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August 2022 / Issue-2

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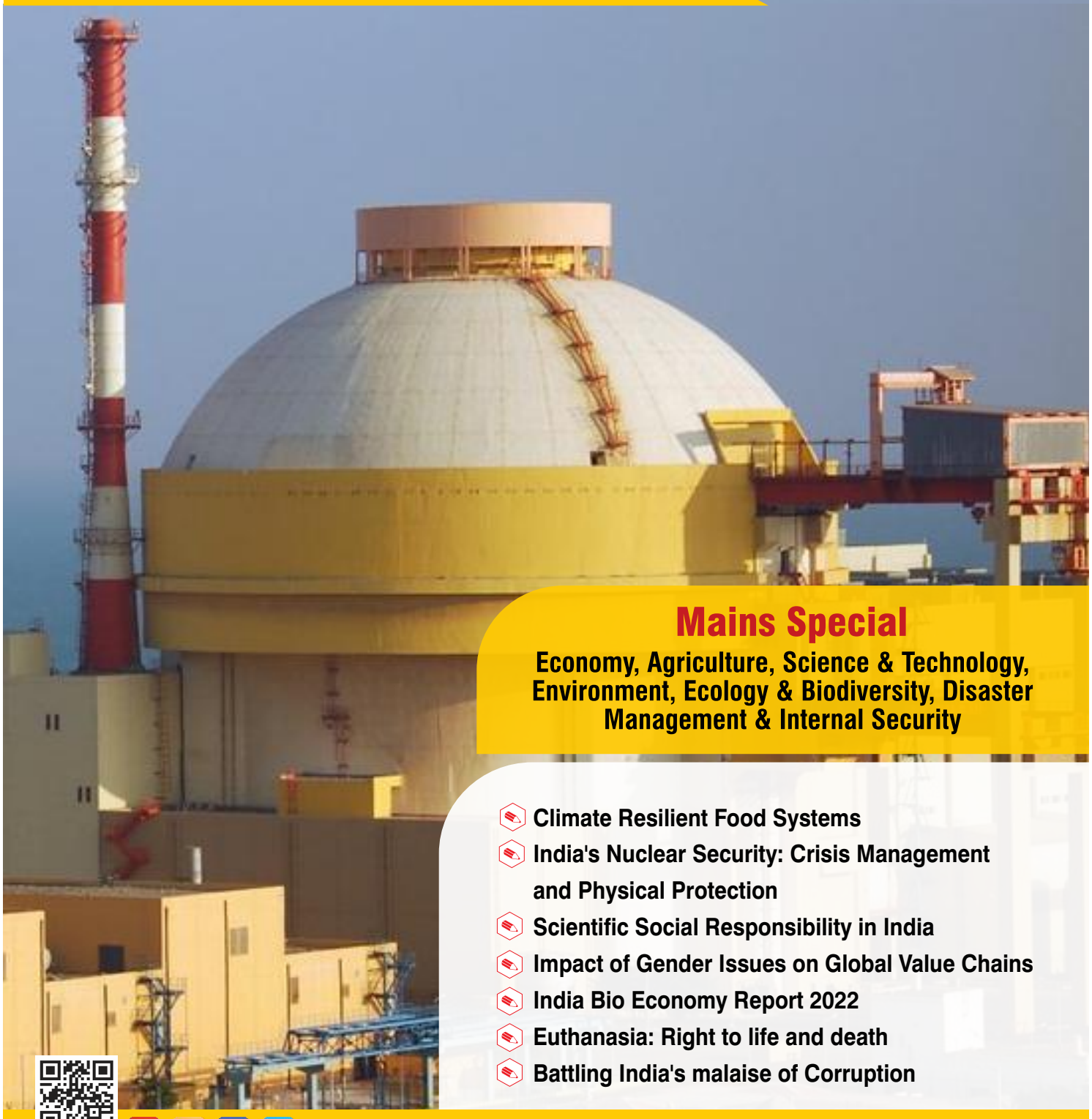

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- India's Nuclear Security: Crisis Management and Physical Protection
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Mr. Vinay Kumar Singh

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Mr. Q H Khan

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Yours very truly,

Q H Khan
Managing Director

PREFACE

Current Affairs has an important role in the examinations conducted by Union Public Service Commission and State Public Service Commissions. It is necessary for the candidate to have knowledge of relevant information on issues of national and international importance. Perfect 7 Magazine is being presented fortnightly in front of the students to fulfill this requirement. Preparation of civil services exam is only completed when candidates have holistic knowledge and analysis of the dynamic nature of the current affairs. 'Perfect7' keeps this vision and approach and understands the multidimensional need of students at the content level, so this magazine has presented the current affairs with relevant issues of general studies. Keeping in mind the mains exam, current articles on 7 burning issues, Ethics Case Studies, Biographies of important personalities, coverage of most useful topics of various sections of General Studies and the most important current affairs issues are being covered for Preliminary Examination in which emphasis is being given on environmental, ecology, art and culture, science and technology, economy issues. A short section on Terminology will also be part of Perfect 7 Magazine.

Brain boosters with 7 themes based graphics are being presented in a concise form to enhance the conceptual understanding of the students. Apart from this, updated information on Global Initiatives, Global Institutions, Structure of Organizations, Functioning, Important Reports, and Indices will be included in this magazine, which is asked prominently in the Civil Services Examination. To give emphasis on facts and analysis, keeping in view the trends of new nature of questions in Preliminary and Main Examination of Civil Services, an inclusive magazine is being provided to the students so that they can give the right direction to their preparation by understanding the new requirements of Civil Services Examination. We hope that Perfect 7 in its new form will prove to be very useful. Your suggestions are always welcome.

Vinay Kumar Singh
Founder
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7 IMPORTANT ISSUES

Climate Resilient Food Systems

Context

Climate change and conflicts have uncovered the vulnerabilities faced by the global food systems. Undernourishment and acute food insecurity have become more common in recent times. The imperative is to build more robust and sustainable food systems that do not adversely impact the environment. The COVID-19 pandemic has only underlined the importance of food security in times of crises.

Introduction:

The pandemics that intersect with climate change, under-nutrition, and obesity pose a grave threat to the human and planetary existence and is termed as 'Global syndemics'. The world population which is expected to touch the 9.1 billion mark by 2050 will result in increased requirement of land for agricultural purposes and for grazing, fertilisers and genetically modified crops. These heightened activities will have an impact on the health of the global environment. The prolonged COVID-19 pandemic has resulted in increased rate of malnourishment across the world.

How are food systems and climate change related to each other?

- **Interrelation between climate and agriculture**: The climate crisis has a major impact on the global food system, from production to consumption. It destroys land and crops, kills livestock, depletes fisheries, and cuts off transport to markets. This adversely affects the production, availability and diversity of food products.

- At the same time, **food systems influence the environment and are a driver of climate change.**

- **Climate change & Hunger:** United Nations World Food Programme (WFP) study shows that a 2°C rise in average global temperature from pre-industrial levels will see a staggering 189 million additional people in the grip of hunger.

- **Climate change & Nutrition:** As per the latest IPCC report, climate change threatens nutrition through multi-breadbasket failures.

- **Climate change & Vulnerable communities:** A vast majority of such communities, who rely on subsistence agriculture, fishing, and livestock, have to bear the impacts of climate change with limited means to adapt.

Human activities and a warming world: Causes for rising emissions

Burning coal, oil and gas produces carbon dioxide and nitrous oxide.

- Cutting down forests (**deforestation**). Trees help to regulate the climate by absorbing CO2 from the atmosphere. When they are cut down, that beneficial effect is lost and the carbon stored in the trees is released into the atmosphere, adding to the greenhouse effect.

- **Increasing livestock farming.** Cows and sheep produce large amounts of methane when they digest their food.

- **Fertilisers** containing nitrogen produce nitrous oxide emissions.

- **Fluorinated gases** are emitted from equipment and products that use these gases. Such emissions have a very strong warming effect, up to 23,000 times greater than CO_2.

Food wastage & Carbon emissions:

- In high-income countries, food losses occur in production and post-harvest phases; and in low-income countries, it takes place during processing, distribution, and consumption.
- Unfavourable climatic conditions, the lack of

infrastructure, and inadequate knowledge of proper food storage and handling leads to food spoilage in low-income countries.

- According to the **Food and Agriculture Organization (FAO),** the food waste footprint on natural resources is around 4.4 billion tonnes of carbon dioxide equivalent per year.
- Waste food that is further along the supply chain has a higher carbon intensity than waste food earlier in the chain.

COVID-19 and Food Security

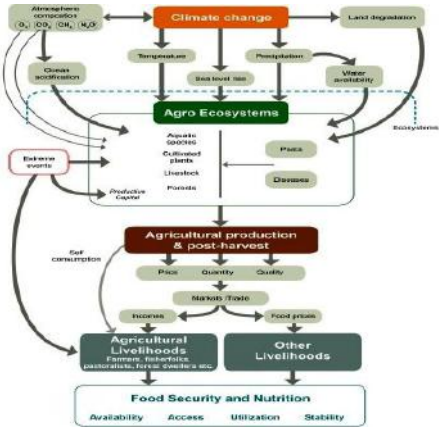
COVID-19 has compelled the policy makers to make urgent decisions to ensure that food supply chains continue to function. For policy makers, the fundamental task is to implement necessary interventions to address immediate pandemic disruptions, while continuing to invest in policies to tackle the triple challenge in the medium and long-term.

- **Ensuring food & Nutrition security**
  - ◊ Getting food to consumers requires well-functioning supply chains and social safety nets.
- **Protecting livelihoods**
  - ◊ Policies to address livelihood impacts along the food chain, should help farmers and firms to respond flexibly to changing market conditions.
- **Environmental Sustainability**
  - ◊ Immediate COVID-19 pressures should help reinforce efforts to address long-term sustainability challenges.
- As per FAO report,
  - ◊ Prevalence of moderate or severe food insecurity increased to an alarming 25.7 percent in 2020 from 18.4 percent in 2014.
  - ◊ The rise was steepest in South Asia, where the prevalence of food insecurity changed from 37.6 percent in 2019 to 43.8 percent in 2020.
- **The Gender dimension**:
  - » Fall in demand and access to food and agricultural supplies, the loss of marketing opportunities for local and imported goods have affected women more acutely.
  - » Almost one-third of women of reproductive age suffer from anaemia.

Current situation of Climate Change & Food Security

- **Indian Meteorological Department (IMD)** had declared March 2022 the hottest month since the beginning of record-keeping.
- **Consistent Above Average Temperature:**
  - ◊ Temperatures were consistently rising 3°C-8°C **above average,** breaking many decadal and some all-time records in several parts of the country.
  - ◊ In India, **around 300 forest fires** were reported near the month of April 2022.
- **Extreme weather events** are now 30 times more likely than before (or between every three-to-five year).
  - ◊ Also, **March 2022 was one of the driest recorded months,** and 2022 April's rainfall was also way below normal in north India's crop-growing regions.
  - ◊ In parts of Kerala, unseasonal rains forced cultivators to wade through watery fields to harvest paddy which **results in low-quality crops**.

Cascading Effects of Climate Change on Food Security and Nutrition



Sustainable Food Systems

- Food system sustainability can be addressed by adopting a sustainable agricultural system, shifting focus to sustainable means, and finding ways to reduce GHG emissions at different levels of food production.
- A sustainable food system (SFS) is one that ensures food security and nutrition for all without compromising the economic, social, or environmental bases for this to occur.

Climate Smart Agriculture (CSA)

The practice of sustainable agriculture or Climate-Smart Agriculture (CSA) is an integrated approach that brings climate-friendly practices to livestock and crop production. It can help:

- Reduce GHG emissions or increase carbon sequestration.
- Takes the growing world population into account and works towards ensuring food security for all.
- Offers various measures to combat challenges associated with sustainable cropping.
- Promising practices of sustainable agriculture, including organic farming; integrated pest management; and agroforestry.

Climate Resilient Agriculture Systems

A World Resources Institute report advocates for "transformative adaptation" in agriculture, aimed at transforming the fundamental attributes of agricultural systems in response to the actual or anticipated effects of climate change.

Climate-resilient agriculture (CRA) is an approach that includes sustainable use of existing natural resources through crop and livestock production systems to achieve long-term higher productivity and farm incomes under climate variabilities.

CRA systems will help in:

- Reducing hunger and poverty.
- Sustainable agricultural production from local to global level.
- Improved access and utilisation of technology.
- Increased adaption of crops.

India's efforts towards climate change adaption:

- The **National Mission of Sustainable Agriculture** was implemented in 2010 under the National Action Plan on Climate Change (NAPCC) to promote management of available resources.
- **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)** 2015 to address the issues of water resources and provide a permanent solution that envisages **Per Drop More Crop,** by promoting micro / drip irrigation for the conservation of maximum water.
- **Paramparagat Krishi Vikas Yojana** mission for climate-smart practices and technologies in conjunction with the **Indian Council of Agricultural Research and state governments of India**.
- To mitigate climate extreme actions, **Green India Mission** was launched by the GOI in 2014 under the umbrella of NAPCC with the primary objective of protecting; restoring and enhancing India's diminishing forest covers, thereby reducing the harmful effects of climate change.
- To protect the soil health, GOI has launched the **Soil Health Card scheme** with the main objective of analysing cluster soil samples and advocating farmers regarding their land fertility status.
- **Neem-Coated Urea** was also introduced to minimise the excess addition of urea fertilizers, thereby protecting soil health and supplying plant nitrogen.
- To encourage farmers with more income benefit and ecosystem protection, programmes such as the **National Project on Organic Farming and National Agroforestry Policy** was introduced in 2004 and 2014 respectively; with an aim of supplying plant nutrients in the form of organic amendments, soil carbon stock improvement, and soil protection from erosion loss.
- These **models are taken forward to SAARC countries towards adaptation to climate change impacts** like floods, cyclones, droughts, and heat waves and seawater rising. ICAR has established climate-resilient villages across India in 151 districts.

Way forward

- **Reduction of greenhouse gas emissions** from all agriculture and non-agricultural sources has to be prioritised.
- **Structured training** is essential to build confidence in stakeholders and creating awareness to understand the climate change events.
- **Implementing CRA** across the country.
- Farmer-oriented programmes and community participations are needed to improve skills in agriculture and allied sectors.
- Collaboration between farmers, research institutions, funding agencies, governments, and non-government organisations and private sectors.

Conclusion:

It is crucial to build climate-resilient agricultural systems to undo the damage caused by the pandemic and pave the way for more sustainable systems in the future. The Focus of global community on global efforts and contributions to transform food systems is needed. This can be achieved by further research on developing evidence around the nexus of climate change, food security, and nutrition and the effectiveness of climate adaptation policies on food security and nutrition. Simultaneously, policymakers should invest in approaches and solutions to effectively address the impacts of climate change on food systems and commitments—at *glocal (global+local)* level towards making food systems more resilient and sustainable.

India's Nuclear Security: Crisis Management And Physical Protection

Context

Japan's nuclear regulator in July, 2022 officially approved a plan to discharge into the sea contaminated but since-treated water accumulating at the crippled Fukushima nuclear power plant. The water, used to cool reactors in the aftermath of the 2011 nuclear disaster, is being stored in huge tanks in the plant, and amounted to more than 1.3 million tonnes by July.

Introduction:

Due to the increasing number of current and potential nuclear dangers, the security of nuclear and radiological materials is a crucial global concern. The physical protection of nuclear materials, insider danger, transportation security, and cyber threats are just a few of the issues and risks that fall under the wide category of nuclear security that have left governments and the international community worried.

Nuclear security is defined by the (IAEA) as "the prevention and detection, and reaction to, unlawful or intentionally prohibited acts involving, or directed at, nuclear material, other radioactive material, connected facilities, or associated activities."

Physical Protection Of Nuclear Facilities

Within the context of nuclear security, the physical security of nuclear and radiological installations is a major problem. The IAEA lists "(a) the illegal removal of nuclear material with the aim to construct a nuclear explosive device; and (b) the sabotage of nuclear material and nuclear facilities resulting in radioactive effects" as risks to the physical security of nuclear facilities and materials.

For a State to maintain an efficient physical protection regime, the IAEA also lists four main objectives, including "

a) To safeguard against unauthorized removal, preventing the illegal taking of nuclear material by theft and other means;
b) Locating and recovering missing nuclear material, ensuring the swift and thorough use of measures to find and, where necessary, recover lost or stolen nuclear material; and
c) To prevent sabotage, defending nuclear resources and nuclear installations against sabotage;
d) Reducing the impacts of sabotage, reducing or attenuating the radiological effects of sabotage.

International Measure For This

The Convention on the Physical Protection of Nuclear Material (CPPNM) and its amendment is the main legal document that obliges parties to establish legal obligations for the "physical protection of nuclear material used for peaceful purposes during international transport; the criminalization of certain offences involving nuclear material; and international cooperation, for example, in the case of the theft of nuclear material." The CPPNM amendment further broadens the definition to cover domestic use, storage, and transportation. Additionally, it makes it illegal to traffic in nuclear weapons and equipment and to disrupt nuclear installations.

Radiological Materials And Medical Facilities

Over 100,000 parcels containing radioactive materials are sent from India each year. These packages come in three different varieties:

1. "Type A packages," which are used to carry radioactive elements with a moderate level of activity. Examples are nuclear gauge sources, certain sources for hospital-based brachytherapy, and sources for diagnostic and therapeutic nuclear medicine.
2. Large activity radioactive materials, such as teletherapy sources, gamma irradiators sources, and industrial radiography sources, are transported using "Type B(U)/B(M) packaging," with the Atomic Energy Regulatory Board's clearance (AERB).
3. "Type C packages," which are utilized to transport exceedingly radioactive stuff. They are built to endure dangerous

transportation accident situations.

Countering CBRN Terrorism

The risk of chemical, biological, radiological or nuclear (CBRN) weapons, or related materials, being used by non-State actors for terrorist or other criminal purposes is one of the gravest concerns in the present volatile situations. To prevent and counter this threat, the international community has pursued a common legislative framework.

Over recent years, UNODC has increasingly scaled up its support to Member States by:

- Raising awareness on the importance and benefits of adhering to and fully implementing the international legal instruments against CBRN terrorism;
- Assisting national policy makers and legislators in drafting and reviewing their relevant legislation upon their request;
- Conducting capacity-building of criminal justice officials to ensure effective investigation, prosecution and adjudication of CBRN-related terrorism offences;
- Developing and disseminating training tools; and
- Enhancing international cooperation in criminal matters related to CBRN terrorism.

Legal Framework Against CBRN Terrorism

International legal instruments against CBRN terrorism:

- 1980 Convention on the Physical Protection of Nuclear Material
- 1997 International Convention for the Suppression of Terrorist Bombings
- 2005 International Convention for the Suppression of Acts of Nuclear Terrorism
- 2005 Amendment to the Convention on the Physical Protection of Nuclear Material
- 2005 Protocol to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation
- 2005 Protocol to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf
- 2010 Convention on the Suppression of Unlawful Acts relating to International Civil Aviation

Where Does India Stands?

Except for intermittent misconduct, industrial abnormalities, and infrequent carelessness, no significant nuclear accident is known to have happened during India's seven decades of nuclear development. The Mayapuri incident (2010) served as a warning to the establishment that it needed to tighten regulations and convince the public that these actions were being implemented. A subtle shift in mindset has occurred inside India's nuclear establishment; the institution is now more eager to present its nuclear security measures to the public. To preserve conformity with the international framework, several institutional, legal, and operational reforms/changes have been made. Although India has developed a comprehensive security system, there is still need for future development in all areas related to its control of nuclear security.

State Of India's Nuclear Program

- 3 percent of India's power is generated via nuclear energy.
- By 2050, India wants to generate 25% of its electricity using nuclear energy.
- India presently has a nuclear capacity installed of 6780 MWs.
- 80 percent of the nuclear reactors installed in India are PHWRs.

Imperatives Of Strengthening Nuclear Security In India

- With aspirations to diversify its nuclear business and involve both domestic and foreign private industrial firms, India has started an ambitious nuclear energy growth. Diversification may provide more safety and security issues, albeit being justified.
- India has a sizable and geographically scattered nuclear infrastructure.
- The usage of radiological materials is expanding across a number of industries.
- India is situated in a troubled area where terrorism is prevalent.
- In the region around India, clandestine nuclear proliferation networks are developing.
- In this area, there are several smuggling networks.

Measures Taken By India Till Now

1. India's top officials have attended every Nuclear Security Summit, demonstrating the nation's dedication to the nuclear security.
2. India has established the Global Centre for Nuclear Energy Partnership (GCNEP) in order to carry out the commitment it made at the first Nuclear Security Summit to "assist in capacity building, in association with the interested countries and the IAEA, involving technology, human resource development, education & training, and giving a momentum to R&D in enlisted areas."
3. India has made financial contributions to the Nuclear Security Fund.
4. India is a part of the Nuclear

Security Contact Group.

5. By signing the 2014 Joint Statement on Enhancing Nuclear Security Implementation, India committed to and started strengthening the implementation of nuclear security.
6. The 2016 NSS in Washington, D.C. was seen as a "transition summit" to determine how to maintain the momentum for nuclear security.
7. India's nuclear security architecture is primarily supported by five pillars:

a. National legal laws that adhere to IAEA regulations
b. A regulatory body (AERB) that establishes SOPs;
c. The security (and intelligence) organizations in charge of physical security and threat assessment;
d. The human component (staff) in charge of supervision or compliance;
e. The use of detection, delay, and reaction technologies in surveillance and security.

8. A Physical Protection System (PPS) for nuclear materials and storage at nuclear facilities for protecting against the unauthorised removal of nuclear material and other purposes has been in use.

Measures Required

For Physical Protection

1. Measures like double fence isolation, physical barriers to the region, and prohibited parking inside protected zones must be taken to protect critical or sensitive equipment situated within vital or protected areas.

For Radiological materials and Medical facilities

1. In accordance with the Atomic Energy Act of 1962, handling radioactive materials necessitates an AERB license. The AERB has created safety regulations, guidelines, and standards for regulation in India to direct radiological facilities and operations.

- In order to handle security needs like physical barriers, establishments like hospitals in India are obliged to submit thorough security and layout plans to the AERB.

2. It is crucial to put in place a safe and secure procedure for acquiring sources and ultimate deactivation and disposal.

- The protection of staff members and the general public from radiation dangers when decommissioning and disposing of equipment is a top priority. Implementing a safe and secure system for source procurement and eventual decommissioning and disposal is essential.

Other Important measures required:

1. It's crucial to involve several non-governmental organizations, agencies, and people in the construction of a viable architecture for nuclear security.
2. The country's security system may be strengthened in a significant way with the help of the private sector. As an illustration, the Terminal 3 at Indira Gandhi International Airport (IGIA) has a remarkable array of security apparatuses installed.
3. In the event of an accident or assault, coordinated, efficient and speedy reaction mechanism is crucial.
4. The Regulatory Bodies' autonomy has to be increased.
5. Reintroducing the Nuclear Safety Regulatory Authority [NSRA] bill with the required changes to establish a more effective and responsible nuclear regulatory organization.
6. Joint exercises including radiological search may be considered by India and the USA
7. Regional Nuclear Security Summits should be considered by India and the NSS process.

Conclusion

The safety and security of the materials and the requirement to safeguard the general public and the environment becomes more crucial as the use of radiation technology increases and the nuclear power industry grows. Although internal security and cross-border security threats continue to be the key concerns for the nation, NBC threats also have the potential to be damaging. A major security mission in this regard belongs to the Indian security establishment Forces. The goal of national security against NBC weapons may be achieved, nonetheless, in many ways with careful planning, attention to detail, and inter-agency collaboration.

Scientific Social Responsibility in India

Context

Department of Science and Technology, Government of India, released the Scientific Social Responsibility (SSR) Guidelines in May 2022 to ensure greater integration of science and technology with society at institutional and individual levels. SSR is the convergence of scientific knowledge with visionary leadership and social conscience.

Introduction

The concept of Scientific Social Responsibility was brought by India in the year 2019. This concept is analogous to Corporate Social Responsibility and it is inspired by the objective of connecting science with society. India is probably the first country to introduce the concept of Scientific Social Responsibility. While making progress in this direction, recently, guidelines have been given by the Department of Science and Technology for Scientific Social Responsibility.

What is Scientific Social Responsibility?

- Scientific Social Responsibility refers to the ethical responsibility of knowledge-based personnel working in the field of science and technology.
- According to the definition given in the draft of Scientific Social Responsibility in 2019, "It is the responsibility of knowledge workers ,in all areas of science and technology, have to act voluntarily, with the spirit of service and mutual awareness, to reach out to the stakeholders at large in the society. The moral obligation given to contribute knowledge and resources is called scientific social responsibility.

Objectives of Scientific Social Responsibility

Science- society connectivity

- Transfer of scientific progress to meet current and upcoming social needs.
- Using Science to Facilitate Inclusive and Sustainable Development

Science-Science Connectivity

- Creating an enabling environment for sharing of innovative ideas and resources within knowledge ecosystem.

Society -Science Connectivity

- Collaborating with communities to identify their needs and problems and develop scientific and technological solutions .
- Change the approach from 'lab to land' to 'land to lab to land' .

Cultural Change

- To develop moral responsibility towards society among individuals and institutions working in the scientific field.
- Incorporating scientific attitude into the interaction of social life.

Scientific Social Responsibility Guidelines 2022

The Scientific Social Responsibility Guidelines 2022 issued by the Department of Science and Technology includes the following points

- All the Ministries of the Central Government and the State Governments themselves will prepare their scientific social responsibility-related plans and strategies.
- Each scientific knowledge-based institution (also called anchor scientific institute) will be free to formulate a separate scientific social strategy to achieve its goals.
- Anchor Scientific Institute will make knowledge-based personnel aware of their ethical responsibility for contributing to the welfare of society, national development, and environmental goals.
- Knowledge-based personnel will contribute 10 working days in 1 year for scientific social responsibility.
- SSR Evaluation Cell will be created in each of the institutions to assess the institutional plans and individual activities from time to time.
- Every knowledge-based institute will publish an annual report.
- Provision for budgetary support will also be made for activities related to scientific social responsibility.
- No outsourcing or sub-contracting process will be accepted for fulfilling the

responsibility.

Who will be the stakeholders in the Scientific Social Guidelines?

Four different categories of stakeholders have been mentioned in the guidelines-

- » Beneficiary
- » Implementer
- » Assessors
- » Supporter.

Beneficiary:

- This group includes any community, group, organization, or individual who is benefiting from SSR activity.
- This includes students, school/ college teachers, local bodies, communities, women's groups, farmers, self-help groups, self-employed working groups, informal sector enterprises, micro, small and medium enterprises (MSMEs), start-ups, non-government Organizations (NGOs), Anganwadi workers, Biodiversity Management Committees (BMCs), etc.

Implementers:-

- This group includes public and private knowledge institutions that will discharge social scientific responsibilities.
- These include laboratories, institutes, universities and colleges, anchor scientific institutions, their knowledge workers, science centers, central ministries, state governments, their departments, and affiliated autonomous agencies.

Assessors :

This group includes internal appraisal cells or external agencies carrying out the evaluation of SSR activities/ projects at the institutional, projective, and individual levels of SSR.

- They will submit a progress report on SSR.

Supporters :

- This category includes all those who will be supporters of government-sponsored projects.
- This may include funding corporate bodies (as per CSR guidelines), Non-Resident Indians (NRIs), Overseas Citizens of India (OCIS), and Alumni Associations.

Need for Scientific Social Responsibility

Scientific-Social Deficit:-

- India has made great progress in science since independence. According to the database of the National Science Foundation, India ranks third in terms of scientific publications, while India is ranked 46 in terms of the global innovation index.
- Despite making remarkable progress in the field of science, technology, and innovation, it is a matter of concern that this scientific knowledge is not transferred for the benefit of society.

Lack of mechanism for scientific social engagement:

- There is a lack of such a system in the present time that helps establish direct synergy between society and the stakeholders of science.

For sustainable and inclusive development:-

- Concepts like sustainable development and inclusive development cannot be possible without the inclusion of society and science.

Scientific social responsibility can play an important role in resolving the above situations.

Benefits of Scientific Social Responsibility

- This will ensure the transfer of scientific knowledge for the welfare of society.
- Through scientific social responsibility, the knowledge ecosystem will be strengthened and it will help change the mindset and working style of the scientific community.
- Linkage between scientists and the public will be established which will help in the growth of institutional democracy by increasing public confidence in scientific institutions.
- It will help improve the lives of citizens and increase self-reliance through fundamental changes in society.
- Through social scientific responsibility, schemes like Make in India, Swachh Bharat, and Digital India can be progressed towards sustainable development by making them successful.

Challenges before Scientific Social Responsibility

- Science is a continuous innovation-promoting method, whereas the change in society is often seen in opposition to people, thus it will be difficult to reconcile these two.
- In these guidelines, all institutions, state governments, and ministries have been asked to formulate different strategies, which can lead to disparity in the effect of scientific social responsibility.
- Like Corporate Social Responsibility, its misuse is also possible.
- The problem of brain drain will affect scientific social responsibility.
- Along with this, administrative delays by the government, public apathy towards science, and lack of sensitivity of scientists

towards society will be major challenges before scientific social responsibility.

Conclusion

Through Scientific Social Responsibility, an effort is being made to develop a mechanism by which society and the stakeholders of science can be brought on a single platform. For this, it is most necessary that there should be mutual trust between scientists and civil society and their practicality changes. It cannot be denied that a successful scientific social responsibility policy can realize the goal of self-reliant nation-building.

Impact of Gender Issues on Global Value Chains

Introduction:

In the recent years, two major global events, namely the COVID-19 pandemic and the Ukraine crisis, have adversely affected the economies and the global market. Early measures to curb the spread of the virus along with the more recent sanctions on Russian oil and gas have together affected supply chains and weakened labour markets. The effects of this began with low-paying, unstable roles primarily occupied by women. While the Global Value Chain (GVC) boosts exports and productivity, participation vary for men and women.

Women are generally restricted to the informal roles, which are the first to be affected in times of crisis thereby exposing GVCs as gendered-structure. Thus, inclusion of female participation in the GVC is a major step towards the recovery from the pandemic and the Ukraine crisis.

Gender Value Chains & Gender Structures

- Structural differences between women and men, most importantly, include:
  - (i) the gendered composition of the labour force,
  - (ii) Women's primary responsibility for reproductive work, and
  - (iii) Women's differential access to and control over resources relative to men.
- The GVC accounts for almost 50 percent of global trade. However, the proportion of women is significantly lower as compared to men.
- A **gendered GVC analysis** requires:
  - o Identification of sectors, occupations and stages of the GVC in which women and men work, and employment terms and rewards of women relative to men;
  - o Identification of gender-based constraints that reduce the benefits of women from the GVC integration and upgrading may mute supply responses, export performance and upgrading prospects for the whole economy;
  - o Identification of policy interventions that would remove these gender-based constraints to achieve equal benefits for women and men from GVC integration and upgrading.

Major Social and Economic Actors: the Women

- **Barriers in Active Women Participation:**
  - o The main factors are low literacy and skills levels, wage disparity, gender based violence, lack of access to healthcare facilities and lack of gender-segregated data in sectors other than agriculture.

- **Participation of Women from Learning to Earning for empowerment and equity**
  - ◊ Creating community and social awareness to change perceptions & gender rights.
  - ◊ Basic and advanced training opportunities.
  - ◊ Developing basic workforce skills and further improvement in soft skills and life skills.
  - ◊ Developing inclination for technical skills and subsequent industry.
  - ◊ Mentorship around Science, Technology, Engineering and Mathematics (STEM)related opportunities .
  - ◊ Upskilling and re-skilling existing women workforce.
  - ◊ Promoting managerial roles and developing leadership skills.
  - ◊ Demand-oriented skills' workshops.
  - ◊ Gender-sensitive work culture. Wage parity for similar roles.
  - ◊ Ease in access to loans.
  - ◊ Availability of online training resources and platforms for peer to peer learning.
  - ◊ Assistance with enterprise development.
  - ◊ Regulatory help from the government.
  - ◊ Assistance with business management practices.
  - ◊ More incentives for social development project.

- Women working in GVC have job security with a higher probability of holding jobs as opposed to women working in sectors not integrated into the GVC.
- Increased female participation creates a beneficial employment-

productivity cycle improving a country's overall economic position and individual poverty traps. Therefore, for recovering from the pandemic and attaining SDGs, female labour participation should be one of the major area, all the countries must focus on.

Global Value Chains: Gendered Opportunities & Challenges:

1. Entry into GVCs generally has a positive impact on female employment generation, providing an important step towards economic independence.
2. The gendered division of labour in economies is largely perpetuated in GVC employment.
3. Women's roles are often cast as unskilled, limiting their remuneration and taking advantage of higher value opportunities.
4. Female employment also often goes hand in hand with lower payment and poorer working conditions.
5. Gender-intensified constraints limit women's abilities to break these patterns of feminisation of the low value stages of chains and de-feminisation of trade in higher value roles.
6. Access to training and skills development.
7. Access to networks and information.
8. Access to land, finance and productive resources.
9. Economic upgrading can have varying effects on gender equality related to gendered job segregation and gender intensified constraints.
10. Gender inequalities impact on and often constrain economic upgrading effort.
11. Social upgrading often improves women's working conditions but gender specific issues have to be taken into account.

Steps for improving Gender parity in Global Supply Chains

- Provision of long-term training to bring attitudinal changes and mentorships for women who are mostly reliant on personal networks to advance their businesses.
- Focus on adoption of gender sensitive macro-economic frameworks while forming gender-sensitive interventions.
- Providing direction to small rural households for extending support to commercialise their production. In recent times, various global companies are diversifying their supplier and distribution base by engaging women-owned businesses, which gives opportunity for increasing these women-run businesses to gain more market capitalisation.
- Measures for helping women includes access to lucrative public procurement contracts include favouring women-owned businesses within supplier evaluation criteria, and making public tender processes more transparent and accessible.
- To offset the trade challenges faced by women, the different impacts of trade regimes on men and women in business likewise need to be better understood and documented.

Gender Equality Policies in Global value Chains

Trade, industrial, export promotion and GVC intervention policies need to take into account gender aspects to make policies more effective drivers of sustainable development based on gender equity.

Complementary interventions in other policy areas include overcoming gender based segregation and constraints that are embedded directly in laws (legislation, regulations) or in socially constructed gender norms. Unless the capacity of women and men to participate in GVCs is strengthened through aligned trade, industrial and complementary policies, the development outcomes of GVC integration and its contributions to the SDGs may not improve.

1. Identify and acknowledge the role and contribution of women and men in GVCs.
2. Support economic upgrading, taking into account gender-based segregation and constraints.
3. Improve the quality and nature of female work by supporting social upgrading.
4. Leverage actions by all GVC actors (most importantly lead firms, industry associations, trade unions and NGOs) are crucial and can play a critical complementary role.
5. Target multi-lateral trade interventions such as Aid for Trade to secure positive economic, social and gender outcomes.
6. Improve access to information and networks for women
7. Increase access to training for women.
8. Increase access to land, finance and productive resources for women.

Conclusion

- While focussing on a sustainable future, it is important to note that inclusivity, participation and equality are important components of the 'Recover Stronger' initiative. Including the dismantling of GVCs as gendered structure as part of recovery, provides women

with opportunities for skill development, job security, and higher wages. In addition, it can be seen that female participation in the GVC unlocks access to new markets and increases innovation, which adds to GDP growth. Thus, gendered policymaking can be economically beneficial and can improve the global economy and trade, creating a positive circle of development.

- The better gender equality has been observed in regions where some part of the budget has been earmarked for gender-based development programmes. This strategy can be implemented by all Indian states to promote gender equality and equitable access to utilities like water, electricity, public transportation, etc. Similarly, policies that promote water and electrical connectivity to female-headed households could ensure that women have more access to these utilities.
- Women are always multi-tasking, juggling home and work responsibilities. In developing countries, due to household works, women have less time available for productive work. Because of this, women prefer to travel to urban destinations that allow them to multitask. Low-income women who need to work to increase household income tend to find work close to home and often walk to work. Affordable means of transportation would make them able to travel longer distances for work.

India Bio Economy Report 2022

Introduction:

- The Biotechnology Industry Research Assistance Council (BIRAC) recently released its "India Bio-economy Report 2022" which is based on the data on contribution of biotech sector to the economy.
- In the meanwhile, the government announced a special Biotech Ignition Grant call for the North East Region (BIG-NER) and provided 25 companies and entrepreneurs from the region with financial support of up to Rs. 50 lakhs each to help them expand the biotech solutions.

Key findings of the report:

- India's bio-economy is expected to reach USD 150 billion by 2025 and more than USD 300 billion by 2030.
- In 2021, India's bio-economy has touched USD 80 billion, accounting for a growth of 14.1 per cent growth, as compared to USD 70.2 billion in 2020.USD 219 million of bio-economy was generated daily in 2021.
- In 2021, on an average, three biotech start-ups were set up every day. Thus, 1128 biotech start-ups were set up in 2021.
- Bio-economy industry expenditure was over USD 1 billion in R&D.
- India administered around 4 million vaccine doses for Covid-19 per day. In 2021, a total of 1.45 billion doses were administered.
- 3 million Covid-19 tests were conducted every day in 2021, accounting for 506.7 million tests in total.
- Number of biotech start-ups in India has increased from 50 to more than 5,300 in last 10 years due to growth in enabling ecosystem and priority given by government to this sector.

Biotech Start-up is likely to increase further by 2 times, and will cross 10,000 by 2025. BIRAC has set up a network of 74 specialized bio-incubation centers across 21 states/ UTs in a bid to nurture bio-entrepreneurial ecosystem and boost local bio-economy.

- With about a 3% share of the global biotechnology market, India is one of the top 3 biotechnology destinations in South Asia and in the top 12 worldwide.
- Due to a growing enabling ecosystem and prioritization in the last ten years, the number of biotech companies in the country has increased from 50 to over 5,300.

Bio-economy: Definition

- "An economy where the basic building blocks for materials, chemicals, and energy are derived from renewable biological resources"
- According to the **United Nations Food and Agriculture Organization (FAO),** bio-economics is the production, use, and conservation of biological resources, together with related knowledge, science, technology and innovation, with the goal of achieving a sustainable economy.

Evolution of Bio-economics:

- In the first ten years of the twenty-first century, the term "bio-economy" gained popularity.
- After being adopted as a framework for supporting the use of biotechnology to generate new goods and markets by the European Union (EU) and the Organization for Economic Co-operation and Development (OECD), it gained more traction internationally.
- Food systems and bio-based goods are crucial components of the bio-economy, and these include:
  - » Sustainable agriculture
  - » Sustainable Fishing
  - » Forestry and aquaculture
  - » Food and feed manufacturing
  - » Bio-plastics
  - » Biodegradable clothing

Circular Bio-economy:

- Bio-economy aims to drive **both sustainable development and circularity.** In particular, the principles of the circular economy — re-use, repair and recycle — are a fundamental part of the bio-economy.

The total amount of waste and its impact is reduced through reuse, repair, and recycling. It also saves energy and minimizes air and water pollution, thus helping to prevent damage to the environment, climate and biodiversity.

Need of Sustainable and Circular Bio-economy:

- Global environmental challenges and ecosystem degradation, along with the growing need for food and energy, force us to explore new avenues of producing and consuming in a world of finite resources.
- The bio-economy has enormous potential for:
  - » **Job Creation:** Create millions of green jobs, especially in rural and coastal areas.
  - » **Climate Mitigation and Carbon Neutrality:** Emphasis on reducing atmospheric emissions and our dependence on non-renewable energy resources.
  - » **Renewal and modernization of the industrial fabric:** Introduction of innovations in agriculture, aquaculture, forestry and other allied industries.
  - » **Restoration of Biodiversity and ecosystem:** Alignment with the SDGs and recovering the part of the degraded ecosystem.

Indian Initiatives related to Bio-economy:

- **Biofuel:** The Government of India released the National Biofuel policy in 2018 with an aim to increase the adoption of biofuel in the economy and further amended the National Policy on Biofuels and took decisions to increase biofuel production and advance the introduction of ethanol blended petrol with up to 20% blend from April 2023.
- **Bio - pharma Sector:** In order to encourage entrepreneurship and domestic production in the biopharmaceutical industry, the **Department of Biotechnology (DBT2017)'s**

National Bio-Pharma Mission, "Innovate India," intends to bring together business and academia.

- **For Startups promotion:** 35 bio incubators with world-class facilities have been established throughout India to promote startups.

  DBT and BIRAC established the first international incubator, the Clean Energy International Incubator under the auspices of Mission Innovation.

  Startups from the 23 member EU nations may visit India and be incubated there, while startups from this incubator may travel to the partner nations, facilitating access to international opportunities. Four bio-clusters are supported by the department (NCR, Kalyani, Bangalore, and Pune).

Broad areas that the start-ups of 2021 are working in:

- Most of the companies registered in India follow the combination of product, development and services. The start-ups lay emphasis on a diverse range of technologies and services and across multiple segments.
- Some of them are into Bio-Energy, Biofuel, and Enzymes space. Some are focused in the diagnostics and medical devices space.
- Some of them are in agriculture and allied services. Many are into manufacturing of reagent and chemicals that go to the life sciences, biotech & space.
  - » Many focus on research and experimental development (R&D);
  - » Development and supply of medical health devices, diagnostics, and appliances (Medical devices & Diagnostics)
  - » Manufacture of basic chemicals for medical purposes (Basic biochemical manufacturers)
  - » Manufacture of other biologic or biotech based products (Other green chemicals)
  - » Services related to community including Clinical Research, diagnostics etc.

Strategy for Bio-economic growth:

Bio-economic advancement requires a strategic action plan starting from the grass root level of governance along with multilateral efforts:

- **Increased investment in research, innovation and training:** Research on bio-economy issues and their application tends to be disconnected. To avoid this, public-private partnerships should be promoted.
- **Strengthening policy coordination and engagement:** Increasing synergies and coherence between bio-economy-related policies, initiatives, and economic sectors is essential.
- **Improving markets and competitiveness:** This consists of providing the knowledge base needed to make the different sectors of the bio-economy more sustainable, as well as boosting the development of clean energy.

Conclusion

- The biotechnology sector has the potential to have a cascading multiplier effect on the overall economic growth of the country. This booming sector enables technology-led solutions for Healthcare, Industrial manufacturing, Agriculture, Environment and Clean Energy.
- The biotech sector particularly for vaccines, diagnostics and therapeutics has shown to the world that India has the ability to fight global challenges like the COVID pandemic leading from the front and contribute with first-in-class and best-in-class solutions not only for itself but for the world.
- India is already witnessing the increasing contribution of biotech startups innovating new affordable and accessible medical devices and digital health-tech solutions.
- From large manufacturers to young start-ups, the innovation ecosystem in the country has made a significant contribution towards making India a self-reliant and self-sufficient nation to manage the pandemic and India needs to keep this momentum.

Euthanasia: Right to Life and Death

Context

- Recently, a women filed a petition was filed in the Delhi High Court. The petition sought the court to restrain a person from going to Switzerland to obtain "euthanasia".

Introduction:-

- In the petition, the woman has pleaded to the court that her friend, who is suffering from myalgic encephalomyelitis disease, is considering emigration to Switzerland for euthanasia. The petitioner has demanded from the court that the court directs the Central Government to not allow his friend to emigrate to Switzerland.

What is euthanasia?

- Euthanasia which is originally from the Greek word, means Eu = good, Thanatos = death. Thus, euthanasia means a good death i.e. a dignified death. In the present time, there are many legal, social and ethical aspects, which remain a topic of discussion all over the world. In the present world, euthanasia is classified into 2 parts -

  1. 'Active Euthanasia'
  2. 'Passive Euthanasia

- 'Active euthanasia' is a condition when a person seeking euthanasia is assisted in this act, such as injecting poison, etc. Whereas passive euthanasia refers to the condition where no act of euthanasia is performed but life support systems are removed.

Legal Status of Euthanasia in India

- **Article 21:-** Article 21 of the Constitution of India provides that no person shall be deprived of his life and personal liberty except according to the procedure established by law. There is no law in the context of euthanasia that has been done, so it is illegal.

- **Suicide: a crime** There are two ideologies and two laws regarding suicide in India. On the one hand, Section 309 of the **IPC considers that the person who attempts suicide commits the offense and for this, there is a provision of imprisonment of one year. Thus euthanasia is a crime. Along with this, Section 304 of the Indian Penal Code (IPC) also considers the death given to reduce the suffering of a person motivated by human emotion as culpable homicide.**

  On the other hand, section 115 of the Mental Health Act says that a person who attempts suicide is suffering from severe stress and depression, so he is not a criminal. Thus euthanasia can be considered the result of social or mental torture.

  Although both these laws do not support suicide in any way, they suggest two different ways to prevent suicide. Thus, there is no place in India's legal code for euthanasia.

Court's stand on euthanasia:-

- In the Aruna Shambaug case, 2011, the Supreme Court, in a land mark judgement issued a set of broad guidelines legalizing passive euthanasia in India.
- The constitutionality of Section 309 of the Indian Penal Code in the case of P. Rathinam v. Union of India (1984) was challenged as a violation of Article 21 of the Constitution. The petitioner had argued that if there is a right to live, there should also be a right to die. However, in 1996 the Supreme Court in Gyankaur v State of Punjab reversed the said decision and clarified that the 'right to life under Article 21 does not include the right to death.
- Hearing a petition by NGO Common Cause, a five-member Constitution Bench of the apex court held that human beings can be given the right to choose death with full dignity, and the court ruled for the implementation of passive euthanasia. In this context, the Supreme Court has given some guidelines, which are described as follows-
  - » In the context of patients suffering from an incurable disease, the near family, friends,

and relatives of the patient can execute the living will by giving advance instructions regarding euthanasia.

» Those who want euthanasia due to being in a medical coma or suffering from an incurable disease, have also been allowed a living will.

» There will be a complete investigation after the living will. It will also examine the person who is going to be benefited from property or inheritance.

» The final decision on the possibility of treatment and euthanasia of the patient will be of the Medical Board. If the medical board concludes that the disease is incurable and treatment is not possible, the life support system may be withdrawn.

Arguments in favor of euthanasia

- **Essence of Article 21*:* -** The Hon'ble Supreme Court has defined the right to life under Article 21 as the 'right to a dignified life. Therefore, if there is a loss of dignity or respect in the life of a person and he starts feeling like a burden, in this situation it would be appropriate to give euthanasia. For example, Narayan Lavate (88) and Iravati Lavate (78), a couple from Maharashtra, say that they do not want to be a burden on society in their old age, so they are demanding euthanasia.
- **Explanation of Article 19: -** If the 'right to be quiet' is included under the freedom of speech and expression of Article 19, then why cannot the right to death come under the right to life of Article 21?
- **International Status:-** Euthanasia is allowed in many countries of the world like Luxembourg, Netherlands, Belgium, etc. These countries are democratic and give importance to human dignity, even after this there is a provision for euthanasia, in this situation it should be provided in India as well.
- **Spiritual aspect:-** The importance of the practice of Santhara in Jainism. This practice is a type of euthanasia. It is a belief that the path of attainment of Kaivalya (moksha as described in Jainism) becomes easy through Santhara. Some time ago this issue became a topic of discussion when the lady of Jaipur Vimala Devi Ji accepted the santhara.
- **Philosophy of Humanism:-** According to humanistic philosophy, man is the end, not the means. And he is entitled to decide about himself. From this point of view, he has the right over his death. Therefore, euthanasia is a proper concept.

Arguments against euthanasia

- **Legal Status :-** In Gyankaur vs the State of Punjab, the Supreme Court clarified that the 'right to life under Article 21 does not include the right to death. That is, there is a right to live, but there is no right to death. Article 21 of the Constitution and Section 309 of the Indian Penal Code both declare euthanasia illegal. Merciful death, even if it is motivated by the human spirit and is to be done to alleviate the unbearable pain of the victim, is also considered an offense of culpable homicide under section 304 of the Indian Penal Code (IPC).
- **Socio-economic status of India:-** Democracy is in the advanced stage in countries like Netherlands and Belgium. But socio-economic justice has not yet been fully established in India, as a result of which many people in the country are compelled to consider euthanasia, such as poor and indebted farmers. Therefore, the right time has not come to provide the right to euthanasia in India.
- **Possibility of misuse:-** It is not appropriate for mentally and physically healthy people. Simultaneously, it will be extremely difficult to avert the misuse of euthanasia due to rampant corruption in India and wealth or family enmity.
- **State can interfere in religion:-** Although India has accepted "secularism" but it is different from western secularism. The state can interfere in religious matters based on restrictions like dignified living, and virtue. Therefore, the demand for euthanasia on religious grounds can be rejected.

Conclusion

The only ground for euthanasia should be when the hope of life has ended. Guidelines for Passive Euthanasia have been laid down by the Supreme Court and the Government has drafted the 'Medical Treatment of Terminally Ill Patients (Protection of Patients and Medical Practitioners) Bill'. This draft will consider the stages of withdrawal of life support systems. Significantly, the Law Commission has also recommended that Parliament Passive Euthanasia be legalized. So we can say that passive euthanasia can be implemented in present-day India.

Battling India's Malaise of Corruption

Context

- At present, corruption has become a big problem for India, which will have to be solved both on the government and private front.

Introduction

- The prevalence of corruption in India at present cannot be denied. Corruption can be defined as the abuse of power for personal gain. It also affects the development of the country. It ranges from providing small facilities to the common man by corruption to high-level scams. Certainly, corruption undermines India's economic security and undermines the values of accountability, transparency, and honesty by undermining the trust in the government.

Corruption situation in India

- According to a report published by Trace International on Bribery in India (which surveyed 9 states) - 91% of bribes in India are done by government officials. 77% of bribes were intended to protect the bribe giver from harm. Whereas 51% of the bribe was done for the performance of such acts for which the person giving the bribe was already entitled to, example- the Customs Amendment.
- India was ranked 85th out of 180 countries in the Corruption Perception Index-2021 released by Transparency International. This means that the condition of about 50% of the countries is better than India.

Effects of corruption

- Corruption is a very serious economic matter which affects the country not only economically but also socially and politically.
- Several attempts were made to demonstrate the economic impact of corruption. For example, the government suffers a loss of two lakh crores every year due to tax evasion, and there is a loss of about 40000 crores due to delays in projects. Losses in the transmission and distribution of the energy sector account for about 50% of the losses.
- The political impact of corruption is even more widespread. This leads to problems like trust deficit between people and government and distrust of institutions.
- It undermines the environment of efficiency, equity, and competition in the use of resources. Along with this, it leads the deprived class towards further deprivation.
- Government officials affected by corruption give recognition to environmentally unfavorable projects. Thus 'pollution of corruption' also affects the environment and ecology.

Major causes of corruption

The main causes of corruption in India are poor implementation of regulatory laws, official secrecy act, rigid bureaucracy with a colonial legacy, lack of ethics, and lack of social control.

- **Poor implementation of regulatory laws:-**
  There are certain laws like Lokpal, CVC, CBI, IPC, and Prevention of Corruption Act-1988 available to prevent corruption in India. But poor implementation of these laws encourages corruption. For example, the Lokayukta was not appointed for many years after the Lokpal Act was enacted.

- **Official Secrets Act:-**
  Under the Official Secrets Act, 1923, those subjects are kept which are highly confidential from the official point of view. The subjects of this Act are exempted from the Right to Information Act, 2005. Therefore, it is often used by the government. It is worth noting here that the Right to Information Act has played an important role in exposing scams like 2G, Commonwealth, etc. but here the Right to Information Act

becomes weak.

- **Rigid bureaucracy suffering from colonial legacy:-**
  There are many good laws in India to prevent corruption, but there is a substantial difference in the policies and feasibility of these laws. This difference is mainly due to the colonial mindset of the bureaucracy.

- **Lack of morals and lack of social control**
  The lack of a formal system to develop social acceptance and tolerance for corruption and values of ethics further encourages corruption.

- **Public attitude:-**
  At times, the attitude of the public towards accomplishing work in "any how "manner also encourages corruption.

Efforts for prevention of corruption in India:-

- **Indian Penal Code 1860: -** The provisions of sections 169 and 409 of this code provide for preventing corruption committed by public servants.
- **Prevention of Corruption Act 1988: -** This act also provides for punishment in respect of corruption committed by public servants. By an amendment made in 2018, the person giving a bribe has also been kept in the category of a criminal.
- **Prevention of Money Laundering Act 2002:** It prohibits black money by prohibiting money laundering. Under this, there is a provision of imprisonment of 10 years and attachment of property if the offense is committed.
- **Central Vigilance Commission (CVC): -** This institution was established in 1964 on the recommendations of the Prevention of Corruption Committee headed by K. Santhanam. It was later given statutory status through the Central Vigilance Commission Act, 2003 enacted by the Parliament. This institution hears complaints related to corruption or abuse of office and recommends suitable action in this direction.
- **Lokpal and Lokayukta:** This Act was passed by both the houses of Parliament in the year 2013, and came into force on January 16, 2014.
  - » Lokpal is a multi-member body
  - » It will have a chairperson. The chairperson of the Lokpal institution should be either a former Chief Justice of India or a former Supreme Court judge or an eminent person of unquestionable integrity and outstanding ability.
  - » In addition to the chairperson, it should have a maximum of 8 members. Half of these should be judicial members, And a minimum of 50 percent members should be from the SC/ST other backward classes/minorities and women category.

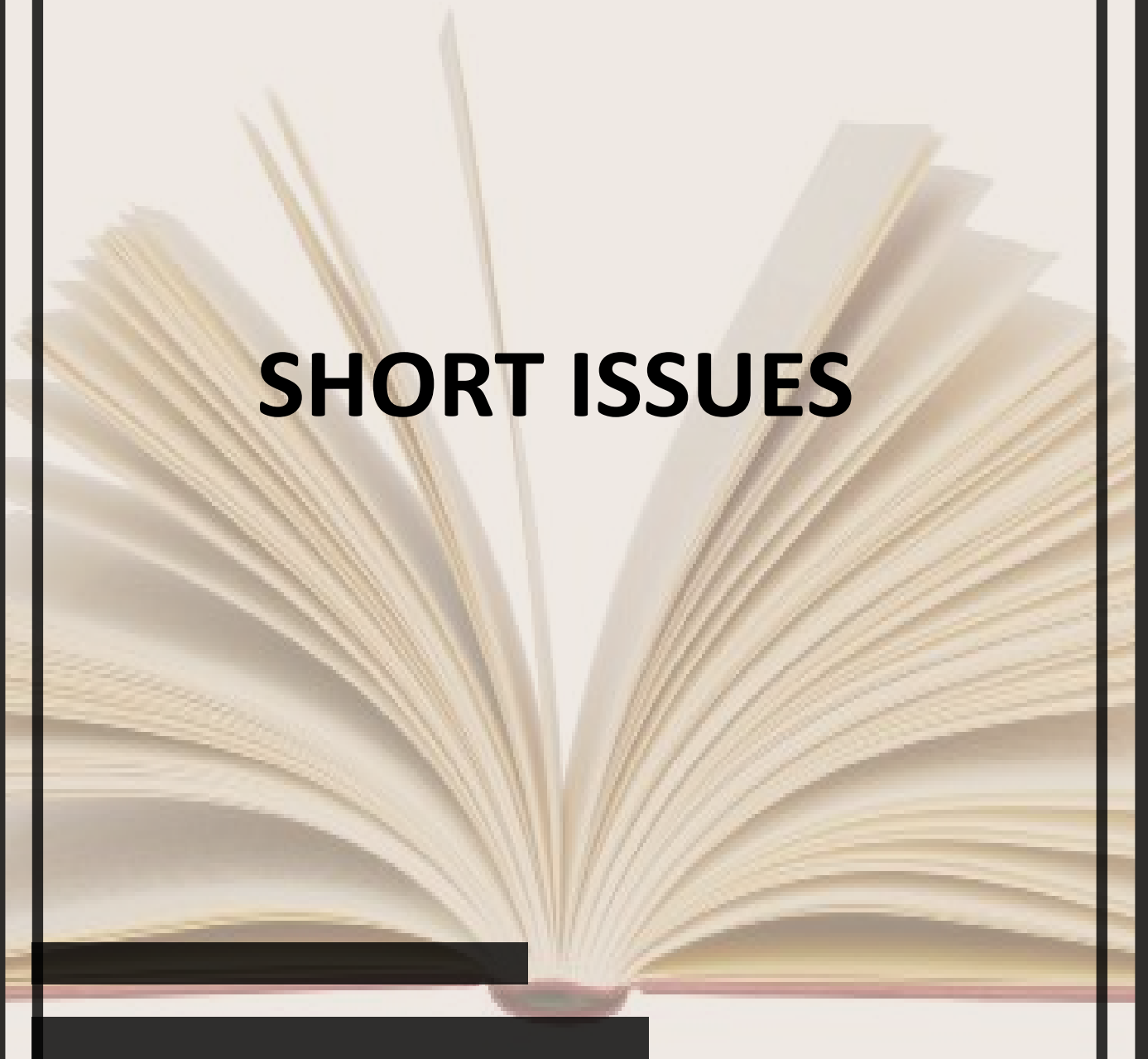
Way Forward:

- To curb corruption, control has to be established on both the supply side (bribe giver) and demand side (bribe taker) of corruption.
- The Official Secrets Act needs to be made more transparent.
- The reforms in the civil services would have to be motivated to abandon the colonial legacy. In this context, bringing the question paper on ethics, and integrity in the civil services examination by the Public Service Commission is commendable.
- The public has to be made aware. Along with this, the Whistleblower Protection Bill will have to be passed.

Conclusion

- All the sanctions in India restrict the demand side of bribery. The regulatory framework for the supply side of bribery also needs to be strengthened. Mayro, the chief economist of Corruption Economics, has said that if India brings its corruption in line with that of the Scandinavian countries, then its investment will increase by 12% and GDP by 1.5 percent from the current situation. In this way, we will say that the path of all-round development of India can be paved by curbing corruption.

SHORT ISSUES



NATIONAL

1 2G Ethanol

Why in news

- Prime Minister Narendra Modi dedicated the second generation (2G) ethanol plant to the nation at Panipat, Haryana.
- This is part of a series of steps taken by the government over the years to promote the production and use of biofuels in the country.
- This is in line with the Prime Minister's constant endeavour to make the energy sector more affordable, accessible, efficient and sustainable.

About the project-

- The 2G Ethanol Plant has been constructed by Indian Oil Corporation Limited at an estimated cost of over Rs.900 CRORE.
- This project will reduce greenhouse gases equivalent to about three lakh tonnes of carbon dioxide equivalent emissions per year.
- This project will use about two lakh tonnes of rice straw to generate about 30 million litres of ethanol per annum.
- This project is a successful example of India's waste-to-money efforts.

About biofuels

- The fuel obtained from biomass is biofuel.
- Sources of biomass include trees, energy crops, agricultural residues and food and waste residues.
- It produces less carbon monoxide and other toxic emissions.
- Biofuels can reduce greenhouse gas emissions and increase energy security by providing an alternative to fossil fuels.

India's efforts

The National Policy on Biofuels 2018 was notified by the Ministry of Petroleum and Natural Gas.

Under this, biofuels were categorized into 3 types-

- **First generation biofuels:** These are made from food sources using traditional technology such as sugar, starch, vegetable oil or animal fat.
- **Second generation biofuels:** These are produced from non-food crops or parts of food crops that are not edible and are considered waste, e.g. the skins and peels of stems, husks, wood chips and fruits.
- **Third generation biofuels:** These arise from micro-organisms such as algae.

» The national policy expands the scope of raw materials for ethanol production by allowing the use of unsuitable grains.

» The national policy allows the use of surplus food grains.

» Under the national policy, there has been an idea of provision of viability gap funding.

SATAT Scheme

- The STATA Scheme was launched in October 2018 by the Ministry of Petroleum and Natural Gas in association with Oil Marketing Companies (OMCs).

Aim

- An initiative aimed at setting up compressed bio-gas production plants.
- To make it available in the market for use in automotive fuel.

Gobardhan scheme

- Gobardhan scheme was launched in early 2018 to achieve Open Defecation Free (ODF) Plus target.
- It aims to manage the existing issues of bio-waste including cow dung in villages and convert them into biogas and organic manure, thereby improving the lives of farmers and families of the village by providing them economic and resource benefits.
- The goals of ODF Plus depend to a large extent on the performance of the Gobardhan scheme, as it not only effectively addresses the challenge of solid waste management but also enhances livelihood opportunities and household income in the rural area.

Advantages of biofuels

- Energy security will increase.
- There will be less emission of greenhouse gas
- Environment pollution will decrease.
- People will get employment.
- Waste To Wealth concept can be landed on the ground.
- Will help in achieving India's INDC.

Conclusion

Government had done its best job particularly in renewable sector. Now it is duty of all citizens to adopt clean fuel for betterment of environment. At the same time it is the need of the hour that private sector comes forward and helps in fulfilling the energy security through renewable means.

2 ATAGS

The indigenously developed and manufactured Howitzer Gun (ATAGS) became part of the 21-gun salute for the first time at the 76th Independence Day celebrations at the Red Fort.

About ATAGS

- The Advanced Towed Artillery Gun System (ATAGS) developed by the Defence Research and Development Organisation, was used with traditional British-origin 25 pound artillery guns.
- Prime Minister Narendra Modi mentioned this gun while speaking on the Atmanirbhar Bharat initiative during the Independence Day speech.
- ATAGS is an indigenous 155mmX 52caliber howitzer gun developed by DRDO's Armament Research and Development Establishment, Pune.
- ARDE has collaborated with Bharat Forge Limited and Tata Advance Limited to manufacture this special gun system.
- The ATAGS project was initiated by DRDO in 2013 to replace the old guns in the Indian Army with the modern 155mm Artillery Gun System.
- It is a great gift for India during the Amrit Mahotsav of Independence.

Features

- The ATAGS system is a 155mmx52caliber gun system capable of hitting a target of 45 to 48 km with precision accuracy.
- It has advanced features like high mobility, quick deployability, auxiliary power mode, advanced communication system, automatic command and control system, which is capable of firing in direct fire mode even at night.
- This special gun system is equipped with the Artillery Combat Command and Control System (ACCCS) like C4I system for technical fire control, fire planning, project management and operational logistics management of the Indian Army.
- India is one of the few countries in the world that has a six-round automatic weapon that activates in thirty seconds. The existing 155mmx52 caliber gun has three rounds which need to be reloaded manually.

Significance

- It is part of the modernization and restructuring of artillery of the army.
- This indigenous artillery system will promote the modernization of the Indian army.
- It can be deployed on the borders of Pakistan and China. The self-propulsion unit allows the gun to be easily deployed in hilly areas.
- ATAGS has emerged as a reliable and robust gun system in the world and will enhance the firepower of Indian artillery manifold.
- India will soon be able to emerge on the world stage as a leading Artillery Gun Design and Manufacturer with the development of ATAGS.

"Such a weapon system is highly strategic for India and future mainstay" said the MoD.

3 E-Governance

Why in news

- Uttar Pradesh now implements all services in the state through e- governance. Government had adopted 100 percent e-governance in all modes of service.

What is E-governance?

E-governance refers to making government services accessible to the people through digital technology.

- It includes the application of communication and information

technology for delivery of government services, exchange of information, transactions, integration of pre-existing services and information portals.

- E-governance is the use of information and communication technology to deliver government services between government to citizens, government to business and government to government.

What is Smart Governance?

Smart governance refers to simple, ethical, accountable and transparent governance

- Simple- Simplification of the rules, regulations and procedures of the government through the use of ICT.
- Ethical - To develop ethical values through technology intervention in political and administrative system.
- Accountable- Ensuring accountability of public service personnel.
- Responsive - Streamlining processes to accelerate service delivery and make systems more responsive.
- Transparent - Bringing hitherto limited information in government documents into the public domain and making processes and actions transparent.

Benefits of e-governance

- The access of the common man to the government is increased.
- Reduction in corruption.
- Women empowerment.
- Use of technology like Artificial Intelligence, Machine Learning, Blockchain, 5G, Augmented Reality, Virtual Reality etc. will be encouraged.
- There will be social and economic development.
- There may be an increase in FDI for the country.
- Transparency in administration.
- Increase in the delivery and efficiency of government services.
- Business and industry friendly.
- Citizen empowerment through access to information.
- More efficient government management.
- Cost reduction and revenue growth.
- Reduction in paperwork and red tape in the administrative process.
- Better relations between public authorities and civil society.

E-Governance Initiative

» **National e-Governance Plan (NeGP)**

- The Government approved the National e-Governance Plan on May 18, 2006.
- The NeGP, takes a holistic view of e-governance initiatives across country, integrating them into a collective vision, a shared cause.
- It aims to bring public services at door of citizens, as articulated in the vision statement of NeGP.
- Under this 44 mission mode projects have been launched.

» **e-Kranti**

e-Kranti is a national e-governance plan to accelerate e-governance across India. It involves the delivery of all government services electronically to citizens through an integrated and interoperable system.

» **Mission mode project**

Mission Mode Project (MMP) was taken up as an independent project under the National e-Governance Plan. This project is designed keeping in mind the services based on various aspects of electronic governance such as banking, land records or business tax etc. The Mission Mode Project of the National e-Governance Plan clearly defines the objectives, scope and timelines of implementation and achievements as well as assessable outcomes and service levels.

Aadhaar, UPI, DigiLocker, UMANG, E-Sign, CSC2.0, E-Praman, E-gov App, PayGov India, Center for E-Governance etc. are also included in the e-governance initiatives.

24th National Conference on e-Governance

The Department of Administrative Reforms and Public Grievances (DARPG), Ministry of Personnel, Public Grievances and Pensions and Ministry of Electronics and Information Technology (MeitY), Government of India in collaboration with Government of Telangana organized the 24th National Conference on e-Governance from 7-8 January 2022 in Hyderabad.

In this, various aspects of e-governance were discussed and Hyderabad Declaration on e-Governance was also launched.

Way forward

Although India has performed great in digital and e-governance sector but it is the people who are the ultimate adopter of technology. Thus it is the need of hour to include villagers and far flung people in e-governance initiatives.

4 Flag Code Rules

Under the 'Azadi Ka Amrit Mahotsav', 'Har Ghar Tiranga' campaign was launched from 13 to 15 August to commemorate the 75th anniversary of independence.

Even before the announcement of the 'Har Ghar Tiranga' campaign, the central government had started making such changes in the rules and regulations, so that it could help in making this campaign a huge success.

About the Flag

The saffron colour present in the tricolour is considered a symbol of courage and sacrifice, white colour symbolizes peace and truth, while green colour symbolizes prosperity. Ashoka Chakra is the symbol of Dharmachakra. The Tricolor was designed by Pingali Venkayyah.

Salient Features of Flag Code 2002

1. The Indian National Flag represents the hopes and aspirations of the people of India. It is the symbol of our national pride and there is universal affection and respect, and loyalty to the National Flag. It occupies a unique and special place in the emotions and psyche of the people of India.
2. 2The hoisting/use/display of the Indian National Flag is governed by the Prevention of Insults to national Honour Act, 1971 and the Flag Code of India 2002. Such as:
   - » The Flag Code of India, 2002 was amended vide order dated 30 December 2021 and National flag made of polyester or machine made Flag have been allowed. Now, the National Flag shall be made of hand spun and hand woven or machine made, cotton/polyester/wool/silk or khadi bunting.
   - » A member of public, a private organisation or an educational institution may hoist the National Flag on all days and occasions, ceremonial or otherwise, consistent with the dignity and honour of the National flag.
   - » The National Flag shall be rectangular in shape. The Flag can be of any size but the ratio of the length to the height (width) of the Flag shall be 3:2.
   - » Whenever the National Flag is displayed, it should occupy the position of honour and should be distinctly placed.
   - » A damaged or dishevelled Flag shall not be displayed.
   - » The Flag should not be flown on a single masthead simultaneously with any other Flag or Flags.
   - » The Flag should not be flown on any vehicle except of the dignitaries mentioned in section IX of Part III of the Flag Code, such as President, Vice-President, Prime-Minister, Governors etc.
   - » No other Flag or bunting should be placed higher than or above side by side with the National Flag.
   - » It is forbidden to use the National Flag "as a portion of costume or uniform". It can not be used as an accessory to be worn below the waist of any person, "nor shall it be embroidered or printed on cushions, handkerchiefs, napkins, undergarments or any dress material".

How is the Flag to be Stored?

- The Tricolour should not be stored in a way that might soil or damage it. If your Flag is damaged, you must not cast it aside, but "destroy it as a whole in private, preferably by burning or by any method consistent with the dignity of the Flag". Also, the Flag "shall not be allowed to touch the ground or the floor or trail in the water".
- Article 51A- It shall be the duty of every citizen of India to abide by the constitution and respect its noble ideals and institutions, the National Flag and the National Anthem

Dishonour of the Flag

According to the prevention of Insults to National Honour Act, 1971, whoever in any public place or in public view burns, mutilates, defaces, defiles, disfigures, destroys, tramples upon or otherwise brings into contempt (whether by words, either spoken or written or by acts) the Indian National Flag shall be punished with imprisonment for a term which may extend to three years or with a fine, or with both.

5 7th Governing Council meeting of NITI Aayog

Why in the news

- The 7th Governing Council meeting of NITI Aayog concluded on 8 August 2022.
- The meeting was chaired by the Prime Minister at Rashtrapati Bhavan Cultural Centre, New Delhi.
- The objective of the Council is to enhance cooperation and cooperative federalism between the Union and the States/UTs.
- On the agenda of the meeting, crop diversification and achieving self-sufficiency in oilseeds and pulses and agri-commodities, National Education Policy-Implementation of School Education, Implementation of Higher Education; and urban governance etc were discussed.

About NITI AAYOG Governing Council

- The Governing Council of NITI Aayog is a premier body entrusted with the task of developing a common vision of national priorities and strategies with the active participation of States and Union Territories.
- The Governing Council provides a forum to discuss inter-regional, inter-departmental and federal issues.
- It includes the Prime Minister of India; Chief Ministers of all the States and Union Territories, Lieutenant Governors of other Union Territories; ex-officio member; The Vice-Chairman, Members and Union Ministers attend as special invitees.
- It is headed by the Prime Minister of India.
- It provides the most important forum for deliberations between the Center and the States and identifies key strategies for cohesive action with a holistic government approach.

About NITI Aayog

It was established on 1 January 2015.
It replaced the Planning Commission which was established in 1950.

Main Objectives of NITI Aayog

- Develop a shared vision of national development priorities, sectors and strategies with the active participation of the states.
- Promoting co-operative federalism through structured support initiatives and mechanisms with states on an on-going basis, recognizing that strong states make a strong nation.
- Developing mechanisms for preparing credible plans at the village level and progressively collating these at higher levels of government.

NITI Aayog's Vision

All the activities of NITI Aayog can be divided into four main heads.

1. Policy and Program Framework
2. Co-operative Federalism
3. Monitoring and Evaluation
4. Think Tank, and Knowledge and Innovation Hub

Major Initiatives of NITI Aayog

Mission Life

At the United Nations Climate Change Conference (UNFCCC COP26) in 2021, the Hon'ble Prime Minister of India, Shri Narendra Modi, announced Mission Life to bring individual behavior to the fore in the global climate action narrative.

E-Amrit

E-Amrit is a one-stop destination for all information regarding Electric Vehicles- dispelling myths about EV adoption, their purchase, investment opportunities, policies, subsidies etc.

Women's Entrepreneurship Platform (WEP)

Women Entrepreneurship Platform (WEP) is an initiative of the Government of India by NITI Aayog to promote and support aspiring and established women entrepreneurs in India, by providing support to them from starting up and expanding and expanding their enterprises.

Conclusion

NITI AAYOG is the main organization in which all the states participate and share their experiences. Also, NITI Aayog actively assists all the states in people centric initiatives. NITI Aayog launched several indices that promote competitive and cooperative federalism in India such as State Health Index, India Innovation Index, Composite Water Management Index, School Education Quality Index, SDG India Index etc.

6 MP's Don't Have Immunity From Arrest During Parliament Session

Why in news

Addressing during Zero Hour, Vice President Venkaiah Naidu said MP don't have any immunity of arrest in criminal cases during parliament session. He told that privileges provide a member protection from civil laws while parliament is in session, it does not make them impervious to criminal proceeding. This statement had come in backdrop of opposition member protesting on summon to Mallikaarjun Kharage, opposition leader of Rajya Sabha.

Constitutional provision related to arrest of MP during parliament session

Under Article 105 of the Constitution, MPs enjoyed certain privileges so they could perform their duties without hindrance.

One of the privileges is that an MP cannot be arrested in a civil case 40 days before the commencement of the session or committee meeting and 40 days thereafter. However, in criminal matters, MPs are not on a different footing than a common citizen. That means members of Parliament do not enjoy any immunity from being arrested in criminal cases during the session or otherwise.

Various types of parliamentary privileges under article 105 of the constitution

- Freedom of speech
- Freedom for arrest
- Exemption from attendance as witness
- Right to publish debate and proceeding
- Right to excludes strangers
- Right to punish member and outsiders

Sources of privileges:

- Constitutional provisions
- Various laws made by Parliament
- Rules of both the Houses
- Parliamentary conventions
- Judicial interpretations

Significance of parliamentary privileges:

- The exemptions, rights or immunities provided to the members of each house of the parliament and the parliament committees secure the independence and effectiveness of the actions taken by them.
- The parliamentary privileges help maintain the dignity, authority and honour of the members of parliament.
- The parliamentary privileges help secure the members of the houses from their discharge of actions.
- It encourages good governance

Supreme Court case on parliamentary privileges

K. Anandan Nambiar v. Chief Secretary, Government of Madras (1966)

In this case, the petitioners were members of the Parliament and were detained under Defence of India Rules, 1962. The Supreme Court held that if a person was detained under valid detention, he could not claim parliamentary privilege and should not be given special status under that of an ordinary citizen and that he was liable to be arrested and determined under it as any other citizen. If an order of detention validly prevents a member from attending a session of Parliament, no occasion would arise for the exercise by him of the right of freedom of speech.

Conclusion

It is very clear that member should not claim parliament privilege on criminal cases during parliament session. But there are many instances where constitution and rule book are not clear on parliamentary privileges. Thus, it is need of the hour to codify the parliamentary privilege law.

7 Nallathambi Kalaiseelvi became the first woman DG of the CSIR

Why in discussion

Senior scientist Nallathambi Kalaiseelvi has been made the Director General of the Council of Scientific and Industrial Research (CSIR), according to a release issued by the Personnel Ministry on Saturday. She will succeed Shekhar Mande, who retired in April. After Mande's retirement, Rajesh Gokhale, Secretary, Department of Biotechnology, was given additional charge of CSIR. Nallathambi Kalaiseelvi has been appointed for a period of two years.

About Nallathambi Kalaiseelvi

- Hailing from the small town of Ambasamudram in Tirunelveli district in Tamil Nadu, Kalaiseelvi received her early education in Tamil language. After that she dreamed of becoming a scientist and she joined CSIR.
- Till now she was the Director of CSIR-Central Electrochemical Research Institute (CECRI) at Karaikudi, Tamil Nadu. Here too she became the first woman to head CSIR-CECRI.
- Kalaiseelvi's research work for more than 25 years has focused primarily on the development of electrochemical power systems, especially electrodes. She is currently working on the development of sodium-ion/ lithium-sulfur (Li-S) batteries and super-capacitors. Her contribution in the field of Lithium Ion Battery is commendable. Kalaiseelvi has also made significant contributions to the National Mission for Electric Mobility. She also has over 125 research papers and six patents to her name.

About Council of Scientific and Industrial Research

- It is the largest Research and Development (R&D) organization in India.
- It is a pan-India institute with an active network of 38 national laboratories, 39 outreach centres, 3 innovation complexes.
- It is funded by the Ministry of Science and Technology and is registered as an autonomous body under the Societies Registration Act, 1860.
- It provides solutions through technology on environment, health, drinking water, food, housing, energy, agri-sector and non-farm sectors.
- It covers a wide spectrum of science and technology from oceanography, geophysics, chemicals, medicines, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation, environmental engineering and information technology.
- It was established on 26 September 1942. Its headquarter is located in New Delhi.

Purpose of CSIR

Scientific and industrial research is to be done related to national importance, that is, to provide solutions through research of things in daily use.

Organizational Structure

President: Prime Minister of India (ex-officio President)

Vice President: Union Minister of Science and Technology (Ex-officio Vice President)

The Director General is the head of the Board of Directors.

Activities

- Providing financial assistance to institutions.
- To promote, guide and coordinate scientific and industrial research.
- To establish and assist special institutions or departments of existing institutions for the scientific study of industrial and business problems.
- To provide scholarships and fellowships for research.
- To use the results of research done under the aegis of the Council for the development of industries in the country.
- Establishment, maintenance and management of laboratories, workshops, institutions and organizations for advancement in scientific and industrial research.
- Collection and dissemination of information relating to scientific research as well as to industrial matters in general.

Conclusion

Today, when the country is celebrating the Amrit Mahotsav of Independence, where the highest focus has been on the pride and upliftment of women, it is indeed a matter of national pride to have Nallathambi Kalaiseelvi as the first woman Director General of CSIR. This will increase the interest of women in the field of science and more and more women will be encouraged to become a part of this scientific sector.

INTER-NATIONAL

1 Chinese Yuan Wang 5 at Sri Lankan Port

Why in News:

A Chinese research vessel, Yuan Wang 5, has arrived at Sri Lanka's southern Hambantota Port.

The India and the U.S. are voicing concern with Colombo over the Chinese military ship's visit.

About Yuan Wang 5:

- The Yuan Wang 5 is a third-generation tracking ship of the Yuan Wang series.
- Yuan Wang-class ships are used to track satellite, rocket and inter-continental ballistic missile (ICBM) launches.
- China has around seven of these, capable of operating throughout the Pacific, Atlantic, and Indian oceans.
- The ships supplement Beijing's land-based tracking stations.
- The Yuan Wang 5 was built at China's Jiangnan Shipyard and it entered service in September 2007. The 222-metre-long, 25.2-metre-wide vessel has state-of-the- art tracking technology.
- Its last monitoring mission was the launch of China's Long March 5B rocket.
- It was also recently involved in maritime monitoring of the launch of China's Tiangong space station's first lab module.
- The Yuan Wang class is not a single class of identical designs but a group of different designs put under the same series that share one name.

Why the Trip:

- According to the Belt & Road Initiative Sri Lanka (BRISL), Yuan Wang 5 will enter Hambantota port, a strategically important deep-sea port developed mostly using loans from Beijing for a week, and will likely leave on August 17 after replenishment.
- "The Yuan Wang 5 will conduct satellite control and research tracking of China's satellites in the North Western part of the Indian Ocean region through August and September," BRISL said on its website.

India's Concerns:

- The Yuan Wang 5's has significant aerial reach reportedly around 750 km that would indirectly mean that Kalpakkam, Koodankulam, and the atomic research centre within Indian borders can be snooped upon being on China's radar.
- The ship can track ports of Kerala, Tamil Nadu, and Andhra Pradesh. As many as six South Indian ports will be under China's focus and the ship can gather information about vital installations along Southern India.
- This could be the next step in the "Strings of Pearls strategy" Chinese strategy to encircle India.

Has this happened in the past?

- India has in the past raised concerns over the presence of the Chinese military or suspected dual-purpose vessels in the Indian Ocean.
- In January 2020, four to six Chinese research vehicles were spotted in the Indian Ocean region, making the navy wary.
- In 2019, the navy pushed out a Chinese naval ship Shi Yan 1, that had come into waters close to the Andaman Islands.
- In 2014, Sri Lanka allowed a Chinese nuclear-powered submarine Changzheng 2 in Colombo and it led to diplomatic tension with New Delhi.

Hambantota Port:

- Hambantota port is located right in middle of vital energy supply lines in Indian Ocean, connecting Middle East and East Asia..
- Hambantota port is a deep-water port in the southern tip of Sri Lanka.
- Under the 99-year lease agreement, China will invest up to US $1.1 billion in the port and marine-related activities.
- Hambantota International Port Group is a Public Private Partnership and a Strategic Development Project between the Government of Sri Lanka and China Merchants Port Holdings (CMPort).

2 Mineral Security Partnership: Rare Earths

Why in News:

A new US-led partnership initiative of 11 nations aims to bolster critical mineral supply chains. India is not part of this arrangement called the Minerals Security Partnership (MSP) but New Delhi is working through diplomatic channels to fetch an entry.

Minerals Security Partnership (MSP)

- MSP is an US-led new partnership to secure supply chains of critical minerals such as Cobalt, Nickel and Lithium and also the 17 'Rare Earth' minerals.
- The MSP will help to catalyse investment from governments and the private sector for strategic opportunities- across the full value chain - that adhere to the highest environmental, social and governance standards.
- The MSP have 11 members that includes Australia, Canada, Finland, France, Germany, Japan, The Republic of Korea, Sweden, United Kingdom and the European Commission.
- The alliance is seen as primarily focused on evolving an alternative to China, which has created processing infrastructure in rare earth minerals and has acquired mines in Africa for elements such as Cobalt.

Rare earth minerals

The 17 rare earth elements (REE) include the 15 Lanthanides (atomic numbers 57 which is Lanthanum to 71 in the periodic table) plus Scandium (atomic number 21) and Yttrium (39). REEs are classified as light RE elements (LREE) and heavy RE elements (HREE).

- They are called 'rare earth' because earlier it was difficult to extract them from their oxides forms technologically.
- They occur in many minerals but typically in low concentrations to be refined in an economical manner.

Importance of Rare earth metals

- These minerals have unique magnetic, luminescent, and electrochemical properties and thus are used in many modern technologies, including consumer electronics, computers and networks, communications, health care, national defence, etc.
- Even futuristic technologies need these REEs such as high-temperature safe storage, superconductivity, and transport of hydrogen for a post-hydrocarbon economy, environmental global warming and energy efficiency issues.
- Cobalt, Nickel and Lithium are required for batteries used in electric vehicles.
- Rare earth minerals are critical in trace amounts in the semiconductors and high-end electronics manufacturing.
- These are essential for clean energy and other technologies.

India's Current Policy on Rare Earths

- Exploration of rare earths in India has been conducted by the Bureau of Mines and the Department of Atomic Energy.
- Mining and processing has been performed by some minor private players in the past, but is today concentrated in the hands of IREL (India) Limited (formerly Indian Rare Earths Limited), a Public Sector Undertaking under the Department of Atomic Energy.
- IREL produces rare earth oxides in low-cost, low-reward and sell to foreign firms that extract the metals and manufacture end products for high-cost, high-reward.

India eager to join MSP

- India is focussed on its ambitious shift towards conversion of large part of public and private transport to electric vehicles.
- Critical minerals are required for its electronics manufacturing push.
- India is seen as a late mover in attempts to enter the lithium value chain.
- Indian state owned Khanij Bidesh India Limited has signed an agreement with Argentinian firm to jointly prospect lithium in Argentina that has third largest reserves of the metals in the world.
- Some RE is available in India such as Lanthanum, Cerium, etc. While other important HREE are not available in India. Hence, there is a dependency on China and other countries.
- India too wants to shed its dependency on China and want to secure its critical minerals supply chain through MSP.
- India and Australia decided to strengthen their partnership in the field of projects and supply chains for critical minerals.
- India's new plan, 80 per cent of the country's two- and three-wheeler fleet, 40 per cent of buses, and 30 to 70 per cent of cars will be EVs by 2030.

ENVIRONMENT

1 The Great Barrier Reef's: Recovery and Vulnerability

Why in News:
The highest levels of coral cover, within the past 36 years, has been recorded in the northern and central parts of Australia's Great Barrier Reef (GBR), according to the annual long-term monitoring report by the Australian Institute of Marine Science (AIMS).
However, the researchers behind the report have warned, that this could be quickly reversed owing to rising global temperatures.

Coral Reefs & Types
There are basically three types of coral reefs:
1. Coastal or fringed coral reefs
2. Barrier Coral Reef
3. Atoll.

Types of coral
Hard Corals: Hard corals extract calcium carbonate from seawater to build hard, white coral exoskeletons.

Soft corals: It attaches themselves to such skeletons and older skeletons built by their ancestors. Soft corals also add their own skeletons to the hard structure over the years.

Distribution: Various species of corals are found in all oceans of the world, from the tropics to the Polar Regions. Coral cover is measured by determining the increase in the cover of hard corals.

Coral bleaching
When exposed to conditions like heat stress, pollution, or high levels of ocean acidity, the zooxanthellae start producing reactive oxygen species not beneficial to the corals. So, the corals kick out the colour-giving algae from their polyps, exposing their pale white exoskeleton and leading to coral starvation as corals cannot produce their own food. This is called Coral bleaching.

Highlights of the Reports
The annual long - term monitoring by AIMS began 36 years ago. The current report surveyed 87 reefs in the GBR between August 2021 and May 2022.
- The report states that reef systems are resilient and capable of recovering after disturbances such as accumulated heat stress, cyclones, and predatory attacks and so on, provided the frequency of such disturbances is low.The hard coral cover in northern GBR has reached 36% while that in the central region has reached 33%.
- Meanwhile, coral cover levels declined in the southern region from 38% in 2021 to 34% in 2022.
- The record levels of recovery, the report showed, were fuelled largely by increases in the fast-growing Acropora corals, which are a dominant type coral in the GBR.
- The biggest threat to the health of the reef is climate change-induced heat stress, resulting in coral bleaching. Sea temperatures are predicted to increase by 1.5°C to 2°C by the time the century nears its end.
- The second event took place in 2002. But the longest and most damaging bleaching event took place from 2014 to 2017.

Initiatives to Protect Corals:
- International Coral Reef Initiative
- Global Coral Reef Monitoring Network (GCRMN)
- Global Coral Reef Alliance (GCRA)
- ICRI had declared 2018 as the third International Year of the Reef (IYOR)
- The Global Coral Reef R&D Accelerator Platform
- Ministry of Environment and Forests and Climate Change (MoEF&CC), India has included the studies on coral reefs under the Coastal Zone Studies (CZS).
- UNEP's Coral Reef Unit (CRU) was established in 2000.

Coral Triangle initiative: Coral Triangle is spread over 6 countries (CT6) of – Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands and Timor Leste. They occupies only 1.5% of the world's total ocean area, but represents 30% of the world's coral reefs.

2 India's Higher Climate Target for 2030

Why in News:

PM Modi made promises to intensify India's climate action by presenting to the world five nectar elements (Panchamrit) for India's climate action at the climate change conference in Glasgow last year.

Now the government converted two of those into official targets that will now be part of India's international climate commitments for 2030.

NDC Then and Now

The 2015 Paris Agreement requires every country to set self-determined climate targets that have to be progressively updated with more ambitious goals every few years.

India's first Nationally Determined Commitments (NDC) was submitted in 2015, just before the Paris Agreement was finalised.

Now India's NDC have been updated with Glasgow promises, and will be submitted to the UN climate body.

India's original NDC contained three main targets for 2030

1. 33-35% reduction in emissions intensity (emissions per unit of GDP) from 2005 levels.
2. At least 40% of electricity generation to come from non-fossil renewable sources.
3. An increase in forest cover to create an additional carbon sinks of 2.5-3 billion tonnes of carbon dioxide equivalent.

In Glasgow PM Modi made five promises, calling it Panchamrit. Now two of those have been put in the updated NDC

1. India will now reduce its emission intensity by atleast 45%, instead of just 33-35%, from 2005 levels by 2030.
2. It will ensure that at least 50% (earlier it was 40%) of its electricity generation comes from renewable sources by 2030.

These two promises have not been converted into official targets.

1. The forestry target has not been touched.
2. India would reduce total projected emissions by at least 1 billion tonnes of carbon dioxide equivalent between now and 2030.

As part of the Panchamrit promises, PM Modi had also announced a net zero target for India for the year 2070.

Net Zero

Net zero is a situation in which a country's greenhouse gas emissions are offset entirely, either by absorption of carbon dioxide through processes like photosynthesis, or through physical removal of greenhouse gases using futuristic technologies. But net zero is a long-term target and does not qualify to be included in the NDC, which seeks 5-10-year climate targets from countries.

India's Contribution towards Panchamrit promises

- India has also announced a Hydrogen Energy Mission for grey and green hydrogen.
- In energy efficiency, the market-based scheme of Perform, Achieve and Trade (PAT) has avoided 92 million tonnes of CO2 equivalent emissions during its first and second cycles.
- **Reforms in Transport Sector:** India is accelerating its e-mobility transition with the Faster Adoption and Manufacturing of Electric Vehicles (FAME) Scheme.
- India leapfrogged from Bharat Stage-IV (BS-IV) to Bharat Stage-VI (BS-VI) emission norms by April 1, 2020, the latter being originally scheduled for adoption in 2024.
- A voluntary vehicle scrapping policy to phase out old and unfit vehicles complements the existing schemes.
- Indian Railways is also targeting the full electrification of all broad-gauge routes by 2023.
- **India's Support to EVs:** India is among a handful of countries that support the global EV30@30 campaign, which aims for at least 30% new vehicle sales to be electric by 2030.
- The remodelled ''Faster Adoption and Manufacturing of Electric Vehicles (FAME II)'' scheme, Production-Linked Incentive (PLI) scheme for Advanced Chemistry Cell (ACC) for the supplier side.
- **Role of Government Schemes:** The Pradhan Mantri Ujjwala Yojana has helped around 90 million households to shift from coal based cooking fuels to LPG connections.
- More than 367 million LED bulbs have been distributed under the UJALA scheme, leading to a reduction of 38.6 million tonnes of CO2 per year.

3 Supreme Court Verdict on Mandatory Eco Sensitive Zone

Why in News:

- Supreme Court on June 3 directed that every national park and wild life sanctuary will be required to have 1 km of mandatory eco sensitive zone on periphery of national park and wildlife sanctuary.
- The court nullifies area specific eco sensitive zone as was previously applied where no mandatory limit had been prescribed.
- Finally, the apex court concluded that although development is necessary but it should not be done at the expense of forest degradation.

Main points of verdict

- The apex court has directed that permanent structure would not be allowed in mandatory eco sensitive zone.
- The Supreme Court has directed that mining would not be allowed in the eco sensitive zone area.
- If the existing eco-sensitive zone goes beyond the one km buffer zone or any statutory instrument prescribes a higher limit, then such extended boundary shall prevail.
- The court also directed chief conservator of forest of each union territory and state to submit detailed report in every three month about eco sensitive zone activity.

About eco sensitive zone:

- As per the National Wildlife Action Plan (2002-2016), issued by the Union Ministry of Environment, Forest and Climate Change, land within 10 km of the boundaries of national parks and wildlife sanctuaries is to be notified as eco-fragile zones or Eco Sensitive Zones (ESZ).
- While the 10-km rule is implemented as a general principle, the extent of its application can vary. Areas beyond 10-km can also be notified by the Union government as ESZs, if they hold larger ecologically important sensitive corridors.
- The purpose of declaring ESZs is to create some kind of shock absorbers to the protected areas by regulating and managing the activities around such areas. They also act as a transition zone from areas of high protection to areas involving lesser protection.
- Although Environment (Protection) Act, 1986 does not mention the word Eco-Sensitive Zones. However, Section 3(2)(v) of the Act says that Central Government can restrict areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards.
- Rule 5(1) of the Environment (Protection) Rules, 1986 states that central government can prohibit or restrict the location of industries and carrying on certain operations or processes on the basis of considerations like the biological diversity of an area, maximum allowable limits of concentration of pollutants for an area, environmentally compatible land use, and proximity to protected areas. The above two clauses have been effectively used by the government to declare ESZ.

Why people are protesting against apex court ruling?

- Protests erupted across the high ranges of Kerala in response to the apex court's directions. Due to the high density of human population near the notified protected areas, farmer's groups and political parties have been demanding that all human settlements be exempt from the ESZ ruling.
- People are claiming that the court's decision would severely impact the livelihoods of farmers.
- The total extent of the wildlife sanctuaries in Kerala is eight lakh acres. If one-km of ESZ is demarcated from their boundaries, around 4 lakh acres of human settlements, including farmlands, would come within that purview. This is a matter of sheer survival of lakhs of people.
- Some other states have protested saying that the ruling will have bad repercussion on state economy because mining activity has hampered in many area.

Conclusion

- India has a countrywide network of protected areas, including wildlife sanctuaries, national parks and tiger reserves. Owing to the pressures of human habitation and infrastructure development projects, the mandatory eco-sensitive zones around protected areas are good decision. At the same time the apex court must ensure that the life of poor and marginalised people's life should not be affected from the ruling.

SCIENCE-TECH

1 Small Satellite Launch Vehicle (SSLV)

Why in News:

ISRO's first developmental flight of Small Satellite Launch Vehicle (SSLV) D1/EOS-2 mission was carrying two satellites named Earth Observation Satellite-2 (EOS-2) and AzadiSAT.

The initial part of the mission was successful with the launch vehicle operating smoothly. However, the mission failed to place the satellites in their required orbits, and the satellites, as they were already detached from the launch vehicle, were lost.

Purpose of the SSLV-D1/EOS-2 mission

The purpose of this mission was to place the two satellites in circular low-Earth orbits at a height of about 350 km above the Equator.

EOS-2: It was designed and developed by ISRO to offer advanced optical remote sensing operations within the infrared region.

It could have served many purposes, from imaging for climate studies to simply keeping an eye on Earth.

AzadiSAT: It was a collection of 75 tiny payloads weighing around 50 grams each, which were integrated by students.

The payloads are integrated by the student team of "Space Kidz India".

It carried tiny experiments which would have measured the ionising radiation in its orbit.

Why were the satellites lost?

The problem appeared to be the SSLV's terminal stage, called the velocity trimming module (VTM). According to the launch profile, the VTM was supposed to have burnt for 20 seconds at 653 seconds after launch. However, it burnt for only 0.1 seconds, denying the rocket of the requisite altitude boost.

The two satellites on board the rocket were separated from the vehicle after the VTM burn. According to ISRO, "SSLV-D1 put the satellites into a 356 km x 76 km elliptical orbit rather than a 356 km circular orbit." This means they are likely to have missed their intended orbit. But the orbit achieved was less than expected, which makes it unstable.

The Small Satellite Launch Vehicle (SSLV)

- SSLV is India's smallest launch vehicle, weighing 110 tonnes.
- PSLV is 44 meters in height, SSLV tops at 34 meters. The newly developed rocket has been configured with three solid stages the 87 t, 7.7 t, and 4.5 t respectively.
- The SSLV has been designed to carry objects ranging up to 500 kilograms to a 500-kilometer planar orbit.
- According to ISRO, SSLV has a diameter of 2.1 metres and the lift-off mass of the launch vehicle is approximately 120 tonnes.

Need to develop an SSLV

With a growing market for the global launch services for small satellites, ISRO's SSLV would make for an attractive option due to its low cost, ability to launch on demand, and capacity of carrying multiple loads.

Operating SSLV on smaller and more commercial missions will free up the massively used Polar Satellite Launch Vehicle (PSLV) for bigger missions to space.

To place an Earth Orbiting Satellite in a low Earth orbit, one does not need such power horses. The SSLV can easily carry small-to-medium loads from 10 kg to 500 kg. It is less expensive.

The three stages being powered by solid fuel is another advantage. Solid fuel is easier to handle, whereas handling the liquid propellants used in the PSLV and GSLV is more complex.

The SSLV is a low cost vehicle due to its low turnaround time, minimal launch infrastructure requirements and increased production rate from industries.

Types of Earth Orbits

Geostationary Earth Orbit (GEO): It is also called Geosynchronous Equatorial Orbit.

- Satellites placed in GEO appear 'Stationary' because they have same orbital period as the earth's rotation period.
- Hence, the satellite/spacecraft returns to the same point in the sky at the same time each day.
- Communication satellites are often placed in GEO.
- The GEO satellites are directly overhead at the Earth's equator.

- ISRO's Indian National Satellite System (INSAT) is placed in GEO.

Low Earth Orbit (LEO)

- It is relatively closer to the Earth's surface than other orbits.
- The altitude from the earth's surface could be between 160 Km to 1000 Km.
- The satellites placed in it have more available routes as they don't have to follow a particular path around the Earth as the GEO
- It is used for satellite imaging because images are of high resolution as the orbit is closer to the surface of the earth.
- The International Space Station (ISS) uses LEO and makes travel of astronauts easier. It is also used for remote sensing satellites.

Medium Earth Orbit (MEO).

- The orbit, altitude of which is between LEO and GEO, is known as Medium Earth Orbit.
- Navigation satellites and a number of artificial satellites are placed in MEO.
- Global Positioning System (GPS) is placed in MEO (20200 Km)
- Communication satellites too can be placed here.

2 WHO Approves New Names for Monkeypox Virus Variants

Why in News:

- Recently, a group of global experts convened by WHO has announced new names for Monkeypox virus variants.

Key points:

- New names for monkeypox diseases, viruses, and variants—or clades—are based on Roman numerals.
- New names of Monkeypox variants "Clades I, IIa and IIb" have been announced.
- The former Congo Basin (Central African) clade is now named Clade One (I), while the former West African clade is named Clade Two (II). Clade II also includes two subclasses.
- It is currently the responsibility of the WHO to rename existing diseases according to the International Classification of Diseases and the International Classification of Health.
- Earlier, the classification of the names of diseases was determined on the basis of the prevalence and identification of diseases in different geographical areas.

About Monkeypox disease:

- Monkeypox virus is a double-stranded DNA virus and a rare zoonotic disease. Monkeypox belongs to the Orthopoxvirus family, which looks like smallpox. This also includes variola, cowpox and vaccinia viruses.
- It is a rapidly spreading infection with a high probability of death of one in ten people if infected.
- The virus was first identified in 1958 in a crab-eating macaque monkey in Copenhagen, Denmark.
- The first case of this virus came in 1970, mainly in Central and West Africa (Congo).
- Monkeypox disease is a disease endemic to Nigeria.

Symptoms of Monkeypox:

- Fever, headache, muscle pain, back pain, shivering, fatigue, swollen lymph nodes, skin rash, body rash, sore throat, frequent cough, lethargy, and itching.

Treatment for Monkeypox:

- There is no cure for Monkeypox yet. To prevent this, Smallpox vaccine is being given. patient have to be in touch with the doctor.

Situation in India:

- Recently, 5 cases of Monkeypox have come under investigation in Delhi, India, while the first case of Monkeypox was found in Kerala.
- After the first death related to Monkeypox in Kerala, the central government has been constituted a task force under the leadership of NITI Aayog member Dr. V.K. Paul to monitor the situation of Monkeypox.
- This task force will also guide the government regarding the discovery of vaccination along with measures to prevent this disease.

Internationally:

- The first cases of Monkeypox were detected in travelers returning from Nigeria in the United Kingdom, Israel and Singapore in May 2022.
- So far this disease has spread in about 80 countries.
- The WHO declared the disease a global health emergency on July 23, 2022.
- As of August 2022, more than 32,000 cases have been found all over the world.

ECONOMY

1 Turnover Limit for GST e-Invoicing Halved

Why in News:

In order to ensure better flow of data and higher compliance to norms, the turnover limit for e-invoicing under the Goods and Services Tax (GST) regime has been reduced to Rs 10 crore with effect from October 1 this year. Now businesses with annual turnover of Rs 10 crore or more will have to generate e-invoice for business-to-business (B2B) transactions from October 1 this year. Earlier this limit was 20 crores.

E-Invoicing in India

- Government of India has implemented the e-invoicing system in a phased manner. The first phase of e-invoicing started on 1 October 2020 for all large enterprises with a turnover of more than Rs 500 crore.
- Phase II extended from January 1, 2021 for people with a turnover of Rs 100 crore.
- While the third phase covers medium-sized businesses with a turnover of more than Rs 50 crore from 1 April 2022.
- On 24 February 2022, the government notified the e-invoicing system for small taxpayers. Those who have earned a total annual turnover of more than Rs 20 crore in the previous financial year 2017-18 to 2021-22 will have to generate e-invoicing from 1st April 2022, which is called the fourth phase of e-invoicing.
- From October 1, now the limit of e-invoicing will be reduced to 10 crores.

About e-invoicing

- E-invoicing or electronic invoicing includes a specific category of GST registered businesses that submit their business-to-business (B2B) invoices and credit-debit notes to the government for verification.
- Businesses have to follow a pre-defined e-invoicing format.
- E-invoice contains details of a unique Invoice Reference Number (IRN) and QR code signed by GST Network (GSTN).
- E-invoice details are auto-populated in GSTR-1 based on the date of invoice, minimizing any invoicing and return filing errors.

Small businessmen's problems regarding e-invoicing

- Most of these small businesses are not technologically advanced so they were concerned about less time to set up the e-invoicing system and adhere to the deadline.
- Small businesses use traditional ERP systems or billing systems throughout the organization, involving many manual tasks. For e-invoicing, they have to put extra work on the billing system.
- Further, they have to look at the volume and frequency of e-invoicing before setting up a robust channel for e-invoicing portal.

Benefits of e-invoicing

- E-invoicing fixes mismatch errors under the GST system.
- E-invoices created on software can be read by another system, allowing interoperability and helping to reduce data entry errors.
- Real-time tracking of invoices generated by the supplier is enabled by e-invoicing.
- Backward integration and automation of the tax return filing process.
- Faster availability of genuine input tax credit.
- Chances of audit by tax authorities are less as the information required by them is available at the transaction level.
- This will reduce the chances of fake GST invoices.

Conclusion

Through e-invoicing, tax evasion can be curbed and the income of the government will increase. In this system the tax officials will have access to the transactions as e-invoicing will have to be generated compulsorily through the GST portal thus system becomes transparent.

2 India's All-Time High Trade Deficit- $31bn

Why in News:

India's trade deficit spiked to an all-time high of $31 billion in July as exports shrank while imports continued to surge, triggering concerns about current account deficit and currency.

The cumulative trade deficit in the first four months of the fiscal more than doubled to over $100 billion from $42.1 billion a year ago and three-time increase from July last year.

About trade deficit:

- Trade deficit or negative balance of trade (BOT) is the gap between exports and imports. When money spent on imports exceeds that earned from exports in a country, trade deficit occurs. It can be calculated for different goods and services and also for international transactions. The opposite of trade deficit is trade surplus.

Key Points of the Report

- India has achieved merchandise export of USD 35.24 billion in July 2022, almost at similar levels of USD 35.51 billion in July 2021.
- Value of non-petroleum exports in July 2022 was 29.82 USD billion, registered a positive growth of only 0.48% over July 2021.
- The trade deficit in July 2022 is USD 31.02 billion, while it was 100.01 billion USD during April -July 2022-23
- The cumulative value of non-petroleum exports in April -July 2022-23 is USD 123.90 billion, an increase of 10.3% over April-July 2021-22.
- India's merchandise import in July 2022 was USD 66.26 billion, an increase of 43.59% over July 2021, with an increase of 48.12% over April-July 2021-22.
- Petroleum imports rose 70.4%, while inward shipments of coal jumped 164.4% to cross $5.1 billion from just a little less than $2 billion a year earlier.
- Gold imports declined while Silver imports were up 9,331%, and electronics goods also escalated 27.8%.
- The large dip in exports is largely due to 7.07% fall in petroleum products, 28.3% decline in cotton yarn and handloom products, 94.3% slump in iron ore and a 2.5% dip in engineering goods.

Economic Terms

Balance of Payments (BoP)

- BoP of a country can be defined as a systematic statement of all economic transactions of a country with the rest of the world during a specific period, usually one year.
- For preparing BoP accounts, economic transactions between a country and the rest of the world are grouped under - Current account, Capital account and Errors and Omissions. It also shows changes in Foreign Exchange Reserves.

Current Account:

- It shows export and import of visible (merchandise or goods) and invisibles (services, transfers and income).

Capital Account:

- It shows a capital expenditure and income for a country. It gives a summary of the net flow of both private and public investment into an economy.
- External Commercial Borrowing (ECB), Foreign Direct Investment, Foreign Portfolio Investment, etc. form a part of capital account.

Foreign Exchange Reserves:

- The four components of forex reserves are foreign currency assets, gold, special drawing rights and the reserve position in the International Monetary Fund.
- Overall the BoP account can be a surplus or a deficit. If there is a deficit then it can be bridged by taking money from the Foreign Exchange (Forex) Account.
- If the reserves in the forex account are falling short then this scenario is referred to as BoP crisis.

Twin Deficit Problem:

- Current Account Deficit and Fiscal Deficit (also known as "budget deficit" is a situation when a nation's expenditure exceeds its revenues) are together known as twin deficits and both often reinforce each other, i.e., a high fiscal deficit leads to higher CAD and vice versa.

Stagflation:

- It is described as a situation in the economy where the growth rate slows down, the level of unemployment remains steadily high and yet the inflation or price level remains high at the same time.

3 RBI Hikes Interest Rates By 50 Basis Points

Why in News:

RBI Monetary Policy Committee (MPC) hiked the repo rate by 50 basis points (bps) to 5.40 per cent with immediate effect.

Prior to this, the RBI had raised the repo rate by 40 bps in an off-cycle meeting in May and 50 bps in June.

Key highlights of Monetary Policy Statement

- The retail inflation or Consumer Price Index (CPI), by which the RBI factors in considering its benchmark lending rate, stood at 7.01 per cent in June.
- Retail inflation has continued to remain above the central bank's comfort level of 6 per cent since January this year.
- The real GDP growth projection for 2022-23 is retained at 7.2% (with growth 4.1% in Q3 and 4.0% in Q4) with risk broadly balanced.
- The retail inflation remains uncomfortably high and noted that inflation expected to remain above 6 per cent. The inflation projection is retained at 6.7% in 2022-23 with risks evenly balanced.
- The assumption of a normal monsoon in 2022 and average crude oil price (Indian basket) of US$ 105 per barrel. The CPI inflation for Q1 of 2023-24 is projected at 5.0 per cent.

Policy Rates	Reserve Ratio	Lending/Deposit Rates
Policy Repo Rate: 5.40% SDF Rate : 5.15% MSF Rate : 5.65% Bank Rate : 5.65% Fixed RRR : 3.35%	CRR : 4.50% SLR : 18.00%	Base Rate : 7.75% - 8.80% MCLR (Overnight) : 6.70% - 7.50% Savings Deposit Rate : 2.70% - 3.00% Term Deposit Rate > 1 Year: 5.30% - 5.75%

Instruments of Monetary Policy

- **Repo Rate:** It is rate at which the central bank of a country (RBI in case of India) lends money to commercial banks in the event of any shortfall of funds. Here, the central bank purchases the security. In India RBI provides overnight liquidity to banks against the collateral of government and other approved securities under the Liquidity Adjustment Facility (LAF).
- **Reverse Repo Rate:** The interest rate at which the Reserve Bank absorbs liquidity, on an overnight basis, from banks against the collateral of eligible government securities under the LAF.
- **Bank Rate:** It is the rate at which the RBI is ready to buy or rediscount bills of exchange or other commercial papers. The Bank Rate is published under Section 49 of the RBI Act, 1934.
- This rate has been aligned to the MSF rate and, therefore, changes automatically as and when the MSF rate changes alongside policy repo rate changes.
- **Marginal Standing Facility (MSF):** A facility under which scheduled commercial banks can borrow additional amount of overnight money from the Reserve Bank by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a limit at a penal rate of interest. This provides a safety valve against unanticipated liquidity shocks to the banking system.
- **Consumer Price Index:** It measures price changes from the perspective of a retail buyer. It is released by the National Statistical Office (NSO).
- **Cash Reserve Ratio (CRR):** The average daily balance that a bank is required to maintain with the Reserve Bank as a share of such per cent of its Net demand and time liabilities (NDTL) that the Reserve Bank may notify from time to time in the Gazette of India.
- **Statutory Liquidity Ratio (SLR):** The share of NDTL of a bank is required to maintain in safe and liquid assets, such as, unencumbered government securities, cash and gold.
- Changes in SLR often influence the availability of resources in the banking system for lending to the private sector.

1. MDR for UPI Transctions

- In a discussion paper released by the Reserve Bank of India, the RBI has asked stakeholders whether the Merchant Discount Rate (MDR) paid by merchants to receiving banks should be re-introduced on Unified Payments Interface (UPI) transactions.
- Merchant Discount Rate refers to the rate at which merchants are charged for accepting payments made through credit cards, debit cards, net banking and digital wallets. Merchants have to agree to a rate defined by payment service providers and set up the service before accepting digital payments.
- MDR is usually around two to three per cent of the transaction amount. For example, if a customer pays Rs 10,000 through a credit card to a merchant while the MDR is 2%, the merchant will be charged Rs 200 for accepting this payment.

2. UN declares Healthy Environment a Human Right

- The United Nations General Assembly declared that everyone on the planet has the right to a healthy environment
- In a resolution passed at the United Nations Headquarters in New York City, the General Assembly stated that climate change and environmental degradation are the most pressing threats to the future of humanity. It called on states to intensify efforts to ensure that their people have access to a clean, healthy and sustainable environment.
- Resolution is not legally binding on UN member states. But environmentalists are hopeful that it will inspire countries to ensue the right to a healthy environment in national constitutions and regional treaties, and encourage states to enforce those laws.

3. Cabinet approves ECLGS for increasing the limit of admissible guarantees

The Union Cabinet, chaired by the Prime Minister, Modi has approved the enhancement in the limit of Emergency Credit Line Guarantee Scheme (ECLGS) by Rs 50,000 crore from Rs. 4.5 Lakh crore to Rs. 5 Lakh crore.

About ECLGS:

- ECLGS is a continuing scheme. The additional amount of Rs. 50,000 crore would be made applicable to enterprises in hospitality and related sectors till validity of the scheme which is 31.3.2023.
- Loans of about Rs. 3.67 Lakh crore have been sanctioned under ECLGS till 5.8.2022.
- ECLGS is an already operational scheme on account of the disruptions caused by the COVID 19 pandemic, hospitality and related sectors.
- Union Budget 2022-23 announced to extend validity of ECLGS upto March, 2023.

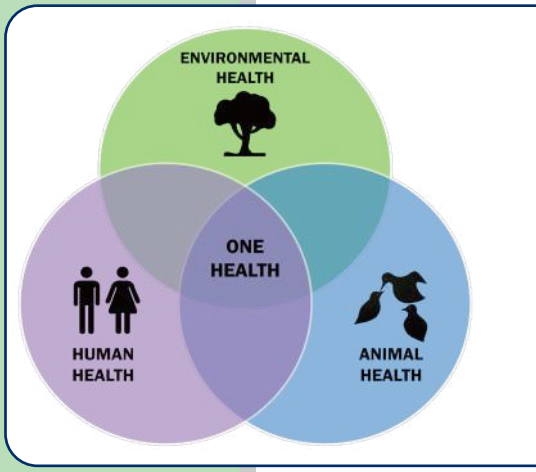
The enhancement is expected to provide much needed relief to enterprises in these sectors by incentivizing lending institutions to provide additional credit at low cost, thereby enabling these business enterprises to meet their operational liabilities and continue their businesses.

4. Government Finalizing National Policy on Blue Economy

- Union Minister Jitendra Singh has said that the Union Ministry of Earth Sciences has finalized a National Policy on Blue Economy for the country.
- In a written reply in the Lok Sabha, the Minister informed that a draft policy framework on India's blue economy has been prepared.
- It envisages optimum utilization of all sectors of the marine sector, from living and non-living resources to tourism and marine energy, for the sustainable development of the coastal areas.
- A National Blue Economy Advisory Council has been proposed to be set up. It will have secretaries of concerned ministries and departments as members and will include chief secretaries, principal secretaries of coastal states and representatives of industry.

5. One Health Concept

- The one health approach focussed on interdependence of human and nature system to obtain optimal health for human, animal and nature.
- The One Health concept is not new but its importance to address the complex health and environmental challenges has become more prominent in recent years.
- The potential solution to these problems can only be understood when human, animal and environmental health questions are evaluated in an integrated and holistic manner rather than in isolated approaches.
- World health organization, World Bank, FAO, OIE and UNICEF has developed a joint strategic framework to implement the One Health approach.



Benefit of one health approach

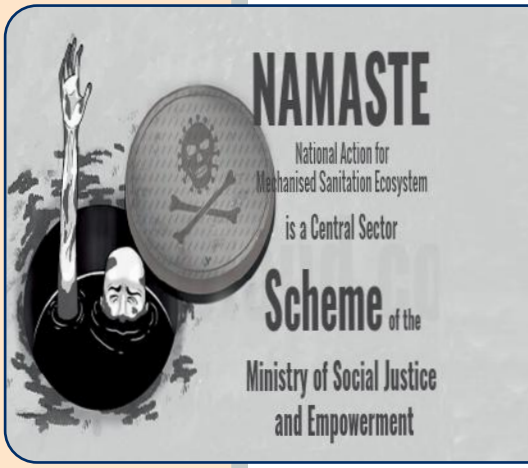
- Tackle antimicrobial resistance threat
- Ensure food safety
- Protect biodiversity
- Prevent environment related threat for animal and human

6. Petition for Voting Rights of NRIs from Abroad

- The Kerala Pravasi Sangh had filed a petition in the Supreme Court for NRI voting rights. In response to the petition, the court sought directions from the central government on the issue.
- Although under Section 20A of the Representation of the People Act, 1950, there is a special provision for voting rights for Indian citizens living abroad.
- Yet this provision was not implemented as no rule frame was framed in this regard. Thus the purpose of the law is not served.
- If this provision is implemented, it can strengthen our democracy and fulfil the aspirations of law makers.

7. National Action for Mechanised Sanitation Ecosystem (NAMASTE)

Namaste is a Central Sector Scheme of the Ministry of Social Justice and Empowerment (MoSJE) as a joint initiative of the MoSJE and the Ministry of Housing and Urban Affairs (MoHUA).



NAMASTE aims to achieve the following outcomes:

- Zero fatalities in sanitation work in India
- All sanitation work to be performed by skilled workers
- No sanitation workers come in direct contact with human faecal matter
- Sanitation workers are collectivized into SHGs and are empowered to run sanitation enterprises
- All Sewer and Septic tank sanitation workers (SSWs) have access to alternative livelihoods
- Strengthened supervisory and monitoring systems at national, state and ULB levels to ensure enforcement and monitoring of safe sanitation work
- Increased awareness amongst sanitation services seekers (individuals and institutions) to seek services from registered and skilled sanitation workers

Five hundred cities (converging with AMRUT cities) will be taken up under this phase of NAMASTE.

8. Cabinet Approves Signing of Contract between India and France to Support ITF Activities on the Indian Transport Sector

The Union Cabinet, chaired by the Prime Minister, Modi was apprised of the signing of Contract between the Organisation for Economic Cooperation and Development, France on behalf of the International Transport Forum and the Technology Information, Forecasting and Assessment Council (TIFAC), India to support the International Transport Forum (ITF) activities on the Indian Transport Sector. The Contract was signed on 6th July, 2022.

The activities to be carried out under this Contract will lead to:

- New scientific results;
- New policy insights;
- Capacity building through increased scientific interaction
- Identification of technology options for de-carbonization of transport sector in India.

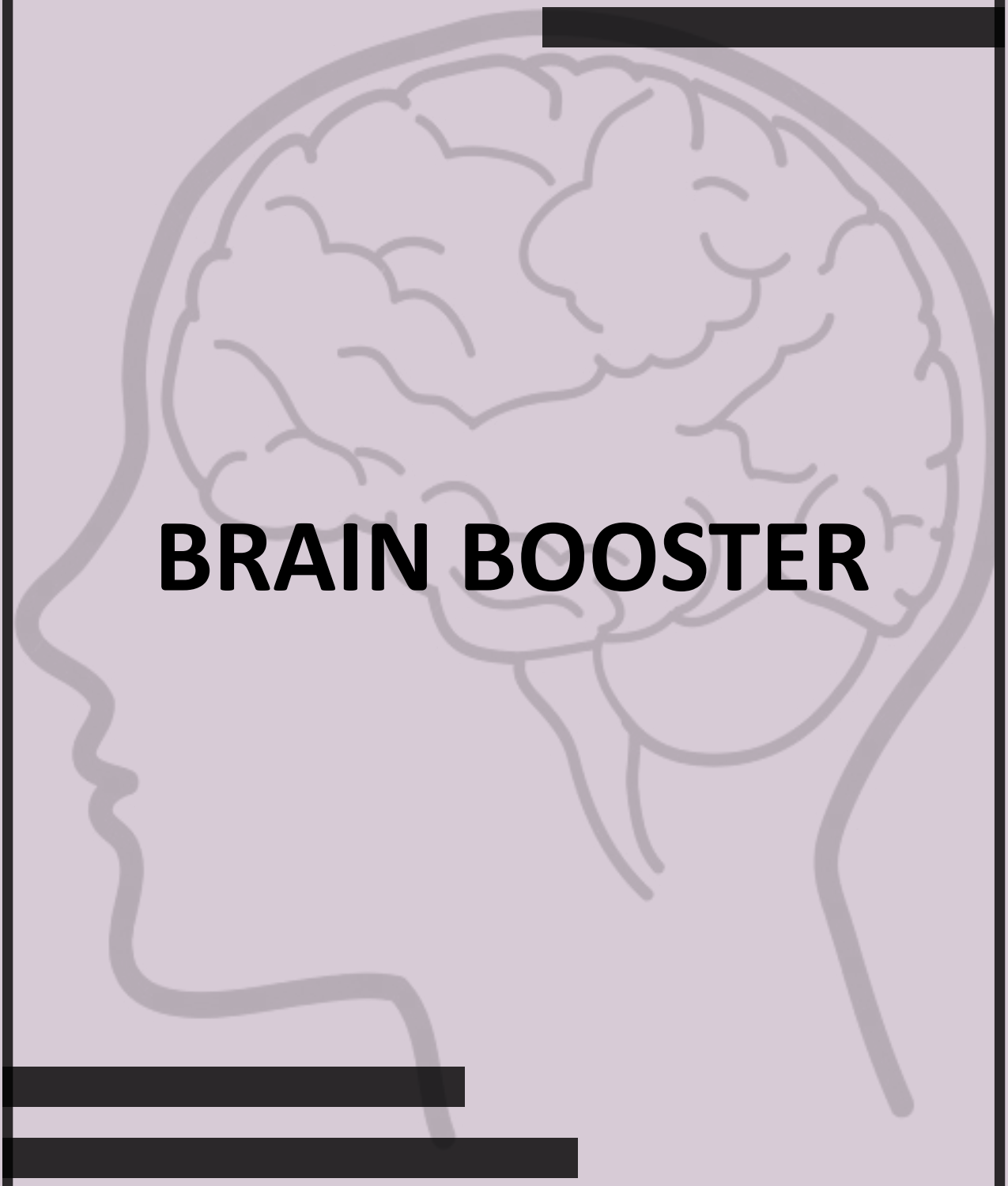
9. International North-South Transport Corridor (INSTC)

- Trade volume between India and Russia has increased in the last three months, facilitated by the International North-South Transport Corridor (INSTC). Iran Shipping Lines transported more than 3,000 tons of cargo and 14 containers between May and July.
- INSTC is a 7,200 km long transport network that has been ratified by 13 countries, Azerbaijan, Belarus, Bulgaria, Armenia, India, Iran, Kazakhstan, Kyrgyzstan, Oman, Russia, Tajikistan, Turkey and Ukraine.
- It was established in St. Petersburg on 12 September 2000 by Iran, Russia and India with the aim of promoting transport cooperation among the member countries.
- This includes sea, road and rail routes. The corridor, apart from improving trade with Russia, will also help India in providing humanitarian assistance to Afghanistan.

Current Affairs at a Glance

1. China's satellite tracking vessel Yuan Wang-5, arrived at Sri Lanka's Hambantota Port on August 16, 2022.
2. Scotland becomes first country to make period products free for all.
3. Himachal Pradesh government has proposed the Himachal Pradesh Freedom of Religion (Amendment) bill 2022.
4. Government of India has announced Agasthiyamalai in Tamil Nadu as 31st Elephant Reserve (ER).
5. The four-day air exercise 'Udarashakti' between the Indian Air Force (IAF) and the Royal Malaysian Air Force (RMAF) concluded in Malaysia.
6. Ministry of Social Justice and Empowerment is preparing to undertake a nationwide survey to enumerate all Sanitation workers engaged in cleaning of sewers and septic tanks.
7. NASA recently highlighted the loss of mangrove cover on Katchal Island, a part of India's Nicobar archipelago.
8. Criminal Procedure (Identification) Act, 2022 replaces the Identification of Prisoners Act, 1920, that authorises police officers to take measurements of people convicted, arrested or facing trial in criminal cases.
9. First time an indigenously developed howitzer gun (ATAG), became part of the 21-gun salute during the Independence Day ceremony at the Red Fort.
10. World Lion Day is observed on 10 August annually with objective to spread awareness and educate people about lions and their conservation.
11. The report titled 'Outbound Travel and Tourism - An Opportunity Untapped' by Nangia Andersen LLP, in association with FICCI, has predicted that outbound trips from India will surpass $42 billion by 2024.
12. CARE released report named "Food Security and Gender Equality: A synergistic understudied symphony", highlighting a global link between Gender Inequality and Food Insecurity.
13. Recently, 'PALAN 1000 National Campaign' and Parenting application have been launched by the Union Health Ministry for the development of children.
14. "Panch Prana Lakshya" (five resolutions) has been set by Prime Minister Narendra Modi on 15 August 2022 to make India a developed nation in the next 25 years.
15. In the year 2022, 28 sites of India have been included in the list of Ramsar sites till August 15, 2022.
16. At present the state with maximum number of Ramsar sites is Tamil Nadu (14), while Uttar Pradesh (10) is at second place.
17. At present, the countries with the most Ramsar sites are: the United Kingdom (175) and Mexico (142).
18. The height of the world's highest rail bridge built over the Chenab River in Jammu and Kashmir is 359 meters.
19. Recently, the University of Hyderabad has been ranked first among all universities in India in the Nature Index-2022, while it has been ranked 16th among all educational institutions.
20. Italy's lake "GARDA" shinks to near- historic low amid drought.
21. China thwarted the joint India-U.S. move to list Jaish-e-Mohammad deputy chief Rauf Asghar as a UN Security Council designated terrorist by placing a "Technical Hold" on the process.

BRAIN BOOSTER



National Sports Day

1. About

- The National Sports Day in India is celebrated on August 29, the birth anniversary of hockey legend Major Dhyan Chand.

2. History of National Sports Day

- August 29 was designated as India's National Sports Day in 2012.
- The president gives away sport-related awards such as the Major Dhyan Chand Khel Ratna Award, Arjuna Award and Dronacharya Award on this day to the players.

3. About Dhyan Chand

- Dhyan Chand was born on August 29, 1905 at Prayagraj in India to a Kushwaha Rajput family.
- He was the son of Sharadha and Rameshwar Singh.
- Dhyan Chand had two brothers- Mool Singh and Roop Singh.
- Dhyan Chand joined the British Indian Army as a sepoy at the age of 16. He exclusively played in army hockey tournaments between 1922 and 1926. He played his last international match in the year 1948.
- He had played a pivotal role in India's three consecutive Olympic wins in 1928, 1932 and 1936.
- He is often referred as 'The Wizard' for his incredible hockey skills.
- He scored over 400 goals in his career that lasted from 1926 to 1948.
- Dhyan Chand's performance in the 1936 Berlin Olympic final is considered as one of his best. He was the top scorer in the game with 3 goals and India went on to easily defeat Germany 8-1.
- He was awarded India's third highest civilian honour of Padma Bhushan in 1956.
- The legend was originally named Dhyan Singh and he received the nickname 'Chand' as he used to practise all night in the moonlight.
- Dhyan Chand died on December 3, 1979, in Delhi.

4. Importance of National Sports Day

- This day raises awareness of the value of sports and physical activity in everyday life.
- Since the first commemoration of the National Sports Day in India in 2012, the government has used the occasion to announce several sports-related projects.
- National Sports Day is observed to honor Major Dhyan Chand's legacy and to recognize the value of sports in our lives.
- Multiple honors, including the Arjuna Award and the Dhyan Chand Award, are presented to sporting heroes to recognize their contributions to sports.
- It brings people together. We can join in the joy of another's hard-won victory through sports.
- Sports can bring people from all walks of life together in ways they would never meet otherwise.

5. What was the Theme of National Sports Day 2021

- "Sports teach us many key life skills along with keeping us fit and physically as well as mentally strong!" was the theme of 2021 National Sports Day.

6. Benefits of playing sports

- Apart from keeping fit and healthy, it improves concentration and reflexes.
- Sports improve stamina and strengthen the body.
- Children who play sports develop sportsmanship spirit. They learn how to work together and cooperate in a team.
- When it comes to sports, sometimes you win and sometimes you lose. Playing sports increases a child's ability to deal with failure. These kids are able to cope better with failure.
- Sports also help in weight loss. Sports provide a chance for children to showcase their leadership skills. It helps them to develop discipline.
- Playing sports provides an opportunity for children to display their talent and achieve success.

Push For Common Charger

1. Why in News

- The Government of India is pushing for the adoption of a common charger for all devices.
- Recently, the European Union announced the adoption of a USB-C port common charging standard for small electronic devices by 2024. A similar demand is in the US as well.
- The government has called a meeting of the concerned stakeholders in the industry to discuss the matter of different chargers for electronic devices.

2. About USB-C

- USB stands for "Universal Serial Bus", an industry standard for short-distance digital data communications.
- USB-C is the latest version of this standard and is symmetrical so that it can be inserted either way.
- The USB-C is a single cable that can transmit data, audio, video and power.

3. Need for Common Charger

- The Prime Minister of India had given the concept of "LiFE- Lifestyle for the Environment" at the UN Climate Change Conference (CoP 26) held in Glasgow in November last year.
- India's updated Nationally Determined Contribution (NDC) targets mandates to reduce the emission intensity of the GDP by 45% by 2030.
- In view of the country's commitment to fight climate change, the necessary step has to be taken with regards to reducing electronic waste.
- Due to the incompatibility of charging ports between old and new devices, consumers are forced to buy a separate charger and cable every time they purchase a new gadget.
- Based on this rationale, the government wants to come out with the possibility of ending the redundancy of having multiple chargers in every household.

4. Which player will be impacted the most?

- The directive for a common charger for all phones, laptops, etc. would severely impact the biggest player Apple because Apple's iPhone is still using the Lighting port for charging and this requires a different cable compared to most other Android phones in the market.
- Apple's Lightning port is totally different from the top five brands in the Indian smart phone market Samsung, Xiaomi, Oppo, Vivo, and Realme.
- All the five brands have switched to phones with Type-C charging ports, therefore the chargers can be used interchangeably.
- Samsung has removed chargers and cables from their devices entirely to encourage environmental sustainability.

5. Case worldwide

- The idea of 'one charger for all devices' was also proposed by the European Union in June.
- The rationale again revolved around the problem of e-waste and that users have to buy multiple chargers.

6. Advantages

- The charging speed is also harmonised for devices that support fast charging, allowing users to charge their devices at the same speed with any compatible charger.
- Consumers will be provided with clear information on the charging characteristics of new devices, making it easier for them to see whether their existing chargers are compatible with it or not.
- Buyers will also be able to choose whether they want to purchase new electronic equipment with or without a charging device.
- This will lead to more re-use of chargers and will eventually reduce the amount of E-waste generated due to it.
- It will encourage technological innovation towards wireless charging technology.

Road To India's Solar Power Dream

1. Why in news

- India has set up a target of 500 GW of renewable energy deployment by 2030, out of which 280 GW is expected from solar power.
- Thus, this requires the deployment of nearly 30 GW of solar capacity every year until 2030.

2. Challenges before Solar PV manufacturing

- The solar module manufacturing capacity of India at present is limited to 15 GW per year. The demand-supply gap widens as we move up the value chain as India only produces 3.5 GW of cells currently.
- India lacks the manufacturing capacity for solar wafers and polysilicon ingots.
- At present, India imports 100% of silicon wafers and around 80% of cells.
- Out of the 15 GW of module manufacturing capacity that India has, only 3-4 GW of modules are technologically competitive and worthy of deployment in grid-based projects.
- Thus, India remains dependent on import of solar modules for field deployment.
- Most of the Indian industry is still using older technology like M2 wafer size whereas the global players have already moved towards M10 and M12 sizes. The bigger size has an advantage in terms of silicon cost per wafer, as this effectively means lower loss of silicon during ingot to wafer processing.
- Most of the Indian manufacturers still use Al-BSF technology for cell manufacturing which gives efficiency of only 18-19% at the cell level and 16-17% at the module level. On the other hand, cell manufacturers worldwide have moved to advanced technologies yielding module efficiency of greater than 21%.
- Land, the most expensive part of solar projects, is scarce in India — and Indian industry has no choice but to move towards newer and superior technologies as part of expansion plans.

3. Government Policy

- The government has levied a 40% duty on the import of modules and 25% duty on the import of cells to discourage the imports.
- Production Linked Incentive scheme has been envisaged to support manufacturing capital expenditure.
- The procurement of modules from an approved list of manufacturers (ALMM) for the projects which are associated with state/ central government grids is mandatory.

4.What needs to be done?

- The huge gap on the raw material supply chain side needs to be addressed.
- India will have to work on technology tie-ups to make the right grade of silicon for solar cell manufacturing.
- India at present is an assembly hub than a manufacturing one. In the long term, India needs to move up the value chain by making components that could drive the price and quality of both cells and modules.
- Establishment of the state-of-the-art manufacturing facilities for cells, modules, and raw material needs access to advanced technology.
- India needs to invest in creating high-quality technology centres such as IMEC Belgium or the Holst Centre Netherlands, which can help the industry to try and test the technologies in a cost-effective manner.
- India needs to have such industry-like centres to work on specific technology domains with clear roadmaps, targets and are monitored by a right mix of specialists from industry and academia.

5. Way forward

- To become a manufacturing hub, India needs comprehensive measures that are in sync with the latest demand and need of the sector than just putting some tax barriers and commercial incentives in the form of PLI schemes.

The Electricity (Amendment) Bill, 2022

1. Why in News

- The Electricity (Amendment) Bill, 2022 was introduced within the Lok Sabha on August 8, 2022.
- The Bill amends the Electricity Act, 2003.

2. Objectives of the Bill

- The Act aims to regulate the electricity sector in India.
- It sets up the Central and State Electricity Regulatory Commissions (CERC and SERCs) to regulate inter-state and intra-state electric matters, respectively.

3. Key amendments

- More than one power distributor can operate in an area and they will be allowed to use the power distribution infrastructure of other suppliers.
- If the regulator does not approve or reject the power distribution license application of an entity within the prescribed period (90 days), the applicant will be deemed to have been granted the license.
- Regulators will be empowered to execute orders as a decree of a civil court.
- The bill has specified eligibility criteria for appointment of members to regulatory bodies and aims to push for timely appointment in key roles.
- The bill proposes that if any state commission is unable to perform its functions on account of vacancies, the central government may, in consultation with the state, entrust its functions to any other state commission or a joint commission.
- There is also a provision for removing a member of a regulatory body in case of willful violation or gross negligence of rules.

4. Benefits of Amendments

- The bill tries to boost the competition and gives more choice to the consumers.
- The Amendments are aimed towards reducing inordinate delays that plague the electricity system right now.
- It further improves the compliance mechanism in the electricity sector.
- The amendments also seek to improve the functioning of the regulators and streamlining tariff revision.

- The bill aims to boost green energy in the country and align states to the national goals.
- It seeks to make changes so that the Renewable Purchase Obligation set by any state is at or above the levels prescribed by the central government.
- The bill tries to strengthen the functioning of the National Load Dispatch Centre for ensuring the safety and security of the grid and for the economic and efficient operation of the power system in the country.
- It states that the dispatch centers may cut supplies in case Discoms have not maintained adequate security of payment, as may be prescribed by the central government.

5. Opposition of the Bill

- Opposition parties are against the bill because it goes against the federal structure of the country and gives more powers in the hands of the Centre.
- The provision to encourage competition may lead to more entities entering into profitable urban areas, while loss-making areas such as small cities, towns and villages may continue to be ignored.
- Farmers are concerned that this will eventually lead to the end of power subsidies.
- The Employees of the power sector are concerned that this will privatize the distribution sector and will adversely affect the interests of employees.
- There are also concerns that the amendments will give more power to the centre on appointment and removal of members of regulatory bodies, thereby reducing the role of the state.
- If the center dictates the minimum level of Renewable Purchase Obligation for states, the latter's powers are reduced.

1. Why in News

- China held its biggest-ever military exercise around Taiwan following a visit to the island nation by the Speaker of the US House of Representatives, Nancy Pelosi.
- China sees Taiwan as a breakaway province that will be under Beijing's control again as a part of "One-China Policy".
- However, the self-ruled island sees itself as distinct from the mainland, with its own constitution and democratically-elected leaders.

2.Background

- After the First Sino-Japanese War in 1895, Taiwan was under the control of Japan. After the end of World War II, the Republic of China (ROC) began ruling Taiwan with the support of its allies- the USA and the UK.
- China in the beginning had two political parties- the Kuomintang or the ROC and the Chinese Communist Party (CCP).
- In the Chinese Civil War, the communist forces led by Mao Zedong emerged victorious.
- KMT leader Chiang Kai-shek fled to Taiwan in 1949.
- Therefore, Taiwan which is officially known as ROC, is an island separated from China by the Taiwan Strait. It has been governed independently of mainland China, officially the People's Republic of China (PRC), since 1949.

3. One-China Policy

- The One China policy states that there is only one China, and Taiwan is an integral part of that.
- Any country wishing to establish diplomatic relations with Beijing must acknowledge there is only "One China" and sever all formal ties with Taiwan.

China-Taiwan Tussle

4. The "one country, two systems" approach

- It was first proposed by Deng Xiaoping to restore the relationship between the communist mainland and historically Chinese territories (Taiwan, Hong Kong and Macau)—that had capitalist economies.
- This system was initially proposed to Taiwan.
- He had suggested that there would be only one China, but the distinct Chinese regions such as Hong Kong and Macau could retain their own economic and administrative systems, while the mainland China uses the socialism having Chinese characteristics.
- In the Sino-British Joint Declaration of 1984, the two countries agreed that Britain would hand over sovereignty of Hong Kong to China.
- China is responsible for the defence and foreign affairs of Hong Kong whereas Hong Kong manages its own internal security.

5. Taiwan's Impact on China

- The Taiwan has made an immense contribution to the economic, material and technological development of China. This has enabled China in becoming the second-largest economy in the world.
- But this relationship between China and Taiwan can only be categorized as commensalism, wherein Taiwan only derives minimal benefits.
- The Taiwanese on realizing this are trying to become independent and they are diverting their investment to other countries such as India and New Zealand to prevent itself from becoming completely dependent on China.

6. Implications for India

- India is facing its own sets of problems with China at the LAC, thus there are suggestions in academia that India should review its One China Policy and use not just the Tibet card.
- India should also develop more robust relations with Taiwan to send a strict message to Beijing.
- India and Taiwan currently maintain "trade and cultural exchange" offices in each other's capitals.

Lumpy Skin Disease

1. Why in news

- Nearly 3,000 cattle have recently died in Rajasthan and Gujarat due to a viral infection called the Lumpy Skin Disease (LSD).
- Around 11 lakh cattle have been vaccinated against the disease, and the National Dairy Development Board has supplied 28 lakh doses of goat pox vaccine to Gujarat, Rajasthan and Punjab, bought from a private entity called Hester Biosciences.
- A toll-free helpline – 1962 – has also been activated to guide cattle-herders and dairy farmers to tackle the disease.

2. About Lumpy Skin Disease

- The Lumpy Skin Disease (LSD) is caused by a virus called the Capripoxvirus and this is an emerging threat to livestock worldwide.
- It is genetically associated to the goatpox and sheeppox virus family.
- It infects cattle and water buffalo through vectors such as blood-feeding insects.

3. Symptoms

- Major symptoms include the appearance of circular, firm nodes on the animal's hide or skin that look similar to lumps.
- Infected animals immediately start losing weight, will have reduced milk yield and also can have fever and lesions in the mouth.
- Excessive nasal and salivary secretion are other symptoms.
- Pregnant cows and buffaloes may suffer miscarriage due to this disease and can die.

4. History of Lumpy Skin Disease outbreaks

- The disease has been endemic to most African countries and since 2012 the outbreal has been more rapidly in the Middle East, Southeast Europe and West and Central Asia.
- Since 2019, several outbreaks of LSD have been reported in Asia. In May this year, Pakistan's Punjab also reported the deaths of over 300 cows due to LSD.
- In September 2020, a strain of the virus was discovered in Maharashtra. Gujarat too has reported cases over the last few years sporadically.
- The point of concern is the number of deaths being reported, and whether vaccination catches up to the rate at which the disease is spreading.
- According to the World Organization for Animal Health (WOAH), of which India is a member, mortality rates of 1 to 5 percent are considered as normal.

5. Are humans at risk?

- The disease is not zoonotic i.e. it does not spread from animals to humans, and humans cannot get infected with it.
- The milk produced by an infected animal will be fit for human consumption after boiling or pasteurisation as these processes will kill the viruses, if any, in the milk.

6.Can the spread be prevented?

- Successful control and eradication of LSD relies on early detection, followed by a rapid and widespread vaccination campaign.
- The cattle-sheds should be sanitized by eliminating vectors through application of insecticides and spraying disinfectant chemicals.
- The infected cattle should be immediately isolated from the healthy stock and the nearest veterinarian should be contacted for treatment of the infected animal.

7. Challenges

- The disposal of the dead animals is a major issue as improper handling of the carcasses can cause health and sanitation issues.
- Proper disposal of the carcasses can include incineration or burning of the bodies at high temperatures, along with disinfection of premises.

1. Why in news

- A new zoonotic virus called 'Langya' has been discovered in China and it has already infected 35 people.
- It is also called as Langya Henipa-virus or the LayV.
- A zoonotic disease is any disease or infection that is transmissible from animals to humans.
- Taiwan's Center for Disease Control (CDC) is currently establishing a nucleic acid testing method to identify and check the spread of the virus.

3. Symptoms

- Some of the patients who have been infected with the virus developed various symptoms including fever, fatigue, a cough, loss of appetite, muscle pain, nausea, headache and vomiting.
- Decrease in white blood cells, low platelet count, liver failure and kidney failure.

4. Discovery of Langya virus

- Langya was discovered in eastern China provinces during surveillance testing of patients who had fever along with a recent history of animal exposure.
- It was identified and isolated from the throat swab sample of one of those patients.
- According to the NEJM study, 35 patients with LayV infection were found in Shandong and Henan provinces, out of which 26 were only infected with this new virus and no other pathogen.

2. About Langya Virus

- It has been found in China's Shandong and Henan provinces and it can be transmitted from animals to humans.
- However, human-to-human transmission of the virus has not been reported yet.
- According to a recent study — A Zoonotic Henipavirus in Febrile Patients in China — published in The New England Journal of Medicine, the newly discovered virus is a "phylogenetically distinct Henipavirus".
- The various types of Henipaviruses that had been identified prior to this include Hendra, Nipah, Cedar, Mojiang and the Ghanaian bat virus.
- According to the US Centre for Disease Control, the Cedar virus, Ghanaian bat virus, and Mojiang virus are not known to cause human disease. But Hendra and Nipah infect humans and can cause fatal illness.
- Langya is known to cause fever and the NEJM study calls for a deeper investigation of associated human illness.
- The study adds that Langya's genome organization is "identical to that of other Henipaviruses", and that it is closely related to the "Mojiang Henipavirus, which was discovered in southern China".

5. Where has Langya virus come from?

- The LayV virus RNA has been predominantly found in shrews, which may be its natural hosts.
- The study concentrated on shrews after a sero-survey of domestic and wild animals was conducted. Among domestic animals, seropositivity was detected in goats and dogs.

6. Human-to-Human transmission

- The sample size of the investigation is too small to determine human-to-human transmission.
- However, among the 35 patients infected by LayV, there was "no close contact or common exposure history", which suggests that the "infection in the human population may be sporadic".

7. Treatment

- At present, there is no medicine or vaccine against this disease, and supportive care is needed.

8. Way Forward

- There is no need to panic as unlike the nipah virus, LayV is not fatal.
- The virus is also not contagious and cannot transmit from human-to-human. The cases of LayV appear sporadically. The animals that are known to be responsible for animal to human transmission are shrew (a rat like mammal), goats and dogs.
- Being very vigilant and testing any suspicious cases with the appropriate assays to diagnose the infections early is the need of the hour.

Mains Special

Economy, Agriculture, Science & Tech., Environment, Ecology and Biodiversity, Disaster management and Internal Security

1. Explain how the Production Linked Incentive scheme and the National Infrastructure Plan will bring about a virtuous cycle of growth in industry?
Ans.

Among several sectors, the manufacturing sector was hit by pandemic-induced disruptions, shrinking by 7% in 2020-21. In response, the government implemented a series of measures aimed at alleviating supply-side bottlenecks, increasing demand, and improving infrastructure.

Production Linked Incentive (PLI) Scheme:

1. The PLI is an old and popular tool with governments to spur production of goods that the country sees as necessary for social good, taxes, or employment-generation reasons.
2. Recently, the Indian government identified 13 priority sectors where PLI schemes will be launched. It is applicable to sectors like pharmaceuticals, solar modules, electronics, automobiles etc.
3. It gives incentive to manufacturers to achieve economies of scale. Large scale of production will make manufacturers and exporters more price competitive in global markets and resilient to external shock.
4. It will help in expansion of small enterprises in order to overcome the "dwarf" phenomenon that has long inhibited the growth of MSMEs.
5. It will also generate employment which will further have positive effect on the economy.

However, there are some issues with the production linked incentive scheme like industries believe that not enough incentive has been given under the scheme.

National Infrastructure Plan-

1. Infrastructure is the back bone for any economy. The extent and quality of infrastructure determines the ability of the country to utilize its comparative advantage and enables cost competitiveness. Given the strong backward and forward linkages and the positive externalities that infrastructure generates, it can be a vehicle for social and economic transformation.
2. Several initiatives such as the National Infrastructure Pipeline (NIP), National Monetization Plan (NMP), PM GATI Shakti etc, have been taken to propel the infrastructure investment.
3. An integrated logistics ecosystem built on the basis of sturdy infrastructure will cut down the logistics cost for industries.
4. It will also assist the local producers to expand their business through exports and e-commerce for which last mile multi modal connectivity is crucial.
5. In order to achieve the GDP of $5 trillion by 2024-25, India needs to spend about $1.4 trillion over these years on infrastructure.

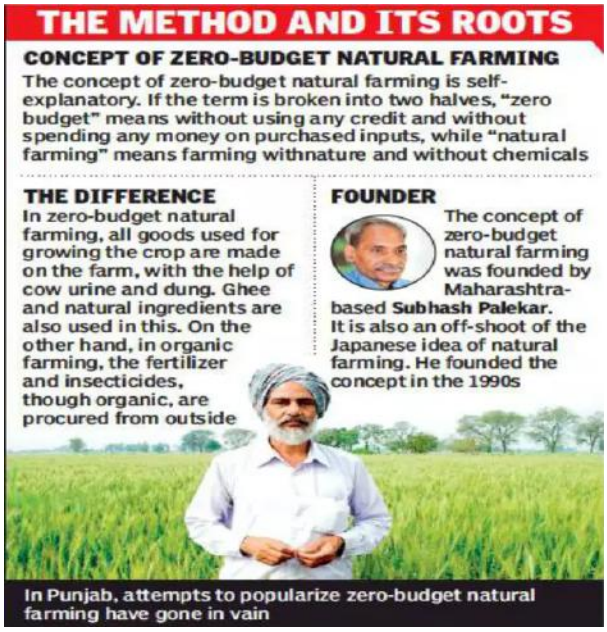
The economic survey for 2021-22 predicts a strong recovery in the industrial sector following the pandemic. The government's various supply-side measures and reforms for industry and infrastructure will set in motion a virtuous cycle of growth in industry and the economy.

2. Zero Budget Natural Farming (ZBNF) has been held as one of the most sustainable methods of agricultural production. What is Zero Budget National Farming? Is it feasible for India to adopt ZBNF on wide scale? Comment in the light of recent report by Indian Council of Agricultural Research.
Ans.

Zero Budget Natural Farming (ZNBF), popularized by Maharashtrian agriculturist and Padma Shri recipient Subhash Palekar, refers to the process of raising crops without using any fertilizers and pesticides or any other external materials.

The term 'Zero Budget' means the zero cost of

production of all crops. ZBNF guides the farmers in practicing sustainable farming that helps in retaining soil fertility to ensure chemical-free agriculture and ensure low cost of production (zero-cost).



Benefits of ZBNF:

i) ZBNF processes require 50–60 per cent less water and less electricity (than non-ZBNF) for all the selected crops.

ii) ZBNF reduces methane emissions significantly through multiple aeration.

iii) It also has the potential to avoid residue burning by practicing mulching.

iv) The cost of cultivation is lower in ZBNF. Thus increasing farmers income.

However, an expert committee of Indian Council of Agricultural Research (ICAR) has stated that large scale adoption of Zero Budget Natural Farming (ZBNF) would result in 'tremendous reduction' in production of agricultural crops thus comprising India's food security.

In place of ZBNF, the ICAR committee has recommended adoption of an integrated production system through usage of farm practices such as -

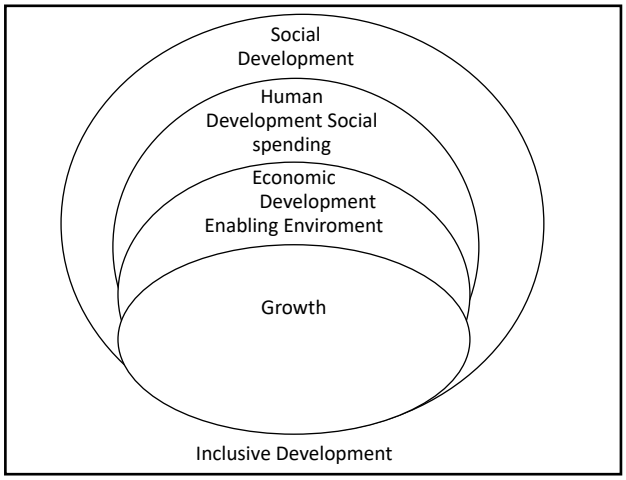
- Conservation agriculture through usage of farmyard manure,
- Inter-cropping,
- Crop diversification, and
- Integrated nutrient management for improving soil health.

ZBNF adoption on a large scale could have a negative influence on farmer income and food security. So it is necessary to conduct a proper scientific confirmation of ZBNF's effectiveness.

3. One of the pillars of Union Budget 2022-23 is 'Inclusive Development'. Analyse the measures proposed in the Budget 2022-23 to achieve inclusive growth and development in India?

Ans.

Inclusive development is a development that includes marginalised people and sectors in social, political and economic processes for increased human well-being, social and environmental sustainability, and empowerment. Budget 2022-23 seeks to realise 'Antyodaya' se 'Sarvodaya' through 'Inclusive development' pillar.



Budgetary provisions under 'Inclusive development' pillar and their significance:

1. Agriculture:

a. Enhanced procurement making **2.37 lakh crore** direct payment of MSP to 163 lakh farmers. This will help doubling farmer's income.

b. A comprehensive scheme to boost domestic oilseed production. Critical for reducing oil related inflation.

c. Promotion of post-harvest value addition, consumption and branding of millets. Ensuring development of dryland farming and other marginalised region.

d. 'Kisan drones' for crop assessment, spraying of insecticides, digitization of land records etc.

2. Micro, Small and Medium Enterprises

a. Udyam, e-Shram, National Career Service and ASEEM portal to be interlinked for ease of access as well ease of doing business.

b. Emergency Credit Linked Guarantee Scheme

to be extended up to March 2023 and cover is also expanded.

c. RAMP programme with an outlay of 6000 crores to help MSME sector become more resilient, competitive and efficient.

3. Skill development – Digital Ecosystem for Skilling and Livelihood (DESH-Stack-e portal) to be launched to empower citizens through online skilling, re-skilling and up-skilling.
4. Education – emphasis on more inclusive digital education through measures like
   a. Expansion from 12 to 200 channels under PM e-Vidya scheme.
   b. High quality e-content delivery through digital teachers.
   c. Digital University for world-class quality universal education with personalised learning experience to be established.
5. Health – Enhancing inclusivity health ecosystem with schemes like
   a. National Tele Mental Health programme for quality mental health counselling and care.
   b. Integrated benefits to women and children through Mission Shakti, Saksham Anganwadi and Poshan 2.0.
6. Ensuring inclusive development of marginalised section and regions through schemes like Har Ghar Nal se Jal (3.8crs household-2022-23), PM-DeVINE (for North east Region), Aspirational Blocks Programme, Vibrant Villages programme etc.

Development must be by the people(more participative), of the people(health, education, skills) and for the people(happiness, well-being, increase in income). The above budgetary will ensure that the same is ensured in India's development during 'Amrit Kaal'.

4. The ongoing crisis in Sri Lanka has a strong economic cause, list out the major economic factors that led towards such crisis. Suggest measures to avert such a crisis to emerge in India.

Ans.

Sri Lanka, which in the 1970s was being hailed as a development success story for a low-income nation, is now mired in a financial and economic disaster, its worst yet since independence in 1948.

Major economic factors that led towards such crisis:

- Sri Lanka's average GDP growth rate almost halved after 2013 as global commodity prices fell, exports slowed down and imports rose.
- Reckless borrowing by government which even exceeded the GDP of the country.
- Tourism was a primary source of income for the country and it got two successive blows in the form of a terrorist attack on the occasion of Easter and the Covid-19 pandemic.
- The government's ban on the use of chemical fertilisers in farming has further aggravated the crisis by dampening agricultural production.
- Lower tax rates and wide-ranging SoPs for farmers by the new government further exacerbated the problem.
- Decline in foreign exchange - it dropped from over $7.5 billion in 2019 to around $2.8 billion in July 2021.

Measures that can avert such a crisis from emergeing in India:

- Limiting the proportion of borrowings in the central budget should be the utmost priority.
- No country can sustain the basic needs of its population by moving away from its primary sector like agriculture and promoting sectors heavily dependent on foreign income like tourism.
- Populist policies implemented with the sole goal to win the election can make people happy in short term, it is not sustainable in the longrun.
- Ensure that the returns from any massive infrastructure investment are adequately assessed and are backed by support from the countries with whom India has genial foreign relations.
- Diversification of economy is very important, especially post-pandemic and now due to the Russia-Ukraine war.

The government should take measures for economic recovery of the country as soon as the shortage of certain essential commodities ends. Government can raise domestic tax revenue and shrink government expenditure to limit borrowing and should take tough measures for restructuring the administration of concessions and subsidies.

5. India can become a major Electronic Vehicle (EV) player within the next decade with the right incentives and policy framework. Identify the major policies of Union Government to promote the electronic vehicle segment in India and comment upon the challenges associated with the EV sector in India.

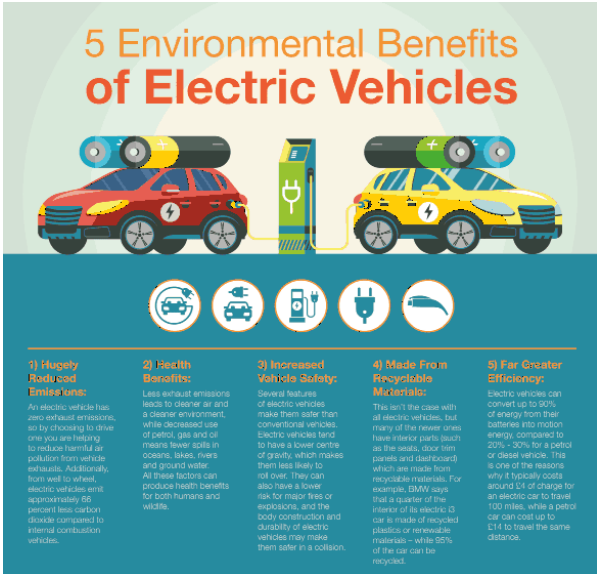
Ans.

India has envisioned a clear road map for a major transformation to electric vehicles (EVs) by 2030. The government's keenness to eliminate the pre-

existing roadblocks by making swift policy changes for sustainable mobility is encouraging growth of EVs.

Major policies of government to promote EVs:

- In 2010, a financial incentive for EV manufacturers for vehicles sold in India was announced by the Ministry of New and Renewable Energy (MNRE).
- In order to undertake a significant transition to EVs and to solve challenges with national energy security, vehicle pollution, and the expansion of local manufacturing capabilities, India released the National Electric Mobility Mission Plan (NEMMP) 2020 in 2013.
- The Faster Adoption and Manufacturing of EVs (FAME) scheme, with an initial cost of Rs. 75 crore, was announced in the Union Budget 2015–16.
- The Transport Ministry highlighted its intent to move to 100 per cent electric cars by 2030 in 2017.
- Under the FAME-II initiative, the government approved a Rs. 10,000 crore programme in 2019 to promote electric mobility throughout the nation.
- Scrappage Policy - It aims to phase out unfit and polluting vehicles in an environment-friendly manner.
- In the 2022 budget, a battery swapping policy was announced as an easier way to charge EVs.
- The government also announced a Production Linked Incentive scheme for automakers, a part of which aims to boost electric vehicles manufacturing.



Challenges associated with EVs:

- The penetration rate of electric vehicles (EVs) in India is currently among the lowest in the world.
- Local manufacturing enterprises lack the necessary resources or the motivation to invest in research and design.
- The absence of a robust manufacturing ecosystem for the materials associated with the EV revolution, coupled with the concentration of the supply chain in certain regions.
- Li-ion batteries are complex devices requiring a level of sophistication that can take years to perfect.
- Inadequate infrastructure and high capital cost with uncertain payoff.
- India does not have any known reserves of lithium and cobalt, which makes it dependent on imports of lithium-ion batteries from Japan and China.
- Recent fire incidents in the 2-wheeler EV segment has created a negative perception about it, thus it might affect the future demand.

The EV market which is going to expand day by day provides a huge opportunity for India to not just achieve its sustainability targets but also emerge as a global EV manufacturing hub. India must take lessons from its e-three-wheeler success story to sustain its EV ambitions.

6 What is Open Network for Digital Commerce (ONDC)? How does Open Network for Digital Commerce (ONDC) will benefit the small traders?

Ans.

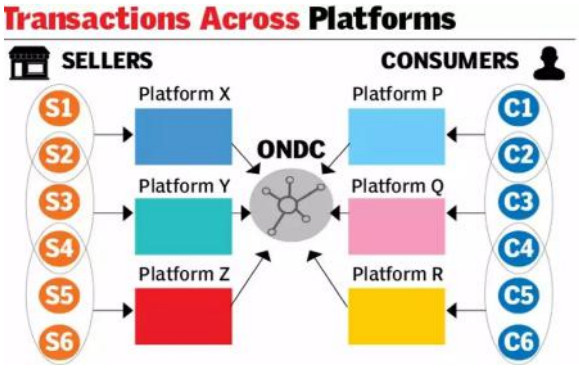
Open Network for Digital Commerce (ONDC) is a network based on open protocol and will enable local commerce across segments, such as mobility, grocery, food order and delivery, hotel booking and travel, among others, to be discovered and engaged by any network-enabled application.

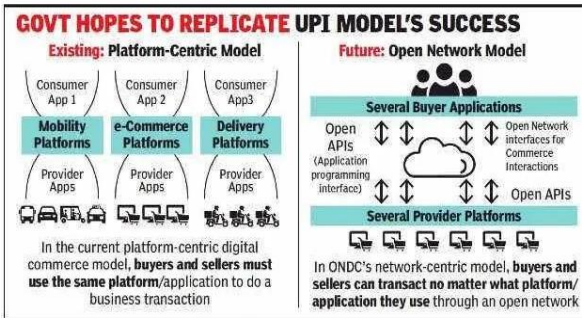
The platform aims to create new opportunities, curb digital monopolies and by supporting micro, small and medium enterprises and small traders and help them get on online platforms.

It is an initiative of the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry.

How ONDC will benefit the small traders?

- The ONDC will provide equal opportunities to all marketplace players. It is a neutral platform that will set protocols for cataloguing, vendor match, and price discovery on an open source-basis, like the Unified Payments Interface (UPI).
- Unlike other online market-places of the large ecommerce players where certain sellers are preferred over others, the ONDC offers a set of protocols and a technology-based solution which allows everybody to trade on a common platform.
- ONDC also help small retailers to engage with big companies and serve customers with modern delivery systems.





Significance of ONDC:

- ONDC is expected to digitize the entire value chain, standardize operations, foster inclusion of suppliers, usher in efficiency in logistics, and augment value for consumers.
- It will provide a boost to smaller online retailers as well as new entrants by ushering in discoverability, interoperability, and inclusivity.
- It will empower suppliers and consumers by breaking the monopoly of giant platforms to drive innovation and transform businesses in sectors like retail, food, and mobility.
- Businesses are expected to benefit from transparent rules, lightweight investment, and lower cost of business acquisition.
- It is also expected that the time-to-market as well as time-to-scale shall also be substantially reduced.

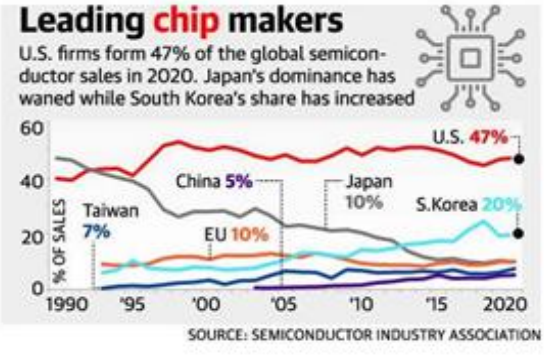
Thus, through ONDC the government is working towards democratising e-commerce in the country so that millions of small mom-and-pop stores and small retailers "do not get extinguished as seen in the West, but get an equal opportunity to engage using digital technologies" to grow their businesses and serve their customs.

7. India's plan to become a semiconductor hub is one of the most ambitious and challenging tasks. What are the challenges that lie ahead for India to become a semiconductor hub? Highlight the steps taken by India to address those challenges.

Ans.

A semiconductor is a material that allows electrical conductivity between a conductor and an insulator. They are core components in manufacturing electronic devices. They are essential in many sectors such as automobile, healthcare, defence etc.

India's plan to become a semiconductor hub is one of the most ambitious and challenging tasks that the government has set to undertake.



Challenges ahead for India:

- India imports some raw materials such as neon gas, C4F6, palladium, rhodium and titanium for semiconductor manufacturing from Russia and Ukraine. Due to the Russia-Ukraine war, the supply chain got disrupted.
- It is highly capital intensive and requires strong R&D setup. A semiconductor fabrication facility

(or fab) can cost multiples of a billion dollars to set up even on a relatively small scale.
- The chip-making industry is electricity and water-intensive. A chip manufacturing unit uses no less than 2 million gallons of water per day.
- The wastewater generated is high in metal and toxic content. So they must be processed before letting run-off. India lacks a clear guideline in regulating such instances.
- The semiconductor manufacturing process also releases toxic gases and chemicals.

Steps taken by India to address the challenges:
- Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS) - India would be offering more than $1 billion in cash to each semiconductor company that sets up manufacturing units in the country.
- The government has approved Rs. 76,000 crore ($10 billion) production linked incentive (PLI) scheme to attract semiconductor and display manufacturers.
- India Semiconductor Mission (ISM) - to develop a sustainable semiconductor and display ecosystem.
- The Government of India has allowed 100 percent (FDI) under the automatic route in the Electronics Systems Design & Manufacturing sector.
- Karnataka government has signed MoU with Israel's ISMC Analog Fab to set up a semiconductor chip-making plant worth $3 billion in Mysuru.

Due to the disruption of supply chains during the pandemic and also reduced production due to COVID safety concerns, there is a global semiconductor shortage. So, India has a lot of scope to utilize this opportunity and become a global hub for semiconductors. But Ukraine crisis can delay India's semiconductor dream.

8. Give an account of the measures adopted by Government of India to realise the target of Rs 1 Lakh crore exports from Fisheries sector by 2024-25. What would be the hurdles in the path of realising this objective?

Ans.

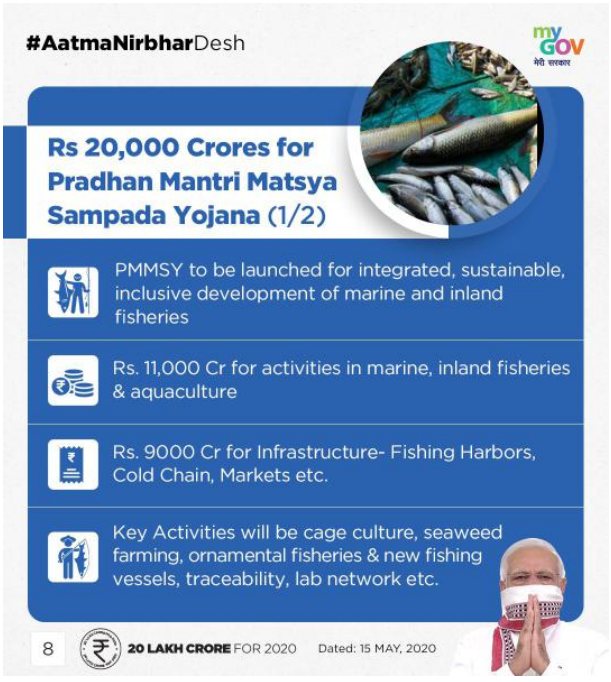
Government of India under the PM Matsya Sampada Yojana has set the target of producing 22 million metric tonnes of fish and exporting fish worth of Rs. 1 lakh crore by 2024-25 from production of 14.2 million metric tonnes and exports worth of 46,662 crores in 2019-20.

Measures adopted to realise the target include:

1. Budget 2019-20 provided for the creation of a **dedicated Department of Fisheries** for holistic development of the sector.
2. Sustained increase in budgetary allocation towards fisheries, for instance increase **of 34% in Budget 2021-22**.
3. Development of **five major fishing harbours** like Kochi, Chennai etc. as hubs of economic activity and exporting centres.
4. A holistic PM Matsya Sampada Yojana is launched as part of the AtmaNirbhar Bharat Yojana to boost fisheries sector with an outlay of around 20,000 crores. It includes:

a. Availability of quality seeds to improve yield.
b. Promotion of all the verticals in fishery be it in inland or marine.
c. Infrastructure development
d. Encourage fish FPOs through '**Sagar Mitras'.**

5. **Fisheries and Aquaculture Infrastructure Fund** to attract private investment in creation and management of fisheries infrastructure. This will help in creation of cold chain and value addition infrastructure critical for exports.
6. Benefits of **Kisan Credit Card** extended to fisheries and fish farmers to meet their working capital needs.
7. Empower traditional fishermen in deep sea fishing through skill training and assistance for modern vessels.



Challenges in boosting exports:

1. **Unsustainable fishing practices-** According to FAO report, 90% of the global marine fish stocks have either been fully exploited or over fished, making it difficult to boost production and exports.

2. **Low productivity** of inland fisheries, for instance a fisherman in Norway catches 250kgs of fish per day whereas in India it is only 4-5kgs per day.
3. **Lack of modern equipment-** Marine fishery dominated by small player having traditional or non-motorised boat, restricting them to coastal waters alone.
4. High level of post-harvest losses due to lack of adequate cold chain network and value addition infrastructure.
5. **Technical barriers to trade** like Sanitary and Phyto-sanitary measures.
6. MPEDA – India's marine export promotion agency has also been able to diversify the market for Indian fisherman.
7. Limited focus on **Research and development** as well coordination between scientists and fish farmers. This manifests into lower yield, lack of diverse varieties etc.

India thus needs a more scientific development of its fisheries ecosystem starting from seeds to market delivery of the fishes. This would require a collaborative effort of Government of India with the States in the spirit of federalism. This will help in ushering in true **Blue Revolution** and realisation of above objectives.

9. Though India being one of the largest producers of coal, recently it has witnessed various coal shortages within a short span of time, in this context elaborate the nature and causes of the shortage faces by India, suggest some measures to avoid such situation in future.

Ans.

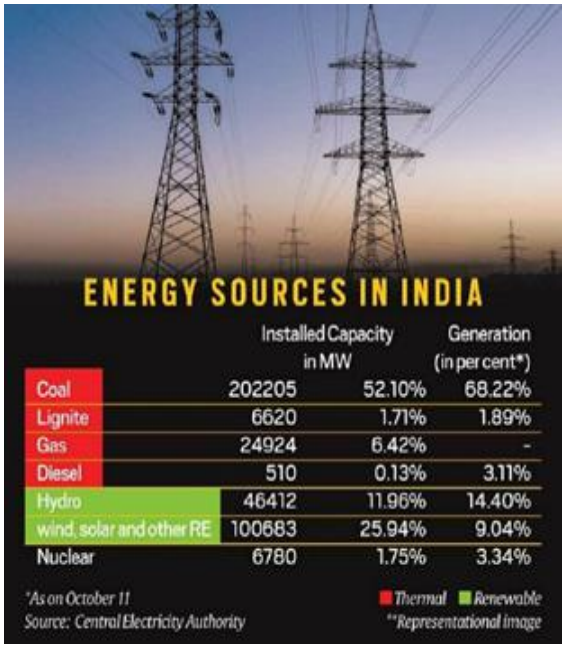
India is one of the largest producer of coal and there has also been an increase in coal production over the past few years. But despite the increased domestic production, the country has witnessed two coal shortage crisis within one year.

What caused the coal shortage?

- India's industrial power demand has surged after the second coronavirus pandemic wave as the economy regained momentum following a devastating second wave of Covid-19.
- A widening price gap between lower domestic prices and record global coal prices has led buyers to shun imports. India is the world's third-largest coal importer.
- Domestic coal production has been hit by severe flooding in India's eastern and central states during the typical monsoon season.
- Other sources of electricity generation — such as hydropower, gas and nuclear — also declined due to an unevenly distributed monsoon season, a sharp increase in gas prices, maintenance shutdowns at nuclear power plants, etc.
- Logistical issues due to the monsoon season also constrained coal supply, despite there being enough pithead stocks available at Coal India.
- The poor financial health of many DISCOMs in the country. Several thermal power stations are cash strapped due to non-payment of dues from DISCOMs.

Nature of the crisis:

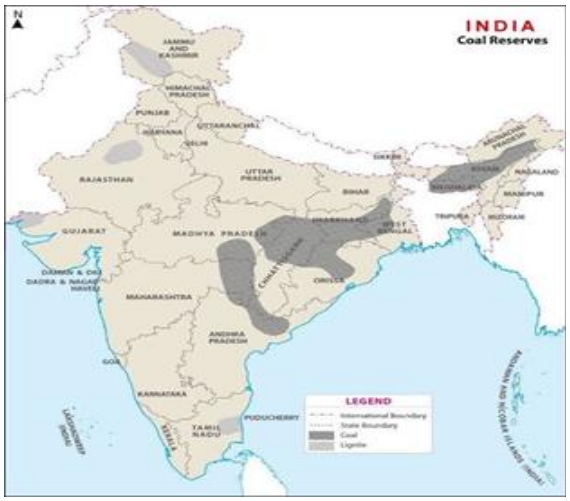
- Some experts highlight that the power sector crisis is also due to a lack of vision of the government and other stakeholders as they failed to take into account the climatic factors.
- The sudden onset of extreme weather conditions often bypasses the preparedness of the coal sector leading to increased crisis.
- The problem is that our planning framework does not consider sudden shock due to climatic factors.



Measures that need to be taken to avoid coal crisis in future:

- Reforms in the railway sector to scale up the transportation capacity during critical times and ensure a smooth supply from coal mines to thermal power stations.
- There is a need for the development of dedicated freight corridors on the critical coal passages for faster transportation.
- Revisiting the existing fuel supply agreements between Coal India Limited (CIL) and the power generation companies.
- Frequent reviews and assessments of the coal allocations and costing to individual power plants should be conducted.

- The scope of coal reallocation and rerouting needs to be explored based on the long-term coal demand from critical thermal power stations.



A recent report by the World Economic Forum (WEF) said urgent action is required by both private and public sectors to ensure a resilient transition as the world faces the most severe energy crisis since the 1970s.

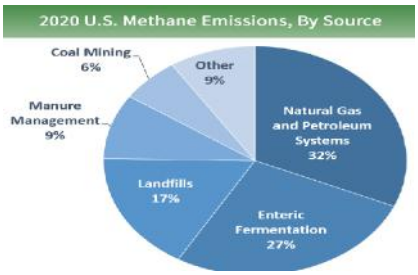
10. Recently the global atmospheric methane concentration exceeded 1,900 parts per billion (ppb) for the first time in human history, in this context analyze the causes of this increase and also discuss the implications of increasing methane on our everyday life?

Ans.

The greenhouse effect is essential to life on Earth, but human-made emissions in the atmosphere are trapping and slowing heat loss to space.The amount of methane in the atmosphere has spiked to historic highs and is increasing at its fastest recorded rate. Atmospheric methane levels rose by 17 parts per billion in 2021.

Causes for increase:

- Agriculture is the largest source.
- Emissions from the fossil fuel industry.
- Urban landfills and sewage systems.
- Coal industry - via ventilation shafts in mines and during the transportation and crushing of coal for power stations.
- Gas industry leaks at wells and pipelines and from distribution pipes under streets and home boilers.



Implications:

1. Methane is the second biggest contributor to human-caused global warming after carbon dioxide. Although carbon dioxide's contribution to climate change is greater overall, methane is far more potent on a per molecule basis. The global warming potential of methane has been estimated at 70 to 100 over a 20-year period.
2. The interaction of gases like methane with sunlight produces tropospheric ozone, a harmful GHG which damages human health, plants and ecosystems. Methane is the primary contributor to the formation of ground-level ozone, a hazardous air pollutant and greenhouse gas, exposure to which causes 1 million premature deaths every year.
3. Curbing methane emissions could provide short-term relief while governments and businesses negotiate the more difficult transition from fossil fuels to clean energy.
4. Reducing methane emissions by 40% by 2030 could prevent an estimated 180,000 deaths, 540,000 emergency room visits from asthma, and 11,000 hospitalizations of elderly people each year.

Conclusion:

The International Energy Agency report shows that major cuts in methane can be achieved in a realistic and cost-effective way. If its recommendations are followed, worldwide oil and gas sector methane emissions could be shrunk from 72 megatons to just 21 megatons by 2030.

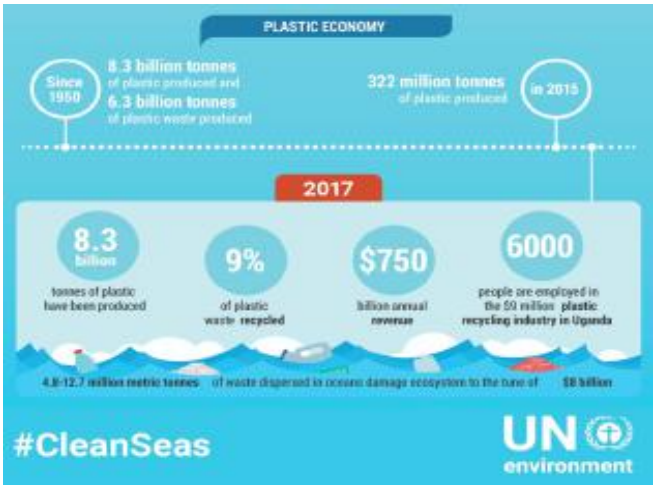
11. How marine plastic pollution is generating impacts on marine biota and ecosystems at many different levels? Elaborating the impact of marine plastic on different organisms, suggest some recent scientific developments that took place to solve the problem of marine plastic.

Ans.

According to UN Environment Programme, plastics accounts for 85% of total marine waste. Without urgent action, the estimated 11 million metric tons of plastic currently entering the ocean annually will triple in the next twenty years.

Impacts of marine plastic pollution on marine biota and ecosystems are:

1. Marine animals mistake floating plastics for their prey and consume them and slowly starving to death. For ex – sea turtles mistakes plastic bags for jellyfish.
2. Marine mammals, sea turtles and other animals often drown after getting trapped in or lost in discarded plastics.
3. They may also cause accidental deaths in marine animals, for ex – straw getting struck in the nostrils of turtles causing their death, critically endangered North Atlantic Right whales dying due to ghost fishing gears.
4. Marine plastic pollutions are responsible for bio-magnification and bio-accumulation of toxins in marine ecosystem.
5. It is responsible for loss of biodiversity of marine ecosystem.
6. Marine pollution reduces the capacity of ocean ecosystem to sequester carbon and thus their climate change mitigating capability.
7. Plastic pollutant by adversely affecting the health of marine ecosystems like mangroves, sea-grasses, corals etc. reduces the productivity as well as resilience of marine ecosystem against climate change and disasters like cyclone, Tsunami etc.



Recent scientific development for solving the problem of marine plastic:

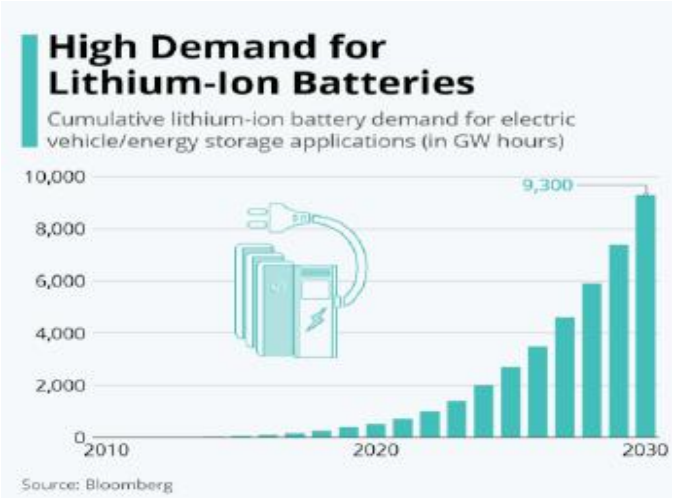
1. Genetic engineering of microbes for bio-remediation of marine plastic pollution. Ex- plastic eating bacteria discovered by Japanese scientist in 2016 though enzyme PETase.
2. The Ocean Clean up group has developed a system called the System 001, consisting of 600m long floating structure designed to contain marine debris.
3. Use of satellites for tracking and tracing plastic debris in vast oceans. For ex – NASA's CYGNSS is being used to detect micro-plastic concentration.
4. Scientists have developed a nanotechnology based Magnetic coil that is able to target micro-plastics in ocean.
5. GloLitter Partnerships Project launched by International maritime Organization and FAO is promoting innovation to reduce marine plastics from shipping and fisheries.

Several existing international agreements and conventions already provide support for reducing marine pollution combatting climate change (SDG 13), and sustainably using the oceans (SDG 14). They must be used effectively and in the spirit of oneness to face and defeat this global menace of Marine Plastic pollution.

12. Why lithium-ion battery is the first choice for virtually all modern electronics as well as electric vehicles? What are some of the alternative power storage solutions that can replace lithium-ion batteries?

Ans.

The use of lithium ion batteries has grown significantly in recent years. They offer some distinct advantages and improvements over other forms of battery technology including nickel metal hydride, lead acid batteries and nickel cadmium batteries.



Lithium-ion battery - first choice for virtually all modern electronics:

- Lithium ion battery technology is advancing at a very swift rate, the disadvantages are being addressed and the overall technology is being improved.
- The high energy density is one of the chief

advantages of lithium ion battery technology.
For example, NiMH batteries would not be able to provide the charge capacity required for a modern smartphone.

- Lithium ion cells rate of self-discharge is much lower than that of other rechargeable cells such as Ni-Cad and NiMH forms.
- They require low maintenance. Ni-Cad cells required a periodic discharge to ensure that they did not exhibit the memory effect. As this does not affect lithium ion batteries and cells.
- The voltage produced by each lithium ion cell is higher than that of the standard nickel cadmium, nickel metal hydride and even standard alkaline cells.
- There are several types of lithium ion cell available. It mean that the right technology can be used for the particular application needed.

Alternatives to lithium-ion batteries:

- Sodium-ion - Unlike some of the elements in a lithium-ion battery, sodium is low-cost, abundant, and much safer.
- Nickel hydride - Unlike lithium-ion, hydride batteries are not flammable, thanks to their water-based electrolyte.
- Nickel-hydrogen - The technology is particularly good in remote and harsh conditions and requires very little maintenance.
- Vanadium redox flow batteries (VRFB) - VRFBs are better suited to long duration and overnight applications. Moreover, the electrolyte is highly reusable.
- Iron-flow batteries - Much cheaper than Li-ion on the materials front, much safer, and longer lasting too.

Conclusion:

Despite its benefits, there are concerns about LIBs' energy density and cycle life, safety, resource-intensive manufacturing, and cost. Several technologies are already in various stages of deployment and development. However, cost parity should not be the only metric and other parameters must also be evaluated before choosing a technology.

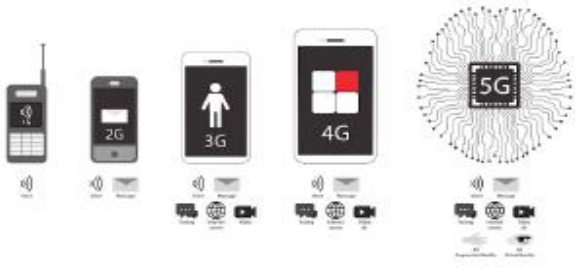
13. What are the various generations of cellular networks? How 5G is stated to be most efficient network vis-a-vis earlier generations?

Ans.

A Cellular network or Mobile network is a radio network distributed over land areas called cells, each served by at least one fixed-location transceiver, known as a cell site or base station.

Various generations of cellular networks:

- **First Generation (1G) -** Based on an analogue technology known as Advanced Mobile Phone System (AMPS), 1G networks offered a channel capacity of 30KHz and a speed of 2.4kbps. 1G networks only allowed voice calls to be made.
- **Second Generation (2G) -** Based on digital signalling technology, Global System for Mobile Communication (GSM), which increased security and capacity, 2G networks offered bandwidths of 30KHz to 200KHz and allowed users to send SMS and MMS messages, although at low speeds, up to 64kbps.
- **Third Generation (3G) -** Also based on GSM, the main aim of 3G was to support high-speed data and the original 3G technology allowed data-rates up to 14Mbps. 3G enabled users to make video calls, surf the web, share files, play online games and even watch TV online.
- **Fourth Generation (4G) -** 4G is the first generation to use Long-Term Evolution (LTE) technology to deliver theoretical download speeds of between 10Mbps and 1Gbps, offering end users better latency (less buffering), improved voice quality, instant messaging services and social media, quality streaming and faster download speeds.
- **Fifth Generation (5G) -** It represents a step-change in performance over 4G and aims to address the requirements of the emerging applications. Speed up to 10Gbps (100 times faster than 4G networks); latencies of 1mSec (30 - 50mSec for 4G); and connection densities of 1000 devices per square kilometre (100 times more than 4G).



Why 5G is stated to be most efficient network vis-a-vis earlier generations?

- Consumers will be able to download data heavy content such as 8K movies and games with better graphics in just a few seconds.
- 5G is the backbone of emerging technologies such as

the Internet of Things (IoT) and machine to machine communications thereby supporting a much larger range of applications and services.

- For the first time 5G technology has extend the use of wireless technologies across completely new sectors of the economy from industrial to commercial, educational, health care, agricultural, financial and social sectors.
- It allow real time relay of information across fields such as manufacturing, consumer durables and agriculture.

Conclusion:

India is aspiring to become a $5trillion economy and science and technological development will be a major pillar for this. Therefore, India must harness the potential of 5G to boost its economy and gain competitiveness in the world.

14. Recently Central Government has banned the use of 'single use plastic'. What is single use plastic and how it effects our environment? Suggest some alternatives that can be used in place of single use plastic.

Ans.

According to a 2021 report of Mindaroo Foundation, India's net generation of single-use plastic is 5.6 million metric tons, and per capita generation is 4 kg. Since plastic waste management in general and safe disposal of single-use plastics in particular is becoming a daunting task, the Central government issued notification banning single use plastics.

What is Single-use plastic (SUP)?

1. SUP refers to plastic items that are used once and discarded.
2. The Plastic Waste Management Rules defined SUP as plastic items intended to be used once for the same purpose before being disposed of or recycled.
3. According to Mindaroo Foundation report, SUP accounts for one-third of all the plastics produced globally. 98% of the SUPs are manufactured from fossil fuel.

Adverse consequences of SUPs on environment:

1. Greenhouse gas emissions – it has been projected that at current rate of generation, SUP could account for **5-10% of emissions by 2050.**
2. Among plastics it is SUP whose collection and safe disposal is most challenging, majority of them being **discarded directly into environment.**
3. Discarded SUPs are converted into **micro-plastics.** These micro-plastics then enter the food chain.

4. **Loss of biodiversity –** As SUPs causes death of the animals either directly, like straw getting stuck in nostrils of turtle or stray cattle eating plastics, or indirectly through micro-plastics.
5. **Major pollutant** –
   a. Choking sewage network of cities.
   b. Marine pollution, for example the Great Pacific garbage patch. According to IUCN 14 million tons of plastics end up in ocean annually.
   c. Facilitates bio-magnification and bio-accumulation of pollutants.
6. SUP has played a major role in enhancing the extent and height of landfills. They are responsible for release of harmful toxins and subsequent pollution of adjacent soil and water bodies.
7. **Impact on health –** the micro-plastics developed from SUPs enters the food chain and then results into numerous health issues for animals and humans.

Alternatives to Single Use plastics are:

1. **Bamboo and other wooden sticks** for replacing ear buds with plastic sticks, plastic tooth-picks etc.
2. **Cotton flags** with bamboo sticks can replace plastic flags.
3. Stainless steel, ceramic, earthen, biodegradable cups, wooden forks and spoons in place of plastic cutlery items.
4. Local plant leaves, like that of **Palash**, can be used to replace single use plastic snacks plate.
5. **Cellophane/cellulose film** recycled paper, recycled cardboard etc. for wrapping or packaging films.
6. Promoting citizens to carry their own **cotton bags** when going to market for vegetables.

Certainly ban on the SUP is a welcome step towards curbing plastic pollution and associated hazard. However, what is more challenging in a country like India is ensuring its compliance. A coordinated effort of all the stakeholders, awareness generation, identification of alternatives and a mixture of incentives and penalties could convert this venture into a successful step toward sustainable development.

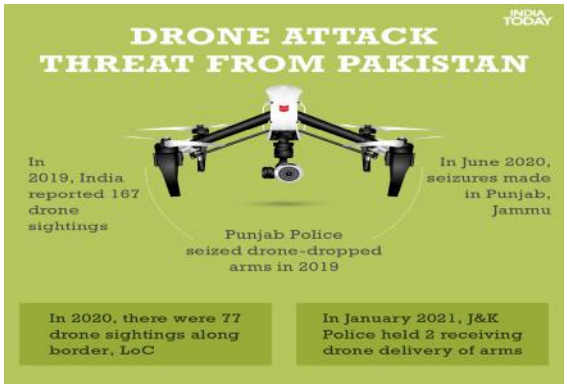
15. Use of drones to attack security establishment and critical infrastructures underlines an emerging threat as well as need to build capacity in this field. What are the security threats due to Unmanned Aerial Vehicles? Also enumerate the steps taken by the Government and suggest other defensive measures to counter such security challenges?

Ans.

The Drone strike at Indian Air Force Jammu base in June 2021followed by numerous sightings of drones at different places, like in Ratnuchak, Kaluchak military stations, and along the international borders is indicative of emerging security threats from drones.

Security risks associated with drones are:

1. May be used for **smuggling of arms,** ammunitions and drugs into India territory.
2. Capability to fly low and therefore **cannot be detected by RADAR.**
3. Use of drones to **remotely drop explosive devices** and thus carry attack on security establishment. Ex – attack on Jammu Air Force Base.
4. Use of drones by non-state actors like terrorist to **carry attack on critical infrastructure** like nuclear power station, fuel refinery etc.
5. Possible use for terrorist attacks in cities, for ex **delivery of weapons of Mass Destruction.**
6. May be used as **distractions along international border** to divert attention of security forces and facilitate infiltration.
7. Drones can also be used as a **tool of surveillance and espionage.**
8. Since drones are **cheap, remotely operated and easy to operate,** they become more potent to be abused by nefarious state and non-state actors like terrorists, organized crime network etc.



Steps taken by Government to reduce security threats from drones are:

1. Unmanned Aircraft System (UAS) Rules, 2020 to be supplemented by **Drone Regulation 2.0 to regulate** the production, import, trade, ownership and operation of UAS.
2. Adoption of **National Counter Rogue Drone Guidelines 2019** to provide appropriate measures depending on the vitality of asset being protected.
3. Anti-drone **Directed-Energy Weapon system** developed by DRDO having hardkill (destroying drone with lasers) and softkill (jamming drone's signal) capabilities.
4. Import of counter drone technology like **Sea Guardian Predator of USA, Israeli Smash 2000 Plus** etc.
5. Recently India's first indigenous Drone Defence Dome, called **Indrajaal,** is being developed by Hyderabad based Grene Robotics.
6. Indian Army is developing **Swarm technology** to engage and destroy multiple threats.

Future strategy to counter drone based security challenge includes:

1. Deployment of **drone detection technology** along the international border.
2. Promoting development of and adoption of **drone defence technology like Indrajaal** around Critical infrastructure.
3. Exploring reforms to make the existing **regulation-measures more stringent.**
4. Enhancing budgetary allocation on **defence procurements** so as to facilitate large scale indigenous technology like Directed Energy Weapon system (DRDO), Indrajaal etc. as well as import of such technologies.

Drone technology is at an evolving stage and is a double edged sword like any other technology. Therefore India needs to be one step ahead in regulating Drone ecosystem wherein commercial development of drones can be facilitated along with a check on mischievous use of drones.

16. Recently Union Government has partially withdrawn Armed Forces Special Powers Act (AFSPA), 1958 from parts of three North-Eastern States. Critically analyze the role of AFSPA in containing insurgency in North East and why is it opposed by most of the States and human rights groups? Also suggest some measure to improve counter-insurgency strategy.

Ans.

1950s witnessed the establishment of the Naga National Council which kicked of Naga Nationalist demand. Subsequently, armed movement started developing in Nagaland. Thus in order to curb the armed rebellion

in the State Parliament passed AFSPA. This act provided power to armed forces **to act with impunity** against the insurgents in the declared **"disturbed area".**

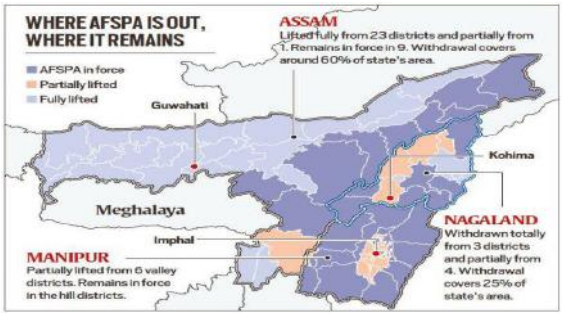
Noted killings in Nagaland forced the Government to form a high level panel to review AFSPA and its applicability. Recent decision of withdrawal is based on recommendation of the panel.

Significance of AFSPA in containing insurgency in North-eastern States:

1. Power to open fire against any person in contravention with the law allows security forces to defend themselves and the nation from armed insurgents.
2. It provided moral and mental support to the member of armed forces acting against insurgents in such a hostile environment.
3. Power to arrest individuals without warrant enabled them to maintain law & order and peace through preventive detention of alleged insurgents, based on credible Intel.
4. Many of the insurgents have local sympathizer who provide the **logistics support** as well as hiding place. Power to **search premise without warrant** aid in swift neutralization of such support.
5. According to Ministry of Home Affairs, AFSPA has helped in improving security situation in North Eastern region, which is cited as one of the factors for withdrawal of AFSPA.

Criticism and oppositions against AFSPA:

1. According to human rights group and activist like Irom Sharmila, the act provides absolute power to the security personnel without an iota of accountability.
2. According to the critic act is responsible for various atrocities like unjustified detention and harm to innocents, murder of innocents, rapes etc. and other human rights violation by security personnel.
3. According to Naga Nationalist leaders, use of force and AFSPA furthered the feeling of alienation of the Naga people.
4. In a writ petition filled in Supreme Court in 2012, it was alleged that impunity under AFSPA is responsible for 1528 fake encounters between 1979 and 2012.
5. States criticize the law as there are instances of Centre overruling the State's decision, such as the imposition of AFSPA in Tripura in 1972.
6. Some critics argue that it is a draconian law and deserves no place in a civilized democratic state, where citizens enjoy fundamental rights under Part III of the Constitution.



Measures to strengthen Counter-Insurgency strategy are:

1. To begin with development acts as best antidote to extremist forces. Thus need to promote Sustainable Development schemes in the region.
2. Promoting participative democracy and strengthening local self-government would give a sense of autonomy to the tribals of the region.
3. Accelerating peace talks and settlements with the insurgents groups through diplomacy and feelers. For ex – expediting Naga Peace talks.
4. Development model to be followed in North east should be inclusive so that the people have Agency, for ex – promotion to Eco-tourism.
5. Faster implementation of the connectivity projects, both national and international, in the region. This will aid development as well removal of sense of alienation.
6. Security co-operation like joint patrolling with neighboring countries like Myanmar, Bhutan etc. to destroy Launchpad and hideouts of insurgents.
7. Modernization of the security forces and use of technology like Comprehensive Integrated Border Management System to check infiltrations.

Thus, it has now been established that containing insurgency in north east requires a mixture of soft as well as hard measures. Therefore, even if the Government wishes to continue with the AFSPA, the government and security forces must abide by the guidelines set by the Supreme Court, Justice Jeevan Reddy Commission and NHRC.

17. A report of Lancet states that antimicrobial resistance is the leading cause of death across the world. Explaining the process of development of anti-microbial resistance, comment upon India's vulnerability in this regard.

Ans.

Antimicrobial Resistance (AMR) occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to medicines making infections harder to treat and increasing the risk of disease spread, severe illness and death.

AMR has emerged as one of the leading public health threats of the 21st century. A report of Lancet has found that 1.27 million people died in 2019 as a direct result of AMR, which is now a leading cause of death worldwide, higher than HIV/AIDS or malaria.

Process of development of anti-microbial resistance:

- AMR occurs naturally over time, usually through genetic changes. Antimicrobial resistant organisms are found in people, animals, food, plants and the environment (in water, soil and air).
- They can spread from person to person or between people and animals, including from food of animal origin.
- The main drivers of antimicrobial resistance include misuse and overuse of antimicrobials.

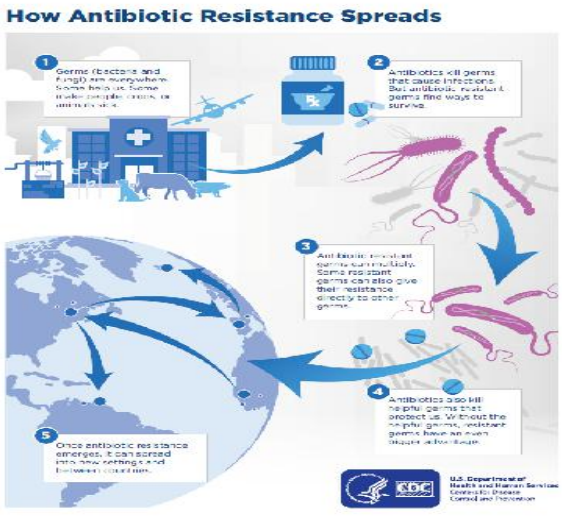
→ Lack of access to clean water, sanitation and hygiene (WASH) for both humans and animals.

→ Poor infection and disease prevention and control in health-care facilities and farms.

→ Poor access to quality, affordable medicines, vaccines and diagnostics.

→ Lack of awareness and knowledge about the use of antibiotics.

→ Lack of enforcement of legislation.



India's vulnerability to AMR:

- India has one of the highest rates of resistance to antimicrobial agents used both in humans and food animals.
- Specific socio-economic and cultural factors prevalent in India make the containment of resistance more challenging.
- Injudicious use of antimicrobials and inadequate treatment of waste waters are important drivers of AMR in India.
- The lack of sufficient research and paucity of data not only hampers the estimation of exact rise and extent of AMR in India but also prevents a nation-wide comparison.
- **Steps taken by government -**

→ AMR Surveillance and Research Network - to generate evidence and capture trends and patterns of drug resistant infections.

→ The National Action Plan on AMR focuses on One Health approach with the aim of involving various stakeholder ministries/departments.

→ ICMR has initiated Antibiotic Stewardship Program (AMSP) to control misuse and overuse of antibiotics in hospital wards and ICUs.

Conclusion:

AMR is a complex problem that requires a united multisectoral approach. The One Health approach brings together multiple sectors and stakeholders to communicate and work together in the design and implementation of programmes, policies, legislation and research to attain better public health outcomes.

18. India features as one of the severely drought impacted countries in the report 'Drought in Numbers 2022'. Define drought, what are its different types and consequences? Also discuss ways to mitigate drought like conditions.

Ans.

According to Indian Meteorological Department (IMD), around 68% of India is prone to drought in varying degrees. Since about 50% of the workforce is engaged in agricultural activity, drought like event can cause farm distress leading to reduced farmer's income, livelihood challenges for laborers, food scarcity, inflation etc.

What do you mean by drought?

1. To begin with there is no single, precise and universally acceptable definition of drought. This is so because of varying characteristics and impacts across different region.
2. In simple words it is the absence of water for a long period of time, at a place where it is considered abnormal as compared to its usual conditions.
3. According to IMD, drought is a consequence of the natural reduction in the amount of precipitation for a long period of time.
4. Specific declaration of drought by central government (IMD) and States is not uniform and has different criteria.

Different types of drought are:

1. **Meteorological drought** refers to an extended period of dry weather pattern. It occurs when

there is a prolonged time with less than average precipitation.

2. **Hydrological drought** refers to low water supply in our rivers, lakes, aquifers and other reservoirs. It occurs when water in reservoirs falls below a locally significant threshold.
3. **Agricultural drought** occurs when a water shortage significantly damages or destroys agricultural crops.
4. **Ecological drought** is the most recently defined type of drought and refers to widespread ecological damage caused by the lack of moisture.
5. **Socio-economic drought** refers to when a water shortage affects the supply and demand of drought commodities, such as water, food grains, fish etc.

Drought Type	Impact
Meteorological	Below-average rain or snowfall (precipitation)
Hydrological	Lack of precipitation decreases streamflow, lake/reservoir and ground water levels
Agricultural	Lack of soil moisture/ground water that affects crops/livestock
Socioeconomic	Food/water supply does not meet demands due to lack of water
Ecological	Lack of precipitation impacts native plant/animal species

Consequences of drought are:

1. **Environmental impacts:**
   a. Lower surface and subterranean water level.
   b. Low flow levels affecting aquatic life.
   c. Drying of wetlands
   d. Increased frequency of forest fires.
   e. Loss of biodiversity
2. **Economic impact:**
   a. Lower agricultural productivity and production.
   b. High food inflation.
   c. Lower energy generation in hydro-power plants.
   d. Adversely affects water related tourism and associated revenue.
   e. Reduced water supply to industries.
3. **Social costs:**
   a. Health issues due to weather phenomenon like heat waves.
   b. May reduce municipal water supply.
   c. High food inflation and reduced food availability may lead to hunger.
   d. Reduced farm income and associated issues like rural poverty, distress migration, farmers' suicide etc.

Ways to mitigate drought like condition are:

1. **Assured and efficient irrigation measures:** Irrigation is the best drought proofing measure. Use of technology like drip irrigation, sprinkler irrigation can improve efficiency.
2. Development of **Integrated Watershed Management** especially in drought prone areas and deserts.
3. Promotion of proper **agro climatic planning of crops**, and other sustainable practices like crop rotation, mulching etc.
4. Systemic and technical measures like **Early warning system, drought monitoring,** integrated and coordinated management of reservoir level as per monsoon prediction etc.
5. Development of comprehensive regional **drought management plan** as per NDMA guidelines.
6. Promotion of research and development for development of drought resistant variety of seeds.

This recent report of UNCCD reporting higher frequency as well as intensity of droughts being experienced in India is indicative of the adverse consequences of the climate change. Thus adopting appropriate mitigation and adoption measure against drought is critical for India's socio-economic security.

19. Urban fires especially in commercial spaces and public buildings like hospitals pose threat not only to the life but also to the economy. Examine the causes for urban fires? What are existing provisions for Fire Safety Management in India and also give suggestions to control urban fires in future?

Ans.

Recent tragic fire Incident like in Mundaka (Delhi – May 2022), fire accidents in numerous hospitals during pandemic has once again compelled to discuss this man-made disaster of urban fires. According to NCRB data in 2019 alone 330 people died in commercial building fires and an alarming 6329 in residential or dwelling buildings.

Causes of urban fires include:

1. **Faulty electrical system** like loose wires, overloaded plugs, old and outdated equipment etc. is amongst leading cause of fires, also one of the reported causes in hospital fire during

pandemic.

2. Non adherence to **National Building Code norms** in the building construction, for ex – large scale false ceiling in high rise building in violation of code.
3. Presence of **flammable and combustible materials** is a dangerous hazard as they aid and accelerate fire. For ex – Delhi Anaj Mandi fire accident, Mundaka Industrial Complex fire.
4. Illegal constructions, unplanned infrastructure and poorly ventilated workplaces increases vulnerability to fire related hazards.
5. **Human error** due to poorly trained staffs may make catastrophic mistakes leading to fire. For ex – burning food in kitchen leading to fire, overuse of equipment leading overheat and catching fire.
6. Operating commercial places without due **fire clearance, manufacturing unit license and NOCs** from concerned authorities.
7. No **regular fire safety audit** by commercial establishment either due to ignorance, cost factor, administrative lapses or in connivance with administration. For ex – reported in Hotel fire incident in Delhi's Tagore garden.
8. Other factors like congestion in the building and adjoining area, lack of fire exits in buildings with single stair case etc. increases the vulnerability to fire hazards.
9. **Lack of awareness and training** vis-à-vis use of fire safety equipment and fire safety practices and drills among citizens.

Provisions related to existing fire safety management in India are:

1. **Constitutional provision** –
   a. Fire safety is a State subject under Schedule 7.
   b. It has been included as **Municipal function** in the 12th Schedule.
2. **National Building Code(NBC) of India, 2016 –**
   a. It is a recommendatory document published by Bureau of Indian Standards.
   b. Part 4 is titled 'Fire and life safety' covers areas of fire prevention and life safety standards to be included in building design.
   c. States have been asked to incorporate the provisions into their building bye laws.
3. **The Model Building Bye Laws, 2016** –
   a. States the regulatory mechanism and engineering parameters to keep in mind before starting any construction project in India.
   b. Chief Fire Officer to be nodal officer for **fire related clearances.**
4. Guidelines by **National Disaster Management Authority –**
   a. Stipulated requirements for fire safety in public buildings, including hospitals.
   b. Incorporated elements of **NB**
   c. Guidelines on maintaining minimum open safety space, protected exit mechanisms, dedicated staircase etc.
   d. Also provides for **fire safety drills.**
5. There are State specific laws and bye laws for fire safety.

Suggestions to reduce urban fires and associated vulnerability:

1. Relevant officers should be made accountable for any lapses on subjects under her/his jurisdiction. This will enhance compliance of various fire safety guidelines.
2. Provision for Regular Fire Safety Audit as a pre-condition for renewal of business licenses.
3. Enactment of a Fire Safety Act in every state and adoption of provisions provided in 'Model Bill on Maintenance of Fire Emergency Services 2019'.
4. Regular mock drills and safety awareness exercise should be carried out by NDMA and the fire services.
5. Adoption of international best practices vis-à-vis fire safety equipment and practices of commercial establishment.
6. Provision of third party fire safety audit and associated penalty in case of fire safety lapses.
7. Increased financial support to fire safety department for adequate procurement of fire safety gears and modernization of fire services. For ex – there are only 2087 fire stations as against required strength of 8599 (Ministry of Home Affairs).

Thus there is an urgent requirement of conscious planning, robust and dedicated institutional mechanism and coordinated approach by all the concerned stakeholders to make Indian urban centers fire proof.

MCQs Based on Current Affairs

1. **With reference to the recently held Commonwealth Games, consider the following statements:**

1. India ranked fourth in medals tally.
2. India won a total of 61 medals, including 22 Gold, 16 Silver and 23 Bronze.

Which of the above statements is/are correct?

(a) only 1
(b) only 2
(c) 1 and 2
(d) Neither 1, nor 2

Answer: C

2. **With reference to the newly elected Vice President (Shri Jagdeep Dhankhar), consider the following statements:**

1. He was born on May 18, 1951 in Punjab.
2. He has been a Lok Sabha MP, Governor and MLA.

Which of the above statements is/are correct?

(a) 1 only
(b) 2 only
(c) 1 and 2
(d) Neither 1, nor 2

Answer: B

3. **Which countries will participate in the Vostok Military Exercise-2022 to be held in Russia from 30 August to 5 September 2022?**

(a) Russia, China and India
(b) Russia, China and America
(c) India, America and China
(d) Russia, Australia and India

Answer: A

4. **In which state of India, Asia's largest Compressed Bio-Gas Plant has started commercial production recently?**

(a) Rajasthan
(b) Punjab
(c) Haryana
(d) Uatter Pradesh

Answer: B

5. **Recently, India's first E-Double Decker Air-Conditioned Bus has been started in which city?**

(a) Delhi
(b) Kolkata
(c) Mumbai
(d) Lucknow

Answer: C

6. **Recently, Indian Railways has conducted the trial of the biggest freight train 'SUPER VASUKI' between which cities?**

(a) Korba and Nagpur
(b) Raipur and Pune
(c) Bhilai and Navi Mumbai
(d) Vilaspur and Nashik

Answer: A

7. **Recently, who among the following was in the news as the 'Daughter of the Hills'?**

(a) Rani Gaidinliu
(b) Rani Chennamma
(c) Velu Nachiyar
(d) Phoolo Murmu

Answer: A

8. **Recently, African Swine Fever infection has been found in which state of India?**

(a) Odisha
(b) Chhattisgarh
(c) Tamil Nadu
(d) Kerala

Answer: D

9. **Which state has become the first state in the country to be certified 'Har Ghar Jal'under the Jal Jeevan Mission?**

(a) Maharashtra
(b) Goa
(c) Kerala
(d) Telangana

Answer: B

10. **" Katchal Island" is a part of which island group?**

(a) Lakshadweep group
(b) Andaman Islands
(c) Nicobar Islands
(d) Cannanore Islands

Answer: C

11. **With reference to 'Blue Bonds', consider the following statements?**

1. The world's first blue bond was issued by the country of Seychelles
2. This bond is related to marine and fisheries projects

Which of the above statements is/are correct?

(a) 1 only
(b) 2 only
(c) 1 and 2
(d) neither 1, nor 2

Answer: C

12. Who has launched the National Intellectual Property Awareness Mission?

(a) Ministry of Commerce and Industry
(b) Ministry of Finance
(c) Ministry of Home Affairs
(d) NITI Aayog

Answer: A

13. India and Bangladesh are going to sign an agreement on which river?

(a) Kushiara River
(b) Meghna River
(c) Teesta River
(d) Brahmaputra River

Answer: A

14. With reference to ISRO's Small Satellite Launch Vehicle (SSLV), consider the following statements:

1. It is a three-stage launch vehicle with three solid propulsion systems.
2. It can launch a satellite of 500 kg mass into 'Low Earth Orbit (LEO)' up to 500 km.

Which of the above statements is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1, nor 2

Answer: C

15. Recently, which country has decided to attend the meeting of the American-led semiconductor alliance "Chip-4"?

(a) Japan
(b) South Korea
(c) Taiwan
(d) China

Answer: B

16. Match List-1 with List-2 :

List-1 (Date)	List-2 (Important Days)
A. 10 August	1. World Lion Day
B. 20 August	2. Harmony Day
C. 26 August	3. Women's Equality Day
D. 30 August	4. Small Industries Day

Code:

	A	B	C	D
(a)	1	2	3	4
(b)	1	2	4	3
(c)	3	4	1	2
(d)	4	3	1	2

Answer: A

17. Recently, which Asian country has been suspended from international football by FIFA?

(a) India
(b) Sri Lanka
(c) Pakistan
(d) Japan

Answer: A

18. Which of the following African countries does not touch the border of the Red Sea?

1. Ethiopia, 2. Sudan, 3. Egypt, 4. Djibouti, 5. Chad, 6. South Sudan

(a) 1 and 2 only
(b) 1, 5 and 6
(c) 1 and 6 only
(d) 1, 4 and 5

Answer: B

19. Recently, the Prime Minister in his Independence Day speech has set a target to make India developed by which year?

(a) By the year 2047
(b) By the year 2048
(c) By the year 2045
(d) By the year 2046

Answer: A

20. With reference to 'Sweet Revolution', consider the following statements:

1. This revolution is related to beekeeping and honey production.
2. Currently, more than 80 per cent of India's natural honey is exported to the United States.

Which of the above statements is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) neither 1, nor 2

Answer: C

Vijaya Lakshmi Pandit

Famously known for being the first woman president of the United Nations General Assembly, Vijaya Lakshmi Pandit, the younger sister of Prime Minister Jawaharlal Nehru, scaled great heights and left behind a legacy of her own.

She took part in the country's freedom struggle, served as a diplomat before carving out a political career and contesting for the President's post.

Early years, the pre-Independence era

Born on August 18, 1900 to Motilal Nehru and Swarup Rani Nehru in Allahabad (Prayagraj), Vijay Lakshmi Pandit married Ranjit Sitaram Pandit in 1921.

In 1937, she won the elections to the provincial legislature of the United Provinces. During this time, she was made the minister of local self-government and public health, making her the first woman in pre-independent India to hold a cabinet position.

She, however, resigned along with her colleagues in the Congress in 1939 to protest against the involuntary participation of British India in the Second World War.

She was arrested and imprisoned thrice during the freedom struggle — in 1932-1933, 1940, and 1942-1943. She was the president of the All-India Women's Conference between 1941 and 1943 and mobilised opinion in favour of gender rights and women's welfare.

In 1942, when the Quit India movement was at its peak, both Vijay Lakshmi and her husband were arrested by the British. Her husband died in January 1944.

After her release from prison, Vijay Lakshmi led the Indian delegation to the Pacific Relations Conference in the United States in 1945, along with other leaders of the freedom struggle such as H.N. Kunzru and B. Shiva Rao. The conference was held in Virginia, to discuss and debate the possible shape of the post-Second World War.

At the conference on the Charter of the United Nations in San Francisco in 1945, Pandit made a case for colonies like India as an unofficial delegate. She referred to the British Indian representatives as 'British stooges' who had no idea about the sufferings of the colonies. After her return to India, she became a member of the Constituent Assembly in 1946 from the United Provinces.

Diplomat & president of UNGA

Vijaya Pandit was the head of the Indian delegation to the United Nations in 1946-48, and again in 1952-53. She was appointed as ambassador to the Soviet Union in 1947, where she served till 1949, upholding India's interests in the early years of the volatile Cold War era. From 1949 to 1951, she was India's ambassador to the United States of America and Mexico.

In 1953, she became the first woman to preside over the United Nations General Assembly. She headed the eighth session of the General Assembly.

Between 1954 and 1961, she served as India's high commissioner to the United Kingdom, as well as the ambassador to Ireland. She played a major role in transforming India-Britain relations in the early decades of India's independence, especially in the immediate aftermath of the nationalisation of the Suez Canal and the crisis that followed in 1956. She had also been India's ambassador to Spain from 1958 to 1961.

After her return to India in the early 1960s, she became the governor of Maharashtra for a brief period from 1962 to 1964.

Political career

After the death of her brother and India's first prime minister, Jawaharlal Nehru in 1964, Vijay Lakshmi fought the Lok Sabha elections from Nehru's erstwhile constituency of Phulpur and became a Member of Parliament between 1964 and 1968.

Although she left politics in the late 1960s, her commitment to freedom pushed her back into the Indian polity in the 1970s. She protested fiercely against her niece and then prime minister, Indira Gandhi, when she imposed an emergency in 1975.

With the sudden demise of Fakhruddin Ali Ahmed, the fifth President of India, Vijaya Pandit entered the electoral fray for the post. Although Neelam Sanjiva Reddy was eventually elected, she travelled across the length and breadth of the country addressing rallies and interacting with people.

In the late 1970s, she also served as India's representative to the United Nations Human Rights Commission.

She died on 1 December 1990.

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