



# Monthly Editorial Consolidation



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## Clarion Call From Sundarban

This editorial is based on “To protect the Sundarbans, Delhi and Dhaka must unite” which was published in Hindustan Times on 29/09/2022. It talks about the current state of Sundarban and related issues.

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

The **Sundarbans**, a cluster of **low-lying islands in the Bay of Bengal**, spread across **India and Bangladesh**, is famous for its unique **mangrove forests**. It occupies a position of importance as a **tourist spot for the scenic beauty** it provides and for the famous and majestic “**Royal Bengal Tiger**”.

Sundarbans is largely dependent on **fisheries and aquaculture** and any change in the **delicate ecosystem** spells doom not only for the **ecology** but also for livelihoods. Over the past few decades, the mangrove forest cover in Sundarbans has been rapidly diminishing, alarming **environmentalists and policymakers alike**. Thus, a joint collaboration between India and Bangladesh to conserve Sundarban is imperative.

### What is the Significance of the Sundarban Delta?

- The Sundarbans hosts the **largest mangrove forests in the world**, lying on the delta of the **Ganges, Brahmaputra and Meghna rivers on the Bay of Bengal**.
  - **Mangrove ecosystem** is a very specialised environment occurring in **between the land and the sea** in the tropical and subtropical regions.
- Sundarban is the **natural abode of many groups of animals** and a large number of species are known to feed, breed and take shelter in this ecosystem.
  - It is home to many **rare and globally threatened wildlife species** such as the **estuarine crocodile, water monitor lizard, Gangetic dolphin and olive ridley turtle**.



- **40% of Sundarban lies in India and rest in Bangladesh**. Sundarban was designated a **UNESCO World Heritage site** in **1987 (India)** and **1997 (Bangladesh)**.
- **Sundarban Wetland**, India was recognised as the ‘**Wetland of International Importance**’ under the **Ramsar Convention** in January 2019.

### What are the Challenges Related to Sundarban?

- **Sea Level Rise:** Sundarbans faces nearly **double the sea level rise** compared to other coastal regions.
  - Also, increasing frequency and intensity of **cyclones in this region** poses a serious threat to its **carbon sequestration** potential and **other ecosystem services** of this mangrove forest.
- **Rising Salinity of Water:** With frequent storms over the years, the **salinity of water** of most of the rivers and ponds has increased in almost **all areas of the Sundarbans**.
  - The rising salinity is **reducing the productivity of fishponds and farmland, resulting in even lower incomes** for poor and vulnerable households.
- **Extreme Poverty:** The **high degree of climate vulnerability** contributes to extreme poverty in this region. It has a high population density of **980 persons/sq km on the Indian side** and between **370-850 persons/sq km on the Bangladesh side**.
  - Moreover, the **average income** is less than **USD 1 per day**. People also suffer from poor infrastructure.
- **Lack of Bilateral Collaboration:** Though **India and Bangladesh** formed a bilateral **Joint Working Group (JWG)** on the **Conservation of Sundarbans** but it has met only once, in July 2016, thus **making little or no progress**.
  - The two countries’ institutions at the national and sub-national levels are **not integrated to address these issues**.
- **Threat to Wildlife:** Loss of these mangrove habitats due to climate change is also leading to **loss of species that belong to IUCN’s near-threatened or endangered category**.
  - These settlement mangroves used to be safe havens of diverse **molluscs and crustaceans**, but **these are also disappearing due to the polluted discharges** and breeding activities of these species.
- **Impact on Women:** In this area, women **earn their living by selling prawns and fish that they catch in the river**. For this they must remain in waist-deep water for four to six hours per day, the salinity of the water has increased, putting their health at risk through **irregular menstrual cycles and miscarriages**.

### What Should be the Way Forward?

- **India-Bangladesh Collaboration:** The current JWG can be converted into a joint high-powered board and a set of **interdisciplinary experts** to plan and **implement climate resilience** of the Sundarbans and **welfare of the communities dependent on this ecosystem**.
  - Institutional mechanisms should be blended with flexibility to work across multiple sectors, **engaging locals for tackling the on ground issues effectively**.
    - The two nations can learn from several international initiatives such as the **Amazon Cooperation Treaty Organisation** and the **Senegal River Basin Development Organisation**.
- **Multi-Sectoral Approach:** A **multilayered approach to multi-engagement and multidimensional planning** can be followed by the ministries of tourism, disaster management, agriculture, fisheries, and rural development.
  - **Biodiversity mapping, resilient housing and public infrastructure, response systems to chemical/oil spills, ecotourism, early warning systems, and nature-positive and nature-based solutions** for transforming the future of Sundarban.
- **Responsibilities of Locals:** Apart from the Centre and State government initiatives, the local communities themselves have to take up some action plans.
  - The people can adopt the concept of **backyard farming instead of using the salinated lands**. At times, the salinated lands might be used by the people. In such cases, the local government should recommend crops that can be grown on salinized lands.
- **Journey Towards Global Role Model:** Successful climate-resilient and inclusive development in Sundarban possesses the potential to enhance **India's international image** and serve as a model for other deltaic regions and **Small Island Developing States**.



## Agrochemicals: Boon or Bane

*This editorial is based on "Let The Land Heal: Why minimising chemical farm input has become an urgent necessity" which was published in The Indian Express on 01/10/2022. It talks about the need to minimise the use of chemical fertilisers and pesticides and related solutions.*

**Tag:** Agriculture, GS Paper - 1, Agricultural Resources, GS Paper-2, Government Policies & Interventions, GS Paper-3, E-Technology in the Aid of Farmers.

**Agriculture** remains the **principal source of livelihood** for the majority of the population in India and **agrochemicals** (Chemical fertilizers and pesticides) contribute significantly to its growth. However, use of **synthetic** fertilisers and pesticide has drastically increased several folds since the **Green Revolution**.

**India is now one of the leading producers of agrochemicals in the world**. But **non-scientific and excessive application** of synthetic fertilisers and pesticides damages not only the environment and **life of agricultural land** but also have entered into the food chain thereby affecting **plant, human, and animal health**.

In order to reduce the negative impact on the **ecological dynamics**, use of fertilisers and pesticides should be reduced and **sustainable alternatives should be explored**.

### What is the Current State of Synthetic Fertiliser and Pesticide Usage in India?

- **Fertilisers:** During **FY20**, India consumed about **61 million tonnes of fertiliser**, of which **55% was urea**; in FY21, this figure is estimated to have risen to 65 million tonnes.
  - Currently, the fertiliser **production** of the country is **42-45 million tonnes**, and **imports are at around 18 million tonnes**.
  - A **subsidy is paid by the Centre for urea fertiliser**, based on the cost of production at each plant. Fertiliser manufacturers are required to sell the product at the government's **Maximum Retail Price (MRP)**.
- **Pesticides:** **Pesticides** are regulated in India through the **Insecticides Act, 1968** and **Insecticides Rules, 1971**.
  - **Insecticides, herbicides, rodenticides, and fungicides** are examples of well-known pesticides.
  - The Indian pesticides market reached a value of around **INR 212 billion in 2021** and is expected to reach **INR 320 Billion by 2027**.

#### What are the Recent Government Initiatives for Sustainable Farming?

- Promotion of Alternate Nutrients for Agriculture Management Yojana (PRANAM)
- Rashtriya Krishi Vikas Yojana (RKVY)
- Liquid Nano-Urea Fertiliser

#### What are the Issues Associated with Chemical Fertilisers and Pesticides?

- **Inappropriate Use of Fertilisers:** **292 out of the 525 districts (56%)** in the country account for **85% of its fertiliser use**. In addition, the ratio of consumption of fertiliser has been **skewed towards urea**.

- Since, there are no restrictions on who can buy subsidised fertiliser, or on how much they can buy, overuse of fertilisers in cultivation is increased, as well as the **urea is getting diverted to other industries (like dairy, textile, paint, fisheries, etc.)**
  - Overuse of urea has led to **falling crop response to fertilisers**, which, in turn, has **decreased farm productivity** and **farmers' profitability adversely**.
- **Biomagnification:** The chemicals used in the synthetic fertilisers contain highly toxic substances resulting in **accumulation of toxic substances (biomagnification)** in the tissues of organisms at successively **higher levels in a food chain** deteriorating their health.
- **Creating Dead Zones:** Chemical fertilisers contain **phosphates, nitrates**, when left unused in soil can **run off into coastal waters**, lakes and streams, resulting in **eutrophication** ( addition of excessive amounts of nutrients).
  - It also catalyses the growth of algae. The algae deplete the water of oxygen before decomposing, **suffocating species that live in the area aids the creation of dead zones**.
- **Deteriorating Soil Health:** Agrochemicals overuse can contribute to **soil acidification**, thereby reducing the content of organic matter (humus content) **stunting plant growth** and even leading to the release of **greenhouse gases** in the atmosphere.
- **Disproportionate Usage of Pesticides:** Due to lack of scientific awareness regarding the proportionate use of pesticide, a large number of farmers in India end up using **excessive amounts of pesticides**.
  - Also, **pesticide licensing and marketing lacks proper regulation** in India including interdepartmental cooperation and coordination. It is estimated that over **104 pesticides that are still produced/used in India**, have been banned in two or more countries in the world.

### What Should be the Way Forward?

- **Inclusion of Bio-Fertilizers:** Use of **biofertilizers** (like **Rhizobium**) should be promoted as they are **cost effective, eco-friendly** and when they are required in bulk can be generated at the farm itself. They **increase crop yield up to 10-40%** and **fix nitrogen up to 40-50 Kg**.
- **Ensuring Year-Round Ground Cover:** In erosion-prone regions, farmers can plant **cover crops or perennial species to prevent periods of bare ground on farm fields** when the soil (and the soil and nutrients it contains) are most susceptible to erosion and **loss into waterways**.

- Also, trees, shrubs and grasses can be planted along the edges of fields, especially important for a field that borders water bodies.
  - **Planted buffers** can help **prevent nutrient loss from fields** by absorbing or filtering out nutrients before they reach a water body.
- **Rural Fertiliser Banks:** Fertilisers can be **regulated by setting up rural fertiliser banks**. **Aadhaar-linked accounts** should be required for fertiliser purchases, and digital records of sales can be kept that can be used at the time of **crop surveillance**.
  - In addition, **nano-urea** should be promoted as well.
- **Crop Audit and Farmer Awareness:** Panchayat level **crop audit** can be conducted by experts from time to time to trace the content of fertilisers and pesticides. Also, **multiple awareness programmes** are needed to inform farmers about **proportionate use of fertiliser and pesticide**.
- **Towards Organic Farming:** A **slow but significant shift** towards chemical-free agriculture is required, as well as **promoting natural and organic methods** like using manure, crop rotation, intercropping, biological pest control, which consumes less energy, **reduces nitrogen runoff induced pollution**, and is a **frontline fighter to tackle global warming**.



## Telecom Sector: Digital Fabric For India

*This editorial is based on "Letting go of a chance to democratise telecom services" which was published in The Hindu on 01/10/2022. It talks about issues related to Telecom Sector in India and Draft Telecommunication Bill 2022.*

**Tag:** Indian Economy, GS Paper-3, Industrial Growth, IT & Computers, GS Paper-2, Government Policies & Interventions

**Telecom sector** has a **multiplier impact** on the economy and in India, it is going through a booming phase playing an important role in **economic growth** and **social transition** of the country.

According to **Telecom Regulatory Authority of India (TRAI)**, India is currently the world's **2<sup>nd</sup> largest telecommunication market** with an overall teledensity of **85.11%**(July 2022). **Internet** and broadband penetration in the country is increasing steadily, boosting the **Government's Digital India campaign** and recently India has joined the race in **5G**.

Yet there are still gaps, such as **high right-of-way costs**, low-rural penetration of modern telecom infrastructure, **data privacy**, and **mismanagement of e-waste**. Therefore, a **stringent legal framework** governing telecommunication in India is essential.

### **What is the Current Status of the Telecom Sector in India?**

- **Expanding Telecom Market:** India is currently the world's **2<sup>nd</sup>-largest telecommunications** market with a subscriber base of **1.20 billion** and has registered strong growth in the past decade and a half.
  - Also, India is on its way to becoming the **2<sup>nd</sup>-largest smartphone market globally by 2025**.
- **Contributor to Government's Non-Tax Revenue:** The telecom sector contributes significantly to the **government's non-tax revenue** (via spectrum auctions, one-time fee from new operators and recurring license fees and **spectrum charges**). The Digital India program is also almost completely dependent on this sector.
  - **100% Foreign Direct Investment (FDI)** has now been allowed in the Telecom sector under the automatic route.
- **Major Government Initiatives:**
  - **Full Mobile Number Portability (MNP):** Government has allowed **One Nation Full Mobile Number Portability (MNP)**. This has enabled the subscribers to change their licence service area and **still retain their mobile number**.
  - **BharatNet:** The Government is implementing the flagship **BharatNet project** (in phases), to link each of the **2.5 lakh Gram Panchayats of India through optical fibre network**. This is the largest rural connectivity project of its kind in the world.
  - **Booming Era of 5G:** GOI has recently rolled out **5G** in India that will not only facilitate **communication technology** but also add a new dimension to the missions like '**Digital India**' and '**Smart Cities**'.
  - **Draft Telecommunication Bill 2022:** The Government of India has expressed plans to **expand the definition of "telecommunication services"** by including **Over-the-top (OTT) communication** services under the same umbrella, which means that **internet-based communications and OTT would both require a licence to offer services**.
    - The plan also lays down provisions for **unutilised spectrum** to be **shared, traded, leased, surrendered, returned, or surrendered**.

### **What are the Issues Associated With the Telecom Sector in India?**

- **Rural-Urban Disparity:** Although adequate teledensity has been achieved, there is a significant **discrepancy**

**in the share of telecom subscribers** between urban (**55.42%**) and rural (**44.58%**) areas of India.

- Also, **fixed broadband penetration** in the country is among the lowest in the world at only **1.69 per 100 inhabitants**.
- **Right of Way Challenge:** The **Right of Way** has been a contentious issue for the Indian telecoms sector due to variable and **complex legal procedures** across states, **non-uniformity in levies**, and **approvals from the Forest Department, Railways and National Highway Authority**, causing delays in paperwork.
  - Various planning and rollout processes for **towers and fibre across** the country have been affected by this delay.
- **Issue with Over the Top Platforms (OTT):** OTT platforms like **Whatsapp and Telegram** use the network infrastructure of telecom service providers like **Airtel and Jio** to provide services such as voice calls and SMS services.
  - **Telecom Service Providers (TSPs)** allege that these features result in a **double whammy for them** as they **cut into their sources of revenue** (voice calls, SMS).
- **Lack of Spectrum Availability:** While **spectrum availability is a larger global problem**, it is particularly **acute in India**.
  - According to the **Cellular Operators Association of India Annual Report**, operators in India possess significantly smaller amounts of spectrum as compared to international standards, approximately **13 MHz on average**.
- **Mismanagement of E-waste:** Telecom industry impacts the environment in multiple ways, including through the generation of **e-waste**. In India, more than **95%** of e-waste is **illegally recycled by informal waste pickers**.
- **Lack of Optical Fibre Connectivity:** Data consumption is growing rapidly in India, and the lack of fibre networks is compromising the ability of telcos to offer reliable and high-speed connectivity.
  - India will need **16 times more fibre** to smoothly transition to **5G**.

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

- **Social Inclusion From Digital Inclusion:** The **Internet** does not discriminate between people, **it is the beacon of democracy**. By expanding the telecom infrastructure and connecting the digitally unconnected areas in India, **social inclusion** can be achieved.
  - A pregnant woman in hilly areas can obtain primary healthcare from home via **telemedicine**. **Physically disabled people** can explore the multitude of **metaverse**, and the **elderly** can relive their old days through **VR technology**.

- Also, social media platforms will enable the **urban LGBTQIA+ community** to speak out and communicate with **rural LGBTQIA+** people who feel **stifled by societal restrictions**.
- **Promoting Digital Literacy:** Internet access and digital literacy are dependent on each other, and creation of digital infrastructure must go hand in hand with the creation of digital skills.
  - **Digital Foundation Centres** can be established in rural areas to **educate and empower** not only young students, but also the working population, especially **women**.
- **Towards Seamless and Secure India:** It is necessary to set up **sector-specific data management and grievance redressal standards** (including OTT platforms) to ensure **seamlessness and security** of digital communication across the country.
  - At the same time, **securing the interests of citizens** with special focus on ensuring **individual autonomy and choice**.
- **Single Window for Right to Way:** A collaborative institutional mechanism between the **Centre, States and Local Bodies** should be developed to speed up the **Right of Way** process.
- **Prioritising Research and Development in Telecom:** There is a need to emphasise upon **R&D** in the telecom sector and creating an environment where hardware components like **mobile handsets, CCTV cameras, touch screen monitors, etc.** can be manufactured and exported by India and transform the country into a **manufacturing and exporting hub**.



## Arctic Region and Melting Aspirations

*This editorial is based on "Fast-melting Arctic ice is turning the ocean acidic, threatening life" which was published in The Indian Express on 03/10/2022. It talks about the impact of Climate Change on the Arctic Region and related issues.*

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

**Arctic region**, the enormous area around the **North Pole** spreading over **one-sixth of the earth's landmass**. It is increasingly being affected by external global forces: **environmental, commercial and strategic** and in turn is poised to play an increasingly greater role in shaping the course of world affairs.

By far, **Climate Change** and the rapid **melting of the Arctic Ice cap** is the most important phenomenon that is redefining the global perspective on the Arctic.

The impact of rapid changes in the Arctic region goes beyond the **littoral states**. There is a need for **global cooperation** to respond to the current challenges regarding **conservation, governance and the exploration of Arctic**.



### What is the Significance of the Arctic Region?

- **Economic Significance:**
  - **Mineral Resources and Hydrocarbons:** Arctic region has **rich deposits of coal, gypsum and diamonds** and also substantial reserves of **zinc, lead, placer gold and quartz**. **Greenland** alone possesses about a quarter of the world's rare earth reserves.
    - The **Arctic** also contains a wealth of unexplored hydrocarbon resources amounting to **30% of the world's undiscovered natural gas**.
    - India is the **3<sup>rd</sup> largest energy-consuming country** in the world, the **3<sup>rd</sup>-largest oil importer**. Increasing ice-melt makes these resources more accessible and feasible for extraction.
      - The Arctic can therefore **potentially address India's energy security** needs and deficiency of **strategic and rare earth minerals**.
- **Geographical Significance:** The Arctic helps circulate the **world's ocean currents**, moving cold and warm water around the globe.
  - Also, **Arctic sea ice** acts as a huge **white reflector** at the top of the planet, bouncing some of the sun's rays back into space, helping keep the Earth at an even temperature.

### ➤ Geopolitical Significance:

- **Countering China From Arctic:** The melting Arctic ice is also raising the geopolitical temperatures to levels not seen since the Cold War. China referred to **trans-Arctic shipping routes as the Polar Silk Road**, identifying it as a third transportation corridor for the **Belt and Road Initiative (BRI)** and is the only country apart from Russia, to be constructing **nuclear ice-breakers**.
  - As a result, it is **crucial to counter China's soft power manoeuvres** in the Arctic, in line India is also taking a keen interest in the Arctic states through its **Arctic policy**.

### ➤ Environmental Significance:

- **Arctic-Himalaya Link:** The **Arctic and the Himalayas**, though geographically distant, are **interconnected and share similar concerns**.
  - The **Arctic meltdown** is helping the scientific community to better understand the glacial melt in the Himalayas, which has often been referred to as the **'third pole'** and has the **largest freshwater reserves after the North and South poles**.
  - Therefore, the study of the Arctic is critical to Indian scientists. In line, India launched its first **scientific expedition to the Arctic Ocean in 2007** and opened the **Himadri research base** in the **Svalbard archipelago (Norway)** and has been actively engaging in research there ever since.

## What are the Recent Challenges Related to the Arctic Region?

- **Arctic Amplification:** In recent decades, the **warming in the Arctic has been much faster than in the rest of the world**.
  - The **permafrost** in the Arctic is thawing and in turn **releasing carbon and methane** which are among the major **greenhouse gases** responsible for **global warming** amplifying the melting of ice, thereby driving the arctic amplification.
- **Rising Sea Level Concern:** Melting Arctic ice adds to rising sea levels, which in turn increases **coastal erosion** and **elevates storm surge** as warming air and ocean temperatures create more frequent and intense coastal storms like **cyclones**.
  - It can **significantly impact India** which has a **7,516.6 km of coastline** and **important port cities**.
    - According to the **World Meteorological Organisation's report, 'State of Global Climate in 2021'**, sea level along the Indian coast is rising faster than the global average rate.

- **Emerging Race Course:** The **opening of the shipping routes** and possibilities in the arctic is giving thrust to the **race of resource extraction** leading to the geopolitical poles: **US, China and Russia**, jockeying for position and influence in this region.
- **Tundra Degradation:** Tundra is returning to **swampy** state because sudden storms are ravaging coastlines especially **interior Canada and Russia**, and **wildfires** are damaging permafrost in tundra areas.
- **Threat to Biodiversity:** The **absence of year-long ice** and higher temperatures are making the survival of Arctic animal life, plants and birds difficult.
  - **Polar bears** need sea ice to hunt seals as well as to move across the large home ranges. Due to **shrinking ice**, life of polar bears along with other Arctic species are under threat.
  - Also, warming seas have triggered a **poleward shift in fish species** reshuffling the **food web**.

## What Should be the Way Forward?

- **Opportunity for India:**
  - **Whole-of-Government Focus:** Presently, the **National Centre for Polar and Ocean Research (NCPOR)** deals with polar and Southern Ocean realms. **includes the Arctic**. The **Ministry of External Affairs** provides the external interface to the Arctic Council.
    - There is a **need to devise a single nodal body to explicitly deal with Arctic Research and Development** and coordinate all the activities of the Government of India relating to the Arctic.
  - **Beyond Scientific Approach:** India needs to go beyond the purely scientific approach in the Arctic.
    - In keeping with its growing stature and consequent say in world affairs, it **should be well positioned** to understand the dynamics of the **Arctic demography and governance**, and become the **voice of arctic tribes and raising their issues in global forums**.
- **Towards Global Ocean Treaty:** It is important to place **global ocean governance** under scrutiny and make progress towards a **collaborative global ocean treaty** with **special attention to polar regions** and associated sea level rise challenges.
- **Safe and Sustainable Exploration:** There is a need to **promote safe and sustainable resource exploration** and development in the arctic region, with **efficient multilateral actions** taking into account cumulative environmental impacts.





## Making Every Drop Count

This editorial is based on “*Making every drop count: On the Jal Jeevan Mission*” which was published in *The Hindu* on 04/10/2022. It talks about the survey conducted by the Ministry of Water Resources to assess the functioning Jal Jeevan Mission.

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

**Water** is a natural and economic resource, which is unique and irreplaceable. At the same time, it is **unevenly distributed on our planet**, which underscores its competing and conflicting nature. A suitable example of the impact of **unequal distribution** of this scarce resource on an ever-increasing population is the **case of India**.

India accounts for **18% of the population** of the entire world. And to serve the basic need of water for this population, India has only **4% of the world's freshwater resources**, illustrating the challenge of water distribution and access.

Government of India through its **Jal Jeevan Mission (Rural & Urban)** recognises the ‘right to water’ and aims to provide **equitable distribution of fully functional tap water connection**.

But **mismanagement of water bodies, contamination, and excessive use of groundwater** highlights the misuse of ‘right to water’ along with major challenges related to water management and calls for urgent attention towards **sustainable water management**.

### What is the Rationale Behind Right to Water?

- **Right to Water As a Human Right:** The **United Nations General Assembly** explicitly recognised the **human right to water and sanitation**, and acknowledged that **clean drinking water and sanitation** are essential to the realisation of all human rights.
- **Under the Periphery of Right to Life:** In India, the **right to water is not enshrined as a fundamental right** in the constitution. However, both the courts, at the state as well as federal level have interpreted the right to safe and basic water and sanitation encompasses **Article 21 of the Indian Constitution** (right to life and liberty).
- **Sustainable Development Goals:** **SDG 6** calls for ensuring availability and sustainable management of water and sanitation for all, **confirms the importance of water and sanitation in the global political agenda**.

### What is the Current

#### Status of the Jal Jeevan Mission?

- **Objective:**

- **Jal Jeevan Mission (Rural):** It aims to provide to all households in rural India safe and adequate water through individual household tap connections by **2024**.
- **Jal Jeevan Mission (Urban):** It complements JJM(R) and has been designed to provide universal coverage of water supply through functional taps in all **4,378 statutory towns** of India.
  - It also aims to provide coverage of **sewage/septage management** in **500 AMRUT cities** as the other focus area.
- **Performance: Goa, Telangana and Haryana** have achieved **100% tap connectivity** to all households.
  - Also, Union Territories like **Puducherry, the Andaman and Nicobar Islands, Dadra and Nagar Haveli, and Daman and Diu**, have also provided **100% of their households with tap water connections**.
- **Water Resources Ministry Report:** According to a survey commissioned by the **Union Ministry of Water Resources** to assess the functioning of the government's marquee Jal Jeevan Mission:
  - Around **62% of rural households in India have fully functional tap water connections** (at least 55 litres of per capita per day) within their premises.
  - However, the report mentions a concerning problem of **chlorine contamination**.
    - Though 93% of the water samples were reportedly free of bacteriological contamination, **“most of the anganwadi centres and schools, had higher than the permissible range of residual chlorine and indicated inappropriate local dosing**.

### What are the Major Challenges

#### Related to Water Resources in India?

- **Sinking Ground Water Resource:** **Unregulated pumping** due to rapid **urbanisation** causing a decline in this valuable resource.
  - In most parts of northwest India, **groundwater is now available 100 metres below ground level**. With the current extraction rate, groundwater will be available 200 and 300 metres below ground level in the future.
  - As the water from the **aquifers** keeps disappearing, scientists warn that land may suddenly or gradually sink, leading to a phenomenon known as **land subsidence**.
- **Rising Water Pollution:** A large amount of **domestic, industrial, and mining waste** is discharged into water bodies, potentially leading to **waterborne diseases** and **eutrophication**, which can negatively impact the food web and especially aquatic ecosystems.

- **Irregularities in the Water System Due to Climate Change:** Temperature fluctuations are leading to shifts in precipitation patterns, sea levels are rising, and because of the increase in temperature, the **evaporation process is accelerating, causing clouds to become heavier.**
  - As soon as clouds are formed, **trade winds are unable to blow them due to their heavy weight**, therefore more rainfall is observed in oceans itself, causing a **drought in rainfall-dependent areas** or excessive rainfall/cloudbursts is observed in particular places, causing **floods.**
- **Lack of Efficient Wastewater Management:** With water resources in short supply in India, inefficient wastewater management is crippling the country's ability to make the most economic use of it.
  - According to a recent report published by the **Central Pollution Control Board (March 2021)**, India's current water treatment capacity is **27.3%** and the sewage treatment capacity is **18.6%**.
    - Still, **most sewage treatment plants do not function at maximum capacity** and do not conform to the standards prescribed.

### What Should be the Way Forward?

- **Decentralised Water-Usage Audit:** There is a need for a **dedicated water usage audit mechanism in India** to identify and eliminate water loss in water distribution systems at localised level caused by **lack of awareness, overuse, and pollution of water bodies.**
- **Localised Water Resource Management:** The Jal Jeevan Mission's role must be viewed from a dual perspective, **emphasising both supply management and sustainability of water resources**, as Jal Jeevan itself symbolises the **life of water**. The healthy life of mankind can only be imagined when it is in harmony with the healthy life of water.
  - Therefore, there is a need to **deploy effective watershed management plans at city level** and **rain water harvesting** should be made mandatory for all the households.
- **Blending Women Empowerment with Jal Jeevan Mission:** Because water scarcity is disproportionately detrimental to women, ensuring accessibility and availability of tap water can help a woman living in rural areas to **give time to her children** and **participate in the development process**. Moreover, this mission can help to **curtail the practice of Water Wives prevalent in Maharashtra.**
  - **50% women's participation** in the **Village Water & Sanitation Committee (VWSC)** is a welcome step in this direction.

- **Water Conservation Zones and Jal Dhan Campaign:** To give time for water to replenish, there is a need to **recharge or ban further extraction of groundwater resources in most affected areas**, which can be achieved by setting up water conservation zones in cities with **zero-exploitation.**
  - Awareness campaigns should also be conducted to inform the citizens regarding efficient use of water, which can be represented by a **mascot named "Neer".**



## Refocusing on Sustainable Livestock Sector

*This editorial is based on "Refocusing our lens to view wildlife health holistically" which was published in Hindustan Times on 04/10/2022. It talks about the current state of Animal health in India and related issues.*

**Tag:** Agriculture, GS Paper-1, GS Paper-3, Agricultural Resources, Growth & Development, Economics of Animal-Rearing

**Animal Husbandry** is an important sub-sector of the Indian agricultural economy. India is blessed with a **huge livestock population** reared under diverse production systems and **agroclimatic conditions.**

Livestock sector plays a **multi-faceted role in providing livelihood support** to more than **60% of the rural population** in India and is significant for **nutritional security of India.**

However, this live asset is facing a number of challenges, including **scarcity of feed and fodder**, **disease outbreaks (lumpy skin disease)**, **poor livestock extension** and the **unorganised markets for livestock products** that demands serious attention to refocus our lens to view livestock health and productivity holistically.

### What is the Contribution of Livestock in the Indian Economy?

- As per the **Economic Survey-2021**, the contribution of Livestock in total agriculture and allied sector **Gross Value Added (at Constant Prices)** has increased from **24.32% (2014-15) to 28.63% (2018-19).**
- **Employment and Gender Equality:** Besides their monetary benefit and providing a steady stream of food and revenues for households, livestock provide employment to the rural family, act as insurance during crop failures and the **number of livestock owned by a farmer determines the social status** among the community.

- **Dairy** is the single-largest agri commodity in India. It contributes **5% to the national economy** and employs 80 million dairy farmers directly.
- It also contributes to **gender equality** by generating opportunities for women.
- **Enhance Soil Fertility:** It generates **in situ fertilisers** for enhancing the soil fertility, and also recycles waste products and residues from cropping or agro-industries.

### **What are the Current**

#### **Challenges Related to Livestock in India?**

- **Rising Animal Diseases:** There has been an increase in communicable diseases among animals. Most recent is the **outbreak of lumpy skin disease (LSD)** in cattle across various states of India.
  - In **Rajasthan**, more than **1 million cattle** have been diagnosed with lumpy skin disease. Down south, **African swine fever** was reported in Kerala.
- **Shortage of Feed and Fodder:** Due to rapid **urbanisation and shrinking land sizes (partition of land, generation after generation due to inheritance setup of India)** the livestock sector is facing severe feed and fodder shortage.
  - Also, India has only **5% of its cultivable land under fodder production**. Whereas, area under **permanent pastures** and grazing lands comprises a mere **3.30% of the total area**, and has been declining steadily.
  - According to a report of **ICAR-Indian Grassland and Fodder Research Institute (IGFRI)**, there is a deficit of **23.40%** in the availability of **dry fodder**, **11.24%** in **green fodder**.
- **Inadequate Financial Attention:** The livestock sector does not receive the **policy and financial attention it deserves**. The sector receives only about **12% of the total public expenditure on agriculture and allied sectors**, which is disproportionately lesser than its contribution to agricultural GDP.
- **Underdeveloped Product Market:** Indian livestock product markets are mostly underdeveloped, uncertain, **lack transparency** and often **dominated by informal market intermediaries**.
  - Lack of access to markets act as a **disincentive to farmers to adopt improved technologies** and quality inputs, while **dairy** is the only product to see uniform changes, **other products are far behind**.
- **Issues Related to Cross-Breeding:** Although, **crossbred dairy cattle** exhibit strengths of the breeds from which they descend, it does **multiply their capacity of production but also adds vulnerability to several diseases**, nutritional deficiencies, and environment adaptations.

- **Impact of Climate Change on Livestock:** Warm and humid conditions cause heat stress, which **affects behaviour and metabolic variations on livestock** or even mortality.
  - The **changing monsoon season** disrupts their **meeting season** and in times of calamities like floods, **animals suffer the same horrendous effects as people:** injury, starvation, thirst, displacement, illness, and stress. Yet, since they are voiceless, **they stand behind in the rescue line**.
- **Lack of Adequate Extension Services:** Livestock extension service includes **appropriate veterinary services (Vaccination, prevention and control of disease)**, livestock awareness and deworming.
  - While the role of extension services in enhancing crop production and productivity is widely recognized, **livestock extension never got the attention it deserves, and this has been one of the reasons for low productivity** of India's livestock sector.

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

- **Fodder Security:** Along with Food Security for the citizens, **there is need to give equal attention to fodder security** maintaining the accessibility, availability and sustainability parameters.
  - According to the **Ministry of New and Renewable Energy (MNRE)** report, India generates on an average **500 million tons of crop residue** per year out of which **92 million tons is burned each year**, which can be potentially used for animal fodder.
    - There are already proven **high yielding varieties of fodder and technologies** that can be utilised such as **silage making, hay making and urea-molasses treatment for crop residue**.
- **Genetic Surveillance:** **Genetic Surveillance** especially of viruses needs to be strengthened for livestock in India. As the **lumpy skin disease outbreak continues to spread rapidly** with high mortality, there is a need to **scrutinise its genetic structure and analyse its behaviour** to tackle this issue effectively.
- **Unified Livestock Market:** It is important to **strengthen Industry-Farmer linkages** in a variety of livestock products, **as in case of dairy (Amul)**, to increase **commercialization of livestock production and provide farmers with additional income security**, so that they will also pay more attention to their livestock health.
- **Indigenous Breed Gene Banks:** It is important to preserve the indigenous breed due to its **ability to adapt to diseases, fragile climatic conditions, and the nutritional value of its milk**.

- Gene banks can be created that will assist various research institutions in conducting research as well as help in conserving indigenous breeds.
- **Veterinary Ambulance Service and Compulsory Livestock Vaccination:** In order to provide immediate primary treatment for injured animals, ambulance services should be expanded in veterinary hospitals.
  - In addition, **livestock primary vaccination should be made mandatory**, and **regular veterinary surveillance** should be conducted in a time-bound manner.
- **Towards One-Health Approach:** There is a need to recognize **One Health Approach** and understand the interconnection between people, animals, plants, and their shared environment and encourage collaborations in research and sharing of knowledge at multiple levels across various disciplines like human health, animal health, plants, soil, environmental and ecosystem that can help in **health sustainability and tackling zoonotic diseases** as well.



## Strengthening the CSR framework

*This editorial is based on "Strengthening the CSR framework is a profitable idea" which was published in The Hindu on 07/10/2022. It talks about the current state of Corporate Social Responsibility in India and related issues.*

**Tag:** Indian Economy, GS Paper-2, Government Policies & Interventions, GS Paper-3, Mobilisation of Resources, Management of Social Sector/Services

India has a long history of **individual and corporate philanthropy** and the concept of **Social Responsibility** has been **integral to Indian culture and value system** since ancient times. India's pioneer industrialist and Tata Group founder **J.R.D Tata** is the **world's biggest philanthropist of the last century** with donations worth 102.4 billion dollars.

With the **enactment of Companies Act, 2013** and subsequent amendments, the **concept of Corporate Social Responsibility (CSR)** has entered a new phase of evolution in India i.e. **from being a voluntary activity to a statutory responsibility**.

While almost all leading companies in India have their own CSR practices and policies, **absence of strict regulations and laws around CSR** makes it inconsistent and inefficient.

Also, some **grey areas in the provisions of Section 135 of Companies Act** need further clarification for more **efficient implementation of the CSR**.

## What is Corporate Social Responsibility?

- The concept of **Corporate Social Responsibility (CSR)** is the idea that companies should assess and take responsibility for their effects on the **environment and on social welfare**, and to **promote positive social and environmental change**.
- The four main types of corporate social responsibility are:
  - **Environmental Responsibility**
  - **Ethical Responsibility**
  - **Philanthropic Responsibility**
  - **Economic Responsibility**
- The **Corporate Social Responsibility** provisions within Companies Act is applicable to companies with an **annual turnover of 1,000 crore and more**, or a **net worth of Rs. 500 crore and more**, or a **net profit of Rs. 5 crore and more**.
  - The Act requires companies to set up a **CSR committee** which shall recommend a **Corporate Social Responsibility Policy** to the **Board of Directors** and also monitor the same from time to time.

## What are the Activities Included under CSR Category?

- Specified under **Schedule VII of the Companies Act 2013**, some major activities include:
  - Eradicating **hunger, poverty and malnutrition** and promotion of education, **gender equality**.
  - Fighting **Acquired Immune Deficiency Syndrome (AIDS)**, Human Immunodeficiency Virus, and other disorders
  - Ensuring **Environmental Sustainability**
  - Protection of **National Heritage, Art and Culture** including restoration of buildings and sites of historical importance and works of art.
  - Measures for the benefit of **armed forces veterans, war widows** and their dependents.
  - Training to **promote rural sports, nationally recognized sports, paralympic sports and Olympic sports**
  - Contribution to the **PM's National Relief Fund** or any other fund set up by the Central Government for socio-economic development and relief.

## What are the Main Challenges Related to CSR Initiatives in India?

- **Lack of Consensus Between the CSR Agencies:** There is **absence of consensus among the organisations** that organise and contribute in CSR processes in India.
  - This leads to **duplication of CSR programs** by the business houses for the society.

- **Lack of Community Participation:** There is a **lack of interest of the local community in participating** in corporate social responsibility activities of companies.
  - This is largely attributable to the fact that there exists **little or no awareness about corporate social responsibility** within the local communities.
- **No Clear Guidelines About CSR:** There are **no clear principle and directions about the CSR in India** and because of **lack of clear cut statutory guidelines**, the level of CSR depends upon the size of organisations, which means bigger the organisation, bigger the CSR programs.
  - This is also a **barrier for the small organisations** that want to contribute to this field.
- **Lack of Transparency:** Due to the **lack of time-bound audits**, many companies in India do not disclose information about the CSR activities they participate in, such as funds used for the project, a list of CSR initiatives, and other assessments.
  - Because of this these **companies fail to build up a sense of belongingness** and connectivity with the society as well.
- **Lack of Corporate-NGO Connect:** Because a **large number of NGOs in India are not recognized**, corporates have fewer choices and benefits are limited.
  - Additionally, **corporations often partially fund NGOs to gain visibility and brand recognition**, not realising the main purpose of CSR.

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

- **Achieving Sustainable Development Goals with CSR:** As India has made a sincere effort to prioritise and achieve **Sustainable Development Goals**. **NITI Aayog** has also made this mainstream to the national agenda, it is the time to **integrate CSR and the SDG targets** under a **common umbrella**.
  - In this way, India can **improve accountability of CSR** at the same time moving towards **green and sustainable growth**.
- **Maintaining Transparency and Promoting CSR Awareness:** **Transparency, accountability and dialogue** can help to make CSR more trustworthy and push up the **standards of other organisations at the same time**.
  - Companies should prioritise **environmental restoration** in the area where they operate, earmarking **at least 25% for environment regeneration**.
  - Also, for its success, there is also a need to **spread awareness regarding CSR initiatives** among the general public, **especially NGO located in remote areas or villages**.

- **Unified CSR Interface:** There is a need to **curate a national-level platform centralised by the Ministry of Corporate Affairs** where **all states can list their potential CSR-admissible projects** so that companies can assess where their CSR funds would be most impactful across India.
  - **Invest in India** and **'Corporate Social Responsibility Projects Repository'** on the **India Investment Grid (IIG)** can serve as a guide for such efforts.
  - Also, there is a need to devise a **single national level agency** acting as a **nexus of funding from corporate and percolating it for social betterment** in a **time bound and duty-bound manner**.
- **Linking CSR With Government Policies:** CSR can be linked with current government policies, especially for the development of rural or backwards areas.
  - For instance, **Saansad Adarsh Gram Yojana (SAGY)**, where each **Member of Parliament adopts a Gram Panchayat** and guides its holistic progress giving importance for social development at par with infrastructure.
    - This **initiative can be linked with CSR** for better **nourishment of Gram Panchayats**.
- **Towards Circular Economy: End-of-life concepts** for products should be replaced by developing technologies and regulations for **recyclability and reusability of products** as part of a company's corporate social responsibility.
  - By doing so, the **life cycle of products can be extended, wastage can be minimised and pollution reduced**. In line, India can transition towards a **circular economy**.
  - The government should also **recognize and reward the business houses working well in the area of CSR** to motivate them and enhance the scale of CSR in India.



## **Atma Nirbhar in Defence Production**

*This editorial is based on "Atma Nirbhar in defence production: Where India stands among Indo-Pacific nations" which was published in The Indian Express on 08/10/2022. It talks about the current state of Indigenisation of Defence Sector in India.*

**Tag:** Governance, GS Paper-3, Defence Technology, Indigenization of Technology, GS Paper-2, Government Policies & Interventions

The **Defence Sector in India** is identified as an important area with an ocean of opportunities for **self-reliance**. With large-scale modernisation requirements of the **Indian Armed Forces**, India's vision for **Atma Nirbhar Bharat** has provided further impetus to realise the goal of indigenisation of Defence Sector.

According to a study released by the **Stockholm International Peace Research Institute (SIPRI)**, India ranks **4<sup>th</sup> among 12 Indo-Pacific nations** in self-reliant arms production capabilities. But the concern is, **India is also ranked as the 2<sup>nd</sup> largest importer of arms for its armed forces in 2016-20**.

In spite of significant efforts to become self-sufficient in defence production, the **indigenous texture still lacks its flavour** due to higher import bills and it needs to be addressed.

### What is Indigenisation of Defence?

- **Defence Indigenization** is the process of developing and manufacturing defence equipment within a country as a way to reduce import dependency as well as achieve self-reliance.
  - **Defence Research Development Organisation (DRDO), Defence Public Sector Undertakings (DPSUs)** are the major front runners in Atma Nirbhar Bharat vision.
- **1983** is marked a significant milestone in **defence indigenization** as the government approved the **Integrated Guided Missile Development Program** to develop 5 missile systems:
  - **Prithvi (surface-to-surface)**
  - **Akash (surface-to-air)**
  - **Trishul (the naval version of Prithvi)**
  - **Nag (anti-tank)**
  - **Agni Ballistic Missiles**

#### What is India's Recent Indigenous Move in the Defence Sector?

- **Defence India Startup Challenge**
- **INS Vikrant: Aircraft Carrier**
- **Dhanush: Long-range artillery gun**
- **Arihant: Nuclear Submarine**
- **Prachand: Light Combat Helicopter**

### What are the Challenges Related to the Defence Sector in India?

- **High Dependence on Imports:** The defence sector in India relies heavily on imports, and changing geopolitical circumstances cause it to be delayed. **For instance**, amid the **Russia-Ukraine war**, India is awaiting the **delivery of the S-400 Air Defence Systems** under a deal signed in 2018.

- In addition, several new deals are in line including **12 Sukhoi-30MKI aircraft and 21 MiG-29** fighter jets for the **Indian Air Force**.

- **Narrow Private Participation:** Private sector participation in the defence sector is constrained by the **lack of a conducive financial framework**, that means our defence production is unable to benefit from **modern design, innovation, and product development**.
- **Lack of Critical Technology:** Lack of design capability, **inadequate R&D investment**, inability to manufacture major subsystems and components hamper indigenous manufacturing.
  - Also, the **relationship between R&D institutions, production agencies (public or private) and end-users** is extremely fragile.
- **Lack of Nexus Between Stakeholders:** India's defence manufacturing capability is hindered by **overlapping jurisdictions** between the **Ministry of Defence** and the **Ministry of Industrial Promotion**.

### What Should be the Way Forward?

- **Indigenisation with Private Boom:** There is a **need to revitalise and regulate entry points for Private sector** to enter in defence production embracing sustainable design and development to meet the needs of Indian Armed Forces in coming years.
- **Defence Industrial Corridors (DICs):** It is necessary to **extend dedicated defence industrial corridors** across the length and breadth of the country in order to harness and channel the potential of **Indian MSMEs and DPSUs** in the defence manufacturing sector, as well as to facilitate the smooth transit of raw materials.
  - Government's initiative to establish two **Defence Industrial Corridors (DICs) in Uttar Pradesh and Tamil Nadu** is a welcome step in this direction.
- **Defence Investor Cell:** It is necessary to strengthen investment in defence by providing entrepreneurs/industry with a **single point of contact to deal with all defence production-related queries, procedures and regulatory requirements** for investment in the sector.
  - The **SRIJAN portal** can be linked with Investment Cell.
- **Inclusion of Defence Entrepreneurs in Policy Making:** Through streamlining procurement and shaking hands with **newer defence entrepreneurs for better policy making and implementation**, can reduce the qualitative and quantitative gaps in its defence sector.
- **Tapping the World's Defence Market:** There is also a need to give **adequate attention to the promotion of exports** of Indian Defence products.

- It is important to **simplify and streamline export authorisation procedures** through an online mechanism and targeted outreach efforts.
- **Defence Exim Portal** is a welcome step in this direction.
- **Strengthening Economy with Strategic Independence: Indigenised India's defence sector** would further strengthen the **economy by generating employment opportunities** and saving the exchequer by **reducing the import burden**.
- **Also, Self-sufficiency** in defence will fundamentally lead to India's **strategic independence**.



## Towards Open and Secure Indo-Pacific

*This editorial is based on "Drafting a robust security strategy for Indo-Pacific" which was published in Hindustan Times on 07/10/2022. It talks about the current geopolitics of the Indo-Pacific region with reference to the new trilateral format between France, India and the United Arab Emirates.*

**Tag:** International Relations, GS Paper - 1, Groupings & Agreements Involving India and/or Affecting India's Interests, Bilateral Groupings & Agreements, India and its Neighbourhood

In a world undergoing **dynamic transformation**, few regions are changing more rapidly than the others like the **Indo-Pacific region**. It is indisputable that the Indo-Pacific is the **21st century's locus in trade and technology incubation** that makes Indo-Pacific a prominent addition to the **geopolitical lexicon**.

In line, the **security and stability of this region remains a major issue** and goes beyond a mere consideration of emerging political equations. And to achieve **open and secure Indo-Pacific**, stakeholder nations need a '**collaborative management**' approach.

### What is the Significance of the Indo-Pacific?

- The **Indo-Pacific region** is one of the most populous and economically active regions of the world which includes four continents: **Asia, Africa, Australia and America**.
- The dynamism and vitality of the region is self-evident, **60% of the world's population and 2/3rd of the global economic output makes this region a global economic centre**.
- The **region is also a great source and destination for Foreign Direct Investment**. Many of the world's

critical and large supply chains have an Indo-Pacific connection.

- There are vast reserves of marine resources in the Indian and Pacific Oceans combined, including **offshore hydrocarbons, methane hydrates, sea bed minerals and rare earth metals**.
- **Sizable coastlines and Exclusive Economic Zones (EEZs)** provide littoral countries with **competitive capabilities for exploiting these resources**.
- **In turn**, a number of the world's largest economies are located in the Indo-Pacific region, including **India, U.S.A, China, Japan, Australia**.

### What are the Current Challenges in the Indo-Pacific?

- **Theatre of Geo-Strategic Competition:** Indo-Pacific is the principal theatre of geo-strategic competition between different multilateral institutions like **QUAD** and **Shanghai Cooperation Organisation**.
- **China's Militarization Move:** China has been a challenge to India's interests and stability in the Indian Ocean.
  - India's neighbours are receiving military and infrastructural assistance from China, including **submarines for Myanmar, frigates for Sri Lanka**, and its **overseas military base in Djibouti (Horn of Africa)**.
  - Also, China has a hold over **Hambantota port (Sri Lanka)**, which is just a few hundred miles off the shores of India.
- **Hotspot For Non-Traditional Issues:** The region's vastness makes it difficult to assess and address multiple risks, including incidents of **piracy, trafficking and terrorism**.
  - The Indo-Pacific region is facing serious challenges related to **geographical and ecological stability** due to **climate change and the three consecutive La Niña events** that are causing **cyclones and tsunamis**.
    - Also, **illegal, unregulated and unreported (IUU) fishing** and **marine pollution** is hampering the aquatic life of this region.
- **India's Limited Naval Capacity:** **Indian Navy** has limited resources and capacity to strengthen its efforts because of limited allocation of Indian military budget. Also, **lack of overseas military bases** creates a fundamental logistical challenge for India to maintain its presence in the Indo-Pacific.

### How can India Enhance its Presence in the Indo-Pacific?

- **Issue based Coalitions:** Indo-Pacific collaboration cannot be successful without coordinated and issue-based partnerships framed by a **burden-sharing model**.

- Recently, three maritime nations, **France, the UAE and India**, launched a **trilateral framework in the Indo-Pacific** for **cooperation in maritime security, humanitarian assistance and disaster relief (HADR), blue economy, regional connectivity, energy and food security** and **people-to-people cooperation**.
- **Maritime Awareness:** From Indian Naval perspective, there is a need to **create broader and more reliable situational awareness** of developments in the Indian Ocean Region through intelligence gathering and surveillance, with **Andaman and Nicobar Islands** as a line of sight.
- **India's Stand on Multipolarity in Indo-Pacific:** With **1/5 of the world's population and the 5<sup>th</sup> largest economy**, India is **entitled to have its own side, weigh its own interests, and make its own choices** and these choices will not be cynical and transactional, but rather **reflect a balance of Indian values and national interests**.
- India emphasises upon all alignment, for example, it **only participated in the military component of Vostok Exercise** and abstained from the naval component that took place near the **Kuril Island (disputed region of Russian and Japan)**
- Also, India's **SAGAR vision** (Security and Growth for all in the Region), is a template of **shared responses to shared challenges in the Indo-Pacific**.
- **Enhancing Engagement with Indo-Pacific Countries:** India needs to **ramp up defence production at home** as well as promote arms exports that will open the door for a more active Indian engagement with hard security issues in the Indo-Pacific.
  - India is now looking to **liberalise trade relations with strategic partners like Australia** and the **sale of the Brahmos supersonic cruise missile systems to the Philippines** lend a sharper edge to India's engagement with the Indo-Pacific.
- **Towards Free, Open and Secure Indo-Pacific:** The need of the hour is to stress upon promoting economic collaboration and collective growth in **Indo-Pacific**, with **active participation of stakeholder nations in economic and social front** aiming for **open, connected, prosperous, secure, and resilient Indo-Pacific** and ensure a more inclusive and sustainable future.



## India's Education System@75 Looking at 100

*This editorial is based on "India@75 looking at 100: What India's education system needs" which was published in The Indian Express on 12/10/2022. It talks about the.*

**Tag:** Governance, GS Paper-2, Education, Issues Arising Out of Design & Implementation of Policies, Issues Relating to Development

By 2030, India will have the **largest number of young population in the globe**, a population size which will be a boon only if these young people are skilled enough to join the workforce. **Quality education** will play a major role in it.

But the current state of Education faces major challenges like **lack of adequate infrastructure, low government expenditure on education**( less than **3.5% of the GDP**) and as per **Unified District Information System For Education (UDISE)** the pupil-to-teacher ratio at national level for **elementary schools** is **24:1**.

So it's high time to tune the **Indian Education System** with global standards and adopt **modern learning approaches** that are responsive and relevant. Also, vitalise **National Education Policy 2020** to see the light of day.

### What are the Features of National Education Policy 2020?

- The NEP 2020 aims at making "India a global knowledge superpower". It is only the **3<sup>rd</sup> major revamp** of the framework of **education in India** since independence.
  - The **two earlier education policies** were brought in **1968 and 1986**.
- It aims to bring **2 crores out of school children back into the mainstream** through an **open schooling system**.
- is set to change, with a **new accreditation framework** and an **independent authority to regulate both public and private schools**.
- Assessment reforms with **360-degree Holistic Progress Card**, tracking Student Progress for achieving Learning Outcomes.
  - **Vocational Education** to start from Class 6 with Internships.

### What are the Other Government Initiatives Related to Educational Reforms?

- **National Programme on Technology Enhanced Learning.**
- **Sarva Shiksha Abhiyan**
- **PRAGYATA**
- **Mid Day Meal Scheme**
- **Beti Bachao Beti Padhao**
- **PM SHRI Schools**

### What are the Major Issues Related to the Education Sector in India?

- **Inadequate Infrastructure in Schools:** According to the **Unified District Information System for Education**



(UDISE) for 2019-20, only **12% of schools have internet facilities and 30% have computers.**

- About **42% of these schools lacked furniture, 23% lacked electricity, 22% lacked ramps for the physically disabled, and 15% lacked WASH facilities** (which include **drinking water, toilets, and hand wash basins**).
- **High Dropout Rate:** The dropout rate is very high in primary and secondary levels. Most of the students in 6-14 age groups leave the school before completing their education. It leads to wastage of financial and human resources.
  - According to the **National Family Health Survey-5, not being interested in studies was the reason given by 21.4% of girls and 35.7% of boys aged between 6 to 17 years** for dropping out of school before the **2019-20** school year.
- **Problem of Brain Drain:** When **intelligent, talented and deserving candidates do not get suitable jobs in India, they prefer to go abroad** to seek jobs there. That makes our country deprived of good talent.
  - There is definitely a **quantitative expansion of education** in India but the **qualitative front (essential for a student to get a job)** is lagging behind.
- **Mass Illiteracy:** In spite of **constitutional directives** and efforts aimed at enhancing education, around **25% of Indians still remain illiterate**, which also leaves them **socially and digitally excluded**.
- **Lack of Adequate Attention to Indian Languages:** Indian languages are still in an underdeveloped stage, the **medium of instruction particularly in science subjects is English**, resulting in **unequal opportunities** for rural students.
  - Also, **standard publications** are not available in the Indian language.
- **Lack of Technical and Vocational Education:** Mainly, our educational system is of **generalistic nature**. Development of **technical and vocational education is quite unsatisfactory**, due to which the number of educated unemployed persons is increasing day by day.
- **Unaffordability:** Meagre incomes at rural level leads to **education taking a backseat**. Due to lack of awareness and financial stability, **many parents tend to see education as an expense rather than an investment**. They would rather want their children to work and India,
  - When it **comes to higher education**, lack of good institutes close by means students have to look at shifting to cities, **which adds to their expenses**. This leads to **low rates of enrollment**.
- **Gender-Inequality:** Despite the government's effort to ensure equality of opportunity for education for

both men and women in our society, the **literacy rate of women in India, especially in rural areas, still remains very poor.**

- According to the **United Nations Children's Fund (UNICEF), poverty and local cultural practices (female infanticide, dowry, and early marriage)** play a big role in gender inequality in education throughout India.
- Another obstacle to education is a **lack of sanitation in schools across the country.**

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

- **Towards Experiential Learning Approach:** There is a need for **inclusion of problem-solving and decision-making related subjects** in the school curriculum to offer a hands-on learning experience to students and **prepare them to face the outside world when they enter into the workforce.**
  - **Experiential Learning can reap maximum benefit** from its ability to extract active participation from every student, which in turn **triggers their emotional intelligence** and sets them on a path to self-learning.
  - **Linking Artificial Intelligence with the Educational Sector** will also facilitate experiential learning.
- **Implementation of National Education Policy (NEP):** The implementation of the NEP can help shake the education system from its slumber.
  - Moving away from the current **10+2 system to a 5+3+3+4 system** will bring the **pre-school age group formally into the education set-up.**
- **Education-Employment Corridor:** India's educational setup needs to be enhanced by **integrating vocational learning with mainstream education** and providing right mentorship at school (**especially in government schools**) to ensure that students are guided in the right direction from the start and are **aware of career opportunities.**
  - Students in rural regions have great potential and are motivated to study but lack the right mentoring. This is **required not just for the children but also for their parents** that will in a way also **reduce the gender gap in education.**
- **Reducing the Language Barrier:** While keeping English as a means of **education for international understanding (EIU)**, it is **important to give other Indian languages equal importance**, and **special publication agencies** can be established to **translate resources into a variety of languages** so that all Indian students have the same opportunity regardless of their **linguistic background.**

- **Taking a Note From Past to Future:** It is important to look to the future while keeping our **long-established roots in mind**.
  - There is much to learn from the **'Gurukul' system** of ancient India, which focussed on **holistic development beyond academics**, centuries before the topic became a buzzword in modern education.
  - **Ethics and value education** remained at the core of learning in the ancient Indian education system. Values such as **self-reliance, empathy, creativity, and integrity** remain a major area in ancient India that have **relevance even today**.
  - The **ancient evaluation of education** was not restricted to **grading thematic knowledge**. Students were assessed on the skills they learned and how well they can apply practical knowledge to **real-life situations**.
    - The modern education system can also devise similar systems of assessment.



## Justice Inside Judiciary

*This editorial is based on "Debate over the collegium system: How are SC and HC judges appointed?" which was published in The Indian Express on 08/10/2022. It talks about the Collegium System for Judicial Appointment in India and related issues.*

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

The **Collegium system** is the way by which **judges of the Supreme Court and High Courts are appointed and transferred**. The collegium system is not rooted in the Constitution, or a specific law promulgated by Parliament, it has **evolved through judgments of the Supreme Court**.

**Parliament of India** came with the **National Judicial Appointment Commission (NJAC)** and **99th Constitution (Amendment) Act** for reforms in **judicial appointment**, but the Supreme Court held it **unconstitutional** and void by striking down the **NJAC** and **99th Constitution (Amendment) Act**.

Since then, the **Collegium system of appointment and transfer of judges** of the higher judiciary **has been debated for long**, and has been blamed for **tussles between the judiciary and executive**, as well as the **slow pace of judicial appointments**.

### What is the Collegium System?

- The **Supreme Court Collegium** is a **five-member body**, which is headed by the incumbent **Chief Justice of India (CJI)** and comprises the **four other senior most judges** of the court at that time.

- A **High Court collegium** is led by the **incumbent Chief Justice and two other senior most judges** of that court.
- The **government can also raise objections** and seek clarifications regarding the collegium's choices, **but if the collegium reiterates the same names, the government is bound** to appoint them as judges.

### What Does the Constitution Say on the Appointment of Judges?

- **Articles 124(2) and 217** of the **Constitution** deal with the **appointment of judges to the Supreme Court and High Courts**.
  - The **appointments are made by the President**, who is required to hold consultations with "such of the judges of the Supreme Court and of the High Courts" as he may think is needed.
  - But the **Constitution does not lay down any process** for making these appointments.

### How did the Collegium System Evolve?

- **First Judges Case (1981):** In '**SP Gupta Vs Union of India**', **1981**, the Supreme Court by a majority judgement held that the **concept of primacy of the Chief Justice of India was not really rooted in the Constitution**.
  - The **Constitution Bench** also held that the term "**consultation**" used in **Articles 124 and 217 did not mean "concurrence"**.
    - It means **although the President will consult these functionaries** for appointment, **his decision was not bound** to be in concurrence with all of them.
- **Second Judges Case (1993):** In '**The Supreme Court Advocates-on-Record Association Vs Union of India**', **1993**, a **9-judge Constitution Bench** overturned the decision in '**SP Gupta**'.
  - They devised a specific procedure called the '**Collegium System**' for the **appointment and transfer of judges** in the higher judiciary.
  - Also, the role of the **CJI is primal in nature** because this being a topic within the judicial family, the **executive cannot have an equal say in the matter**.
- **Third Judges Case (1998):** In **1998**, then **President KR Narayanan** issued a **Presidential Reference** to the Supreme Court under **Article 143** of the Constitution (advisory jurisdiction) over the meaning of the term "**consultation**".
  - The **question was whether "consultation" required consultation with a number of judges** in forming the CJ's opinion, or **whether the sole opinion of CJI could by itself constitute a "consultation"**.

- **The Supreme Court** laid down that the recommendation should be made by the CJI and his four senior most colleagues.

### **What are the Issues**

#### **Related to the Collegium System?**

- **Exclusion of Executive:** The **complete exclusion of the executive** from the judicial appointment process created a system where a few judges appoint the rest in **complete secrecy**.
  - Also, they are **not accountable to any administrative body** that may lead to the wrong choice of the candidate while overlooking the right candidate.
- **Chances of Favouritism and Nepotism:** The collegium system does not provide any specific criteria for testing the candidate for the post of **CJI** because of which it **leads to wide scope for nepotism and favouritism**.
  - It gives rise to **non-transparency of the judicial system**, which is very harmful for the **regulation of law and order** in the country.
- **Against the Principle of Checks and Balances:** The principle of **check and balance is violated** in this system. In India, three organs work partially independently but they keep check and balance and control on the excessive powers of any organ.
  - However, the collegium system gives Judiciary immense power, which **leaves little room for checks and poses the risk of misuse**.
- **Close-Door Mechanism:** Critics have pointed out that this system does not involve any official secretariat. It is seen as a closed-door affair with **no public knowledge of how and when a collegium meets**, and how it takes its decisions.
  - Also, there are **no official minutes of collegium proceedings**.
- **Unequal Representation:** The other area of concern is the **composition of the higher judiciary**, women are fairly **underrepresented in the higher judiciary**.

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

- **Balance Between Independence and Accountability:** The **real issue is not who (judiciary or executive) appoints the judges**, but the **manner in which they are appointed**.
  - For that, whatever may be the composition of the Judicial Appointment Commission (JAC), it is important to strike a **balance between judicial independence and judicial accountability**.
    - The **Executive should have a say in appointments** but the composition of the JAC should be such that it **does not result in compromising judicial independence**.

- **Justice Inside Judiciary:** Care must be taken to ensure that the **institutional imperative of the Court for dispensing justice is maintained inside the judiciary** with equality of opportunity and fixed criteria for selection of judges.
- **Reconsidering the Establishment of NJAC:** **NJAC's Act may be amended to include safeguards** that would make it **constitutionally valid**, as well as reorganised to ensure that **majority control remains with the judiciary**.
- **Gender Diversity and Representative Judiciary:** **No woman has been appointed as Chief Justice of India** so far. There is a need to maintain and **promote Gender Diversity in Higher Judiciary** with a fixed percentage of its members as women judges that will lead to the evolution of a gender-neutral judicial system of India.
  - **Justice B.V. Nagarathna**, expected to be India's first woman Chief Justice of India in September 2027, is a welcome step in this direction.



## **De-Stigmatizing Mental Health**

*This editorial is based on "Mental health and children: It's time to face the NextGen challenge" which was published in Hindustan Times on 12/10/2022. It talks about the status of mental health among children in India and related issues.*

**Tag:** Social Justice, GS Paper-2, Issues Related to Disability, Health, Issues Arising Out of Design & Implementation of Policies

**Good mental health** is indispensable for the holistic well-being of people. **Mental illnesses contribute 18.5% of the global disease burden** including **depression, anxiety and neuro-psychiatric disorders**.

**Covid-19 pandemic** has highlighted that **poor mental health incapacitates communities** and **erodes productivity of the nation** besides imposing huge economic costs. The absence of **adequate infrastructure, accessibility, and awareness** is a major roadblock in the development of **Mental Healthcare in India**, that requires serious attention.

### **What is the Status of Mental Healthcare in India?**

- **Mental health** encompasses **emotional, psychological, and social well-being**. It influences **cognition, perception, and behaviour**. It also determines how an individual **handles stress, interpersonal relationships, and decision-making**.

- Any disturbance in mental health affects the cognition, perception, and behaviour of a person to a greater extent.
- In India, according to National Institute of Mental Health and Neuro-Sciences data, more than 80% of people do not have access to mental healthcare services for a multitude of reasons.
- **Initiatives by Government of India:**
  - **National Mental Health Program (NMHP):** The **National Mental Health Program (NMHP)** was adopted by the government in 1982 in response to the large number of mental disorders and shortage of mental health professionals.
    - **District Mental Health Programme (DMHP), 1996** was also launched to provide community mental health services at the primary health care level.
  - **Mental Health Act:** As part of the **Mental HealthCare Act 2017**, every affected person has access to mental healthcare and treatment from government institutions.
    - It has significantly reduced the significance of **Section 309 IPC and attempts to commit suicide are punishable only as exceptions.**
  - **Kiran Helpline:** In 2020, the Ministry of Social Justice and Empowerment launched a **24/7 toll-free helpline 'Kiran'** to provide mental health support.
  - **Manodarpan Initiative:** It aimed at providing **psychosocial support** to students, teachers, and family members during the Covid-19 pandemic.
  - **MANAS Mobile App:** To promote mental wellbeing across age groups, the Government of India launched **MANAS (Mental Health and Normalcy Augmentation System)** in 2021.

### **What are the Challenges Related to Mental Health in India?**

- **Poverty Adding Vulnerability:** Most strongly associated factors with mental disorders are **deprivation and poverty**. Individuals with **lower levels of education, low household income, lack of access to basic amenities** are at high risk of mental disorder.
- **Women at Spotlight:** Due to a **variety of social stigma and gender disparity**, lack of access to education, **limited mobility**, added household responsibilities for working women, conditioning them into honed caregivers make them vulnerable to a variety of mental health issues.
  - Also, the **National Family Health Survey of 2019-2021** showed that an **overall 30% of women in India face gender based violence putting a third**

- of all women in India at higher risk of developing anxiety disorders and depression.
- **Disaster, Climate Change and Mental Health:** Disasters are potentially traumatic events which affect millions of people around the globe every year.
  - Many studies reported there were **increased short term and long-term mental health consequences**, such as **depression, post-traumatic stress disorder (PTSD)**, anxiety and suicide among disaster survivors.
  - The **Intergovernmental Panel on Climate Change (IPCC)** revealed that **rapidly increasing climate change** is also posing a serious threat to mental health and psychosocial well-being, **by amplifying disaster events.**
- **Education System and Mental Health:** Due to **lack of stress on personalised and holistic educational structure in India**, a large % of students show signs of mental disorders. Shockingly, every **1 hour a student commits suicide in India.**
  - **Children and young adults have complicated emotional eco-systems** that are easily affected by surroundings, **including parental pressure for good grades, social media engagements and relationship issues**, which affect their mental health to a great extent.
- **Discrimination and Negligence:** Mentally ill patients are vulnerable to **discrimination, physical and sexual abuse, wrongful confinement, even at homes** which is a cause of concern and a **gross human right violation.**
  - Specially, **people with disabilities** face a variety of structural and ideological challenges that have little to do with their actual limitations.
    - They experience abuse and neglect more often than the general population that **further limits their participation in everyday life.**
- **Lack of Awareness:** Most of the mental health patients are not aware that it is actually a disease of concern and remain untreated. Poor awareness about **symptoms of mental illness, myths & stigma related to it, lack of knowledge on the treatment availability & potential benefits of seeking treatment**, makes a large number of patients deprived of care.
- **Lack of Mental Health Resources:** Also, **lack of low-cost diagnostic tests and lack of easily available treatment** are the main hurdles in combating the problem of mental health in India.
  - There is a considerably low proportion of the mental health workforce in India (per 100,000 population) including **psychiatrists (0.3), nurses (0.12), psychologists (0.07) and social workers (0.07).**

- In addition, **beliefs in supernatural powers** for treatment in community delays diagnosis and treatment.

### What Should be the Way Forward?

- **Inclusive and Resilient Healthcare Infrastructure:** There is a need to build more inclusive and resilient healthcare infrastructure **incorporating mental health aspects with emphasis on collective social health, access to affordable and quality care** based on human rights and with **psycho-social approach** rather than following the traditional biomedical paradigm.
  - There is also a need to **upgrade physical infrastructure and strengthen human resources** by training **more mental health professionals** and skilled health workers especially for rural areas.
- **Mental Health Awareness:** It is **crucial to deconstruct the stigma related to mental disorder**, through **targeted awareness-raising** and outreach through campaigns, **utilising celebrities and social influencers**.
  - There is also a need to **mobilise support of NGOs to rural areas** and deeper engagement of local communities and local governments.
- **Expansion of Yoga and Meditation Centres:** **Expansion of yoga and meditation** would also provide enormous relief.
  - Their capacities can be **built by civil society in collaboration with community-based organisations**, but **these initiatives have to be strongly supported by the Government**.
- **Concerted Suicide Prevention Strategy:** India needs a **'Concerted Suicide Prevention Strategy'** at the national, state and local level.
  - **At school level, Mentor-mentee programmes** can be introduced to allow students to express themselves freely to their mentors and **prevent them from falling into mental disorder pitfalls**.
- **De-Stigmatizing Mental Health:** This apathy can be mitigated if the focus shifts from viewing mental health as a negative concept to a **social responsibility** of improving health literacy, setting up **self-help groups**, and providing emotional support to the concerned.



## Time to View Forest as a Heritage

*This editorial is based on "We need a forest-led COP27" which was published in The Hindu on 13/10/2022. It talks about the state of Forest Conservation in India and forest optimisation along with technology optimisation.*

**Tag:** Biodiversity & Environment, GS Paper-2, GS Paper- 3, Conservation, Issues Relating to Development, Forest Resources

India is not only famous for its **diverse architectural marvels and culture**, but also for its dense and vast **forest heritage**. According to the **State of India Forest Report 2021**, the total forest cover of the country is **21.71% of the geographical area**.

But the rising demand for forest-based products and resultant **climate change, deforestation and encroachment** has caused severe loss to this valuable asset. According to **NITI Aayog**, around **13 million hectares of forests** are being lost every year.

Therefore, it is the need of the hour to understand that **forest sustainability is not an option but imperative**.

### What is the Significance of Forests?

- **One-third of the land on Earth** is covered by forests, which play a vital role in maintaining the **hydrological cycle, regulating climate, and preserving biodiversity**.
- Forests are also important for **poverty alleviation**. Forests provide more than **86 million green jobs**. Everyone on the planet has had some form of contact with forests.
- They are also the **homes of India's submerged humanity—the tribals**. They are ecologically and economically a **part and parcel of the forest environment**.
- Forests provide **raw materials for a number of industries**, viz. **silk worm rearing**, toy making, leaf plate making, plywood, paper and pulp etc.
- They also provide **major and minor forest produce**:
  - Major such as **timber, round wood, pulp-wood, charcoal** and fire-wood.
  - Minor produce like **bamboo, spices, edible fruits and vegetables**.

### What are the

#### Constitutional Provisions Regarding Forest?

- Forests are included in the Concurrent List in the (Seventh Schedule) of the Constitution of India.
  - Through the **42<sup>nd</sup> Amendment Act, 1976** forests and protection of Wild Animals and Birds **were transferred from State to Concurrent List**.
- **Article 51 A (g)** of the Constitution states that it shall be the **fundamental duty** of every citizen to **protect and improve the natural environment** including forests and Wildlife.
- **Article 48 A** in the **Directive Principles of State Policy**, mandates that the State shall endeavour to protect and improve the environment and to **safeguard the forests and wildlife** of the country.

### **What are the Government Initiatives for Forest Conservation?**

- Forest Conservation Act, 1980
- National Afforestation Programme
- Environment Protection Act of 1986
- Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

### **What are the Challenges Related to Forest Management in India?**

- **Inadequate Forest Cover:** According to **National Forest Policy of India**, the ideal percentage of total geographical area under forest **should be at least 33%** to maintain ecological stability.
  - But currently it covers only **21.71% of the country's geographical area** and is dwindling day by day.
- **Unregulated Grazing:** India possesses a **livestock population of over 412 million of which 270 million are bovine animals**, about **one-tenth of which graze in the forests**.
  - Due to **lack of strict grazing regulatory framework**, overgrazing in many parts of India is observed **causing serious damage to forests**.
- **Menace of Climate Change:** Climate change alters the **frequency and intensity of forest disturbances** such as **insect outbreaks, invasive species, wildfires, and storms**. These disturbances **reduce forest productivity and change the distribution of tree species**.
  - By **2030, 45-64% of forests in India will experience the effects of climate change** and rising temperatures.
  - **Many forest species in Himalayan region are already migrating to higher altitudes** and some species are **even facing extinction**.
    - The **Bramble Cay melomys** is the **first mammal reported to have gone extinct** as a direct result of climate change.
- **Low Productivity:** The **gap between consumption and production of timber and wood-based products** in India is rapidly increasing. Against the global average productivity of **2.1 m<sup>3</sup>/hectare/ year**, the productivity of **Indian Forest** is only **0.7 m<sup>3</sup>/hectare/ year**.
  - **Loopholes in regulation of Forest Development Corporations** is a major factor of low productivity as well as there is a considerable section of **north eastern forest in India which remain unexplored and can be potential medicinal hubs**.
- **Injustice with Tribes:** The **tribal communities, the hallmark of Indian civilization, are based on forest areas for their survival**. Although they live in isolation in forest areas, they are having harmonious relationships with forests and species.

- But the **continuous deforestation, development of national parks and wildlife sanctuaries and eco-parks** are negatively impacting their habitat and displace their living **leaving them with mental health issues**.
  - In 2014, around **450 families from indigenous Baiga and Gond communities** were evicted to protect tigers in the **Kanha Tiger Reserve**.
  - In 2017, in Assam, **more than 1,000 people from Bodo, Rabha and Mishing tribal communities** were **forcefully evicted** from the **Orang National Park**.

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

- **Dedicated Forest Corridor:** **Dedicated Forest corridors** can be maintained for **safe intrastate and interstate passage of wild animals** and protecting their habitat from any external influence, giving a message of **peaceful-co existence**.
- **Resource Mapping and Forest Optimisation:** **Potential resource mapping** can be done in unexplored forest areas, and they can be brought under **scientific management and sustainable resource extraction** maintaining density and forest health.
- **Viewing Tribals as Forest Entrepreneurs:** There is a need to revitalise **Forest Development Corporations (FDCs)** to **structure commercialization of forests and engage tribal communities as "Forest Entrepreneurs"** In exploration, extraction, and enhancement of forest-based products.
- **Forest Waste to Forest Wealth:** **Technology** can be utilised for **reduction and recycling of waste**. Large quantities of inferior wood that is dumped in forests as a waste can be put to better use through seasoning and preservation treatment.
  - Also, **standards and codes can be promoted for wood products**.
- **Comprehensive Forest Management:** **Forest conservation** should include all components of protection and sustainable management of forests such as, **forest fire control measures, timely survey, tribal-dedicated policies, reducing man-animal conflicts** and sustainable wildlife health measures.
- **Towards Nature Based Solutions:** **Nature-based solutions** such as **blue-green infrastructure, (green roofs, rain gardens, or constructed wetlands)** can **minimise the impacts of climate change by capturing CO<sub>2</sub> from the air and sequestering it in plants, soils, and sediments**.
  - It can also allow forests to regrow and restore wetlands.

- Also, the **Dasgupta Review-Independent Review on the Economics of Biodiversity** reports that green infrastructure is **2-5 times cheaper** than grey infrastructure (**seawalls and water treatment plants**).



## Securing India's Cyberspace

*This editorial is based on "Securing India's cyberspace from quantum techniques" which was published in The Indian Express on 17/10/2022. It talks about the issues related to India's cyberspace and rising quantum technology.*

**Tag:** Science & Technology, GS Paper - 3, Cyber Security, Cyber Warfare, Challenges to Internal Security Through Communication Networks

**Unprecedented growth in technology has blurred boundaries** by connecting people and transforming governance. The **Digital India Programme** launched by the Government of India, which aims to provide **government services digitally and promote digital literacy**, is driving this transformation by building world-class digital infrastructure for the country.

However, there exist gaps **which can be exploited by the adversaries and deprive us of the benefits of digital technologies**. Cyber adversaries are becoming more sophisticated and resourceful. Among more than 100 countries that were hit by **WannaCry (an advanced ransomware attack)**, India was the third worst affected.

With **technology protocols still being developed and evolving at a gradual pace, it is very difficult to avoid such cyber-attacks** and considering the fact that India is moving towards a digitised life where the existence will highly depend on elements like **cloud computing, 5G in telecom, e-Commerce and quantum technology** etc. it is **imperative to keep a check on loose ends**.

### What are the Major Terminologies Related to Cyber Threats?

- **Clickjacking:** Act of **tempting internet users to click links containing malicious software** or unknowingly share private information on social media sites.
- **Denial of Service (DOS) Attack:** The deliberate act of **overloading a particular service like website** from multiple computers and routes with the aim of disrupting that service.
- **Man in Middle Attack:** In this kind of attack, the **messages between two parties are intercepted during transit**.
- **Ransomware:** It is a form of malware which first **hijacks a computer's data and thereafter posts a message demanding money** (usually in the form of bitcoins) to restore it.
- **Spyware:** Malware that **secretly monitors a user's computer activity**.
- **Zero Day Vulnerability:** A zero-day vulnerability is a flaw in the machine/network's operating system or application software which has not been fixed by the developer and **can be exploited by a hacker who is aware of it**.

### What are the Challenges Related to India's Cyber-Space?

- **Internet Polarisation:** Currently there are **no common rules and norms that govern the internet**; therefore, it enables the **illegitimate prioritisation of some websites over others** through **ad-based technology**, forcing viewers to browse and **deteriorating internet democracy**.
- **Multiplying Capacity, Adding Vulnerability: Artificial Intelligence (AI)** along with advances in new generation provide us with immense power to redefine and restructure lives.
  - **AI is capable of producing autonomous lethal weapon systems** that can kill and destroy lives and targets without any human interference.
  - Vulnerability to illegal activities ranging from **selling drugs, fake currency and intellectual property thefts** also **posing major concern to national security**.
- **Global Threat of Cyber Warfare and Internet Battlefields:** **Data has become a new "oil" for the world, which can be used to ignite cyberwarfare at any time**. All the major power centres in the world are converting their cyberspace into a warfare-ready domain.
  - The **Internet** is at high risk of potentially being used as an **intelligence gathering platform**.
- **Inter-Dependent Cyberspace:** The supply chains are increasingly **interconnected**. Increasingly, **personal data-based platforms are taking centre stage**. This makes a **company's security wall thin**, and **data breaches are becoming more common**.
- **China's Quantum Lead:** China's quantum advances expand the **spectre of quantum cyberattacks against India's digital infrastructure**, which already faces a barrage of attacks from Chinese state-sponsored hackers.
  - **India's dependence on foreign, particularly Chinese hardware**, is an additional vulnerability.

- **No Legal Backing for Internet of Things(IoT):** With the **Internet of Things** now becoming the backbone of modern ventures, organisations and even basic ways of living, it is worrying that **India has no dedicated law for IoT**.
- **Rising Fake News Concern:** Increasing **access to free information online**, either through news-based apps and services or messages forwarded via **social media** platforms, also known as **internet intermediaries**, has resulted in the rise of fake news with often grave consequences in the real world.
  - **Lack of awareness and digital illiteracy** makes them even more vulnerable.

#### What are the Recent Government Initiatives for Cyber Security?

- National Cyber Security Policy, 2013
- National Cyber Security Coordination Centre (NCCC)
- Cyber Swachhta Kendra
- Indian Computer Emergency Response Team (Cert-In)

#### What Should be the Way Forward?

- **Quantum-Resistant system:** With traditional internet models at risk and considering the **increasing potential of military applications of quantum technology**, the deployment of **“quantum-resistant” systems in India** is the **need of the hour**.
  - The **Union Budget 2020-21** had proposed to spend Rs 8,000 crore on the newly launched **National Mission on Quantum Technologies and Applications** is a **welcome step in this direction**.
- **Towards Techno-Diplomacy:** India needs to strengthen its diplomatic **partnerships with other “techno-democracies” countries** and advanced economies to **pool in the ideas and resources** for tackling emerging **cross border cyber threats** and move towards **secured global cyberspace**.
- **Linking Cooperative Federalism with Cybersecurity:** State Lists include police and public order, and therefore, states must ensure that police are well equipped to deal with cybercrime.
  - In addition, **since the IT Act and major laws are centrally enacted, the central government can look forward to developing uniform statutory procedures** for law enforcement agencies.
  - Also, the centre and states must commit adequate funds to develop much-needed cyber infrastructure.
- **Enhancing Cyber Forensic Laboratories:** In order to keep pace with new technologies, cyber forensic laboratories need to be upgraded.
  - The **National Cyber Forensic Laboratory and the Cyber Prevention, Awareness and Detection**

**Centre (CyPAD)** initiative of the Delhi Police are good examples.

- **Blending Ethical Values with Cybersecurity:** Technology has reached a stage where we need **global understanding and commonality of ethics and morality**, for more judicious use of cyber resources for individual and global good.
- **Filling the Infrastructural Gaps:** There is need to **expand India’s cyberspace by filling the physical infrastructural gaps** and move towards **cyber-inclusion amalgamated with cyber-security measures**.
- **Cyber-Awareness Campaign:** In a world of **e-governance, where government is becoming e-government, citizens are being e-citizens**, there is need to make strides to promote **cyber-awareness among citizens**, including **safe online transactions and not sharing personal information with unauthentic websites**.



## Reading Global Hunger Index 2022

*This article is based on “Reading Global Hunger Index and Indian govt’s response” which was published in The Indian Express on 18/10/2021. It talks about India’s position in Global Hunger Index 2022 and related issues.*

**Tag:** Governance, GS Paper-2, GS Paper-3, Government Policies & Interventions, Issues Arising Out of Design & Implementation of Policies, Issues Relating to Poverty & Hunger, Important International Institutions, Food Security

**India** has experienced remarkable economic growth in recent years and **remains one of the fastest growing economies in the world**. However, **hunger and malnutrition** are still areas of concern in spite of many strides.

While the food security situation is progressively improving, **access to nutritional and balanced food is problematic** for the vulnerable population. India has slipped 6 places and ranked **107, out of 121 countries, in Global Hunger Index (GHI) 2022**. In response the Indian government has raised methodological concerns.

Let’s understand the issues related to the **Global Hunger Index (GHI) 2022** and the extent of **Food and Nutritional Security in India**.

#### What is the Global Hunger Index (GHI)?

- In common parlance, hunger refers to discomfort due to a lack of food. However, the **GHI** is not such a simplistic measure **“it captures the multidimensional nature of hunger”**.



- There are **4 measures** it used by GHI:
  - **Undernourishment:** The share of the **population whose caloric intake is insufficient.**
    - This makes up 1/3 of the GHI score.
  - **Child Stunting:** The share of children under the age of 5 **who have low height for their age**, reflecting chronic undernutrition.
    - This makes up 1/6 of the GHI score.
  - **Child Wasting:** The share of children under the age of 5 **who have low weight for their height**, reflecting acute undernutrition.
    - This makes up 1/6 of the GHI score.
  - **Child Mortality:** The share of children who **die before their 5<sup>th</sup> birthday**, reflecting in part the fatal mix of **inadequate nutrition and unhealthy environments.**
    - This makes up 1/3 of the GHI score.
- The overall score is placed on a **100-point scale** and a lower score is better.
  - A score between **20 and 34.9** is **pegged in the “serious” category** and **this is where India finds itself with a total score of 29.1.** (GHI 22)

### **Why has the Indian government criticised GHI 2022?**

- The **Indian government has questioned the methodology of GHI.** There are two major sub-parts to the government’s contention:
  - First, that the GHI uses **“an erroneous measure of hunger”**, that **3 out of the 4 variables used are related to children** and cannot be representative of the entire population.
  - Second, that the **4<sup>th</sup> indicator of GHI**, the proportion of undernourished population is **“based on an opinion poll conducted on a very small sample size of 3000”**, which is **not justified with a country like India** representing one-fifth of the world’s population.

#### **What are the Recent Government Initiatives to Tackle Hunger?**

- **POSHAN Abhiyan**
- **Pradhan Mantri Matru Vandana Yojana**
- **Food Fortification**
- **Mission Indradhanush**
- **Eat Right India Movement**

### **What are the Factors Responsible for Hunger and Malnutrition in India?**

- **Poverty Backing Hunger:** Poor living conditions limit the availability of food for children, while **overpopulation**,

**coupled with limited food access**, result in **malnutrition** in children, especially in rural India.

- **Faulty Public Distribution:** There has been a **wide variation in the distribution of food in urban and rural areas**, with **grains being diverted to the open market in order to make a higher profit**, and poor quality grains being sold in ration shops, and the irregular opening of these shops contributing to hunger and malnutrition.
- **Unidentified Hunger:** Due to the **arbitrary nature of the criteria used to determine a household’s Below Poverty Line status** and the fact that these criteria vary from state to state, **food consumption has declined significantly due to the inaccurate classification** of above poverty line (APL) and below poverty line (BPL).
  - Besides this, the **poor quality of grains** have further contributed to the problem.
- **Hidden Hunger:** India is experiencing a severe **micronutrient deficiency (also known as hidden hunger)**. There are several causes of this problem, including **poor diet, disease, and a failure to meet micronutrient needs during pregnancy and lactation.**
  - Lack of **adequate knowledge amongst mothers** regarding **nutrition, breast-feeding and parenting** is another area of concern.
- **Gender Inequality:** Due to patriarchal mindset, **gender inequality places the girl child at a disadvantage** compared to boys and causes them to suffer more since they are last to eat and considered less important.
  - In contrast to boys, **girls are deprived of mid-day meals due to a lack of access to school.**
- **Lack of Immunisation:** Children are neglected when it comes to **preventive care (specifically immunizations)** due to lack of awareness and not given access to health care for diseases due to **affordability issues.**
- **Lack of Audit for Nutritional Programmes:** Although a number of **programmes** with improving nutrition as their main component are planned in the country, there is **no specific nutritional audit mechanism at local governance level.**

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

- **Viewing Nutrition Through Different Lenses:** **Better nutrition involves more than just food**, it includes health, water, sanitation, gender perspectives, and social norms. Therefore, there is a **need to look forward to comprehensive policy to fill the nutritional gap.**
  - If **Swachh Bharat Abhiyan, Beti Bachao Beti Padhao** and nutrition policies like **Poshan Abhiyan** are **interlinked**, India’s nutritional situation will undergo holistic changes.

- **Bringing Social Audit Mechanism:** States and Union Territories should compulsorily carry out the **social audit of the mid-day meal scheme in every district**, with the help of local authorities and simultaneously work on **nutritional awareness**.
  - Use of **information technology** to improve program monitoring can be thought of too.
- **Re-orienting PDS:** There is a need to be re-orient and an up-scale **Public Distribution System to make it more transparent and reliable and ensure availability, accessibility and affordability of nutritious food**, also making a positive impact on the purchasing power of the lower socio-economic segment of the population
- **Agriculture-Nutrition Corridor:** Currently, India's **nutritional hubs (villages) are the most deprived of adequate nutrition**, there is a need to devise mechanisms to check "Nutritional security of villages" in line with **agricultural-commerce**.
  - Recognising the importance of this link, the **Ministry for Women and Child Development** launched the **Bharatiya Poshan Krishi Kosh in 2019**.
- **Women-led SDG Mission:** There is a need to redesign existing **direct nutrition programs** and linking it with **women's self-help groups** can make India realise the **Sustainable Development Goal-2** to end hunger and all forms of malnutrition by 2030.
- **Reducing Waste, Reducing Hunger:** India wastes **about 7% of its total annual food production** and almost 30% of the fruits and vegetables because of **inadequate warehousing facilities and cold storages**.
  - According to the **International Institute of Refrigeration**, if developing countries had the same level of refrigeration infrastructure as developed countries, they would save **200 million tonnes of food or around 14% of their food supply**, which can help in tackling hunger and malnutrition.



## Semi-Conductor Industry and its Significance

*This article is based on "US sanctions targeting China's semiconductor industry are a gamble aimed at maintaining American hegemony" which was published in The Indian Express on 20/10/2022. It talks about US sanctions against China's semiconductor industry and their ramifications.*

**Tag:** International Relations , GS Paper-2, Government Policies & Interventions, Effect of Policies & Politics of Countries on India's Interests, GS Paper-3, Growth & Development, Indigenization of Technology

The US has banned the sale of advanced computer chips to China, escalating efforts to contain China's tech and military ambitions.

The moves are designed to cut off supplies of critical technology to China that may be used across sectors including advanced computing and weapons manufacture.

The crackdown marks the most significant action by USA against China on technology exports in decades, escalating a trade battle between the world's two most powerful economies.

### What are the Highlights of the Ban?

- The US imposed a sweeping set of export controls that included measures to cut China off from certain semiconductor chips and chip-making equipment.
- Under the rules, **US companies must cease supplying Chinese chipmakers with equipment** that can produce relatively advanced chips unless they first obtain a licence.
- The new regulations also add controls on advance semiconductor production items and transactions for specific end-uses of some integrated circuits or chips.
- The US also wants to increase its export controls to include semiconductor products and software, technology, and other things used to develop and make integrated circuits.
- US Citizens and green-card holders will also be banned from working on certain technology for Chinese companies and entities.

### What will be the Ramifications of this Move?

- **Unreasonable Grounds for Imposing Sanctions:** US has given the pretext of strategic advantage in critical technologies will prompt other countries too to impose bans like these which will lead to a trade war like situation. The far-reaching nature of these sanctions will have implications for the reliability of the global trading and financial order.
- **Neo-colonial in Nature:** USA ban on the export of chip-making equipment will not affect only China but also make other countries devoid of the potential benefits. The legitimacy of the order that the Americans seek to maintain will not be enhanced by mercantilist rather than global public good justifications.
- **Disruption of Supply Chains:** At the very least these sanctions are a recipe for creating immense uncertainty in global supply chains. Some countries, like India, may be salivating at the prospect of opportunistically gaining from this moment. But it is likely that these gains can be hugely diminished by the cumulative uncertainties in the world trading system. China is too important to isolate.

- **Hamper Efforts to Control Climate Change:** It is clear that the principal arena where global cooperation is required, climate change, is on the back burner. It is difficult to imagine concerted global action on climate change while the superpowers are in a mercantilist war.

### **What are the Semiconductor Chips?**

- **About:** Semiconductors are materials which have a conductivity between conductors and insulators. They can be pure elements, silicon or germanium or compounds, gallium, arsenide or cadmium selenide.
- **Significance of Semiconductor Chips:** They are the basic building blocks that serve as the heart and brain of all modern electronics and information and communications technology products.
  - These chips are now an integral part of contemporary automobiles, household gadgets and essential medical devices such as ECG machines.
- **Recent Increase in Demand:** The **Covid-19 pandemic**-driven push to take sizable parts of daily economic and essential activity online, or at least digitally enable them, has highlighted the centrality of the chip-powered computers and smartphones in people's lives.
  - Its shortage causes cascading effects, given that the first one creates pent-up demand that becomes the cause for the follow-up famine.

### **What is the Significance of Semiconductors?**

- **Semiconductors** are essential to almost all sectors of the economy including aerospace, automobiles, communications, clean energy, information technology and medical devices etc.
  - Demand for these critical components has outstripped supply, creating a global chip shortage and resulting in lost growth and jobs in the economy.
- In December 2021, the centre govt sanctioned ₹76,000 crore under the **Production-Linked Incentive (PLI)** scheme to encourage the manufacturing of various semiconductor goods within India.
- Semiconductors and displays are the foundation of modern electronics driving the next phase of digital transformation under **Industry 4.0**.

### **Why is there a Need for Promoting the Semiconductor Industry?**

- Semiconductor chips are the lifeblood of the modern information age. They enable electronic products to compute and control actions that simplify our lives.
- These semiconductor chips are the drivers for **ICT (Information and Communication Technologies)** development and one of the key reasons for the current flattening of the world.

- They are used in **critical infrastructures** such as communication, power transmission, etc., that have implications for national security.
- **Development of the semiconductor** and display ecosystem will have a multiplier effect across different sectors of the economy with deeper integration to the global value chain.
- There are not many countries in the world that manufacture these chips.
  - The industry is dominated by the United States of America, Taiwan, South Korea, Japan, and the Netherlands.
  - Germany is also an emerging producer of ICTs.

### **Where does India Stand in the Semiconductor Market?**

- India currently imports all chips and the market is estimated to touch \$100 billion by 2025 from \$24 billion now. However, for the domestic manufacturing of semiconductor chips, India has recently launched several initiatives:
  - The Union Cabinet has allocated an amount of ₹76,000 crore for supporting the development of a 'semiconductors and display manufacturing ecosystem'.
    - Consequently, a significant amount of incentives would be provided to design companies to design chips.
  - India has also launched the **Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS)** for manufacturing of electronics components and semiconductors.
  - In 2021, the MeitY also launched the **Design Linked Incentive (DLI) Scheme** to nurture at least 20 domestic companies involved in semiconductor design and facilitate them to achieve a turnover of more than Rs.1500 Crore in the next 5 years.
- India's own consumption of semiconductors is expected to cross USD 80 billion by 2026 and to USD 110 billion by 2030.

### **What are the Challenges for India?**

- **High Investments Required:** Semiconductors and display manufacturing is a very complex and technology-intensive sector involving huge capital investments, high risk, long gestation and payback periods, and rapid changes in technology, which require significant and sustained investments.
- **Minimal Fiscal Support from Government:** The level of fiscal support currently envisioned is minuscule when one considers the scale of investments typically

required to set up manufacturing capacities in the various sub-sectors of the semiconductor industry.

- **Lack of Fabrication Capacities:** India has a decent chip design talent but it never built up chip fab capacity. The **ISRO** and the **DRDO** have their respective fab foundries but they are primarily for their own requirements and are also not as sophisticated as the latest in the world.
  - India has only one old fab which is located in Mohali, Punjab.
- **Extremely Expensive Fab Setup:** A semiconductor fabrication facility (or fab) can cost multiples of a billion dollars to set up even on a relatively small scale and lagging by a generation or two behind the latest in technology.
- **Inefficient Sector:** Chip fabs are also very thirsty units requiring millions of litres of clean water, an extremely stable power supply, a lot of land and a highly skilled workforce.

### What can be the Way Forward?

- **Need to Become a Key Player:** India should aim to become a key player in a trusted, plurilateral semiconductor ecosystem that keeps key adversaries out.
  - Favourable trade policies are critical for building a plurilateral semiconductor ecosystem.
- **Sufficient Fiscal Support for All the Elements:** Considering India's considerable talent and experience, it may be best if the new mission focuses fiscal support, at least for now, on other parts of the chip-making chain including design centres, testing facilities, packaging, etc.
- **Maximising Self-Reliance:** Future chip production shouldn't be a one-trick pony and must develop an ecosystem from design to fabrication, to packing and testing.
  - India must also improvise research and development in this sector where it is **currently lacking**.
- **Connectivity and Capability Related Measures:** Many factors need to come together for India to make a mark in the niche chip-making and designing industry.
  - The immediate need for the Indian government is to connect related industries in India to create the chip manufacturing ecosystem. National capability needs to be enhanced.
- **High Investments Required:** Semiconductors and display manufacturing is a very complex and technology-intensive sector involving huge capital investments, high risk, long gestation and payback periods, and rapid changes in technology, which require significant and sustained investments.

- **Enhancing the Important Component:** There are three components of the chip:
  - Hardware (raw materials)
  - Design
  - Fabrication
    - The design itself is the component that creates the value and if India is able to harness this capability the no one in the world can beat the country

### Conclusion

- As there is a need of Semiconductors as well as a global demand also to which India can cater to but that would require building upon the existing capabilities, putting robust policy mechanisms and ecosystems in place. It is also required for the industry and the government to work together.
- All these advantages have been there for a long time and it's now necessary to connect with them.



## Towards Transformative Global Policing

*This article is based on "Why Interpol needs to get better at countering global challenges" which was published in The Indian Express on 18/10/2021. It talks about the Interpol General Assembly meeting in India and challenges in front of global policing.*

**Tag:** International Relations, GS Paper-2, Bilateral Groupings & Agreements, Important International Institutions, International Treaties & Agreements, GS Paper-3, Linkages of Organized Crime with Terrorism.

**World's largest international police organisation, Interpol facilitates police cooperation across borders. The Interpol General Assembly** meeting is taking place in India after a gap of about **25 years**, it was last held in **1997**.

Considering the evolution of the criminal landscape, **crimes are becoming more sophisticated, more transnational, and more complex for investigators**, due to technological advances that require serious attention to keep the **International Policing** standards up to the mark.

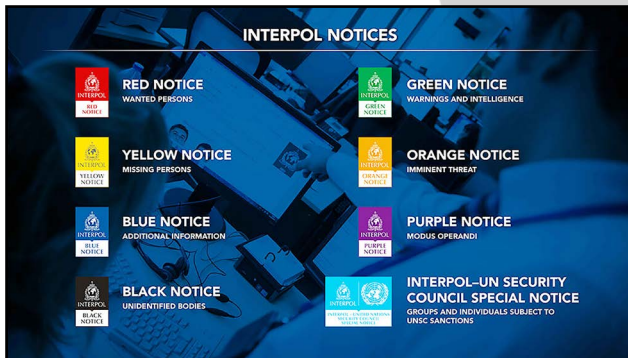
### What is Interpol?

- The **International Criminal Police Organisation (Interpol)** was set up in **1923**, in order to facilitate criminal investigation across the globe.

- Interpol has **195 member countries including India**. They work together to share data related to police investigations.
- Interpol is **neither an investigative agency nor a front-line police force**. It is **mandated to share information and provide back-end technical assistance** to law enforcement agencies.
  - Each country hosts an **Interpol National Central Bureau (NCB)**, which links national police with a **global network**.
    - In India, the **Central Bureau of Investigation** is the collaborating agency with the Interpol.

### What are Interpol Notices?

- **Interpol Notices are international requests for cooperation or alerts** allowing police in member countries to share critical crime-related information.
  - Notices are issued by the **General Secretariat**.
- Notices can also be issued at the request of **International Criminal Tribunals** and the **International Criminal Court** to seek persons wanted for committing crimes within their jurisdiction, notably **genocide, war crimes, and crimes against humanity**.
  - They can also be issued **at the request of the United Nations** in relation to the implementation of **sanctions imposed by the Security Council**.



### What are the Challenges in Front of Global Policing?

- **Accelerating Technology, Challenging Policies:** The next decades will likely be characterised by the acceleration of **digitalization, hyper-connectivity** and an exponential growth in the volumes of **data**.
  - The convergence of different domains like **Bioweapons and nuclear technology** is set to create new threats to **effective global policing**.
- **Rising Global Migration and Era of Gen-Z:** At the global level international migrations can be expected to persist. In addition, the next decade will be shaped by the maturation of **Generation Z, born entirely in the**

**digital age** and featuring **high rates of smartphone social media penetration**, this creates possibility of **data-breach and cyberwarfare** between two countries.

- **Widening Global Trust Deficit:** Global policing can only be imagined in harmony with global cooperation but currently the globe is experiencing the **theatre of geo-strategic competition**, shaping multipolarity and rising traditional issues of **cross border trafficking and terrorism**.
  - Around the world, many **governments, businesses and media** are facing growing **trust deficit and social polarisation**. Through the **rise of synthetic media and digitally enabled mis- and disinformation**.
- **Climate Change and Global Policing:** More frequent and **severe extreme weather** events due to **climate change** are increasing public concerns over these risks of **Ecocide**.
  - It is also putting a strain on global public safety capabilities and resources.
- **Changing Tides of Globalisation:** Growing **income inequality and nationalist sentiments** have fuelled a **backlash against globalisation**, for instance it is visible in the **escalation in trade disputes**.
  - In the coming decades, **populism and nationalism** are likely to remain significant countervailing forces.
  - In the long run this could have repercussions for existing **international regimes, including policing cooperation, with more reliance on regional, bilateral or informal arrangements**.
- **Limited Policing Jurisdiction:** In democratic politics across the globe, **police forces have to act with restraint**, within the boundaries of legal procedures, whereas the lawbreakers enjoy the ease of mobility and access to the internet.

### What Should be the Way Forward?

- **Speeding up Red Notice Process:** The notice mechanism of Interpol should be improved to **speed up the process of issuing Red Notices** to fugitive offenders, sending a message that there can be no safe havens for corrupt, terrorist and drug cartels.
- **Early Detection and Warning System:** There is a need to develop international strategies for establishment of **early detection and warning systems and intelligence exchange to take global policing to a new level**.
- **From Politics Centric to People Centric Ecosystem:** There is a need to keep policing away from the theatre of geopolitical issues. **Public-spirited efficient policing** is the most **meaningful confidence-building measure that people across diverse geopolitical contours desire and deserve**.

- **Interpol and cross-national law enforcement agencies** must endeavour to **build, maintain and operate a people-centric ecosystem** to meet evolving challenges.
- **Developing Cyber-Policing for Cyber Crimes:** To meet the **growing sophistication, complexity and transnationalization of crime**, new digital investigative and data management capabilities, expertise like **innovative AI-enhanced tools** are the need of the hour.
  - For example, **criminal statistics will have to be updated to adequately capture cybercrime** across the globe.
  - **International policing cooperation has to evolve and become more connected** to meet the **greater imperative for collaboration**.
- **Opportunity for India:** India is now an **acknowledged technology powerhouse**. **India's demographic dividend** of a large and young technology-oriented workforce in startups can be utilised for **upgrading the security architecture and setting up effective policing standards for the globe**.
  - Indian skill development resources through **capacity building programmes run by the CBI training academy** are used periodically by the international police fraternity, particularly law enforcement agencies in Asia and Africa.



## Pro-Planet-People

*This article is based on "A new lease of LIFE for climate action" which was published in The Hindu on 20/10/2022. It talks about the role of India's LiFE initiative to tackle the challenges related to climate change and environment.*

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

**India's LiFE initiative** has become a **mass movement towards an environmentally conscious lifestyle**. **Covid-19** has proved that despite mankind's scientific and technological advancements, **we continue to be at the mercy of the natural world**.

Today, the threat posed by **unmitigated climate change** is more dangerous than ever before. **A throwaway society, driven by wasteful consumerism**, is equally culpable for the deepening crisis.

According to **Swiss Re**, the global economy could lose up to **18% of GDP by 2050** if no climate action is taken. This is a clarion call for transition towards **sustainable and eco-friendly practices**.

### What is LiFE Initiative?

- The idea of **LiFE** was introduced by India during the **26th United Nations Climate Change Conference of the Parties (COP26)** in Glasgow in 2021.
- This idea **promotes an environmentally conscious lifestyle** that focuses on 'mindful and deliberate utilization' instead of 'mindless and wasteful consumption'.

### What are India's

#### Achievements in Conserving the Environment?

- **Installed Electric Capacity:** India's commitment to reach **40% of installed electric capacity** from non-fossil fuel-based sources has been achieved, 9 years ahead of schedule.
- **Ethanol Blending Target:** The target of **10% ethanol blending** in petrol has been achieved 5 months ahead of the November 2022 target.
  - This is a major accomplishment given that blending was hardly 1.5% in 2013-14 and 5% in 2019-20.
- **Renewable Energy Target:** According to **REN21's Renewables 2022 Global Status Report (GSR 2022)**, India was ranked third in wind power, fourth in solar power and third in renewable power installed capacity in 2021.

### What are the Challenges

#### Related to the Environment in India?

- **Degrading Forest, Degrading Livelihood:** **Poverty** and environmental degradation have a **nexus between them**. The vast majority of our people are directly dependent on the natural resources of the country for their basic needs of food, fuel, shelter and fodder.
  - **Environment degradation** has adversely affected the poor who depend upon the resources of their immediate surroundings. Thus, the challenge of poverty and the challenge of environmental degradation are two facts of the same challenge.
- **Submerging Healthy Environment:** **Forests serve catchments for the rivers**. With increasing demand for water, plans to harness the mighty river through large **irrigation projects** were made. Certainly, these can submerge forests, displace local people, damage flora and fauna.
  - Also, forests in India have been shrinking for several centuries owing to pressures of agriculture and other uses. **Vast areas that were once green, stand today as wastelands**.
- **Unregulated Mining:** The massive need for **construction materials** has led to the **disappearance of many hills** due to quarrying and other mining activities. Example: **Aravali Hills, Rajasthan**.

- Also, despite advances in renewable energy, **India is still largely dependent on thermal power plants to meet its increasing energy demand**, resulting in a rise in coal mining rates.
- **Improper Solid-Waste Management:** Among the most pressing environmental issues in India is also waste. Around **277 million tonnes of municipal solid waste (MSW) is produced every year**.
  - Currently, **only about 5% of the total collected waste is recycled, 18% is composted**, and the remaining is dumped at landfill sites.

#### What are the Recent Government Initiatives to Tackle Environmental Degradation?

- Swachh Bharat Mission
- GOBARdhan Scheme
- Give It Up Campaign
- Catch the Rain Campaign

#### What Should be the Way Forward?

- **Towards Responsible Consumption:** There is a need to consider the **social, environmental and economic impacts of consumption**, buying greener products; **consuming better – wasting less** and having a more **sustainable consumption**.
  - Also, there is a need to **initiate transition towards a circular economy** from today's 'take-make-use-dispose' economy.
- **Sustainable Mobility:** There is a need to **rethink and restore confidence in public transport**, including the **procurement of more buses, the adoption of e-buses, bus corridors** and bus rapid transit systems with digitization of public transport.
  - The development of several **electric freight corridors** to promote electrification is also crucial to reaping the benefits of electric vehicles.
- **Pro-Planet-People:** India's **rich traditional wisdom and climate-friendly practices** make us best placed to **assume a leadership role in driving a behavior change on climate action**.
  - The world needs to know about India's LiFE initiative across the globe that **aims to unite the people as pro-planet people**, uniting them all in their thoughts and functions on the basic principles of '**Lifestyle of the planet, for the planet and by the planet**',
- **Environmental Awareness:** **School curriculums** should make environmental awareness a priority, while **ULBs and panchayats** can act as **ambassadors to percolate it down to the grassroots**.
- **Promoting Eco-Design:** There is a need to keep **environmental impact assessment at all stages of the product development process**, striving for products

which make the **lowest possible environmental impact** throughout the product life cycle.

- Use of **plant-based biodegradable utensils** (sal tree leaves) and **tea in clay pots (kulhad)**.
- **Furoshiki, a Japanese traditional wrapping cloth, is eco-friendly and used for wrapping gifts**, carrying goods or as decoration.
  - The reusable Furoshiki can be an **example of a sustainable alternative to traditional plastic wrapping paper**.



## Urban Poor and Climate Shocks

*This editorial is based on "Insulate Urban Poor from Climate Shocks" which was published in Hindustan Times on 22/10/2022. It talks about the challenges faced by urban poor as a consequence of the climate crisis.*

**Tag:** Governance, Population and Associated Issues, GS Paper 2, Governments Policies & Interventions, Issues Relating to Development, GS Paper 3, Disaster Management

Extreme weather events, accounting to the **climate crisis**, have become a common phenomenon in recent years. **Flooding in cities** like Mumbai, Hyderabad and Bengaluru can be often heard in the news. More recently, **north India was severely affected by heat waves that shrunk the wheat crop production** in the rabi season.

Although these extreme climatic changes affect all, **they hit the poorest and the vulnerable the worst** and reduce their chances of improving their socioeconomic status.

More than half of the world's population currently lives in cities and urbanisation continues to expand. With this growth, the **numbers of the urban poor are increasing**, particularly in developing countries. The **urban poor are especially vulnerable to climate change** because their homes are frequently located in hazardous areas.

#### How does Climate Change Affect the Urban Poor?

- **Makes them More Prone to Disasters:** Poor people living in slums are at particularly high risk from the impacts of climate change and natural hazards.
  - They **live on the most vulnerable lands within cities**; typically areas that are **deemed undesirable by others** and are thus affordable and are **exposed to the impacts of landslides, sea-level rise**, flooding, and other hazards.

- **Socio-Economic Impacts:** The consequences of extreme weather events such as frequent flooding or heat waves is the **loss of workdays, livelihoods, housing and critical economic assets**.
  - The strong hit to the economy is coupled with adverse health impacts; **increased morbidity and mortality** from **vector-borne diseases and heat strokes**.
- **Loss of Housing and Assets:** Housing and asset loss and damages are other significant concerns, especially during floods.
  - This is further exacerbated by **overcrowded living conditions, lack of adequate infrastructure and services, unsafe housing, inadequate nutrition, and poor health**.
- **Impacts of Delayed Responses:** The speed of response remains the most critical factor for addressing the vulnerabilities of the poor. **Delayed response aggravates losses and protracts rehabilitation, adversely affecting resilience**.

### **What can be Done to Shield the Urban Poor from Climate Change?**

- **Insurance Scheme:** An insurance scheme can boost resilience at the household level. There are **insurance products that cover both house and household assets**, but not many people avail of them. Given the heterogeneity of the clientele, the industry must design products for specific segments.
  - The State may have to intervene to **address the needs of those with the lowest purchasing power**.
  - A **Prime Minister Grih Bima Yojna** for the poor must be **instituted on the lines of Prime Minister Fasal Bima Yojna**.
- **Minimising Response Time:** Reducing the time between exposure to climate risk and the accrual of benefit is necessary whether from the State or insurance firms.
  - The **direct benefit transfer** architecture can be leveraged, expanding its scope in response to the policy action.
  - The insurance industry can plug into the State delivery system along with a **simplified process of claim-making**.
- **Integrated Interventions in Key Areas:** Strengthening the resilience of urban poor will require integrated interventions across six policy areas (**social protection, public health, livelihood, housing, community infrastructure, and urban planning**) at different scales (**household, community, and city levels**).
  - Three enabling factors – capable, accountable, and **responsive governance; climate and urban data;**

and **climate and urban finance** – need to be put in place to ensure that **pro-poor climate resilience solutions** promote transformational change to address the underlying drivers of vulnerability.

- **Data Capturing and Sharing:** **Satellite imagery** could be used to **identify flooded areas**, and government databases of such localities could be used to identify beneficiaries.
  - Insurance claims could be directly transferred without the beneficiary raising a claim. This can be made possible by a new **purpose-driven data-sharing agreement** between the State and the industry.
- **Role of Local Governments:** City governments are the drivers for addressing risks. **Local governments play a vital role in providing basic services** which are critical to improving the resilience of the urban poor.
  - City officials can build resilience by **mainstreaming risk reduction into urban management**.
    - Climate change adaptation and disaster risk reduction can be best addressed and sustained over time through integration with existing urban planning and management practices.
  - In this context, a major challenge would be financial dependence of the local governments on state and central governments; hence, **significant financial support is needed**.

### **Conclusion**

Sufficient response and synergies between the State's policy imperatives and the insurance industry are necessary for easing the vulnerabilities of the poor. Leveraging technology and partnerships between State and industry can facilitate speedy and timely responses to climate calamities and build the resilience of the urban poor.



## **Menace of Stubble Burning**

*This article is based on "Addressing north India's burning issue sustainably" which was published in The Indian Express on 22/10/2022. It talks about the issues associated with Stubble burning in India and solutions.*

**Tag:** Agriculture, GS Paper-1, GS Paper-3, Government Policies & Interventions, Health, Environmental Pollution & Degradation

The **Green Revolution** transformed the way agriculture was practised in India, **especially in Punjab and Haryana**. The economics of high-yielding varieties of paddy and wheat, supported by a guaranteed buyer



(the government) and **minimum support prices** led to a **crop duopoly**, and **vitalised the practice of stubble burning**.

According to an **official report**, more than **500 million tonnes of parali (crop residues)** is produced annually in the country, cereal crops (rice, wheat, maize and millets) account for 70% of the total **crop residue**.

Stubble burning begins around **October and peaks in November**, coinciding with the **withdrawal of southwest monsoon**.

The **prevention of stubble burning is not guaranteed by only banning and punishing the farmers**. In order to prevent this from happening in the future, **there needs to be a permanent and effective solution**.

### Why is it still Being Practised?

- The Indian farmers have been practising stubble burning for decades now and multiple factors lead to it. Some of them are:
  - One factor is being a **cheaper way to get rid of crop debris**.
  - Another is the boom of **Mechanised Harvesting**, which leaves behind 1- 2ft tall stubble which takes around **1.5 months to decompose on its own**.
    - However, **farmers do not have sufficient time as they need the soil prepared for the next crop**, so instead of waiting for the residue to decompose they burn it.

### What are the Issues

#### Associated with Stubble Burning in India?

- **Environmental Degradation:** Stubble burning emits **toxic pollutants** in the atmosphere containing harmful gases like **Carbon Monoxide (CO)**, methane (CH<sub>4</sub>), **carcinogenic polycyclic aromatic hydrocarbons**, **volatile organic compounds (VOC)**.
  - These pollutants disperse in the surroundings and **eventually affect air quality and people's health by forming a thick blanket of smog**. This is one of the primary causes of **Delhi's air pollution**.
- **Soil at Risk:** Soil becomes **less fertile**, and its **nutrients are destroyed** when the husk is burned on the ground. It **generates heat that penetrates into the soil**, causing an increase in **erosion**, **loss of useful microbes and moisture**.
  - Due to the **loss of 'friendly' pests**, the **wrath of 'enemy' pests has increased** and as a result, **crops are more prone to disease**. The solubility capacity of the upper layers of soil have also been reduced.
- **Climate Change Induced Stubble Burning:** The **shortened harvesting season due to climate change**

has forced the farmers to **rapidly clear their fields between the kharif and rabi crops**, and the quickest of these ways is to burn off the remaining stubble post-harvest.

- **Increased Backing, Increased Burning:** Policy moves in subsequent decades has included the introduction of **subsidies for electricity and fertilisers**, and **ease of access for credit in agriculture** has significantly increased the crop yields and agricultural productivity, that has in turn **cemented the issue of stubble burning**.

#### What is Chhattisgarh Model of Stubble Utilisation?

- An innovative experiment has been undertaken by the **Chhattisgarh government by setting up gauthans**.
- A **gauthan is a dedicated five-acre plot, held in common by each village**, where all the **unused stubble is collected through parali daan (people's donations)** and is **converted into organic fertiliser** by mixing with cow dung and few natural enzymes.
  - This scheme has also **generated employment among rural youth**.

#### What should be the Way Forward?

- **Post-Harvest Regulation and Incentivisation:** There is a need to replicate the schemes like the **MGNREGA** for **harvesting and composting of stubble burning**, and **regulate post-harvest management at ground level**.
  - The **government can also provide incentives to farmers who reuse and recycle their stubble**.
- **Using Stubble as a Fodder:** **Wheat stubble can be used as a fodder for cattles**, the Tudi, which is made from wheat stubble, is considered to be the **best dry fodder for cattle** because of its nutritional value.
- **Technical Intervention:**
  - **Microbe Pusa:** Several innovative measures have been developed to reduce stubble burning, **The Indian Agricultural Research Institute developed a microbe Pusa**, that **hastens decomposition and converts stubble to compost** within 25 days, **improving soil quality** as a result.
  - **Happy Seeder:** Instead of burning the stubble, a **tractor-mounted machine called the Happy Seeder** can be used that **"cuts and lifts rice straw, sows wheat into the bare soil, and deposits the straw over the sown area as mulch**.
- **Recycling and Reusing Stubble:** Stubble can be recycled to make products including **paper and cardboard**. Also, it can be used as a manure.
  - For example, in **Palla village outside Delhi**, the **Nandi Foundation purchased 800 MT of paddy residue from farmers to turn it into manure**.

- Crop residue can also be used for various purposes like **charcoal gasification**, power generation, as industrial raw material for production of bio-ethanol.



## Expanding Space for Space Proficiency

*This editorial is based on "India must expand its space capacities" which was published in Hindustan Times on 25/10/2022. It underlines the need of India's Space proficiency for balancing the global power equation.*

**Tag:** International Relations, GS Paper-2, Government Policies & Interventions, GS Paper-3, Scientific Innovations & Discoveries, Space Technology

The **Indian Space Sector** has been globally recognised for building cost-effective satellites, and taking foreign satellites to space. Currently, India constitutes **2-3% of the global space economy** and is expected to enhance its share to **more than 10% by 2030**.

As part of India's commitment to the **Geneva Conference on Disarmament**, the country continues to advocate peaceful and civilian use of outer space and oppose any **weaponization of space** capabilities or programs.

But as **commercialization is advancing in space**, it is more challenging for India to remain a major player. Therefore, it is the **right time to turn the corner** and rethink India's presence in the space domain.

### What are Recent Developments in India's Space Sector?

- **Defence Space Agency:** India has recently set up its **Defence Space Agency (DSA)** supported by the **Defence Space Research Organisation (DSRO)** that has the mandate to create weapons to "**degrade, disrupt, destroy or deceive an adversary's space capability**".
  - Also, the Indian Prime Minister launched the **Defence Space Mission** at the **Defence Expo 2022, Gandhinagar**.
- **Expanding Satellite Manufacturing Capabilities:** India's satellite-manufacturing opportunity will reach **USD 3.2 billion by the year 2025** (in 2020 it was USD 2.1 billion)
  - Recently, on its maiden commercial flight, India's heavy-lift rocket **GSLV Mk-III** (renamed for this mission as **Launch Vehicle Mark-3**) successfully

placed all **36 satellites** of the **UK-based company-OneWeb** into the intended orbits.

- **IN-SPACe: Indian National Space Promotion and Authorisation Centre** (IN-SPACe) is launched to provide a level playing field for private companies to use Indian space infrastructure.
  - This platform serves as an **interface between the Indian Space Research Organisation (ISRO) and those who wish to use India's space resources** or participate in space-related activities.
- **SAMVAD Program:** To encourage and nurture space research among young minds, ISRO launched its **Student Outreach Program** called **SAMVAD** at its Bengaluru facility.

### What are the Current Challenges Related to Space Technology?

- **Inadequate Private Sector Opportunity:** In India, the **Department of Space (DoS)** sits under the Prime Minister's Office and **directly controls the ISRO**. ISRO also has a commercial arm- **Antrix** that promotes **ISRO's space products** and technologies to an international customer base.
  - The **government therefore plays the dual role of regulator and commercial executor**, which has led to **significant bottlenecks in the participation of the private sector**.
    - Also, due to this the **private sector remains concerned about sharing its intellectual property** with the government.
- **Lack of Regulations on Commercialisation:** The commercialization of outer space is accelerating due to the development of private satellite expeditions for **Internet services (Starlink-SpaceX)** and for **space tourism (concept of Jeff Bezos)**.
  - It is possible that if **no regulatory framework is put in place**, rising **commercialisation will lead to monopolisation** in the future.
- **Rising Space Debris:** As outer space expeditions increase, **more space debris will accumulate**. Because objects orbit Earth at such high speeds, even a small piece of space debris can damage a spacecraft.
  - Space Debris can also lead to **ozone depletion**.
- **China's Space Leap:** Compared to other countries, the Chinese space industry has grown rapidly. It has successfully launched its own navigation system, **BeiDou**.
  - It is very likely that **China's Belt Road Initiative (BRI)** members will contribute to or join the Chinese space sector, **solidifying China's global position**.

## How Space Technology Can be Further Harnessed?

- **Smart Farming Using Space-based Tech:** India can harness its space research potential by developing remote sensing satellites that provide key data for **monitoring soil, drought and crop development**.
  - Rainfall assessments from satellites can **help farmers plan the timing and amount of irrigation** they will need for their crops.
    - Also, through satellite based monitoring, **early warning systems** can be developed to **save the farms from pest attack**.
  - **National Agricultural Drought Assessment and Monitoring System (NADAMS)** and **Geo-tagging** of infrastructure and assets created under **Rashtriya Krishi Vikas Yojana** are good steps in this direction.
- **Replicating Space4Women in India:** Space4Women is a United Nations Office for Outer Space Affairs (UNOOSA) project that promotes **gender equality and women's empowerment in the space sector**.
  - It would be beneficial to **initiate space awareness programmes at the rural level in India**, and **College-ISRO Internship corridors** can be built specifically for female students **to introduce them to the possibility of stretching their wagon beyond earth**.
    - **AzaadiSAT, made by 750 schoolgirls** from India is a firm step in this direction.
- **Connecting Hospitals, Saving Lives:** India can harness satellite communication technology in the field of **"telemedicine"**, connecting **specialty hospitals in India's major cities to hundreds of hospitals in rural and remote areas of the country**, and provide primary accurate healthcare at doorsteps in rural areas.
- **Developing Self Defence Capacities:** In light of the fact that **space has evolved into a fourth battlefield**, India needs to enhance its space capabilities through adequate research and development.
  - **KALI (Kilo Ampere Linear Injector)** is being designed as a potential response to any incoming missiles whose objective would be to disrupt the country's peace.
  - **Proficiencies in space** will also enable militaries to configure a blanket of power that **any movement above treetops will be spotted and eliminated**.
    - Space proficiency will also be a **crucial determinant of the pecking order in the global power calculus**. Hence, a truly **"Vikasit Bharat"** will have to be a **space power**.

- **Technological Intervention for Cleaner Space:** Technologies like **self-eating rockets, self-vanishing satellites and robotic arms to catch space debris** can make India an **explorer cum problem solver** in the space arena.
- **India Towards Potential Space Market Hub:** India can take advantage of the local market conditions (**talent pool, low labour costs, engineering services**) to replicate the **cost-competitive world-class products and services for the space market**.
- **Establishing A Permanent Presence in Space:** The time has come for India to rethink its space presence, and in line **ISRO has undertaken manned space flight** as a key focus area, beginning with the upcoming **Gaganyaan mission**.
  - India should take the initiative to **cooperate with international bodies** and plan for a **planetary defence program in the long term**.

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## Internet Monopolisation by Big Tech

*This article is based on "Regulating Big Tech: Tread lightly" which was published in The Hindu on 27/10/2022. It talks about the internet monopolisation by big tech and the recent penalty on Google by the Competition Commission of India.*

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

**Big Tech companies** are transforming **India's digital economy** and society in a multitude of ways. Although tech platforms **open up new opportunities for bringing products and services** to market, somewhere they also wreak **serious real-world harms**.

These companies have been **on the government radar in many countries** for being **big spenders and trying to steamroll competition** by either buying out their rivals or pushing vendors to avoid working with their competitors.

Recently, the **Competition Commission of India** imposed a penalty of **Rs 1,337.76 crore on Google** for **"abusing its dominant position"** in the **Android Mobile Device** ecosystem.

Considering that **big tech companies transact a large volume of data across the globe**, it is necessary to harmonise, regulate them along with maintaining standards for consumer protection.

### What are Big Tech Companies?

- Big Tech collectively describes the **most prolific and prosperous technology companies in today's marketplace** which have inordinate influence on internet users across the globe.
- They are often called the Big Five and include the following companies:
  - Amazon, Apple, Facebook, Google, and Microsoft

### How does India

#### Currently Keep a Check on Big Tech?

- At present, **antitrust issues in India** are guided by the **Competition Act, 2002** with the **Competition Commission of India** taking the lead in **checking monopolistic practices**.
  - Competition Commission of India has raised issues with **Google's commercial flight search option**, its **dominant position in the search marketplace**.
    - Google was found guilty in 2019 of misusing its dominant position in the mobile Android market to **impose unfair conditions on device manufacturers**.
    - In addition, Google is accused of following a high and unfair commission mechanism for its **Play Store apps**.
- The government has also proposed amendments to the competition law through the **Competition Amendment Bill, 2022** which is currently under review by **The Parliamentary Standing Committee on Finance**.

### What are the Issues

#### Related to Big Tech Companies?

- **Internet Monopolisation:** Big tech companies **acquire competitors to buy consumer loyalty instead of earning it**.
  - They **leverage their market power in one line of business to gain monopolies in others**, locking consumers into their ecosystem of products and services.
  - Their consolidated power can also **swing elections and change the political mood of a nation**.
- **Invasion of Privacy:** When a person searches for a product online, the ads related to it appear on almost every internet platform they use. While it has many positive aspects, it has a **massive potential of drastic negative repercussions**.
  - Also, there is a **lack of transparency** in how tech companies process user data, which has made **invasion of privacy a default**.

- **Regulatory Vacuum:** Due to **rapid innovation and advancement by the Big Tech firms**, the regulators are **only able to react, not be in readiness**.
  - These giant platforms maintain that **they are only intermediaries** and therefore, they can't be held liable for the content.
- **Arbitrary Pricing:** In the non-digital arena, **price determination happens through market forces**. However, in the digital space, rules are largely dictated by the large platforms. Consumers are products themselves on these platforms.
  - Concepts like **network effects and winner-takes-all** coupled with **gatekeeping by Big Tech firms** exacerbate the problem.
- **Moral Panic:** Tech platforms are used to **spread disinformation and propagate political polarisation, hate speech**, misogynistic abuse, terrorist propaganda, all things that cause moral panic in general public.

### What Should be the Way Forward?

- **From Ex-Post to Ex-Ante Approach:** There is a need to move towards an **'ex-ante' approach to regulate competition in the digital market economy** instead of the 'ex-post' model followed now.
  - This will **prevent anti-competitive behaviour**, instead of just initiating a probe and penalising after a breach occurs.
- **Regulating Platform-to-Business (P2B) Space:** India must adopt a hard approach towards regulation of the **platform-to-business (P2B) space** in the larger socio-political and **economic interests of small businesses**.
  - Big tech companies enjoy an undeniable monopoly across sectors due to regulatory gaps and consumer loyalty. As **consumers will not easily give up the convenience that this offers**, it is **necessary to create a network of regulatory measures and safeguards centred around them**.
    - To have the greatest impact, **regulation should be sensitive to regional issues**.
- **Data Management Framework:** The regulatory framework for big tech companies to manage their data can be framed through joint collaboration between **Ministries of Corporate Affairs, Electronics and Information technology, as well as the Competition Commission of India**.
  - The government should require BigTech companies to ensure that the **data harvested from consumers will not be used for any purpose other than serving the consumer's interest**.
- **Consumer Awareness:** The government needs to take adequate steps to promote **internet awareness**, such

as checking the authenticity of websites before any transactions are made, and not granting access to unauthorised applications.



## Decoding Genetic Modification

This editorial is based on “Understanding GM mustard: what is it, and how has it been achieved?” which was published in The Indian Express on 27/10/2022. It talks about genetic modification crops and recently approved GM mustard.

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

Agricultural experiments in India have a long and dubious record, but **biotechnology** has added a new twist with genetically modified crops. The use of **genetic engineering** tools to address agricultural vulnerabilities is not just limited to India. A number of other countries are in line to deploy new genetic modified tools as well.

India, USA, Brazil, Argentina and Canada are 5 top GM growing countries, together accounting for approx. 90% area of the **Genetically Modified** cultivation. While proponents of genetic modification argue that it has the potential to solve India’s agricultural productivity problem, opponents point to the negative implications on environment and **human health**.

It is therefore essential to conduct a more thorough and comprehensive assessment of Indian agriculture’s experiences with genetic modification.

### What is Genetic Modification?

- “Genetic modification” involves altering the genes of an organism, be it a plant, animal or microorganism.
- GM technology involves **direct manipulation of DNA** instead of using controlled pollination to alter the desired characteristics.
  - It is one the approaches to **crop improvement**, all of which aim at adding desirable genes and removing undesirable ones to produce better varieties.

### How Genetic Modified Crops are Regulated in India?

- In India, the regulation of all activities related to **Genetically modified organisms** and products are regulated by the **Union Ministry of Environment, Forest and Climate Change (MoEFCC)** under the provisions of the **Environment (Protection) Act, 1986**.

- **Genetic Engineering Appraisal Committee (GEAC)** under MoEFCC is authorised to review, monitor and approve all activities including **import, export, transport, manufacture, use or sale of GMO**.
- GM foods are also subjected to regulations by the **Food Safety and Standards Authority of India (FSSAI)** under the **Food Safety and Standards Act, 2006**.
- GEAC recently approved **commercial cultivation of genetically modified mustard**.
  - Before that **Bt cotton** was the only GM crop that was approved for commercial cultivation in **2002**.
    - ‘Bt’ is shorthand for **Bacillus thuringiensis**, a bacterium found mainly in the soil that produces proteins toxic to some insects, especially the **cotton bollworm**.

### What are the Key Contributions of Genetic Modification Technique?

- **Revolutionised Pharma Sector:** GM microbes and plants revolutionised the production of **complex pharmaceuticals** by enabling the generation of safer and cheaper vaccines and therapeutics.
  - Mass production of GM technology based **human insulin, vaccines, growth hormones** and other drugs has greatly facilitated the **availability and access to life saving pharmaceuticals**.
  - For instance: **Human hepatitis B virus vaccine** was prepared using antigen produced by **recombinant technology in yeast**
- **Herbicide Tolerance:** Genetic Modification has played a key role in **herbicide tolerance** and transformed crops to tolerate specific broad-spectrum herbicides, **which kill the surrounding weeds, but leave the cultivated crop intact**.
  - For example: **Soybean, maize, cotton and canola** are modified with herbicide tolerance character.
- **Climate Change Adaptation:** Genetic Modification is already being used to **help the plants adapt to the rapidly changing climate**. Researchers are developing strains of **rice, maize and wheat capable of withstanding longer droughts and wetter monsoon seasons**.
- **Salinity Tolerance:** Scientists have genetically modified plants to **tolerate high levels of salt offering a potential solution to growing food in salty soils**.
  - The researchers inserted a gene to **remove salt present in the form of sodium ions from water** before it reaches the leaves and also adjusts the ionic and osmotic balance of cells in roots.

- **Contributor to Food Security: Genetic Modification** has improved crop yield, resulting in greater production of the target crop. Scientists have also engineered pest-resistant crops, helping local farmers better withstand environmental challenges that might otherwise wipe out a whole season of produce.
  - **Genetic Modification in microbes** has also significantly contributed to food security for instance the use of animal-based rennet for cheese production has been replaced to the extent of 80-90% by the enzyme chymosin produced by genetically modified microorganisms.
- **Enhancing Biofuel Production:** A chemical modification was performed on the crude **Jatropha oil (CJO)** with the intention of improving the low thermal and oxidative stability, the modified jatropha is considered as a viable **bio-ethanol feedstock**.
  - Additionally, it is giving thrust to the '**National Policy on Biofuels**' which aims for a **20% blend of ethanol in petrol by 2025-26**.

### What are the Concerns Related to Genetic Modification?

- **Compromising Nutritional Security:** Ironically, some genetically modified foods have been reported to be void of nutritional value.
  - As genetic modification tends to focus more on increasing their production, prolonging their lifespan, and deterring pests, the nutritional value of some crops is sometimes compromised.
- **Loss of Indigenous Variety:** Genetically modified production imposes high risks to the disruption of ecosystem and biodiversity because the better traits produced from engineering genes can result in the favouring of one organism. Hence, it can eventually disrupt the natural process of gene flow and affect the sustainability of indigenous variety.
- **Risk of Allergic Reactions:** Genetically modified food has immense potential of allergic reaction because it is biologically altered. The sudden emergence of genetic modification may have a common side effect of allergic reaction for humans who have adapted to the conventional variety.
- **Threat to Wildlife:** Altering the genes of plants can also have serious effects on wildlife. For example, genetically modified plants, such as tobacco or rice, that are used to produce plastic or pharmaceuticals, can endanger mice or deer who consume crop debris left in the fields after harvesting.

### What Should be the Way Forward?

- **Towards Bio-Safety:** There is a need to prevent large-scale loss of biological integrity, focusing both

on agricultural production as well as plant, animal and human health.

- Creation and use of genetically modified crops must be done in collaboration with stewards of ecosystems in order to meet the needs of the environment, local populations, and the wider global community.
- **Complementing Genetic Modification:** Genetic modifications are not the only solution for food security, it must be combined with improved farming credit, better use of water and reducing waste, to create better food options and sustainable crop management.
- **Technical Competency for Effective Regulation:** All regulatory bodies of gm crops, especially the **GEAC**, should be made technically competent.
  - Specific competence on **Risk Assessment and Risk Management of GM crops** including **Monitoring and Information Systems** skills are the need of hour.
  - Also, there is a need to create with immediate effect legally mandated District Level and Panchayat level Committees for faster documentation, and analysis of GM crops.
- **Bottom-Up Genetic Modification:** There should be a consultative and participatory process to prioritise crops and traits for genetic improvement through biotechnology with the goal of addressing the needs of small farmers.
- **Indigenous Gene Banks:** It is important to preserve the indigenous variety due to its ability to adapt to diseases and nutritional value.
  - **Gene banks** can be created that will assist various research institutions in conducting research as well as help in conserving indigenous crops.



## Revitalising Indian Criminal Justice System

*This editorial is based on "The death penalty and humanising criminal justice" which was published in The Hindu on 29/10/2022. It talks about the need for reform in the Criminal Justice System of India.*

**Tag:** Governance, GS Paper-2, Judiciary

The transition of the **Criminal Justice System** with the waves of time is something worth notice. From the premature, primitive, customary legal system to the present, modern complicated judicial framework is the outcome of the evolving nature of crimes and administration.

The synthesis of the above factors has **increased appetite for change in the Indian Justice Delivery System** highlighting the demands for **affordable and effective dispute resolution mechanisms**, and technology driven speedy trials to prepare India for a **potential game-changing transformation** in the justice delivery framework.

### **What is the Structure of the Criminal Justice System in India?**

- The Indian Criminal Justice System is composed of government agencies that enforce the law, adjudicate crimes, and correct criminal behaviour.
- It has four subsystems:
  - **Legislature (Parliament)**
  - **Enforcement (Police)**
  - **Adjudication (Courts)**
  - **Corrections (Prisons, Community Facilities)**

### **How the Criminal Justice System Evolved in India?**

- Throughout India's history, different criminal justice systems have evolved and gained prominence in different regions under different rulers.
- During British rule, criminal laws were codified in India, which remain largely unchanged even today.
- **Indian Penal Code (IPC)** is the **official criminal code of India** drafted in 1860 in the wake of the **first law commission** established in 1834 under the **Charter Act of 1833**.
  - In line, the **Code of Criminal Procedure (CrPC)** provides **procedures for administering criminal law in India**. It was enacted in 1973 and became effective on **1 April 1974**.

### **What are the Current Issues Related to the Criminal Justice System in India?**

- **Pendency of Cases:** As per the records of 2022, over **4.7 crore cases are pending in Indian courts across different levels of the judiciary**. Amid the rising trend of litigation, more people and organisations are approaching courts. This spike, however, is not reflected in the number of judges available to hear these cases.
  - Also, according to **National Crime Records Bureau (NCRB)-Prison Statistics India**, 67.2% of total prison population in India comprises trial **prisoners**.
- **Colonial Nature:** Both **substantive and procedural aspects** of the criminal justice system were designed with the purpose of ruling the nation in British colonial times.
  - In light of this, the **relevance of these 19th century laws is debatable in the 21<sup>st</sup> century**.

- **Slow Enforcement of Judicial Orders:** Lack of coordination between the Judiciary and Police often results in **judgements remaining on paper rather than percolating to the ground**.
  - For instance, **Section 66A of the Information Technology Act 2000** that prescribed **punishment for sending offensive messages** through a computer or any other communication device.
    - Even after **Section 66A was struck down by the Supreme Court**, **police continued to carry out arrests**. It shows a lack of coordination and a **failure to apply judgements on the ground**.
- **Inhumane Behaviour Behind Bars:** Over the years, critics have repeatedly complained about the **indifferent and even inhuman behaviour of prison staff**. Also, there have been many instances of **custodial rapes and deaths** resulting in **violation of prisoners' human rights**.
- **Language Barrier:** As per the **current constitutional scheme**, **English is the official language** for the Supreme Court and High Court of India until Parliament by law otherwise provides. (**Article 348(1)**).
  - For those coming from different linguistic backgrounds, the complexity of statutory language makes the legal system difficult to understand.
  - This **language barrier limits the understanding regarding their rights**, exacerbates lack of awareness and effectively **prevents them from accessing justice**.

#### **What are Recent initiatives to Improve the Criminal Justice System?**

- **National Mission for Justice Delivery and Legal Reforms**
- **AI Portal SUPACE**
- **Interoperable Criminal Justice System (ICJS) Project**
- **Live-Streaming Supreme Court Proceedings**

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

- **Restorative Justice:** Identifying the **rights of crime victims** must be given a major thrust in reforming laws. Introducing **victim and witness protection schemes**, **utilising victim impact statements**, and enhancing **victim compensation and restitution rights** will be a step towards restorative justice.
  - The **V S Malimath Committee (2003)** and **268<sup>th</sup> Law Commission Report of India, (2017)** championed the **victim's right to participate in grant or cancellation of bail** and suggested "**victim impact assessment**" reports in bail matters.

- **Increasing Strength of Judicial Service:** The 2020 India Justice Report revealed that **India has one judge for every 50,000 citizens**. There is a need to substantially **increase the strength of the judicial services** by appointing more judges at the subordinate level. Improvements **must start from the bottom of the pyramid**.
  - As part of strengthening the subordinate judiciary, it must also receive technical and administrative support including **digitisation of documents to help in speeding up investigations and trials**.
  - Also, institutionalising **All-India Judicial Service** can be a step in the right direction.
- **Polishing the Police:** A **progressive, modern India must have a police force which meets the democratic aspirations of the people**. In line, there is a need to reform the **Police Act** and upgrade the skills of our police force to effectively tackle 21<sup>st</sup> century crimes such as **cybercrimes and economic offences**.
  - The Supreme Court in the case of **Pratap Singh v. The Union of India** has also given guidelines suggesting reforms in the police system including separation between the **functions of police in maintaining law and order and investigation**.
- **Overcoming Judicial Backlog:** Right to a speedy trial is the essence of criminal justice. To overcome the backlog of cases, the judiciary needs to embrace a host of reforms in court procedure. At the same time, it can stress on measures such as adopting **Alternative Dispute Resolution mechanisms** like **Mediation, Arbitration for petty offences** and the **effective use of technology for proper case management**.
- **Judicial Language Parity: Communication of justice is as important as the determination of justice.** To cultivate the confidence of the common citizen, the goal of the legal system should be to **eliminate language difficulties** making the process of **entering courts less burdensome** for non-English speakers.
  - Reducing the language barrier would be a step towards 'Indianisation' of a country's legal system.
- **Raising the Bar on Death Penalty:** Supreme Court suggested that while delivering judgement in case related to death penalty the **convict's social background, age, educational levels should be taken into account**.
  - Recently, the Supreme Court bench has also laid emphasis upon framing **guidelines regarding potential mitigating circumstances to be considered while imposing death sentences**.

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## Drishti Mains Questions

1. Examine how climate change is affecting the mangrove ecosystem of Sundarban and suggest measures to mitigate the challenges.
2. Highlighting the impacts of agrochemicals in farming, suggest measures on how India can attain sustainable farming.
3. Discuss the major issues related to management of Telecom Sector in India in light of recent 5G rollout.
4. The impact of rapid changes in the Arctic region goes beyond the littoral states. Comment.
5. Discuss the major challenges related to accessibility and availability of water resources in India and to what extent the Jal Jeevan Mission has bridged the gaps.
6. Highlight the major challenges related to the Livestock sector in India in light of recent lumpy skin disease outbreak.
7. Explain major issues and potentials of Corporate Social Responsibility in light of Companies Act, 2013?
8. Self-sufficiency in defence is fundamental for India's strategic independence and self-reliance. Comment.
9. Indo-Pacific has become a prominent addition to the geopolitical lexicon in recent years. Explain how India can enhance its presence in this region.
10. "There is a quantitative expansion of Education in India, but the qualitative front is still lagging behind". Explain how National Education Policy 2022 can help shake the education system from its slumber.
11. Discuss how the Indian collegium system evolved and major issues associated with it.
12. Discuss major roadblock in the efficiency and development of Mental Healthcare in India, and also suggest innovative solutions to deal with mental health issues.
13. Forest sustainability is not an option but imperative. Explain.
14. Unprecedented growth in technology has blurred the boundaries of cyberspace across the world. Highlight major challenges related to India's cyber-space.
15. Despite major strides in nutritional security, India's position in the Global Hunger Index remains an area of concern. Critically analyse.
16. How significant is semiconductor manufacturing for India and what are the challenges associated with its manufacturing? Discuss
17. What are the major challenges related to global policing and to what extent Interpol can facilitate global cooperation to tackle rising cybercrimes.
18. Transition from today's 'take-make-use-dispose' economy to a circular economy is essential for environmental sustainability. Explain with reference to India's LiFE initiative.
19. "As extreme weather events become more frequent, newer mechanisms are needed for shock-proofing the urban poor". Comment.
20. Highlight the issues associated with stubble burning in India. Also, suggest innovative measures to recycle crop residue.

## **Drishti** Mains Questions

21. Highlighting India's recent initiatives in the space sector, explain how commercialisation of space technology is impacting India's presence in the space domain,.
22. Despite transforming India's digital economy and society in a variety of ways, big tech companies are also under scrutiny for Internet Monopolisation. Critically Analyse.
23. Highlighting the key contribution of genetic modification in India, explain how genetic modified crops are regulated in India.
24. The evolution of criminal practises has increased appetite for change in the Indian Justice Delivery System. Comment.