service delivery efficiency. JAM facilitates **seamless authentication and digital transactions**, reducing leakages in welfare programs.
- **Elaborating Banking System: Payment banks, small finance banks, and priority sector lending,** together they expand financial services reach, fostering broader economic participation and inclusion.
  - **Payment Banks:** Specialized banks for small savings accounts and payments.
  - **Small Finance Banks:** Banks focused on underserved segments.
  - **Priority Sector Lending:** Mandated lending to specific sectors including agriculture and MSMEs.
- **Banking Correspondents:** The **Reserve Bank of India's (RBI)** introduced the **Banking Correspondent (BC)** model in 2006 to extend banking services to areas where full bank branches are impractical.
  - BCs provide basic services such as **account opening, cash deposits, withdrawals, fund transfers**, and **balance inquiries** using technology like **micro-ATMs** and **point-of-sale devices**.
- **Digital Payments and Financial Technology (FinTech):** **Digital technology** has revolutionized financial services in India, with both government-backed and private sector innovations driving financial inclusion.
  - **Unified Payments Interface (UPI):**Introduced in 2016, **UPI** enables **instant money transfers** between bank accounts through a mobile app, supports multiple accounts in one app, and facilitates seamless transactions.
    - According to the **RBI annual report**, in FY24, nearly **80% of digital payments** in India were made through the **UPI.**
  - **Bharat Interface for Money (BHIM):** A UPI-based app designed for **basic smartphones** and low connectivity areas.
  - **RuPay Cards:** India's domestic card network, reducing reliance on international schemes with **lower transaction costs**.
  - **Aadhaar Enabled Payment System (AEPS):** Uses the **Aadhaar biometric** database to enable transactions through Aadhaar number and **biometric authentication**. This system is particularly beneficial for those lacking traditional **banking infrastructure.**
- **Microfinance Institutions (MFIs) and Self-Help Groups (SHGs):** **Microfinance institutions** and **Self-Help Groups (SHGs)** play a vital role in reaching underserved communities, especially in rural and semi-urban areas.
  - **Microfinance Institutions (MFIs):** Provide **small loans** to individuals who are unable to access traditional banking services, focusing on empowering **economically weaker sections** by offering credit without collateral.

- **Self-Help Groups (SHGs):** SHGs are community-based organizations where members pool savings and provide loans to one another, effectively fostering savings and offering credit based on mutual trust, especially in rural areas.
  - India boasts of some **12 million SHGs**, of which **88%** are **all-women-member ones**. These groups have been crucial in **promoting financial discipline** and providing **credit to underserved communities**.

- **Financial Literacy Programs:** Financial literacy is essential for ensuring effective use of financial services. Several initiatives aim to improve financial literacy across various demographics.
  - **Financial Education Programme for Adults (FEPA)**: It is a financial literacy program aimed at spreading **financial awareness** among adults, including farmers, women's groups, and various workers, aligning with the National Strategy for Financial Education.
  - **National Centre for Financial Education (NCFE):** It **enhances financial literacy** through educational resources, workshops, and training programs, focusing on budgeting, saving, investing, and understanding financial products.
  - **Digital Financial Literacy Campaigns:** Educate people about **digital banking, online transactions, and** cybersecurity, especially important as digital financial tools become more prevalent.

What are the Challenges Associated with Financial Inclusion?

- **Digital Divide:** India's **vast and diverse geography** poses significant challenges for delivering financial services to remote areas, where a substantial portion of the rural population lacks access to **smartphones and internet connectivity**.
  - **Inadequate road connectivity**, unreliable electricity supply, and **limited** internet penetration in rural regions hinder the expansion of financial services.
  - For instance, India's internet penetration rate is around **52%**, which is below the global average of **66%**.This digital divide limits the reach and effectiveness of digital financial services.
- **Financial Literacy:** Low levels of financial literacy, especially among rural and low-income populations, impede the effective use of financial services.
  - Many individuals struggle to understand financial products and make informed financial decisions.
- **Gender Gap:** Women face additional barriers to financial inclusion due to social, economic, and cultural factors.
  - For instance, the National Family Health Survey (NFHS-5) in India reveals that **33%** of women use the internet, while the figure is **57%** for men.
  - Limited asset ownership and **lower financial literacy** rates among women contribute to this gap.
- **Difficult KYC Norms:** Despite improvements, many individuals still struggle with providing necessary documentation for accessing financial services.
  - This is particularly **challenging for migrant workers** and those in the informal sector.
- **Last-Mile Connectivity:** Ensuring consistent availability of **banking services** in remote areas remains a challenge.
  - Issues such as irregular visits by banking correspondents and **non-functional ATMs** affect service quality.
- **Credit Access for MSMEs:** Micro, Small, and Medium Enterprises(MSMEs) often face difficulties in accessing **formal credit** due to lack of collateral, credit history, and complex loan application processes.
- **Cybersecurity Concerns:** The growth of digital financial services has led to **increased cybersecurity risks**.
  - For instance, as per National Crime Records Bureau (NCRB) 2022, cybercrime reporting surged by **24.4%**, totalling 65,893 cases, a significant surge from 52,974 cases in 2021.
  - Rising incidents of digital fraud and limited awareness of cybersecurity best practices among users pose significant challenges.

What Should be the Way Forward?

- **Strengthen Digital Infrastructure**: Expanding **internet connectivity** through the BharatNet project and public **Wi-Fi in rural areas** while encouraging private investment in **telecom infrastructure** would **strengthen digital infrastructure**.
- **Enhance Financial Literacy Programs**: Enhance financial literacy programs to improve understanding of **digital financial services and cybersecurity**. This is crucial for empowering users to **navigate online transactions securely**, **bridging gaps in access**, and **reducing vulnerabilities** in remote and underserved areas.
  - **Leverage Technology for Last-Mile Connectivity**: Use blockchain for secure transactions, artificial intelligence (AI) for credit scoring, and voice-based interfaces to overcome literacy barriers.

- **Focus on Women and Rural Populations: Tailor financial products and services** to meet the needs of women, the poor, and those living in rural areas. This can include creating **gender-sensitive financial products, providing microcredit, and offering savings schemes** that cater specifically to these groups.
  - **Implement targeted policies** to address the persistent **gender gap** in financial inclusion. This could include promoting **women-focused financial services**, encouraging women's entrepreneurship through microfinance, and ensuring that financial literacy programs are accessible to women.
- **Simplify KYC Norms**: Implement **video KYC** for remote account opening, create a unified KYC system, and develop alternative methods for those without traditional documents.
- **Strengthen the Banking Correspondent Model**: Improve **Banking Correspondent** training and incentives, expand service offerings, and enhance monitoring. This will enhance last-mile banking access, particularly in remote areas.
- **Credit Histories and Data Sharing:** Enhance **online credit history systems** such as CIBIL.
  - Providing people with the ability to build and access their credit histories can **encourage financial institutions to extend credit** and other financial services to first-time users and those in underserved areas.

Conclusion

The journey towards comprehensive **financial inclusion** in India is ongoing, marked by significant progress and persistent challenges. The convergence of **government initiatives, technological innovation, and collaborative efforts across sectors** has laid a strong foundation for a more **inclusive financial ecosystem**. However, bridging the remaining gaps requires sustained focus on addressing infrastructure limitations, enhancing financial literacy, and developing tailored solutions for underserved segments.

As India moves forward, the emphasis must be on ensuring that **financial inclusion** translates into meaningful **financial empowerment and improved economic outcomes** for all citizens. This involves not just expanding access but also fostering usage, building trust in the formal financial system, and continuously innovating to meet evolving needs. Ultimately, achieving true financial inclusion will be pivotal in realizing India's aspirations for **equitable and sustainable economic growth.**

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India's Biotech Revolution

This editorial is based on "Biotech enigma: On the BioE3 proposal and beyond" which was published in The Hindu on 30/08/2024. The article highlights the recent BioE3 policy as a significant initiative to boost India's biotechnology sector but emphasizes that its success hinges on sustained financial support and collaboration between central and state governments.

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

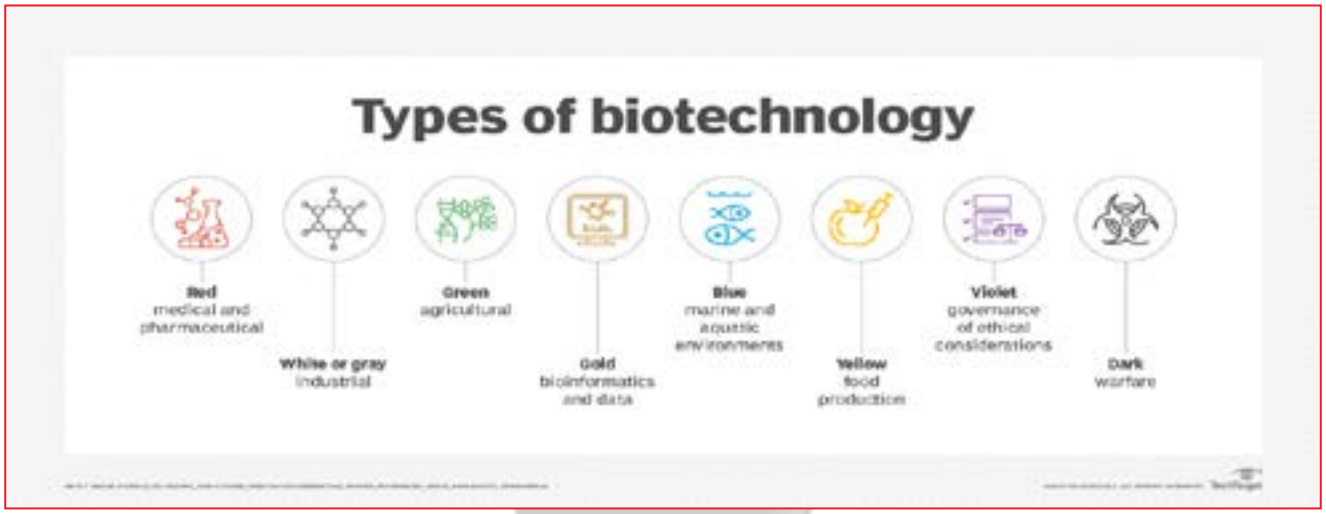
India's Cabinet has approved the **BioE3 (Biotechnology for Economy, Environment and Employment)** proposal to **boost manufacturing in the biotechnology sector.** While India has made significant strides in areas like **vaccine development**, the country has yet to fully capitalize on the **broader potential of biotechnology.** The **BioE3** policy focuses on six **verticals, including bio-based chemicals, functional foods, precision biotherapeutics, climate-resilient agriculture, carbon capture, and marine/space research**. While well-intentioned, the policy's success depends on long-term financial and infrastructural support from both the central and state governments.

While the BioE3 policy is a promising step, it is essential to create a conducive environment for long-term capital investment and foster collaborations between the central and state governments. Without these enabling conditions, the policy's impact may be limited. India needs to progress more in the field of biotechnology to fully **realize its potential and contribute to global advancements in this sector.**

What is the Current Status of India's Biotechnology Sector?

- **Status:** India ranks among the **top 12 destinations for biotechnology worldwide.**
  - It is the **3rd largest destination for biotechnology** in the Asia-Pacific region.
  - India's Bioeconomy reached an estimated value of **USD 130 billion in 2024.**
  - Biotechnology is **recognized as a sunrise sector,** playing a crucial role in India's ambition to become a USD 5 trillion economy by 2024.
  - With about **3% of the global biotechnology market share**, India is becoming a hub for delivering innovative and affordable healthcare solutions.
- **Biotechnology Categories in India**
  - **Biopharmaceuticals:** India is a leading global supplier of low-cost drugs and vaccines.
    - The country is also a pioneer in **biosimilars**, with the **highest number of biosimilars approved in the domestic market.**
  - **Bio-Agriculture:** With approximately 55% of Indian land dedicated to agriculture, India holds the 5th largest area of organic agricultural land globally.
    - The Bio-Agriculture sector has the potential to nearly double its BioEconomy contribution from USD 10.5 billion to **USD 20 billion by 2025.**
  - **Bio-Industrial:** Biotechnology is transforming industrial processes, manufacturing, and waste disposal across the country.
  - **Bio IT & BioServices:** India has strong capabilities in contract manufacturing, research, and clinical trials.
    - The country hosts the **highest number of US FDA-approved plants outside the United States.**
- **Government Initiatives:**
  - **100% FDI is allowed under the automatic route** for greenfield pharma and for the manufacturing of medical devices.
    - FDI policies are favorable, with specific routes for brownfield pharma and medical devices.

- **National Biotechnology Development Strategy 2021-25** aims to make India globally competitive in biotechnology research, innovation, translation, entrepreneurship and industrial growth and be a **USD 150 billion Bioeconomy by 2025.**
- The **Department of Biotechnology** has funded **51** Biotech-KISAN hubs to connect farmers with scientists and institutions, focusing on sustainable agricultural practices, soil health, irrigation, and new agri-technologies.
- Under the Union Budget 2023-24, the government announced the establishment of **500 new 'waste to wealth'** plants under the **GOBARdhan scheme,** with a total investment of INR 10,000 crore.
- GenomeIndia Project aims to sequence and analyze the genomes of a representative Indian population to understand genetic diversity and its implications for public health.
- The **Department of Biotechnology (DBT),** Government of India, announced the First National Biotechnology Development Strategy in **September 2007.**



What is the Significance of Biotechnology for India?

- **Economic Powerhouse-Biotech's Billion-Dollar Promise**: India's biotech industry is poised for explosive growth, with projections suggesting it could reach **USD 150 billion by 2025.**
  - Success stories like **Biocon**, demonstrate the potential for Indian biotech firms to compete globally.
  - The government's push through initiatives like **BioE3 and the Biotechnology Industry Research Assistance Council (BIRAC**) aim to catalyze this growth, potentially creating millions of high-skilled jobs and significantly contributing to India's GDP.
- **Vaccine Prowess**: India's prowess in vaccine production has earned it the moniker **"pharmacy of the world."**
  - India accounts for **60% of global vaccine production**, contributing 40-70% of the WHO demand for Diphtheria, Tetanus and Pertussis (DPT).
  - During the **Covid-19 pandemic**, India's Serum Institute became the world's largest vaccine manufacturer.
  - This capacity not only ensures India's health security but also positions it as a crucial player in global health initiatives, enhancing its **soft power and diplomatic influence.**
- **Agricultural Revolution 2.0:** Biotechnology offers solutions to India's pressing agricultural challenges, from climate-resilient crops to enhanced nutritional content.
  - Bt cotton**,** India's first genetically modified crop, now accounts for **95% of cotton cultivation**, significantly increasing yields and farmer incomes.
  - Ongoing research into **drought-resistant rice varieties and biofortified crops like** golden rice could revolutionize food security for India's growing population
- **Environmental Safeguard:** Biotechnology offers promising solutions to India's environmental challenges.
  - **Bioremediation techniques** are being developed to clean up polluted sites, with successful pilot projects like the **cleaning of Versova Beach in Mumbai.**
  - The development of biodegradable plastics and **bio-based materials** could help address India's waste management crisis.

- Furthermore, **biotech approaches to carbon capture,** as outlined in the BioE3 policy, could play a crucial role in meeting India's ambitious climate targets under the **Paris Agreement**.
- The government's push for **climate-resilient agriculture under BioE3** could be a game-changer in adapting to climate change impacts.

➢ **Innovation Ecosystem:** India's biotech sector is fostering a vibrant innovation ecosystem.
- The country now boasts over 5,000 biotech startups, with hubs like **Bangalore Bioinnovation Centre and Hyderabad's Genome Valley** driving research and commercialization.
- Government initiatives like the **Atal Innovation Mission** and the establishment of **bio-foundries** under BioE3 aim to further catalyze this ecosystem.
- This could lead to breakthrough innovations and potentially position India as a global biotech innovation leader.

➢ **Self-Reliance in Critical Sectors**: Biotechnology is key to reducing India's import dependence in critical sectors.
- Environmental biotechnology aids in **creating eco-friendly alternatives to imported plastics** and developing efficient waste management solutions.
- In the energy sector, biotech advances support the **production of biofuels and bio-based materials**, reducing dependence on imported fossil fuels.
- Additionally, industrial biotechnology facilitates the **domestic production of enzymes, biocatalysts, and other bio-based products**, minimizing imports for industries like textiles, leather, and food processing.
- In the pharmaceutical sector, increasing domestic production of **active pharmaceutical ingredients (APIs) t**hrough biotechnology could enhance India's health security and reduce vulnerability to supply chain disruptions.

➢ **Futuristic Frontiers- Marine and Space Biotechnology:** India's focus on futuristic marine and space research in biotechnology opens up exciting new frontiers.
- Marine biotechnology could unlock the potential of India's vast coastline, leading to discoveries in **biofuels ,novel materials** and conservation of key marine species like **coral reefs**.
- In space biotechnology, research on **extremophiles and closed-loop life support** systems could not only support India's space ambitions but also lead to innovations applicable on Earth, such as in **waste management and resource efficiency.**

➢ **Biotech-A Catalyst to Achieve Sustainable Development Goals:** Biotechnology serves as a powerful tool in India's pursuit of the **UN Sustainable Development Goals (SDGs).**
- It addresses **SDG 2 (Zero Hunger)** through biofortified crops and GM varieties that enhance food security.
- For **SDG 3 (Good Health)**, affordable biopharmaceuticals and diagnostics improve healthcare access.
- Biotech solutions contribute to **SDG 6 (Clean Water) and SDG 7 (Clean Energy) through advanced water treatment** and **biofuel production.**
- Moreover, it aids in **climate action (SDG 13)** via carbon capture technologies and climate-resilient crops, while also supporting **marine and terrestrial biodiversity (SDGs 14 and 15).**
- By aligning with these goals, biotechnology positions itself as an essential driver of India's sustainable future.

What are the Key Challenges Hindering the Growth of Biotechnology in India?

➢ **Regulatory Maze- Navigating the Bureaucratic Labyrinth:** India's complex and often slow regulatory environment poses a significant challenge to biotech innovation.
- The approval process for **genetically modified organisms (GMOs)** is particularly cumbersome, with the **moratorium on Bt brinjal since 2010** serving as a prime example.
- Multiple agencies involved in regulation, including the **Genetic Engineering Appraisal Committee (GEAC)** and the **Review Committee on Genetic Manipulation (RCGM)**, often lead to overlapping jurisdictions and delays.

➢ **Funding Famine-The Capital Crunch in Biotech:** Despite government initiatives, access to adequate funding remains a major hurdle for Indian biotech firms.
- Long gestation periods and high risks associated with biotech research deter many investors.
- India's funding in 2022 for the biotechnology sector is critically low, as the entire Ministry of Science and Technology receives **only 0.05% of India's GDP as funding from the Central Government.**

➢ **Infrastructure Inadequacies-The Facilities Fallout:** Despite improvements, India's biotech infrastructure **lags behind global standards in many areas.**

- High-end research equipment, state-of-the-art laboratories, and biocontainment facilities are often in short supply or concentrated in a few urban centers.
- The **lack of reliable cold chain infrastructure** poses challenges for pharmaceutical distribution, as highlighted **during the Covid-19 vaccine rollout.**
- While initiatives like the **National Biopharma Mission** aim to address these gaps, the scale of investment required is substantial, with estimates suggesting a need for over **USD 10 billion** in the next decade to bring facilities up to global standards.

- **IP Insecurity-Protecting Innovation in a Global Market:** Intellectual property protection remains a concern for biotech innovators in India.
  - Patent application filing increased by **24.64%,** from **66440 in 2021-22 to 80211 in 2022-23,** still enforcement challenges persist.
  - The ongoing debate over patent protection for **Covid-19 vaccines** highlights the delicate balance between innovation incentives and public health needs.
- **Global Gatecrashing-Competing in an Established Market:** Indian biotech firms face stiff competition from well-established global players, particularly in **lucrative markets like biopharmaceuticals**.
  - Breaking into these markets requires not just innovative products but also significant investments in clinical trials, regulatory compliance, and marketing.
  - While initiatives like the Production Linked Incentive (PLI) scheme aim to boost competitiveness, Indian firms still have **ground to cover in terms of global market presence and brand recognition.**
- **Talent Tug-of-War - Brain Drain and Skill Gaps:** India produces a large number of biotech graduates annually, yet faces a **paradoxical shortage of skilled professionals in cutting-edge areas.**
  - Brain drain remains a persistent issue, with many top talents seeking opportunities abroad.
  - Moreover, the industry cites a significant gap between academic training and industry needs, particularly in areas like **bioinformatics, computational biology, and bioprocess engineering**. This skills mismatch hampers the sector's growth and innovation potential.
- **Ethical Challenges- Navigating Moral and Social Dilemmas:** Biotechnology often intersects with complex ethical issues, creating roadblocks to research and commercialization.
  - The ongoing debate over **genetically modified crops** exemplifies this, with **public opposition stalling the introduction of GM mustard** despite regulatory approvals.
  - Recent advancements in gene editing technologies like **CRISPR have reignited discussions** on the ethical implications of human genome modification.
  - The lack of clear ethical guidelines and public engagement mechanisms often leads to **regulatory paralysis,** hindering progress in potentially beneficial areas of research.

What Measures can India Adopt to Enhance the Biotechnology Sector?

- **Regulatory Reimagining-Streamlining for Innovation**: India should establish a **single-window clearance system for biotech projects**, similar to the successful model used in the **IT sector.**
  - This could be achieved by creating **a unified Biotechnology Regulatory Authority of India (BRAI),** consolidating the functions of multiple existing agencies.
  - Implementing a **risk-based assessment approach,** as opposed to the **current one-size-fits-all model,** would accelerate approvals for low-risk innovations while maintaining stringent oversight where necessary.
  - Recent initiatives like the **DNA Technology Regulation Bill (withdrawn)** can provide a framework that could be expanded to cover broader biotech regulations.
- **Capital Catalyst-Innovative Funding Mechanisms**: To address the funding gap, India should create a dedicated **Biotechnology Investment Fund,** leveraging a public-private partnership model.
  - This fund could offer a **mix of grants, soft loans, and equity investments** tailored to different stages of biotech development.
  - Recent success stories like the government's **Covid Suraksha mission,** which accelerated vaccine development through targeted funding, provide a template for future crisis-responsive funding mechanisms.
- **Talent Transformation-Bridging Academia and Industry:** Launch a National Biotechnology Skill Development Program, focusing on emerging areas like **synthetic biology, bioinformatics, and precision medicine.**

- Mandate **industry internships as part of biotech curricula** and incentivize companies to offer these opportunities.
- Encourage interdisciplinary education by integrating biotech modules into engineering, computer science, and business programs to create a versatile workforce.

- **Infrastructure Imperative-Building World-Class Facilities:** Develop a network of shared high-end research facilities across the country, accessible to both academia and industry on a **pay-per-use basis.**
  - Establish **specialized biotech manufacturing zones** with plug-and-play facilities, streamlined approvals, and shared utilities to reduce setup costs for companies.
  - Invest in upgrading and expanding the cold chain infrastructure critical for biopharmaceuticals.
- **IP Empowerment-Nurturing a Culture of Innovation:** Strengthen the intellectual property rights (IPR) regime by **increasing the number of patent examiners** specializing in biotechnology and reducing patent processing times.
  - Establish a **Biotech Patent Pool** to facilitate **collaborative research and technology transfer**, especially for neglected diseases and agricultural innovations.
- **Leveraging Make in India for Biotech Manufacturing:** Expand the Production Linked Incentive (PLI) scheme to cover a wider range of biotechnology products, including **enzymes, bioplastics, and biofortified crops.**
  - This aligns with the Make in India initiative and addresses the BioE3 policy's focus on boosting domestic manufacturing.
  - Establish **Biotech Manufacturing Corridors** in states with strong biotech presence (e.g., **Karnataka, Telangana, Maharashtra)** with specialized infrastructure and single-window clearances.

Conclusion:

The **BioE3 initiative** represents a significant step towards harnessing India's biotechnology potential. For its success, **robust financial and infrastructural support is crucial.** This initiative could drive economic growth, enhance environmental sustainability, and create employment, but it requires effective collaboration between central and state governments to overcome existing challenges. India's continued progress in biotechnology will be pivotal for its global standing and sustainable development goals.

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Drishti Mains Questions

1. Discuss the major global health issues currently facing the world. How can India leverage its strengths to contribute to global health governance?
2. Evaluate the current biodiversity conservation strategies in India. Discuss the effectiveness of various in-situ and ex-situ methods, and suggest measures for enhancing biodiversity conservation efforts.
3. Discuss the ethical challenges associated with the use of Artificial Intelligence (AI) in decision-making processes within public sector institutions. How can these challenges be effectively managed to ensure transparency and accountability?
4. Discuss the current status of genetically modified (GM) crops in India and evaluate the challenges associated with their adoption. What measures should be taken to address biosafety concerns related to it?
5. Examine the challenges and opportunities faced by India in managing its relationships with neighboring countries considering their recent political and economic turmoil. How can India effectively balance its strategic interests with the need for regional stability and cooperation?
6. Discuss the major challenges in achieving nutritional security in India. How can policy interventions be improved to ensure better nutritional outcomes for the population?
7. Analyze the role of India in the evolving geopolitical dynamics of the Middle East. How can India balance its relations with various regional powers while safeguarding its national interests?
8. What measures should India implement to address stagnant job creation and skill mismatches as it transitions towards a developed economy by 2047? Discuss the role of education reforms, vocational training, and support for emerging industries in enhancing employment opportunities.
9. What are the major challenges in achieving universal healthcare in India? Highlight measures to address these challenges with special focus on bridging the gap between urban and rural healthcare access.
10. Discuss the current challenges and opportunities in India's research and development (R&D) sector. What measures can be taken to enhance India's R&D ecosystem to drive innovation and global competitiveness?
11. Discuss the key challenges in India's cybersecurity landscape and evaluate the effectiveness of current measures in addressing these threats. Suggest strategies for strengthening India's cybersecurity framework to counter emerging digital threats.
12. The Supreme Court of India, as the apex judicial authority, plays a vital role in upholding constitutional values and civil liberties. Highlighting this, critically analyze the major challenges confronting the Supreme Court of India.
13. Discuss the strategic importance of the Andaman and Nicobar Islands in India's maritime security and foreign policy. What challenges do these islands face, and what measures should be taken to ensure their sustainable development and security?
14. Discuss the significance of implementing a Uniform Civil Code (UCC) in India and the challenges associated with its adoption
15. Discuss the key challenges faced by the Mental Healthcare System in India. What measures can be implemented to address them effectively?
16. Discuss the concept of the demographic dividend and explain why it has turned into a demographic disaster in the context of India's current youth employment scenario. What measures can be taken to reverse this trend?
17. Analyze the challenges faced by women at the workplace. What measures can be taken to improve

compliance and enforcement of various legal provision like Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redressal) Act, 2013 ?

18. Discuss the implications of lateral entry in the Indian civil services for governance, inclusivity, and social justice. Also, what are the challenges posed by this initiative?
19. What are developmental challenges faced by the eastern states of India. What measures should be taken to unleash their potential toward India's development.
20. Discuss the recent achievements of India's space sector and analyze the challenges and opportunities in transitioning from state-led exploration to a robust, commercialized space industry.
21. India-US relations have evolved significantly over the past two decades, transitioning from a cautious engagement to a robust strategic partnership. Analyze the key factors driving this transformation and discuss the challenges that continue to shape the bilateral relationship.
22. Discuss the key challenges and opportunities in India's food processing sector. How can policy measures and technological advancements address these issues to enhance the sector's growth and global competitiveness?
23. Discuss the impact of the rapid growth of e-commerce on traditional retail in India. What measures should the government consider to ensure a balanced and inclusive growth of the retail sector?
24. Discuss the concept of carbon credits and analyze their potential role in combating climate change, with a special focus on India's approach and challenges in integrating carbon credits into its environmental policies.
25. Evaluate the challenges faced by India in achieving comprehensive financial inclusion and propose measures to address issues related to digital divide, financial literacy, and infrastructure.
26. India's biotechnology sector holds immense potential for driving economic growth, environmental sustainability, and employment generation. Analyze the role of BioE3 initiative in realizing this potential.