



**INSIGHTSIAS**

SIMPLIFYING IAS EXAM PREPARATION

**INSTA MINDMAPS**



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**DECEMBER 2022**

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# General Studies – 1

Topic: Salient features of Indian Society, Diversity of India.

## 1. Protecting Tribal Languages

### Introduction

- **India epitomizes unity in diversity, and languages are a big part of our collective identity.**
- According to **UNESCO**, any language that is spoken by **less than 10,000 people is potentially endangered.**

### Endangered tribal languages

- In India, after the 1971 census, Government decided to not include **any language spoken by less than 10,000 in the official list of languages.**
- Such languages are treated by UNESCO as potentially endangered.
- According to the **People's Linguistic Survey of India 2013**, around 220 languages has been lost in the last 50 years and 197 has been categorised as **Endangered.**
- Examples of such languages would be **Wadari, Kolhati, Golla, Gisari.**

### Importance of tribal languages

- The primary need to conserve any language is to conserve the cultures associated with them which include literature, food habits and lifestyle.
- A language is not just words. It's a culture, a tradition, a unification of a community.
- **Tribal languages are fundamental to understand the world we live in, our origin and the roots that we all came from.**
- An experience of generations is preserved in indigenous languages.
- Languages serve as the medium of transmitting cultures from one generation to the other.
- It is language that distinguishes one ethnic community from another.

### Concerns / Challenges

- With a dying language die thousands of stories, millions of lessons, and a lifetime of experience.
- **A language's death is akin to erasing a part of our history.**
- With loss of their mother tongue, people find themselves unable to speak their first language.

### Initiatives to Preserve Tribal Languages

- A local community radio channel called 'Asur Mobile Radio' in Jharkhand launched cultural programmes in the Asur language, which has only 7,000-8,000 speakers.
- The Government of India launched **Scheme for Protection and Preservation of Endangered Languages (SPPEL)** to document and archive the country's languages that have become endangered.

### Way Forward

- Tribal languages should be endorsed through innovative, cultural and entertainment programmes.
- There is a need to promote tribal languages as a medium of communication and education in tribal-dominated districts.
- It is important to integrate indigenous knowledge systems alongside modern sciences in the curriculum of schools.
- There is a need to create livelihood support for the speakers of these language.
- Recording audio or video of folk songs/folk tales in different languages can help preserve not just the language/dialect but also the folk culture.
- The traditional knowledge about sustainable living, medicines, farming and architecture can also be documented for preservation.
- There is a need to set up departments in central universities to study the dying languages and work towards their promotion.

- Language departments in central universities can set up libraries or museums with audio and video material showing the oral traditions of these languages.
- Institutions like **Central Institute of Indian Languages (CIIL)** should take lead in studying and preparing materials in tribal languages.
- A healthy nexus and coordination between voluntary organisations, linguists, and the government is a must.

Topic: Women related Issues

## 2. Female Labour Force Participation

### Introduction

- As the world hits a population milestone of 8 billion, India is all set to become the world's most populous country in 2023.
- India is poised to gain a massive number of working-age individuals in the next 25 years.
- Such a huge potential of human resources will do much for the Indian economy, if we are able to enhance women's participation on a significant scale.

### Current female labour force participation

- As the labour market currently stands, **our female labour force participation rate (FLFPR) is one of the lowest in the world.**
- Further, it **remains in declining mode**, having fallen from 30.5% in 2000 to 21.1% in 2019, and 18.6% in 2020, by International Labour Organisation figures.
- On FLFPR, India was placed at No. 140 of 156 countries in 2021 by The **Global Gender Gap Report of the World Economic Forum.**
- Study shows, structural shift and sectoral transformation in the Indian economy (1983-2018) made no impact on the pattern of women's employment in India, both quantitatively and qualitatively.
  - Women continued to overcrowd the agriculture sector, despite its declining share of the economy.
  - Non-farm sectors didn't open up many opportunities for them.
  - As 90% of working women are in the informal sector, they are subject to high degrees of gender discrimination in wages, job and social security.

### Discriminatory Practices

- Wages are lower for women overwhelmingly because of discriminatory practices and only slightly due to lack of education and work experience.
- In 2019-20, about 60% of men had either regular salaried and self-employed jobs, while only a fifth of women did.
- By an appraisal made by The Economic Survey of 2020, 60% of women in the 15-59-years age group are engaged in full-time housework, as compared to 1% of males.
- In a situation of job scarcity, "men have more right to opportunities than women".
- India's trend of female labour supply doesn't follow a U-shaped curve in keeping with the typical pattern of GDP growth and a rise in female literacy.
- Even though 43% of India's Science, Technology, engineering and Math (STEM) graduates were women, only 14% of the STEM workforce is female.
- A 2014- 2018 study on Industrial Training Institute enrolment found large gender gaps.

### Concerns / Challenges

- Better educational achievements have not necessarily converted to women's sustained workforce participation.
- **India's investment in human capital is abysmally poor**, with 3.1% of GDP spent on education (2021-22), around 1% on health.
- We also have a high level of unfulfilled requirements for reproductive health services.

- Skill programmes in India also suffer from a gender bias, which reinforces our labour market imbalance.
- Employed women are at greater risk of being displaced by automation, according to McKinsey Global Institute report cautioned.
- A significant number of qualified women are unwilling to join the labour market due to 'family responsibilities.
- According to an analysis, though Indian women represent 48% of India's population, they contribute only around 17% of GDP, compared to 40% in China.
- Factors like a **disproportionate burden of child care, logistical barriers of mobility and safety, and socio-cultural norms around marriage, etc, have also acted as deterrents.**

### Way Forward

- An Asian Development Bank study said that if the participation of women were equal to that of men, India's GDP could be 60% higher in 2025.
- **India's human capital, particularly of women must be optimally utilized for the economy to perform well.**
- Gender differentials in access to education and skill development must be removed on a priority basis.
- Social infrastructure to relieve women from their 'double burden' of work should be expanded.
- A '**women-friendly' work culture** must be fostered to achieve India's ambitious Amrit Kaal target of having half its workforce female by 2047.

## 3. Gender Responsive Urban Mobility

### Introduction

- Recently the **World Bank launched a "Toolkit on Enabling Gender Responsive Urban Mobility and Public Spaces in India"** with the aim of suggesting ways to make public transport in Indian cities more inclusive.

### Present Status

- Studies show that women, especially those from lower socio-economic groups, are among the biggest users of public transport in Indian cities.
- Women have unique mobility patterns, often travelling shorter distances, using multiple modes of transport, and travelling with dependents, during "off-peak hours".
- Currently, urban mobility systems are not catered to these unique needs of women.
- This can make travel inconvenient, unsafe, and also more expensive for them.

### Impact of lack of reliable public transport

- Studies have shown that lack of safe, inexpensive and reliable public transport has a profound **impact on women's ability to access education and employment opportunities.**
- Lack of viable urban transport is frequently cited as a **major impediment for women to access better employment opportunities.**
- India's female labour force participation rate is among the lowest in the world.
- Studies have also shown how distance from home impacts women's choice of colleges and other educational institutions.

### Concerns / Challenges

- Lack of safety and also the lack of a perception of safety are a major impediment for women when it comes to accessing public transport.
- Dearth of good street lighting, no reliable last mile transport, and high waiting time at remote bus stops are some of the challenges.
- Here a vicious cycle is created — unsafe transport leads to fewer women travelling out which in turn leads to fewer women out in public spaces which actually make these spaces even more unsafe.

- Since the burden of care work lies disproportionately on women, they often need to plan their travel far more meticulously than men.
- This means longer waiting times and delays have a deleterious effect on them.

### Way Forward

- There has to be greater effort made to understand the on-ground situation with a gender lens.
- Any new transport policy or infrastructure development must be preceded by an honest evaluation of issues concerning women.
- **Policies and development plans must reflect the concerns of women.**
- **Inculcating a gender lens in public transport planning and development** means involving and giving authority to more women stakeholders.
- **Building gender sensitivity and awareness** among service providers through mandatory programmes and community action.
- Investment has to be made in better infrastructure and services with a focus on women-friendly design.
- Creation of wide obstruction-free footpaths, street lighting, clear signages, introduction of short bus routes, and subsidising public transport for women.

## General Studies – 2

Topic: Structure, organization and functioning of the Executive and the Judiciary

### 4. Transparency in Judicial System

#### Introduction

- The Indian Judiciary plays an increasingly important role in the life and the governance of the country.
- However, the issue of transparency has been a sticking point for the judiciary in India.

#### **Importance of transparency in Judiciary**

- It promotes accountability, combats corruption, and helps eliminate arbitrariness.
- It facilitates greater judicial independence and **enhances public confidence.**
- The level of trust and the legitimacy of judges and others operating in the justice system can be enhanced.
- Policy of transparency and access to public information enables the society to understand its operation, challenges, and limitations.
- Transparency also leads to the proper functioning of a democratic country whereby people have the right to receive information and make informed decisions.
- Thus, **Transparency fundamentally reassures society that justice is served.**

#### **Concerns / Challenges**

- **Appointment and Transfer of Judges**
  - Due to lack of transparency in the appointment of judges, the procedure adopted by Collegium system is being criticized.
- **Transfer of Judges**
  - The policy of transfer is also criticized because many transfers of judges of different High Courts has been made on extraneous motive.
- **Roaster System**
  - Chief Justice of India has power to decide the roster of the cases.
  - In this regard, dissatisfaction from the members of highest judiciary itself has been expressed.
- **Practice of Sealed Envelop**

- In case of sealed cover submission, the information is accessible only to the court and only to the party who has submitted it.
- There are so many cases where the Court had sought detailed report in sealed cover envelope such as in case of former Chief of CBI Alok Verma, 2G Spectrums and Board for Control of Cricket in India etc.
- **RTI Act**
  - The Supreme Court, in the Chief Information Commissioner v. High Court of Gujarat (2020) case, barred citizens from obtaining access to court records under the RTI Act.
  - Though this ruling does not restrict the RTI Act from being used to the administrative side of the court, it does effectively close the door to accessing the millions of court records submitted on the judicial side under the RTI Act.
- **Judicial independence**
  - Judicial independence is employed as a blanket over all difficulties and as a shield against accountability for the problems that have arisen.
  - There is a lack of openness in the court system's operation.

### Way Forward

- To create confidence and faith of the public **it is necessary to adopt the principal of transparency and fairness in the functioning of any democratic institution.**
- Transparency in the appointment of judges serves to shield judges from undue external influences.
- A key strategy to increase judicial transparency is **to collect, analyse, and share statistical data.**
- Such data allows for the analysis of performance, the identification of accomplishments, the detection of problems, and the development of strategies to address them.
- It is critical to provide public access to the courts, including through the media, in order to raise awareness of the judiciary's activities.
- The Supreme Court should determine and circumscribe the circumstances in which confidential government reports, especially those withheld from the other side, can be used by courts in adjudication.
- **The procedure for allotment of cases must be transparent, fair, just and reasonable through a proper codified system.**
- As the Supreme Court is the protector of the fundamental rights of the citizen in the country, it is important to make sure that the people's right to receive information which is implicit under Article 19(1)(a) of the Indian Constitution is not affected.

Topic: Statutory, regulatory and various quasi-judicial bodies

## 5. Quasi-judicial courts

### Introduction

- There is a class of quasi-judicial agencies that are not discussed in conversations on the pendency of cases.
- These are generally handled by the revenue authorities and largely relate to land, tenancy, excise, arms, mining, or preventive functions under the Criminal Procedure Code.

### Importance of Quasi-judicial courts

- The functioning of these bodies is of paramount importance as they deal with vital land and related issues.
- Their failure to administer speedy justice leads to harassment of citizens, besides abetting criminal activity by unscrupulous elements.
- If we aim at the ease of living by citizens, we must make adjudication by administrative authorities timely, accessible and affordable.

### Problems with Quasi-judicial courts

- The maladies that these agencies suffer from are far graver than judicial set-ups, as they are staffed by revenue authorities who have several other functions.

- Usually, many of these offices are understaffed.
- Their engagement with duties such as law and order, protocol and other administrative functions leaves them with much less time for court work.
- Their access to court clerks and record keepers is limited.
- Only a few states have electronic platforms for supporting activities such as the filing of cases, publication of cause lists and sending summons.
- Several of the presiding officers lack proper knowledge of law and procedures.
- The most critical issue faced by these systems is the lack of adequate supervision and ownership by the administrative and political leadership.
- Data on the level of pendency or the speed of disposal is not compiled in many states.

### Way Forward

- A multi-pronged action plan inclusive of legal, governance and HR reforms is required to move ahead.
- The government should make the efficient functioning of these agencies a priority.
- Detailed data on the functioning of these agencies must be collected and published from time to time.
- An electronic platform should be established to handle all ancillary work related to the administration of justice, such as filing of complaints, issue of summons and movement of case records between courts.
- Annual inspections of the subordinate courts should be made mandatory.
- Interdisciplinary research on the functioning of these courts should be encouraged. This would identify the areas of improvement.
- Regular training and orientation of the adjudicating authorities should be taken up from time to time.
- The state index of performance of these quasi-judicial courts be made and published.
- More rigorous induction training of officials handling judicial work would help.
- The importance of judicial work should be instilled among the trainees and the skill and confidence in handling them should be developed.
- Procedural reforms such as minimising adjournments and other such reforms proposed by Law Commission for reform of the Civil Procedure Code should be adopted.

Topic: Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.

## 6. Food Fortification

### Introduction

- When it comes to nutrition, there is an urgent need to address the maladies that poor nutrition can inflict on the masses.

### Malnutrition

- Malnutrition exacerbates the magnitude of the public health crises we face, and is India's most serious challenge and concern.
- **As in National Family Health Survey-5 data, every second Indian woman is anaemic, every third child is stunted and malnourished, and every fifth child is wasted.**
- India ranks 101 out of 116 countries in the Global Hunger Index 2021, with a 15.3% undernourished population.
- According to Global Nutrition Report 2021, stunting among children in India is significantly higher than the Asian average of 21.8%.

### Food Fortification

- Food fortification is the process of adding nutrients to food.
- For instance, rice and wheat are fortified with iron, folic acid and vitamin B 12, and salt fortified with iron and iodine.

- **Food fortification is a cost-effective complementary strategy to address multiple micronutrient deficiencies.**
- It can help us in reducing micronutrient deficiencies and address overall health benefits.
- Since the 1920s, developed countries and high-income countries have successfully tackled the issue of malnutrition through food fortification.
- Of late, the low-and middle-income countries have pursued food fortification to tackle micronutrient malnutrition.

### Rice programme and Anaemia

- Pilot projects on the distribution of fortified rice have been taken up in select States as part of a targeted Public Distribution programme for the masses.
- The programme has been a success in terms of preventing cases of anaemia.
- The central government scaled up the distribution of fortified rice through PDS, ICDS and PM-POSHAN.
- Experiences from the different States on the fortified rice project, so far tally with the results of global programmes that use fortified food as a cost-effective strategy.

### Need for Rice Fortification

- **Iron deficiency anaemia is a major public health concern**, because it is responsible for 3.6% of disability-adjusted life years or DALYs (years of life lost due to premature mortality and years lived with disability).
- Rice fortification can save millions of DALYs per year with no known risk of toxicity.
- Rice fortification, which costs less than 1% of the food subsidy bill (2018-19), has the potential to prevent 94.1 million anaemia cases.

### Noon meal scheme in Gujarat

- In Gujarat, an eight-month long study on multiple micronutrient fortified rice intervention for school children (six-12 years) in 2018-2019, as part of the Midday Meal Scheme, found
  - increased haemoglobin concentration,
  - 10% reduction in anaemia prevalence, and,
  - improved average cognitive scores (by 11.3%).

### Concerns/Challenges

- Activists have expressed concern that **excess iron overload from fortified rice has been dangerous for Jharkhand's tribal population suffering from sickle cell anaemia and thalassaemia.**
- Consumption of excess iron by pregnant women can adversely affect foetal development and birth outcomes. These children have increased risk of contracting chronic diseases.

### Way Forward

- Dietary diversity is a healthier and more cost-effective way to fight malnutrition. The quality of diet should be improved.
- National Institute of Nutrition, too, recommended that a diverse natural diet is required to meet the normal population need of micronutrients in its Nutrient Requirements of Indians released 2020.
- The government must spend on alternative diet based sustainable solutions and improve the access to quality healthcare in the public sector.

### Conclusion

- **Food fortification carried out with precautions, is the key to the malnutrition issue which the nation continues to grapple with.**

## 7. Private Healthcare

### Introduction

- **Private spending still constitutes nearly 60% of overall expenditure on health in India.**
- This is driven by the dominant role of the private health sector.

### Healthcare Expenditure

- India ranks poorly on multiple health financing indicators.
- Its public health expenditure as a percentage of its GDP (1.28%) and share of general government expenditure dedicated to health (4.8%) remain akin to the poorest countries.
- Per capita health spending growth has not kept pace with rising incomes.
- The issue of high healthcare costs remains limited to what the government can do to share the personal expenditure burden.

### Concerns / Challenges

- **The private sector in India is marked with inequities between rural and urban areas and widespread market failure.**
- In India, the income disparities, backwardness, and under-regulation incentivised the private sector.
- These often provide care at apparently inexpensive rates but of dubious quality.
- Many States have their own Clinical Establishments Acts that are stuck short of full implementation.
- **The high costs of medical education trigger cost recovery through resource-intensive ways of practice.**

### Way Forward

- Initiatives that make private healthcare more affordable without affecting care quality assume importance.
- This requires a range of policy instruments that alter the operating conditions of the private sector.
- Such policies have to be enshrined in our national health policy.
- We need overarching policies that drive down private healthcare costs even for the self-paying consumer with little or no government subsidy.
- Need to regulate rates and standards of care in the private sector.
- Widening the ambit of practice of nurses and allied personnel should form a strong emphasis of health policy.
- Creating affordable and effective private health insurance products.

### Conclusion

- **No country in the world has ever achieved universal healthcare through predominantly private means.**
- **Affordable private healthcare must only come to supplement strong public healthcare,** while in turn having a complementary effect in enhancing the efficiency of government health spending.

## 8. Empowerment of Persons with Disabilities

### Introduction

- According to an estimate of the United Nations, more than one billion people in the world are persons with disabilities.
- More than two per cent of India's population are differently-abled people.
- Therefore, **it becomes the responsibility of all to ensure that those people can lead a dignified life independently.**

### Rights of Persons with Disabilities Act, 2016

- According to Rights of Persons with Disabilities Act, 2016, “Person with disability” means a person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others.
- The types of disabilities have been increased from 7 to 21.
- It increases the quantum of reservation for people suffering from disabilities from 3% to 4% in government jobs and from 3% to 5% in higher education institutes.
- Every child with benchmark disability between the age group of 6 and 18 years shall have the right to free education.
- Stress has been given to ensure accessibility in public buildings in a prescribed time frame along with Accessible India Campaign.
- The Chief Commissioner for Persons with Disabilities and the State Commissioners will act as regulatory bodies and Grievance Redressal agencies, monitoring implementation of the Act.

### Government Initiatives

- Government of India launched the **Accessible India Campaign (AIC)** to make the built environment, ICT ecosystem and transport facilities more disabled-friendly.
- Department of Empowerment for Persons with Disabilities (Department) has released the **Sugamya Bharat app** to enable persons with disabilities to report any building that is inaccessible.

### Concerns / Challenges

- Lack of strong enforcement mechanism under Accessible India Campaign (AIC), led by people with disabilities and accessibility professionals.
- Deadlines in the AIC have also been repeatedly breached.

### Making Parliament disabled-friendly

- Need to have an Accessibility Committee in Parliament to attend to the access needs of the disabled.
- The constitution of an Accessibility Committee by the Supreme Court recently may be a good reference point for Parliament.
- Providing sign language interpretation for Parliamentary proceedings.
- Ordering an accessibility audit of Parliament’s websites.

### Way Forward

- Make every new building accessible before it is granted an Occupancy Certificate.
- Standards for Universal Accessibility in India, 2021 must be integrated into local bye-laws and state planning laws.
- The list of empanelled professionals maintained by municipal authorities must also consist of accessibility professionals, and this requirement must be codified in model building bye-laws and the National Building Code.
- Central and state level procurement laws and policies must incorporate accessibility criteria in public procurement of physical, digital and transport infrastructure.
- **Department of Empowerment for Persons with Disabilities must take the lead in ensuring that accessibility targets are met.**

## 9. Making Cancer Drugs Affordable

### Introduction

- **The subject of the spiralling costs of cancer medicines and their implications were highlighted in a recent report (“Cancer Care Plan and Management”) by the Rajya Sabha’s Standing Committee on Health.**
- According to the WHO Constitution, “enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being”.

### Rising costs of Cancer care

- The Committee noted that “about 40% of cancer hospitalization cases are financed mainly through borrowings, sale of assets and contributions from friends and relatives”.
- Even average out-of-pocket spending on cancer care is too high.
- Spending for cancer care in private facilities is about three times that of public facilities.
- WHO report highlighted that the cost of a course of standard treatment for early-stage positive breast cancer would be equivalent to about 10 years of average annual wages in India.
- The costs associated with other medical care and supportive care would make overall care even more unaffordable.

#### Impact on survival rates

- The catastrophic treatment cost has seriously impacted survival rates in developing countries.
- In breast cancer, the five-year survival rates in India and South Africa are estimated to be 65% and 45%, respectively.
- In contrast, in high-income countries, it is nearly 90%.

#### The justifications by pharma companies

- Large pharmaceutical companies cite that they spend over \$3 billion in bringing a new molecule to the market, which they must recoup in order to remain in the market for innovation.
- WHO report mentioned above observed that spending on research and development may bear little or no relationship to how pharmaceutical companies set cancer medicine prices.
- Another factor that allows the companies to sustain their high profit margins is intellectual property protection.
- Through this companies can exercise monopoly control over their products.

#### Concerns / Challenges

- **The lack of access to these critical medicines has pushed the life of patients and their families into deep financial stress.**
- It has also jeopardised their right to live with dignity, a fundamental right guaranteed under Article 21 of the Indian Constitution.

#### Supreme Court's Interpretation

- The Supreme Court of India has interpreted the right to life as the most precious human right.
- The Court has, in several judgments interpreted the **right to health as an extension of the right to life under Article 21.**

#### Way Forward

- **Authorising Indian companies to domestically produce high-priced cancer medicines.**
- Granting compulsory licences (CLs) in keeping with Sections 84 and 92 of the Patents Act.
- The Government can invoke provisions of Section 100 of the Patents Act, which empowers it to authorise any entity to use a patented invention without the authorisation of the patent holder.

Topic: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

## 10. Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)

#### Introduction

- The **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)** is a regional grouping of seven countries that lie in the littoral and adjacent regions of the Bay of Bengal.
- This sub-regional organisation came into being through the Bangkok Declaration.
- Technological and economic cooperation among South Asian and Southeast Asian countries along the coast of the Bay of Bengal is the main objective of BIMSTEC.

### Importance of BIMSTEC for India

- BIMSTEC is the natural platform for India to implement its regional connectivity, Neighbourhood First and Act East policies.
- BIMSTEC is important for free trade agreement, poverty alleviation, tourism, energy and climate change, and even counter-terrorism and disaster management.
- BIMSTEC could allow India to push a constructive agenda to counter Chinese investments.
- Myanmar and Thailand, have a crucial place for India's ambitious connectivity plans for north-eastern region.
- India-Myanmar-Thailand highway is one of the key projects in India's Act East policy.

### Potential of BIMSTEC in a rapidly changing Indo-Pacific region

- **Connectivity**
  - Connectivity remains a priority on the BIMSTEC agenda.
  - The Bay of Bengal is one of the least integrated regions in the world. Seamless inter-connectivity transport links would allow for cross-border trade facilitation.
  - BIMSTEC makes it easier for India **to share a common regional platform with its neighbours in South Asia**
  - **BIMSTEC also establishes a linkage between South and Southeast Asia.**
  - **Promoting regional and sub-regional cooperation** via BIMSTEC and BBIN to counter China's BRI and its geo-economic and geo-political interventions in Asia.
  - The development of the North-eastern region, by opening up to Bangladesh and Myanmar, is another incentive for India.
- **Regional Co-operation**
  - Regional cooperation under the ambit of SAARC has become difficult made BIMSTEC more viable.
- **Cordial Relationship**
  - The member countries have cordial relationships, something patently missing among the SAARC countries.
  - BIMSTEC's major strength comes from the fact that it includes two influential regional powers: **Thailand and India.**
  - This adds to the comfort of smaller neighbours by reducing the fear of dominance by one big power.
- **Economic vistas**
  - The region has countries with the **fastest-growing economies in the world.**
  - The combined GDP in the region is around US\$2 trillion and will likely grow further.
  - **Trade among the BIMSTEC member countries reached six percent in just a decade**, while in SAARC, it has remained around five percent since its inception.

### Way Forward

- **The members need to work collectively towards making BIMSTEC a stronger, more effective and result-oriented organisation** for achieving a peaceful, prosperous and sustainable Bay of Bengal Region.
- BIMSTEC secretariat must be significantly empowered with more human and financial resources.
- BIMSTEC will have to prioritize economic connectivity, which is the prerequisite for regional integration.
- Need for upgrading cooperation in disaster management, terrorism, maritime security and transnational crime.
- India will need to take on an informal BIMSTEC leadership role and let its commitments lead by example.
- Now is the time not just to deliberate, but also to deliver. Now is the time to translate promises into performance.

## General Studies - 3

Topic: Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment

### 11. Examining the cost of GST

#### Introduction

- The Goods and Services Tax was introduced to replace the complex order of entry levies and sales tax in India.
- It also aimed to modify tax compliance and administration within the country.

#### Positive Impact

- GST has been successful in facilitating the free movement of goods in the country.
- Earlier, checkposts served as bottlenecks that not only involved a lot of waiting time but were also breeding spots for corruption.
- Thanks to GST, the only requirement at these checkpoints is now the e-way bill.
- The e-invoice system has now become an integral part of doing business in India. The law has slowly expanded its coverage coverage.
- The GST number that can track every supply chain transaction has helped to address fraudulent claims and fake invoicing.

#### Negative Impact

- GST has raised issues between states and the Centre.
  - It harms producer states and rewards consumer states in terms of revenues.
  - Though the government decided to roll out compensations for five years of revenue losses for such states, the pandemic affected this plan.
- A large burden of the slowdown has been passed on to the states as the Centre has been steadily increasing cesses and surcharges to earn revenue.
- Federalism is also suffering because of GST from a broader perspective.
  - State governments have lost most of their independent taxation powers, which has increased their dependence on the Centre.
- Sectoral issues with GST continue to persist.
  - Fuel is out of its purview and the airline industry doesn't get credit for taxes on jet fuel.
- With a 28 per cent GST rate on products like plywood, automobile parts, and electronic items, potential buyers are forced to opt for unregistered dealers.
- India's online gaming sector is one of the fastest-growing sectors in the media and entertainment space.
- Thus, an increase in this tax burden leads to a loss of investments.

#### Concerns / Challenges

- The amplification of the Centre-state disparity after GST was implemented has put Indian federalism in a tight spot.
- Each state has the same voting right in the GST council irrespective of its population.
- The decisions of the council are binding on Parliament — in contravention to the principle of parliamentary sovereignty.
- The delay in establishment of an appellate tribunal related to GST is increasing the burden on the judiciary. GST refunds and numerous court cases are alarming.

#### Way Forward

- As GST matures and evolves, the impact on the economy may be further accentuated by bringing in reforms to make the law more efficient.
- As state revenues are suffering, there is an urgent need for the inclusion of gasoline, diesel, jet fuel, real estate and electricity under GST.

- We need to create another institution in the form of a GST state secretariat that can bring together senior officers from the Centre and states in an institutional forum registered under the Society Act.
- This forum could also provide a common point of contact for trade and industry to redress the grievances on non-policy matters.
- The success of GST lies not only in the revenue growth it has brought about but also in making India a truly single market.
- Such an achievement in this land of diverse economic considerations is a win for India's federal roots.

Topic: Investment models

## 12. Domestic Credit System

### Introduction

- In fiscal 2022-23 India's economy is expecting 6.8–7.0% growth, when the world's largest economies face a slowdown amid rising inflation and pandemic and war-related disruptions.
- The deepening and widening of domestic credit during this period sustained businesses while providing retail loans to support consumption-led growth.

### Well-regulated financial system

- India is in a position to temper the severity of a global recession.
- Nobel laureates Ben Bernanke et al demonstrated how **society might mitigate the impact of a financial crisis through a well-regulated financial system.**
- In India, it was a robust digital-age financial ecosystem that kept our credit engine running.
- The domestic credit keeps flowing in the country even as global uncertainties persist.

### Domestic Credit

- From the onset of the pandemic, the government ensured that the credit continued to flow not just to traditional sectors, but also to newer and more accretive segments such as the Micro, Small and Medium Enterprises (MSMEs).
- RBI data reveals that bank credit growth accelerated to 17.2% in the quarter ended September 2022 from 7% in 2021.
- In the MSME sector, where the loan market grew from ₹31 trillion in March 2020 to ₹36.4 trillion as of June 2022.
- Bank credit to non-banking financial companies (NBFCs) rose by 30.6 % year-on-year.
- NBFCs and fintech firms have extended the Indian financial sector's reach through digital means.

### Capital to equity markets

- In recent times the **new capital to equity markets is coming in the form of systematic investment plans (SIPs).**
- In recent months, as foreign capital exited Indian markets, the **retail investor money provided additional credit and boosted overall economic sentiment.**

### Way Forward

- Today India has a multi-engine credit delivery system where banks, specialized financial institutions and NBFCs, apart from insurance, asset-management and fintech firms, will all have roles to play.
- Policymakers and regulators must study their inter-dynamics in detail to ensure credit flows remain robust enough to support growth even in case of global headwinds.
- Enabling and deepening cooperation between key credit sectors such as banking and NBFCs is important.
- **Banks and NBFCs will have to adopt modern data analytics, including artificial intelligence (AI) and machine learning (ML) to serve newer segments such as low-income individuals and small businesses.**
- Time to focus on deepening corporate bond markets and secondary markets for debt.

- While households and individuals have entered equity markets in large numbers via SIPs, we should run information and education campaigns to draw them into debt markets too.
- Care need to be taken to **tackle future inflationary pressures and currency challenges without sacrificing credit flows.**

### Conclusion

- The various constituents of our financial sector will have to act like a team to move credit along and lead the country towards its goal of sustained economic growth.

Topic: Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth.

## 13. Rural Manufacturing

### Introduction

- Manufacturing sector in India is seeing a shift in the manufacturing activity and employment from bigger cities to smaller towns and rural areas.
- This '**urban-rural manufacturing shift**' has often been interpreted as a mixed bag.
- The advantage is it could transform the rural economy, while the constraint is it could hamper higher growth.

### World Bank Study

- The movement of manufacturing away from urban locations was brought out by the World Bank in a report.
- It found that manufacturing plants in the formal sector are moving away from urban areas and into rural locations, while the informal sector is moving from rural to urban locations.
- Their results suggested that higher urban-rural cost ratios caused this shift.

### Present Status

- Recent data from the Annual Survey of Industries for 2019-20, shows that the rural segment is a significant contributor to the manufacturing sector's output.
- While 42% of factories are in rural areas, 62% of fixed capital is in the rural side.
- This is the result of a **steady stream of investments in rural locations over the last two decades.**
- In terms of output and value addition, rural factories contributed to exactly half of the total sector.

### Causes for Rise in Rural Manufacturing

- Rural areas have generally been more attractive to manufacturing firms because **wages, property, and land costs are all lower than in most metropolitan areas.**
- **Factory floorspace supply constraints**
  - When locations get more urbanised and congested, the greater these space constraints are.
  - In cities, factories just cannot be expanded as opposed to rural areas.
- **Production cost differentials**
  - Many firms experience substantially higher operating costs in cities than in rural areas.
- **Capital restructuring**
  - Big firms deliberately shift production from cities to take advantage of the availability of less skilled, less unionised and less costly rural labour.
- In the aftermath of trade liberalisation, import competition intensified for many Indian manufacturers, forcing them to look for cheaper methods and locations of production.

### Impact

- The shift in manufacturing activities from urban to rural areas has helped maintain the importance of manufacturing as a source of livelihood diversification in rural India.
- The growth of rural manufacturing, by generating new jobs, provides an economic base for the transition out of agriculture.

**Concerns / Challenges**

- Though firms reap the benefits of lower costs via lower rents, the cost of capital seems to be higher for firms operating on the rural side.
- The rural segment accounted for only 35% of the total rent paid, while it had 60% of the total interest payments.
- The benefits reaped from one source seem to be offset by the increased costs on the other front.
- Issue of “skills shortage” in rural areas as manufacturing now needs higher skilled workers to compete in the highly technological global ‘new economy’.
- Manufacturers who depend only on low-wage workers simply cannot sustain their competitive edge for longer periods as this cost advantage vanishes over time.
- Rising inflation in international commodity prices also threatens the rural non-farm economy.

**Way Forward**

- **Need for clear solutions to the problems of rural manufacturing and the most important is the provision of more education and skilling for rural workers.**
- A more educated and skilled rural workforce will establish rural areas’ comparative advantage of low wages, higher reliability and productivity and hasten the process of the movement out of agriculture to higher-earning livelihoods.
- Rural areas will also need greater fiscal support, both in terms of direct income support to revive demand in the economy and through various subsidies and protection from the rising inflation in input prices.

Topic: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

## 14. Road Safety and its impact on the environment

**Introduction**

- Road safety is an issue of universal concern.
- **Safer Roads in addition to ensuring an easier, comfortable, and more secure commute, also have a positive impact on the environment.**

**Present Status**

- Every year, mega Indian cities witness nearly 50,000 accidents. A quarter of them are fatal.
- More than half of these are on account of over speeding and a quarter due to dangerous driving.
- Nearly half of those who lose their lives are pedestrians.
- Almost half of these avoidable deaths are due to collisions with buses and trucks.

**Impact of Road safety on Environment**

- Vehicle crashes adversely impacted the environment in various ways and in different degrees.
- Most vehicles contain toxic metals such as lead, mercury, cadmium or hexavalent chromium, which are detrimental to the environment.

**Automobile Scrappage**

- Severe road crashes lead to automobile wreckage, which gives rise to scrappage.
- Despite being one of the largest car and light commercial vehicle markets in the world, **India’s National Automobile Scrappage Policy**, launched in 2021, is still in its nascent stages.
- Vehicle landfills turn into automobile graveyards leading to wasteful and sub-optimal land usage and water and soil pollution for decades.

**Speeding limits**

- One of the biggest factors for road crashes is speeding.
- Speeding has consistently been responsible for over 60% of all road crash fatalities in India in the last five years.

- Studies show that cutting motorway speed limits even by 10 km/h can deliver 12% to 18% fuel savings for current technology passenger cars, along with a significant reduction in pollutant emissions.
- Several governments globally have reduced speed limits to prevent crashes and lower air pollution.
- In India, the **Zero-Fatality Corridor solution for road safety** by the SaveLIFE Foundation (SLF) focuses on reducing speeding through advanced engineering and enforcement technologies.
- Technology tools and deploying artificial intelligence would introduce necessary deterrence for traffic violations.

### Concerns / Challenges

- Vegetation on or very close to the road stretches often falls prey to road widening initiatives.
- Missing or inadequate signages are another leading cause of road crashes.
- It is a common standard practice to use asbestos for creating these signages. Asbestos has an adverse impact on the environment.
- The propensity of people to use personal vehicles instead of public transport also adds to the chaos.

### Way Forward

- Guarding hard structures such as trees using crash barriers to prevent direct collisions.
- Installing retro reflective signage on the trees to make them more visible to commuters.
- Building green corridors to go over forests and animal paths.
- Scaling this will have a profound impact on preserving the environment while ensuring better road connectivity.
- Roads and the environment are inseparable spaces. They are not just our shared resources but also our joint responsibility.
- Therefore, **safer roads and a sustainable environment can be ensured only through the joint efforts of road-owning agencies, enforcement officials and the public.**

Topic: Conservation, environmental pollution and degradation

## 15. Soil Management

### Introduction

- Healthy soils are essential for our survival.
- **Soils help to regulate the planet's climate by storing carbon and are the second largest carbon sink after the oceans.**
- They help maintain a landscape that is more resilient to the impacts of droughts and floods.
- The **theme of World Soil Day (WSD) 2022, 'Soils: Where food begins'**, is a means to raise awareness on the importance of maintaining healthy soils, ecosystems and human well-being.

### Soil Degradation and its Impact

- Nutrient loss and pollution significantly threaten soils, and thereby undermine nutrition and food security globally.
- The main drivers contributing to soil degradation are **industrial activities, mining, waste treatment, agriculture, fossil fuel extraction and processing and transport emissions.**
- The reasons behind soil nutrient loss range from **soil erosion, runoff, leaching and the burning of crop residues.**
- Soil degradation in some form or another affects around 29% of India's total land area.
- This in turn **threatens agricultural productivity, in-situ biodiversity conservation and water quality.**
- Excessive use of fertilizers and pesticides, and irrigation with contaminated wastewater are also polluting soils.
- **Impacts of soil degradation can have irreparable consequences on human and ecosystem health.**

### India's Soil conservation strategy

- The Government of India is implementing a five-pronged strategy for soil conservation. This includes
  - making soil chemical-free,

- saving soil biodiversity,
- enhancing Soil Organic Matter,
- maintaining soil moisture,
- mitigating soil degradation and preventing soil erosion.
- Government of India launched the **Soil Health Card (SHC) scheme** in 2015 to assess the current status of soil health.
- **Pradhan Mantri Krishi Sinchayee Yojana**, aims to prevent soil erosion, regeneration of natural vegetation, rainwater harvesting and recharging of the groundwater table.
- **National Mission for Sustainable Agriculture (NMSA)** has schemes promoting traditional indigenous practices such as organic farming and natural farming.
- The Food and Agriculture Organization of the United Nations (FAO) undertakes multiple activities to support the Government of India's efforts in soil conservation towards fostering sustainable agrifood systems.
- The FAO works in different states for boosting crop diversification and landscape-level planning.

### Way Forward

- **There is a need to strengthen communication channels between academia, policymakers and society for the identification, management and restoration of degraded soils.**
- These will facilitate the dissemination of timely and evidence-based information to all relevant stakeholders.
- Greater cooperation and partnerships are central to ensure the availability of knowledge, sharing of successful practices, and access to clean and sustainable technologies.
- Citizens can contribute by planting trees to protect topsoil, developing and maintaining home/kitchen gardens, and consuming foods that are mainly locally sourced and seasonal.

## 16. Impact of Sea Level Rise on India

### Introduction

- Sea level rise (SLR) is an increase in the level of the world's oceans due to the effects of global warming and other factors.
- According to IPCC report, destructive changes have already been set in motion.

### IPCC report

- The report says that even with most optimistic emission reduction scenario, by the year 2050 many low-lying megacities and small island nations will experience extreme sea level events every year.
- The big four – **United States of America, China, India and European Union** will face most devastating fall out.

### Alarming rate of sea level rise

- Sea levels have risen by between **180 to 200 mm since 1900**.
- Nearly **5-0.7%** of the world's land area is at a risk of episodic coastal flooding by 2100.
- By 2100, the global population potentially exposed to episodic coastal flooding will increase from 128-171 million to 176-287 million.

### Consequences of sea-level rise

- **Loss of habitat**
  - Almost 3 billion people are living within 200 km of the coasts and islands all over the world.
  - A sea level rise will lead to **loss of habitation** and hence leads to **de-urbanization**.
  - It may also significantly **affect tourism and recreation**.
  - **Indonesia** is shifting its capital from **Jakarta to a new city called 'Nusantara'**.
- **Agriculture**
  - SLR will affect agriculture mainly through **land submergence**, soil and fresh groundwater **resources salinisation**, and land loss.

- It will impact production and food security.
- **Coastal fisheries and aquaculture**
  - Adverse impacts on habitats (e.g., coral reef degradation, reduced water quality in deltas and estuarine environments, soil salinisation, etc.
- **Impact on Small Island Nations**
  - Because of small islands' high coastline to land area ratio, most of their human settlements, agricultural lands, and critical infrastructure are at or near the coasts.

### Impact on India

- As per study, Sea levels along the Indian coast are projected to rise between 3.5 inches to 34 inch (2.8 feet) by the end of century.
- India's coastal regions are **experiencing sea-level rise, erosion, and natural disasters such as tropical storms and cyclones.**
- **In May 2020**, the strongest storm recorded in decades in the Bay of Bengal—**Cyclone Amphan**—hit, forcing several million people to evacuate.
- **India lost 235 square kilometres of land to coastal erosion** between 1990 and 2016, placing people's livelihoods and homes in jeopardy.
- Sea level around **Asia in the North Indian Ocean has increased faster than global average**, with coastal area loss and **shoreline retreat.**
- Mega cities such as **Mumbai, Chennai, and Kolkata** are at high risk of **flooding and sea-level rise.**
- In such circumstances, forced migration and displacement would be inevitable.

### Adaptation measures

- **Integrated coastal management**
  - It will help in resource management and addressing the complex management issues in the coastal area.
  - **Coastal Regulation Zone** notifications issued under Environmental Protection Act, 1986 will help in this integrated management.
- **Community ownership**
  - Policy makers should engage stakeholders in the early stages of decision-making to enhance overall resilience in coastal areas, while supporting community ownership.
- **Barriers to urban areas**
  - Rotterdam has offered a model to other cities seeking to combat flooding and land loss.
  - Rotterdam has built barriers, drainage, and innovative architectural features such as a "water square" with temporary ponds.
- **Adaptation to Sea Level Rise**
  - **Relocating utility infrastructure**, such as treatment plants to higher elevations would reduce risks from coastal flooding.
- **Limiting global warming**
  - More use of renewable energy can help reduce carbon emissions.
  - Nations must act fast to attain their NDC's and work on carbon sequestration.

### Conclusion

- **The Paris Agreement** provides a clear vision on limiting climate change and thus, Sea level rise.
- Sea level rise is a slow disaster that will become magnanimous and all steps must be taken to ensure that such disasters are mitigated.

## 17. Regenerative Agriculture

### Introduction

- The Green Revolution of the 1960s pulled India out of starvation, transformed the country's ability to feed itself and turned it into a big food exporter.
- But the revolution also made India the world's biggest extractor of groundwater.

**Present Status**

- According to the UN's World Water Development Report, 2022, **India extracts more than a quarter of the world's groundwater withdrawal each year**; 90 per cent of this water is used for agriculture.

**Need for regenerative agriculture**

- If agriculture want to feed India's undernourished population and drive the economy, it needs to work in harmony with nature, not against it.
- Farmers, activists and agricultural research organisations across the world are thus developing methods of chemical-less farming under the wider umbrella of regenerative agriculture.
- The key to improving water use and efficiency is enhancing the health and nutrient-holding capacity of the soil.
- Study shows severe and widespread deficiency of organic carbon and micronutrients in Indian soils.
- **The importance of regenerative agriculture was emphasised in the Intergovernmental Panel on Climate Change (IPCC) report on "Climate Change and Land."**

**Regenerative agriculture**

- Regenerative agriculture uses natural inputs and cultivation practices such as crop rotation and diversification.
- It includes minimum-till, mulching, multi-cropping and sowing of diverse and native varieties.
- It aspires not only to maintain the resources like soil and water but also to improve them.
- The natural inputs help improve soil structure and its organic carbon content.

**Benefits of Regenerative agriculture**

- Healthy soil helps in better water storage, transmission, filtering and reduces agricultural run-off.
- One per cent increase in soil organic matter per 0.4 ha increases water storage potential by more than 75,000 litres.
- Planting water-guzzling and water-efficient crops together or in alternating cycles reduces the frequency and intensity of irrigation.
- They conserve energy used by irrigation aids such as pumps.

**Government Initiatives**

- In India, the Union government is promoting regenerative agriculture with an aim to reduce application of chemical fertilisers and pesticides and to lower input costs.
- States like Uttarakhand, Himachal Pradesh, Andhra Pradesh, Sikkim and Gujarat too have introduced schemes to promote it.

**Way Forward**

- Concerted research is required to understand the role of regenerative agriculture in saving water.
- The scientific findings will further help inform policy measures and future initiatives.
- There is an immediate and urgent need to provide all the necessary training and support to farmers so that they can prepare the required organic inputs in their own locality.

Topic: Science and Technology- developments and their applications and effects in everyday life.

## 18. Synthetic biology and its Applications

**What is Synthetic Biology**

- Synthetic biology refers to the science of using genetic sequencing, editing, and modification to create unnatural organisms or organic molecules that can function in living systems.
- Synthetic biology enables scientists to design and synthesise new sequences of DNA from scratch.

**Applications of Synthetic Biology**

- Synthetic biology has applications in various fields from **developing synthetic organisms** for vaccination to **creating natural products** in a lab.
- In the pharmaceutical industry, synthetic biology can be used to make natural compounds such as artemisinin used for the treatment of malaria and Car T cell therapy for cancer treatment.
- Some companies are exploring the possibility of dyeing jeans without producing hazardous waste.
- Companies using it to deliver fixed nitrogen to plants instead of using fertilisers, engineering microbes to create food additives or brew proteins.

### Security Implications

- The exponential technologies have unforeseen **national and global security implications**.
- In 2014, the U.S. Department of Defense categorised **synthetic biology as one of the six 'disruptive basic research areas'**.
- There are many risks associated with the technology which must be addressed before it becomes widely accessible.
- There is the possibility of **deliberate misuse**.
- **Accidental leaks** of experimental pathogens are another concern.
- There has been very little focus on threats emanating from biological sources.
- A well-planned attack using highly infectious pathogens synthetically engineered in a lab could be disastrous.

### Concerns / Challenges

- Unlike the nuclear domain, the **fields of synthetic biology are not regulated internationally** despite growing military interest in synthetic biology applications and their potential misuse.
- Very little has been done by the international community about 'weapon of mass destruction' (WMD) capability of bio-weapons.
- When it comes to bio-weapons, all we have is the **Biological and Toxin Weapons Convention (BTWC) of 1972** with no implementing body.
- The outcomes of bio-defence research could potentially be used to create bio-weapons.

### India's Position

- **India has multiple institutions dealing with biosafety and biosecurity threats** but there is no coordination among them.
- Implementation of biosafety guidelines is the responsibility of the Science and Technology Ministry and the Environment Ministry.
- However, labs dealing with biological research are set up under the Indian Council of Medical Research and the Indian Council of Agricultural Research, which are under the Ministries of Health and Agriculture, respectively.
- The **multiplicity of bodies and ministers makes coordination difficult**.
- Given the **rising risk of diseases of zoonotic origin**, the traditional ministry-wise separation might not be useful.
- An important question is whether India, with its porous borders, is prepared for defending against pathogens or dangerous biological organisms or agents arriving from abroad.
- COVID-19 should serve as a wake-up call.

### Way Forward

- There is a need to carefully review, especially in the wake of the pandemic, the biosecurity systems in place where such technologies are in use.
- Pandemics have also highlighted that the traditional distinction at the international institutional level between biological weapons and diseases may not be useful anymore.
- There needs to be more conversation between health specialists and bio-weapons/defence specialists.
- There is a need to address the thin line between biotechnology research and bio-weapons research, and consider international measures for monitoring and verification.
- There is also a need to look at the benefits of the products and the risk it poses to biodiversity.

- Best practices and standards must be woven into operational biological protocols to combat these threats.

Topic: Awareness in the fields of IT, Space, Computers, robotics, Nano-technology, bio-technology and issues relating to intellectual property rights.

## 19. India's Space Sector

### Introduction

- **Space, universe, solar system, planets have interested human beings since time immemorial.**
- With every exploration, the desire and intent to know more about space grows.
- **Space and satellite are the backbone** for predictions that help us in sectors like agriculture, weather, communications, military, defence, banking, monitoring, and surveillance and in several other domains.

### India's Journey into Space Program

- Dr. Vikram Sarabhai, Dr. A.P.J. Abdul Kalam, Wing Commander Rakesh Sharma, Kalpana Chawla the list is endless of inspirational space research scientists.
- Astronauts of India and their life stories are inspiring students and engineers across the country to explore the domain of space and aeronautics.
- Indian films have showcased how we made history with the successful Mars mission.
- ISRO started its ambitious and daring journey five decades ago with a record of over 100 successful space missions.
- To further enhance the field of space research, ISRO and its research centers have active programs with academic and research institutes across the country.
- The space sector in India accounts for 3% in the rising \$360-billion global space market.

### Space- the opportunity in India

- In India, there is an inherent interest in the domain of space, defence, aeronautics and satellites.
- India produces the best brains that have been part of several space missions elsewhere in the world.
- The **Indian National Space Promotion and Authorisation Centre (IN-SPACe)** was formed to assess the need and demand of private players.
- With these, India now stands on the cusp of building a space ecosystem with ISRO being the guiding body.
- With startups and technology innovators, India can now evolve as a space startup hub for the world.
- Providing opportunities to private companies for space exploration and satellite launches has democratize the sector creating new opportunities for large enterprises and SMEs in the value chain.

### Bridging the gap between the real and virtual worlds

- To win the space race with successful satellite launches, companies must close the gap between the real and virtual worlds.
- India has the required provisions, evolving infrastructure, and young talented minds to master this cusp of space technology and evolve into a global leader in the sector.
- We need to enable the emerging companies with accurate know-how, profound knowledge, and expertise experience.

### Way Forward

- **Need for collaboration between industry and ISRO on indigenous missions like re-launchable spacecrafts & human in space programs.**
- Bridging the real and virtual worlds, and extending the boundaries of rocketry and satellite innovation and make space more accessible.
- Shorten rocketry and satellite development time to achieve first-time-right quality for successful launches.
- **Effective global collaboration with international space organizations, thus achieving innovation.**

- Technologies such as the launch vehicle technology and other allied technologies in the space ecosystem require innovation and entrepreneurship.

Topic: Challenges to internal security through communication networks, role of media and social networking sites in internal security challenges, basics of cyber security.

## 20. Hybrid Warfare

### Introduction

- Modern war is multifaceted and includes **military warfare, a cyberwar, an information war and also economic war.**
- External support and assistance, however generous, will be inadequate for victory.
- Our deficiencies are visible in India's import bills that range from military hardware, combat aircraft, parts and inputs for local production to energy and technology.
- **The answer lies in atmanirbharta (self-reliance).**

### Vulnerabilities that can affect India's security

- **Dependence on defence equipment:**
  - India remained the world's second-largest arms importer during 2015-19.
  - Although Russia's share of the Indian weapons market has declined from 72% to 56%, it is still a significant amount.
- **Hostile neighbourhood:**
  - India is surrounded by hostile neighbours in the north like **China, Pakistan and Taliban ruled Afghanistan.**
- **Space warfare:**
  - Rapid developments in space technology have significantly enhanced capacity of a nation to partake in offensive and defensive space operations.
  - India has been at the receiving **end of variants of Hybrid Warfare.**
  - Firstly, from Pakistan in the form of state sponsored terrorism and the other through cyber-threats from China
- **New forms of terrorist attacks:**
  - **The idea of Hybrid Warfare encourages new forms of terrorist attacks** such as 'lone-wolf attacks and creation of ' sleeper cells'.
  - These attacks are extremely difficult to detect and, in most cases, the financial and ideological source remains anonymous.
  - Adversary could also act on the lines of radicalization of the population, which leads to issues like Communalism, Naxalism and Separatism in the long run.

### Hybrid warfare

- **Hybrid warfare essentially refers to the use of unconventional methods of warfare clubbed with the traditional means of military actions.**
- These methods aim to disrupt and disable an opponent's actions without engaging in open hostilities.
- The methods **include disinformation, economic manipulation, use of proxies and insurgencies, diplomatic pressure and military actions.**

### Way Forward

- The nature of war is changing and it is important to engage adversaries in all domains, like land, sea, air, space and cyber.
- Institutional measures are needed to keep vulnerabilities in check and estimate possible hybrid threats.
- **Self-assessment of critical functions** and regularly **upgrading critical Fintech systems** in the country.
- **Training of armed forces in hybrid warfare:**
  - Training in special battle techniques, as well as conditioning to overcome urban combat stress.
  - Training in use of technological tools such as smart robots, Unmanned Aerial Vehicles (UAVs) and Intelligence tools like Real Time Situational Awareness (RTSA) for precise operations.

- **Strengthening the democratic institutions** enables government to gain trust of its citizens.
  - This helps government negate various forms of hybrid warfare such as disinformation and radicalization.
  - Inclusion of Civil Society Institutions such as think tanks multiply the government's capabilities to counter such threats.
- **Investing in Journalism to raise media literacy:**
  - Global research shows that 70 percent of uses of the term "hybrid threats" by the media are inaccurate.
  - As a result, investing in journalism will indirectly help citizens in understanding the threat.

**Conclusion**

- India must become self-reliant with robust backing of technology. This will secure our borders against intruders.



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