

## 1. NATIONAL

### 1.1 Decriminalization of Politics

- Supreme Court has asked the Centre whether it was “willing” to favor a lifetime ban on contesting elections for people convicted of offences.
- Government has rejected the idea of a lifetime ban on convicted persons contesting elections or becoming an office-bearer of a political party citing reason that MPs and MLAs were not bound by specific “service conditions”.
- The government had maintained that disqualification under the Representation of the People Act of 1951 for the period of prison sentence and six years thereafter was enough for legislators.
- Supreme Court also remarked that the Allahabad High Court misinterpreted the Top Court's order by not creating Magisterial Courts for trying cases against MPs/MLAs and by designating only Sessions Courts for such purposes.

### **Causes of Criminalization of Politics**

#### **Success rate of Politician:**

- Political parties give tickets to candidates on the basis of their ability to win. The chances of winning for a candidate with declared criminal cases in the Lok Sabha 2019 was 15.5 percent whereas for a candidate with a clean background, it was just 4.7 percent.

#### **Use of Money and Muscle Power:**

- Success in elections is largely dependent on the amount of funding it receives. Candidates with criminal records often have large hordes of cash that ensures their victory in elections.
- Out of the 542 MPs analyzed during Lok Sabha elections in 2014, 185 (34 percent) winners had declared criminal cases against themselves while during Lok Sabha elections in 2009, 30 percent had declared criminal cases against themselves.

#### **Corruption and Red Tapism:**

- Corruption and red-tapism in the bureaucracy and government have led to the development of a nexus between bureaucrats, politicians, police officers, criminals, and the corporates. All these ultimately aid the people with a criminal background to enter politics.

#### **Weak Rule of Law and Increasing Vote Bank Politics:**

- Weak rule of law has reduced the belief of people on the police and bureaucracy.
- The social divisions on the basis of caste and religion etc., and the inability of authorities to act promptly in case of social tensions have reduced the faith of people on democratic institutions.
- This creates a breeding ground for the strongmen to gain popularity and hold on the people of their own community.

**Lack of intra-party democracy:**

- In India, there is a lack of intra-party democracy, and the top leadership takes the decision on the candidates contesting elections. Thus politicians with criminal records are able to escape the scrutiny of the ground level workers and organization of the party.

**Poor Conviction Rate:**

- In India, the levels of conviction of MPs and MLAs with criminal records have been very low. Low level of convictions and the delays in the trials does not deter the political party to give tickets to candidates with a criminal background.

**Toothless Election Commission:**

- Election commission asks for the details of the property, cases pending in the courts, and educational qualifications from the candidates filing the nomination papers and also election expenditure of candidates.
- However, the candidates often give wrong details and the Election commission is unable to take any action against them.

**Measures to Curb Criminalization of Politics:**

- **Section 125A of the Representation of Peoples Act:** The Act should be amended, in order to provide more stringent punishment for concealing or providing wrong information in Form 26 under the Conduct of Election Rules, 1961 to a minimum term of two years' imprisonment.

**Law Commission 244th Report recommended:**

- Completion of trials against a sitting MP and MLA within one year.
- With the retroactive application, all persons with pending criminal charges that are punishable by more than 5 years to be disqualified subject to certain safeguards.
- Punishment of 2 years for filing a false affidavit under section 125A. A conviction under this should be made a ground for disqualification.

**2nd Administrative Reforms Commission:**

- Recommended to amend the Section 8 of Representation of People Act, 1951 for disqualifying persons who are facing charges related to heinous crimes and corruption, provided that charges are framed 6 months before the election.
- Bringing greater transparency in campaign financing is going to make it less attractive for political parties to involve gangsters.

**Supreme Court Landmark Judgements:**

- Union of India vs. Association for Democratic Reforms and Anr case, 2002: Supreme Court ruled that every candidate contesting election has to declare his criminal and financial records along with educational qualification.
- Ramesh Dalal vs. Union of India case, 2005: Supreme Court ruled that a sitting Member of Parliament or any Member of state legislative assembly will be disqualified from contesting the election if convicted and sentenced for imprisonment for two years or more by a court of law.
- Lily Thomas vs. Union of India case, 2013: Supreme court declared the Section 8(4) of the Representation of People Act, 1951 as unconstitutional that allowed the convicted MLAs and MPs to continue in office till the appeal against those convictions is disposed of.
- Accordingly, MLAs and MPs would be disqualified immediately if convicted and sentenced for two or more years. However, in 2017, the union government informed the Supreme Court that if the appellate court stays the conviction, the MLAs and MPs would be allowed to continue.

**Way forward:**

- The criminalization of politics and corruption hits the roots of democracy. There should be wide publicity of the candidates with criminal records, who are contesting in an election and the political parties that give them support.
- There is a need to bring greater transparency in the campaign financing of political parties. The political parties must be brought under the Right to Information Act to improve their transparency and accountability.
- The Parliament should enact a law dealing with increased criminalization of politics. Further, of courts dealing with sitting legislators would be crucial for the decriminalization of politics.
- The suggestions of Law Commission, Supreme Court and Election Commission needs to be implemented for cleansing the Parliament and state legislatures from people with a criminal background.

**1.2 National Family Health Survey (NFHS-5)****Frame of reference**

Union Health Ministry releases NFHS-5 Phase II Findings

**About National Family Health Survey (NFHS):**

- The National Family Health Survey (NFHS) is a large-scale, multi-round survey conducted in a representative sample of households throughout India.
- The NFHS is a collaborative project of the International Institute for Population Sciences (IIPS), Mumbai, India; ICF, Calverton, Maryland, USA and the East-West Centre, Honolulu, Hawaii, USA.

- The Ministry of Health and Family Welfare (MOHFW), Government of India, designated IIPS as the nodal agency, responsible for providing coordination and technical guidance for the NFHS.
- NFHS was funded by the United States Agency for International Development (USAID) with supplementary support from United Nations Children's Fund (UNICEF). IIPS collaborated with a number of Field Organizations (FO) for survey implementation. Each FO was responsible for conducting survey activities in one or more states covered by the NFHS. Technical assistance for the NFHS was provided by ICF and the East-West Centre.

### **The history of NFHS**

- **The First National Family Health Survey (NFHS-1)** was conducted in 1992-93. The survey collected extensive information on population, health, and nutrition, with an emphasis on women and young children.
- **The Second National Family Health Survey (NFHS-2)** was conducted in 1998-99 in all 26 states of India with added features on the quality of health and family planning services, domestic violence, reproductive health, anemia, the nutrition of women, and the status of women. The results of the survey are currently being published.
- **The Third National Family Health Survey (NFHS-3)** was carried out in 2005-2006. Eighteen Research Organizations including five Population Research Centres carried out the survey in 29 states of India.
- **The NFHS-4 (2015-16)** surveyed 572,000 households in 640 districts of India (as per the 2011 Census). The survey collected information on the socio-economic characteristics of households, education, fertility, family planning, infant and child mortality, maternal and child health, reproductive health, sexual behaviour, marriage, domestic violence, attitudes to gender roles, HIV/AIDS status, nutrition, water, sanitation, and health services and insurance. The survey also provides vital estimates of the prevalence of malnutrition, anaemia, hypertension and high blood sugar.

### **The key results from the State/UT factsheets are as follows:**

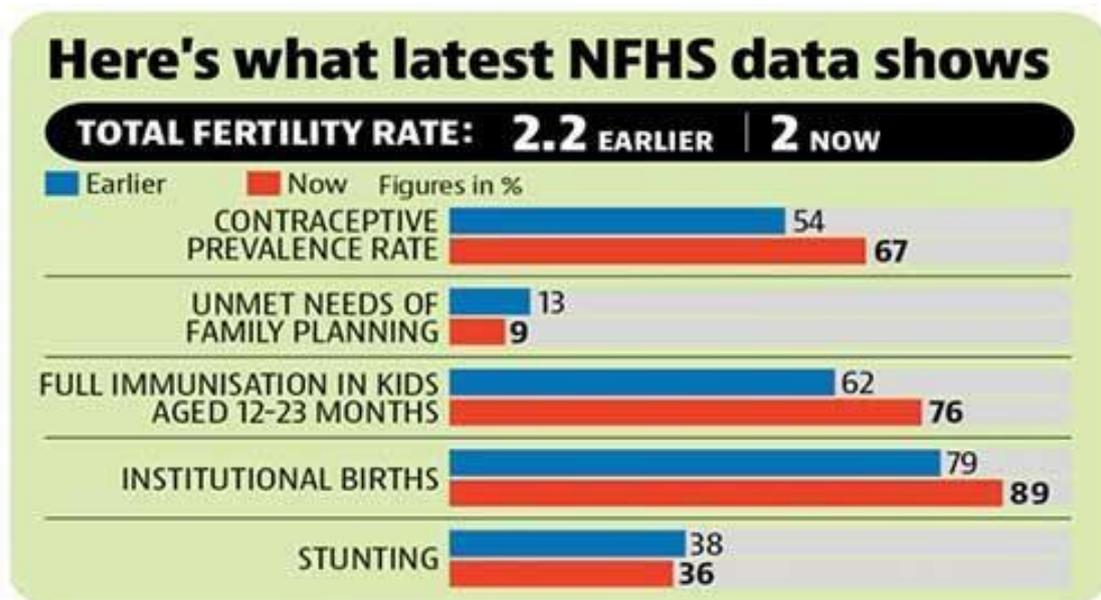
- The Total Fertility Rates (TFR) has further declined since NFHS-4 in almost all the Phase-1 States and UTs. The replacement level of fertility (2.1) has been achieved in 19 out of the 22 States/UTs and only 3 states viz. Manipur (2.2), Meghalaya (2.9) and Bihar (3.0) have TFR above replacement levels now.
- Overall Contraceptive Prevalence Rate (CPR) has increased substantially in most States/UTs and it is the highest in HP and WB (74%). Use of modern methods of contraception has also increased in almost all States/UTs.
- Unmet needs of family planning have witnessed a declining trend in most of the Phase-1 States/UTs. The unmet need for spacing which remained a major issue in India in the past has come down to less than 10 per cent in all the States except Meghalaya and Mizoram.

- Full immunization drive among children aged 12-23 months has recorded substantial improvement across States/UTs/districts. More than two-third of children are fully immunized in all the States and UTs except Nagaland, Meghalaya and Assam. In almost three-fourths of districts, 70% or more children aged 12-23 months are fully immunized against childhood diseases.
- The NFHS 5 that started in 2019, however, was stalled amid the COVID-19 associated lockdown. Eventually, the NFHS-5 findings were released in December 2020. Based on these findings, the ministry has set up a technical expert group to improve indicators pertaining to Malnutrition, Stunting, Anaemia, and C-Section.

**The recent NFHS 5 survey key points:**

- The Total Fertility Rates (TFR), an average number of children per woman has further declined from 2.2 to 2.0 at the national level and all 14 States/UT's ranging from 1.4 in Chandigarh to 2.4 in Uttar Pradesh. All Phase-II States have achieved replacement level of fertility (2.1) except Madhya Pradesh, Rajasthan, Jharkhand and Uttar Pradesh.
- Overall Contraceptive Prevalence Rate (CPR) has increased substantially from 54% to 67% at all-India level and in almost all Phase-II States/UTs with an exception of Punjab. Use of modern methods of contraceptives has also increased in almost all States/UTs.
- Unmet needs of family Planning have witnessed a significant decline from 13 percent to 9 per cent at all-India level and in most of the Phase-II States/UTs. The unmet need for spacing which remained a major issue in India in the past has come down to less than 10 per cent in all the States except Jharkhand (12%), Arunachal Pradesh (13%) and Uttar Pradesh(13%).
- Full immunization drive among children aged 12-23 months has recorded substantial improvement from 62 per cent to 76 percent at all-India level. 11 out of 14 States/UTs has more than three-fourth of children aged 12-23 months with fully immunization and it is highest (90%) for Odisha.
- On comparing NFHS-4 and NFHS-5 data, the increase in full immunization coverage is observed to be expeditious in many states and UTs; more than 50 percent of Phase-II States/ UTs are sharing over 10 percentage points during the short span of 4 years. This can be attributed to the flagship initiative of Mission Indradhanush launched by the government since 2015.
- There is an increase from 51 per cent to 58 percent of women receiving the recommended four or more ANC visits by health providers at all-India level.
- Also, all the Phase-II States/UTs have shown improvement except Punjab between 2015-16 to 2019-20.
- Institutional births have increased substantially from 79 per cent to 89 percent at all-India Level. Institutional delivery is 100 percent in Puducherry and Tamil Nadu and more than 90 percent in 7 States/UTs out of 12 Phase II States/UTs.

- Along with an increase in institutional births, there has also been a substantial increase in C- section deliveries in many States/UTs especially in private health facilities.
- Child Nutrition indicators show a slight improvement at all-India level as Stunting has declined from 38 per cent to 36 per cent, wasting from 21 per cent to 19 per cent and underweight from 36 per cent to 32 percent at all India level. In all phase-II States/UTs the situation has improved in respect of child nutrition but the change is not significant as drastic changes in respect of these indicators are unlikely in a short span period.
- Anaemia among children and women continues to be a cause of concern. More than half of the children and women (including pregnant women) are anaemic in all the phase-II States/UTs and all-India level compared to NFHS4, in spite of substantial increase in the composition of iron folic acid (IFA) tablets by pregnant women for 180 days or more.
- Exclusive breastfeeding to children under age 6 months has shown an improvement in all-India level from 55 percent in 2015-16 to 64 percent in 2019-21. All the phase-II States/UTs are also showing considerable progress.
- Women's empowerment indicators portray considerable improvement at all India levels and across all the phase-II States/UTs. Significant progress has been recorded between NFHS-4 and NFHS-5 in regard to women operating bank accounts from 53 percent to 79 percent at all-India level. For instance, in the case of Madhya Pradesh the increase was to the tune of 37 percentage points from 37 per cent to 75 per cent. More than 70 percent of women in every state and UTs in the second phase have operational bank accounts



### Major issues in Indian health sector:

#### 1. Neglect of Rural Population:

A serious drawback of India's health service is the neglect of rural masses. It is largely a service based on urban hospitals. Although, there are large no. of PHC's and rural hospitals yet the urban bias is visible.

According to health information 31.5% of hospitals and 16% hospital beds are situated in rural areas where 75% of total population resides.

Moreover, the doctors are unwilling to serve in rural areas. Instead of evolving a health system dependent on paramedics (like bare-footed doctors in China) to strengthen the periphery. India has evolved one dependent on doctors giving it a top-heavy character.

## **2. Emphasis on Culture Method:**

The health system of India depends almost on imported western models. It has no roots in the culture and tradition of the people. It is mostly a service based on urban hospitals. This has been at the cost of providing comprehensive primary health care to all. Otherwise speaking, it has completely neglected preventive, promotive, rehabilitative and public health measures.

## **3. Inadequate Outlay for Health:**

According to the National Health Policy 2002, the Govt. contribution to the health sector constitutes only 0.9 percent of the GDP. This is quite insufficient. In India, public expenditure on health is 17.3% of the total health expenditure while in China, the same is 24.9% and in Sri Lanka and USA, the same is 45.4 and 44.1 respectively. This is the main cause of low health standards in the country.

## **4. Social Inequality:**

The growth of health facilities has been highly imbalanced in India. Rural, hilly and remote areas of the country are under served while in urban areas and cities, health facilities are well developed. The SC/ST and the poor people are far away from modern health service.

## **5. Shortage of Medical Personnel:**

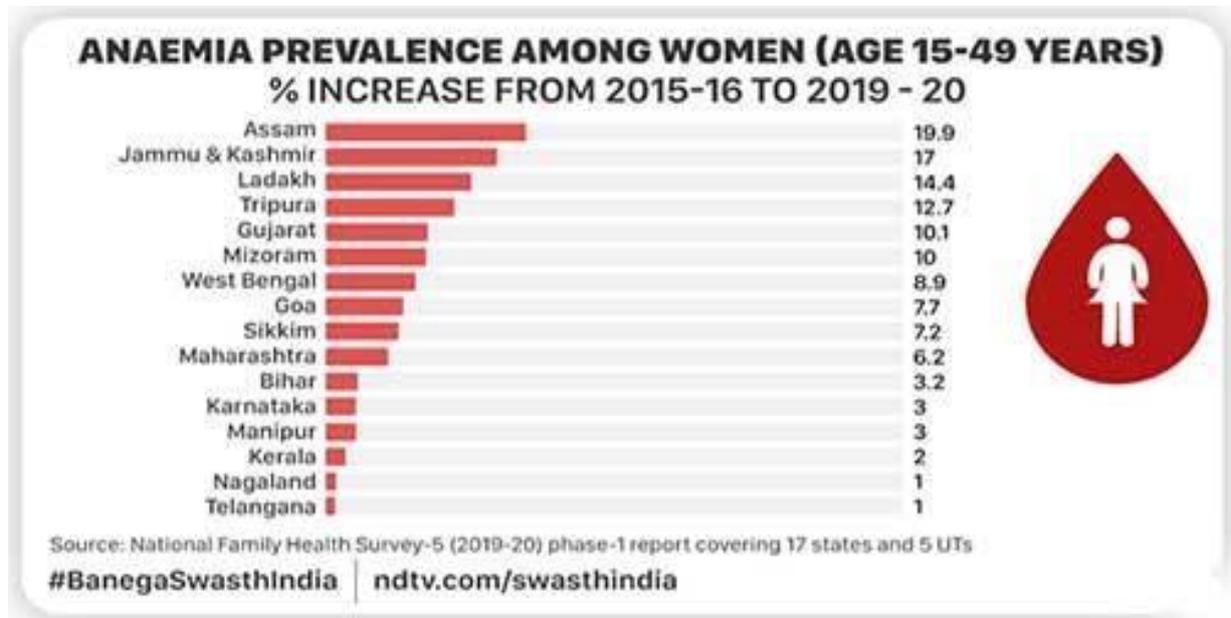
In India shortage of medical personnel like doctors, nurses etc. is a basic problem in the health sector. In 1999-2000, while there were only 5.5 doctors per 10,000 population in India, the same is 25 in the USA and 20 in China. Similarly, the number of hospitals and dispensaries is insufficient in comparison to our vast population.

## **6. Medical Research:**

Medical research in the country needs to be focused on drugs and vaccines for tropical diseases which are normally neglected by international pharmaceutical companies on account of their limited profitability potential. The National Health Policy 2002 suggests allocating more funds to boost medical research in this direction.

## **7. Expensive Health Service:**

In India, health services, especially allopathic, are quite expensive. It hits the common man hard. Prices of various essential drugs have gone up. Therefore, more emphasis should be given to the alternative systems of medicine. Ayurveda, Unani and Homeopathy systems are less costly and will serve the common man in a better way.



### Way forward

- Encouraging innovation and manufacturing (of medical devices) within the country.
- Spending more on medical research.
- Improving medical, nursing and technical education as well as up-skilling of existing manpower.
- International collaborations.

### 1.3 Civilizing Civil Society

#### Frame of reference-

While addressing the passing out parade of the 73rd batch of IPS probationers at the Sardar Vallabhbhai Patel National Police Academy in Hyderabad, NSA Ajit Doval said that civil society, the new frontiers of war, and can be manipulated to hurt a nation's interests.

#### Introduction

According to the World Bank: "Civil society refers to a wide array of organizations: community groups, non-governmental organizations [NGOs], labour unions, indigenous groups, charitable organizations, faith-based organizations, professional associations, and foundations."

When mobilized, civil society sometimes called the "third sector" (after government and commerce) - has the power to influence the actions of elected policy-makers and businesses. But the nature of civil society - what it is and what it does - is evolving, in response to both technological developments and more nuanced changes within societies.

#### Role of Civil Society in Transforming Nations

- Civil society organizations give voice to the disorganized, voiceless segments of society. They raise awareness of social and environmental issues and advocate for change, empowering local communities to develop new programs to meet their own needs.

- Involvement of civil society in the Swachha Bharat Mission has made it a huge success. Role of Swacchagrahis has a visible impact in changing the behavior of people to stop open defecation practices in rural areas. Similarly, Swachha iconic places and Swachhata Pakwada are the instances of roles of civil society in bringing out transformation the society.
- The various NGOs are working for the conservation of nature and biodiversity which are quite essential for a clean and healthy environment. The civil society movements like the Chipko, Apiko movements of the past for the protection of tree to the present day Aravali Bachao and Narmada Bachao Abhiyan try to achieve a similar objective
- Civil society in Israel is promoting or inhibiting democratic consolidation. Mobilization is broad, but it is more ritualistic than real. Civil society does not play a significant role in enhancing tolerance and mutual respect. Challenging of the authorities is limited. It is the “bad” civil society, allied with the government coalition and mainstream ideology that gains visibility, significance, and influence in public life.
- Civil society in Japan provide social services directly in the community, they cooperate with local government through both subcontracting and unpaid collaboration, they encourage political participation by demand articulation as well as endorsements and campaigning.
- Indonesia has been a crucial example for exhibiting role of civil society in strengthening democracy through overthrowing a 32-year authoritarian regime. It shows how a civil society may render an authoritarian regime irrelevant and promote democracy for just and more accountable governance

### **Developing Positive Attitude and Integrity in Civil society**

- Due to the influence of society, we all develop positive, negative, and neutral attitudes towards many things. If our negative or neutral attitude is undesirable in modern society, it should be changed to a positive attitude.
- Advertisement can change attitude of a person to make him like/buy your product.
- Information-education-communication (IEC) components must be included in all Government schemes and policies for changing attitude of people.
- By developing ‘tolerant/inclusive’ attitude towards other castes and religions.

### **Civil Society Represents the National Conscience and Character**

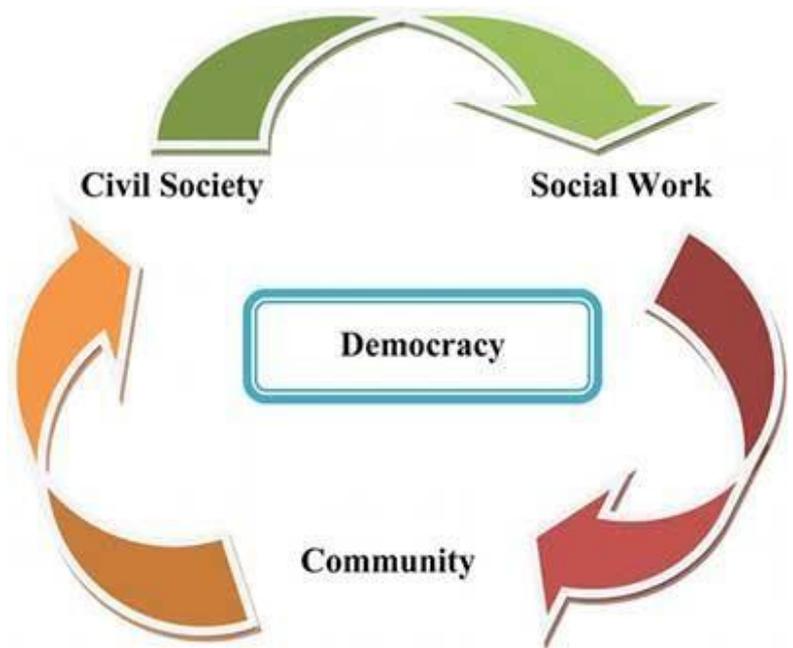
- The high point of connection between civil society and democracy included the emergence in the 1970s in western Europe of sustained social movements rooted in civil society, and in the 1980s in the east the dissident networks building up to the 'Velvet Revolution' of Wenceslas Square in Prague and the fall of the Berlin Wall.
- A common feature of both these contexts was a conception of civil society not simply as a 'sphere' but as a source of power for democratic change. There are signs that we are seeing a revival - in new, more

international forms - of this awareness of civil society as a source of power, including power to bring about political change.

- Civil and political rights are a class of rights that protect individuals' freedom from infringement by governments, social organizations and private individuals, and which ensure one's ability to participate in the civil and political life of the society and state without discrimination or repression.

### **Civil Society is lynchpin In a Democracy (Must be aware, agile and alert)**

- One of the important contributions of civil society in the arena of democracy is its mass awareness activity. An effective democracy requires informed citizens to be aware about their governance system.
- A civil society organization is capable of conscientizing masses through various means like publication of handbooks, information booklets, organizing seminar and workshops, spreading information through curricular materials in educational institutions, advocating certain policy issues through mass media, and so on.
- The Civil society educates the people about their rights and responsibilities, consequences of certain policies on their lives, and strategy of government authorities behind any agreement or treaty.
- It also plays a role of making the elite and general masses more committed to democracy through disseminating democratic principles and ideas.
- They encourage masses to involve them in political affairs through exercise of their franchise and associational activities.



### **Manipulation of Civil Society through Radicalization, Fake Propaganda etc.**

- Manipulation is the exercise of harmful influence over others. The person manipulating called the manipulator seeks to create an imbalance of power, and take advantage of a victim to get power, control, benefits, and/or privileges at the expense of the victim.
- Socio-economic factors like poverty, social exclusion, marginalization and discrimination, limited education and employment etc. is a cause of growing radicalization. The poor and illiterate provides a fertile ground for radical agencies for recruitment.
- Social media provides virtual participation and a platform for like-minded extremist views, accelerating the process of radicalization through fake news.

- Rising religious intolerance, hate crimes, mob lynching and further leading to radicalization. Feeling hatred and intolerance, against a section of people are turning them towards radicalization
- Some political parties for their interest manipulate certain section of society to fulfil their interest.

### **Civil society need to be carefully manoeuvred in the age social media revolution.**

#### **Positive and negative impact of social media**

##### **Positive impact of social media**

- Enhance connectivity or network
- Convenient communication
- Opportunity to share feelings and opinions
- Enhance education
- Fostering Business growth

##### **Negative impact of social media**

- Fake profile and relationship
- Spreading of rumor
- Addiction to social media
- Anxiety and depression
- Cyber bullying
- Cultural aggression

### **The Social Media Ethics are-**

In relation to news coverage it includes issues such as impartiality, objectivity, balance, bias, privacy, and the public interest. More generally, it also includes stereotyping, taste and decency, obscenity, freedom of speech, advertising practices such as product placement, and legal issues such as defamation.

### **They need to be channelized through**

- Better Education help to develop the personality of students and act as a mentor to them to influence their personal development and behaviour.
- Skill development activities like critical thinking, creative art & craft work, decision-making, problem-solving, an ability to collaborate & communicate along with a sense of responsibility towards personal as well as society at large, to contribute good citizenship comes under Life Skill. Scheme like UDAAN and NAI MANZIL must be inclusive in nature and drag youth from all sections.
- Enough number of job opportunities should be provided to people to decrease their chances of joining any radical organization.
- Moral values should be imbedded to the people for the good of country.

### **Constitutional obligation and SDGs.**

- Civil Society Institutions should be a defined term in the Constitution, as was done for Cooperative Societies under Part IX-B inserted by the Constitution (97th Amendment) Act, 2011, Not-for-profit

educational, healthcare, cultural, sports, and media institutions, as well as not-for-profit social enterprises must be brought into the ambit of CSIs.

- Make the Directive Principles a conjoint responsibility of the state and CSIs, by amending Articles 38 to 51 (except article 50). Article 38(1) to read as follows: ‘The State shall strive, directly as well as by involving and enabling civil society institutions, to promote the welfare of the people...’
- Add a new Article 43(C) as follows: ‘The State shall Endeavour to promote voluntary formation, autonomous functioning, democratic control and professional management of civil society institutions, and establish mechanisms to consult them, fund them, and collaborate with CSIs.’
- Amend Part IV A on Fundamental Duties as follows: Article 51-A: ‘It shall be the duty of every citizen of India, individually as well as a member of various civil society institutions.’
- Establish a National Commission on Civil Society Institutions answerable to the Parliament.

In 2015, world leaders agreed to 17 Global Goals (officially known as the Sustainable Development Goals or SDGs). These goals have the power to create a better world by 2030, by ending poverty, fighting inequality and addressing the urgency of climate change. Guided by the goals, it is now up to all of us, governments, businesses, civil society and the general public to work together to build a better future for everyone.



SDG 17 calls for a global partnership for sustainable development. The goal highlights the importance of global macroeconomic stability and the need to mobilize financial resources for developing countries from international sources, as well as through strengthened domestic capacities for revenue collection.

Transparency international highlights how corruption obstructs development and how effectively countries are tackling this issue, it also underlining how important is to include civil society in efforts to address corruption and ensure peaceful, just and inclusive society.

### Suggestions

Civil society that can be subverted, suborned, divided, manipulated to hurt the interests of a nation. So there is need to civilize civil society in the promotion of “good governance” civil society can play an important

role in reforming the state in the badly governed countries and through interrogation and collaboration can help promote democracy, rule of law and social justice.

#### 1.4 **Sikhism: The Epitome of Sanctity**

##### **Frame of reference-**

- Ahead of Gur Purab, the Centre announced that the Kartarpur Sahib corridor will be reopened from November 17 to allow pilgrims from India to visit the Sikh shrine in Pakistan.
- Pakistan had urged India to reopen the corridor and allow Sikh pilgrims to visit for Guru Nanak's birth anniversary celebrations.

##### **Introduction to the Topic-**

- India and Pakistan signed the historic agreement for the construction of the Kartarpur Sahib Corridor in 2018, which connects Darbar Sahib Gurdwara located in Pakistan's Narowal district with the Dera Baba Nanak shrine in Gurdaspur district in Punjab, India.
- The Gurdwara Kartarpur Sahib was established by first Sikh guru, Guru Nanak Dev Ji in 1522
- Village Kartarpur is located at the west bank of river Ravi where Sri Guru Nanak Dev Ji spent last 18 years of his life. Gurdwara Dera Baba Nanak is about 1 km from the Indo- Pakistan border and on the east bank of River Ravi.
- To the west side of the river is located the town of Kartarpur, Pakistan. Gurdwara Sri Kartarpur Sahib falls in district Narowal of Pakistan, about 4.5 kms. from the international border near the historic town of Dera Baba Nanak, District Gurdaspur, Punjab.
- Dera Baba Nanak is a city situated in Gurdaspur district in the state of Punjab, India. Followers of Sri Guru Nanak Dev Ji built the town and named it Dera Baba Nanak after their great ancestor.

Dealing with the 'doctrine of pleasure' implicit in civil service

##### **Frame of reference-**

Centre brings Ordinances to extend tenure of ED, CBI directors up to 5 years

##### **Key highlights**

- President Ram Nath Kovind has virtually extended the tenures of the chiefs of the two agencies for up to five years. Both posts currently have a fixed tenure of two years
- The Delhi Special Police Establishment (DSPE) Act and The Central Vigilance Commission (CVC) Act have been amended to give the government the power to keep the two chiefs in their posts for one year after they have completed their two-year term.
- The CBI is governed by The DSPE Act; The CVC Act lays down the term of office of the Director of Enforcement

**"Vineet Narain Vs Union of India" judgment****Backgrounds**

- On 25th March 1991, Ashfaq Husain Lone, an alleged official of a terrorist organization named Hizbul Mujahedeen, was arrested in Delhi. Ashfaq was interrogated and it was revealed that his organization was getting funds through hawala transactions with the help of Surrender Kumar Jain and his family.
- Subsequent to his interrogation, Central Bureau Investigation (CBI) raided the premises of Surrender Kumar Jain, his brothers, relatives, and his businesses. During the raid at his premises, the CBI seized Indian and Foreign currency along with two diaries and two notebooks. The diaries contained detailed accounts of huge payments made to persons identified only by initials. The initials corresponded to the initials of various high ranking politicians, both who were in power and who were out of power, and high ranking bureaucrats.
- The CBI, then, stopped probing the case, leaving the diaries and the Jain brothers uninvestigated. In fact, the officers of CBI who were involved in the case were transferred to other places by an order from the ruling politicians.
- Later on, on 4th October 1993, writ petitions were filed in the Supreme Court in the public interest under Article 32 of the Constitution of India. The petitions contained allegations against Government agencies, CBI, and revenue authorities, for not fulfilling their legal obligation and duties as they failed to investigate the 'Jain diaries' which were seized while investigating the matter.

**Supreme Court Judgment**

- The Supreme Court using the power under Article 32 and Article 142 of the Constitution of India issued certain directives. These directives are:

**For Central Bureau Investigation**

- The appointment of the director of the CBI shall be made on the basis of recommendation made by a committee headed by Chief Vigilance Commissioner with the Home Secretary and Secretary (Personnel) as its member.
- The director of CBI shall have tenure of a minimum of 2 years, irrespective of the date of his superannuation. The reason for setting this limit is that a capable officer must not be ignored because of the fact that he/she has less than 2 years left for his/her superannuation.
- The director shall be free to assign any work to any officer within the agency. Further, the director shall be free to constitute a team for any investigation; however, if the director wishes to make any change in the head of an investigative team, then he/she shall present cogent reasons for the same.
- It is the responsibility of the director to file a charge-sheet in the court within stipulated-time. Apart from that, the director is also responsible for keeping the case under constant review.

- The director shall timely appraise the officers of the agency to maintain their efficiency and efficacy and to prevent corruption as well.

### **For Enforcement Directorate (ED)**

- Director of ED shall be appointed by the Appointments Committee of the Cabinet (ACC) on the recommendation made by the Selection Committee headed by Central Vigilance Commissioner with the Home Secretary, Secretary (Personnel), and Revenue Secretary as its members.
- Like the director of CBI, the director of Enforcement directorate shall have a minimum tenure of 2 years.
- The transfer of the director before completion of the minimum tenure is possible only for extraordinary reasons with the approval of the Selection Committee.
- The ED shall begin the prosecution/adjudication of the case within a period of one year.
- Revenue department shall continuously review the work of the ED and a separate section in the annual report of the Department of Revenue shall contain a detailed account of the working of ED.

### **Benefits of fixed tenure**

- To prevent their sudden transfer out of office if their functioning goes against the interests of the regime of the day.
- The reason for setting this limit is that a capable officer must not be ignored because of the fact that he/she has less than 2 years left for his/her superannuation.
- The officers discharge their duty impartially.

### **Issues with annual extension of services**

- In Prospect of getting an annual extension can be an incentive for displaying regime loyalty in the discharge of their duties.
- If the extension allowed in exceptional circumstances it becomes the rule.
- Other member will not get the chance of becoming director and their moral should down.

### **Supreme Court judgment in S.K. Mishra case**

- In September, the Supreme Court had held Mishra's tenure of three years to be legal, but had asked the government not to extend it any further.
- In a petition challenging the extension of Mishra's tenure, the court had declined to interfere with the government's order, saying that the provision in The CVC Act, 2003 that chiefs of the ED shall hold office for "not less than two years", could not be read to mean not more than two years.
- The bench of Justices L Nageswara Rao and B R Gavai had, however, said that "no further extension shall be granted" to Mishra beyond November 2021.

- We should make it clear that extension of tenure granted to officers who have attained the age of superannuation should be done only in rare and exceptional cases, the bench had said.

### **Doctrine of Pleasure**

- Doctrine of pleasure originated in England.
- In England, the Crown is regarded as the Executive head and the civil services are part of the Executive.
- The doctrine of Pleasure means that the Crown has the power to terminate the services of a civil servant at any time they want without giving any notice of termination to the servant.
- When the civil servants are removed from their service, they do not have the right to sue the Crown for wrongful termination and they also cannot ask for damages undergone due to wrongful termination.

### **The Position of Doctrine of Pleasure in India**

- The doctrine of pleasure is also followed in India. Since the President of India is the Executive Head of the Union and he enjoys the same position as the Crown enjoys in England, the President has been vested with the power to remove a civil servant at any time under this doctrine.
- While this doctrine has been adopted in India it has not been blindly copied in the same manner as it is followed in England and there are some modifications which exist in India's adoption of this doctrine from that of England. In India, Article 310 of the Indian Constitution embodies the provision for this doctrine.
- According to Article 310, except for the provisions provided by the Constitution, a civil servant of the Union works at the pleasure of the President and a civil servant under a State works at the pleasure of the Governor of that State.

### **Under the constitution, the following are excluded from the operation of this doctrine:**

- Judges of the Supreme Court
- Judges of the High Courts
- Chief Election Commissioner; and
- Comptroller and Auditor General of India.
- Article 311 says that no government employee either of an all India service or a state government shall be dismissed or removed by an authority subordinate to the owner that appointed him/her.
- Section 2 of the article says that no civil servant shall be dismissed or removed or reduced in rank except after an inquiry in which he has been informed of the charges and given a reasonable opportunity of being heard in respect of those charges.

**Recommendation provide by 2nd ARC for civil services neutrality**

- Promotion of officers through Departmental Promotion Committees (DPC), up to the level of Selection Grade may be delegated to the concerned Departments. The UPSC should supervise the functioning of these DPCs through periodic reviews, audit etc
- In the case of disciplinary proceedings, consultation with the UPSC should be mandatory only in cases involving likely dismissal or removal of a government servant
- All civil servants should undergo mandatory training before each promotion and each officer/official should be evaluated after each training programme. Successful completion of the training programme should be made mandatory for promotions
- The Central Civil Services Authority should be charged with the responsibility to fixing tenure for all civil service positions and this decision of the Authority should be binding on Government.

**Conclusion**

The protection given by a fixed tenure and the use of a high-ranking committee to recommend appointments and transfers were meant to dilute the ‘doctrine of pleasure’ implicit in civil service. While the doctrine of pleasure has been adopted from the British legal system, it has been modified to suit Indian context as per prevailing social structure in India. The judiciary has played a key role in balancing the arbitrary aspects of this doctrine by their power of judicial review.

**Evolution of Sikhism-**

- Sikhism was born in the Punjab area of South Asia, which now falls into the present day states of India and Pakistan. The main religions of the area at the time were Hinduism and Islam.
- The Sikh faith began around 1500 CE, when Guru Nanak began teaching a faith that was quite distinct from Hinduism and Islam.
- Nine Gurus followed Nanak and developed the Sikh faith and community over the next centuries.
- According to Sikh tradition, Sikhism was established by Guru Nanak (1469–1539) .
- All 10 human Gurus, Sikhs believe, were inhabited by a single spirit.
- Upon the death of the 10th, Guru Gobind Singh (1666–1708), the spirit of the eternal Guru transferred itself to the sacred scripture of Sikhism, Guru Granth Sahib (“The Granth as the Guru”), also known as the Adi Granth (“First Volume”), which thereafter was regarded as the sole Guru.
- Sikh in Punjabi means “learner,” and those who joined the Sikh community, or Panth (“Path”), were people who sought spiritual guidance.
- Their tradition drew heavily on the Vaishnava bhakti (the devotional movement within the Hindu tradition).

- Sants maintained that God is nirgun (“without form”) and not sagun (“with form”). For the Sants, God can be neither incarnated nor represented in concrete terms.
- Guru Nanak Dev Ji - Nanak, (born April 15, 1469, Rai Bhoi di Talvandi [now Nankana Sahib, Pakistan], near Lahore, India—died 1539, Kartarpur, Punjab), Indian spiritual teacher who was the first Guru of the Sikhs, a monotheistic religious group.
- It was presumably during this final period that the foundations of the new Sikh community were laid.

#### **Other gurus of Sikh sect-**

- Guru Angad (1539-1552) - Originally named Lehna, Guru Angad became deeply devoted to Guru Nanak and his teachings. He created langar.
- Guru Amar das (1552-1574) – he collected the writings of all prior Gurus, forming the first manuscripts of the Sikh holy book, the Sri Guru Granth Sahib
- Guru Ram Das ( 1574-1581)- Guru Ram Das' teachings focused on the doctrine of equality. He also preached against superstition and the empty adherence to ritual, dietary restrictions, and dress code.
- Guru Arjan ( 1582- 1606 )- Guru Ram Das selected his youngest son, Arjan, to become next guru.
- Guru Hargobind ( 1606- 1644) - Guru Hargobind accepted the leadership of the Sikh faith only a month before his 11th birthday.
- Guru Har Rai ( 1644- 1661) -. He accepted the Guruship at a young age, only 14. The Guru taught simplicity and devotion to God by the means of love and self-sacrifice.
- Guru Har Krishan (1656-1664)- Guru Har Krishan was born in 1656. He was the youngest of all the Sikh gurus.
- Guru Tegh Bahadur ( 1621-1675) - He believed strongly that people should be allowed and have the freedom to worship whatever religion they wanted.
- Guru Gobind Singh ( 1666-1708) - Guru Gobind Singh was the last of the human Sikh gurus. He was born in 1666 and was the son of Guru Tegh Bahadur. He introduced the Khalsa, or ‘pure ones’ and the ‘five Ks’. Just before he died in 1708, he proclaimed Guru Granth Sahib – the Sikh scripture – as the future guru.

#### **Wars waged with Mughal Empire-**

- Some historians say that Guru Arjan was executed by Jahangir because the emperor was threatened by the growing power of the Sikh community.
- Jahangir himself said , Guru Arjan’s execution was justified as punishment for his support to Prince Khusrau, the emperor’s eldest son, who had led a rebellion against the throne soon after Jahangir took over.

- Guru Hargobind fought three battles against Mughal forces during the reign of Shah Jahan. In all of them, his modest Sikh Army humbled the mighty Mughal forces.
- Guru Tegh Bahadur was executed (by beheading) on the orders of Aurangzeb, the sixth Mughal emperor, in Delhi. His martyrdom is remembered as the Shaheedi Divas of Guru Tegh Bahadur every year on 24 November.
- The battle of Rohilla was fought between Guru Hargobind and Mughal emperor Jahangir in 1621.
- The Battle of Amritsar was a campaign by Mukhlis Khan against Guru Hargobind and the Sikhs in 1634.

#### **Important practices as propounded by them-**

- A Sikh gurdwara includes both the house of worship proper and its associated langar, or communal refectory.
- The dastaar or turban, is an integral part of Sikh Identity, in addition to the five kakaars. It is worn by Sikh males, and some females. It covers, protects and crowns the head—the center of wisdom.
- Worship consists largely of singing hymns from the scripture, and every service concludes with Ardas, a set prayer that is divided into three parts.
- Distribution of the karah prasad, which is prepared or donated by people of all castes.
- Guru Nanak laid down three basic guidelines for Sikhs:
  - Naam Japna (focus of God),
  - Kirat Karni (honest living) and
  - Vand Chakna (sharing with others).

#### **Teachings of Sikhism and values as per religious beliefs-**

- The Adi Granth contains a forthright condemnation of caste, and consequently there is no toleration of caste in its presence (normally in a gurdwara). The Gurus denounced caste and preach that everyone is equal.
- There is only one God.
- God is without form, or gender.
- Everyone has direct access to God.
- Everyone is equal before God.
- A good life is lived as part of a community, by living honestly and caring for others.
- Empty religious rituals and superstitions have no value.

**The five vices**

1. Lust
2. Covetousness and greed
3. Attachment to things of this world
4. Anger
5. Pride

**Raja Ranjit Singh and his contribution to Sikhism-**

- Ranjit Singh, also known as Lion of the Punjab, (born November 13, 1780, Budrukhan, or Gujranwala [now in Pakistan]—died June 27, 1839, Lahore [now in Pakistan]), founder and maharaja (1801–39) of the Sikh kingdom of the Punjab.
- He was the only child of Maha Singh, on whose death in 1792 he became chief of the Shukerchakias, a Sikh group.
- His territory extended from the Khyber Pass in the northwest to the Sutlej River in the east and from the Kashmir region at the northern limit of the Indian subcontinent southward to the Thar (Great Indian) Desert.
- In 1799 he seized Lahore, the capital of the Punjab (now the capital of Punjab province, Pakistan).
- Ranjit Singh proclaimed himself maharaja of the Punjab. He had coins struck in the name of the Sikh Gurus.
- A year later he occupied Amritsar (now in Punjab state, India), the most-important commercial region in northern India and sacred city of the Sikhs.
- In 1809, the Britishers compelled him to sign the Treaty of Amritsar, which fixed the Sutlej River as the eastern boundary of his territories.
- In July 1819 he finally expelled the Pashtuns from the Vale of Kashmir, and by 1820 he had consolidated his rule over the whole Punjab between the Sutlej and Indus rivers.

**Relevance of Sikhism in the contemporary world-**

- Sikhism teaches moral values and principles that are relevant for human awakening and peaceful coexistence.
- Keep God in heart and mind at all times
- Live honestly and work hard
- Treat everyone equally
- Be generous to the less fortunate
- Serve others
- Sewa is the key to humanity

**Way forward-**

- Sikhism is one of the world's major religions. There are approximately 27 million Sikhs worldwide, 76% of whom live in Punjab, a region of northern India that is divided between India and Pakistan. 83% of all Sikhs live in India itself.
- Sikhs believe that each individual's journey is unique and that we are all learners on the path toward leading a truthful life.

**1.5 Dealing with the 'doctrine of pleasure' implicit in civil service****Frame of reference-**

Centre brings Ordinances to extend tenure of ED, CBI directors up to 5 years

**Key highlights**

- President Ram Nath Kovind has virtually extended the tenures of the chiefs of the two agencies for up to five years. Both posts currently have a fixed tenure of two years
- The Delhi Special Police Establishment (DSPE) Act and The Central Vigilance Commission (CVC) Act have been amended to give the government the power to keep the two chiefs in their posts for one year after they have completed their two-year term.
- The CBI is governed by The DSPE Act; The CVC Act lays down the term of office of the Director of Enforcement

**"Vineet Narain Vs Union of India" judgment****Backgrounds**

- On 25th March 1991, Ashfaq Husain Lone, an alleged official of a terrorist organization named Hizbul Mujahedeen, was arrested in Delhi. Ashfaq was interrogated and it was revealed that his organization was getting funds through hawala transactions with the help of Surrender Kumar Jain and his family.
- Subsequent to his interrogation, Central Bureau Investigation (CBI) raided the premises of Surrender Kumar Jain, his brothers, relatives, and his businesses. During the raid at his premises, the CBI seized Indian and Foreign currency along with two diaries and two notebooks. The diaries contained detailed accounts of huge payments made to persons identified only by initials. The initials corresponded to the initials of various high ranking politicians, both who were in power and who were out of power, and high ranking bureaucrats.
- The CBI, then, stopped probing the case, leaving the diaries and the Jain brothers uninvestigated. In fact, the officers of CBI who were involved in the case were transferred to other places by an order from the ruling politicians.
- Later on, on 4th October 1993, writ petitions were filed in the Supreme Court in the public interest under Article 32 of the Constitution of India. The petitions contained allegations against Government agencies,

CBI, and revenue authorities, for not fulfilling their legal obligation and duties as they failed to investigate the 'Jain diaries' which were seized while investigating the matter.

### **Supreme Court Judgment**

- The Supreme Court using the power under Article 32 and Article 142 of the Constitution of India issued certain directives. These directives are:

### **For Central Bureau Investigation**

- The appointment of the director of the CBI shall be made on the basis of recommendation made by a committee headed by Chief Vigilance Commissioner with the Home Secretary and Secretary (Personnel) as its member.
- The director of CBI shall have tenure of a minimum of 2 years, irrespective of the date of his superannuation. The reason for setting this limit is that a capable officer must not be ignored because of the fact that he/she has less than 2 years left for his/her superannuation.
- The director shall be free to assign any work to any officer within the agency. Further, the director shall be free to constitute a team for any investigation; however, if the director wishes to make any change in the head of an investigative team, then he/she shall present cogent reasons for the same.
- It is the responsibility of the director to file a charge-sheet in the court within stipulated-time. Apart from that, the director is also responsible for keeping the case under constant review.
- The director shall timely appraise the officers of the agency to maintain their efficiency and efficacy and to prevent corruption as well.

### **For Enforcement Directorate (ED)**

- Director of ED shall be appointed by the Appointments Committee of the Cabinet (ACC) on the recommendation made by the Selection Committee headed by Central Vigilance Commissioner with the Home Secretary, Secretary (Personnel), and Revenue Secretary as its members.
- Like the director of CBI, the director of Enforcement directorate shall have a minimum tenure of 2 years.
- The transfer of the director before completion of the minimum tenure is possible only for extraordinary reasons with the approval of the Selection Committee.
- The ED shall begin the prosecution/adjudication of the case within a period of one year.
- Revenue department shall continuously review the work of the ED and a separate section in the annual report of the Department of Revenue shall contain a detailed account of the working of ED.

### **Benefits of fixed tenure**

- To prevent their sudden transfer out of office if their functioning goes against the interests of the regime of the day.

- The reason for setting this limit is that a capable officer must not be ignored because of the fact that he/she has less than 2 years left for his/her superannuation.
- The officers discharge their duty impartially.

### **Issues with annual extension of services**

- In Prospect of getting an annual extension can be an incentive for displaying regime loyalty in the discharge of their duties.
- If the extension allowed in exceptional circumstances it becomes the rule.
- Other member will not get the chance of becoming director and their moral should down.

### **Supreme Court judgment in S.K. Mishra case**

- In September, the Supreme Court had held Mishra's tenure of three years to be legal, but had asked the government not to extend it any further.
- In a petition challenging the extension of Mishra's tenure, the court had declined to interfere with the government's order, saying that the provision in The CVC Act, 2003 that chiefs of the ED shall hold office for "not less than two years", could not be read to mean not more than two years.
- The bench of Justices L Nageswara Rao and B R Gavai had, however, said that "no further extension shall be granted" to Mishra beyond November 2021.
- We should make it clear that extension of tenure granted to officers who have attained the age of superannuation should be done only in rare and exceptional cases, the bench had said.

### **Doctrine of Pleasure**

- Doctrine of pleasure originated in England.
- In England, the Crown is regarded as the Executive head and the civil services are part of the Executive.
- The doctrine of Pleasure means that the Crown has the power to terminate the services of a civil servant at any time they want without giving any notice of termination to the servant.
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**Conclusion**

- The protection given by a fixed tenure and the use of a high-ranking committee to recommend appointments and transfers were meant to dilute the 'doctrine of pleasure' implicit in civil service. While the doctrine of pleasure has been adopted from the British legal system, it has been modified to suit Indian context as per prevailing social structure in India. The judiciary has played a key role in balancing the arbitrary aspects of this doctrine by their power of judicial review.

## 1.6 The Road to a Himalayan Blunder

### Frame of reference-

- The Char Dham road project, inaugurated by Prime Minister to widen nearly 900 kilometers of hill roads at the cost of ₹12,000 crores.
- The project executed by Ministry of Road Transport and Highways (MoRTH), aims to provide all-weather connectivity to the four major shrines of Yamunotri, Gangotri, Kedarnath and Badrinath.
- This project will increase pilgrimage tourism from the Indian plains and provide attendant local economic dividends.

### Unique Features of the Himalayan Ecosystem:

- **Climate Influence:** Blessed with high altitude, length and location, they effectively intercept the summer monsoons coming from the Arabian Sea and Bay of Bengal cause precipitation in the form of rain and snow. "Abode of snow".
- **Defense:** Himalayas serve as a defense barrier from the neighboring countries like Nepal, China, Bhutan, Myanmar.
- **Source of rivers:** Himalaya act as huge reservoir of water for the north Indian rivers. Almost all the great and perennial rivers of India originate from the Himalayan mountain or glaciers.
- **Fertile soil:** Great plains of north India which is the country's food basket is actually the gift of Himalayas.
- **Hydroelectricity:** Deep valley in the Himalayas are the best location for the construction of the dams. The Himalayan region offers several sites which are suitable for the production of the hydroelectricity.
- **Forest Wealth:** The Himalayan Ranges are very rich in forest resources. In their rising altitude, the Himalayan ranges show a succession of vegetal cover from the tropic to the Alpine. The Himalayan forests provide fuel wood and a large variety of raw materials for forests based industries.
- **Agriculture:** Himalayan slopes are terraced for the cultivation. Rice is the main crop on the terraced slopes. Also tea cultivation is famous in North Eastern Himalayas.
- **Tourism:** Himalayas provides the huge scope of tourism due to its scenic beauty and healthy environment. Famous hill stations like Kullu Manali, Shimla, Darjeeling etc are present in Himalayas.
- **Pilgrimage:** The Himalaya is abode of the Gods. Mount Kailash is mentioned as the abode of the Lord Shiva in Veda.
- **Minerals:** As we know that the Himalayas are the creation of sediments which was deposited by the rivers in Tethys sea. Along with these deposition thousands of the fossils also get buried, which today exists in the form of the minerals.

### Concerns:

- **Ecological decline:** What should worry Himachal, and neighboring Uttarakhand, is that the States may be entering a phase of irreversible decline because of losses to their ecology; frequent landslides may become inevitable.

- **The use of heavy machinery** to flatten land for agriculture or other purposes aggravates the crumbling of hilltops.
- **Highway development:** In its 2020 report, the Supreme Court appointed-high-powered committee on the Char Dham project noted the massive slope cutting, unmindful of the irreversible loss it was causing to the fragile terrain.
- **Mega hydropower projects:** All Himalayan states are awarding hydroelectric projects to private companies at a breakneck speed—Uttarakhand on the Ganga basin alone has identified projects adding up to nearly 10,000 mw of power and plans for 70-odd projects.
- **Ignoring environmental impact:** Kinnaur is a focus point for such development, centered around the potential of the glacially-fed Sutlej valley.
- **There is high seismicity** causing fatal landslides and severe damage to hydropower structures in the Himalayas; the cost of power produced was underestimated, while the potential was overestimated.
- **Unsustainable model of tourism:** In the IHR include the replacement of traditional eco-friendly and aesthetic architecture with inappropriate, unsightly and dangerous construction, poorly designed roads and associated infrastructure, inadequate solid waste management, air pollution etc.
- **Lack of early warning system:** The country lacks a sophisticated warning system for predicting landslides. Preparedness for the hazard and a suitable warning system are vital to preventing loss of human lives and property.
- **Climate change:** Warming due to climate change was melting the Himalayan glaciers and facilitated avalanches and landslides, and that constructing dams in the fragile ecosystem was dangerous.
- **As glaciers melt** due to warming, valleys that were earlier crammed with ice open up, creating space for landslides to move into.
- In other places, steep mountainous slopes may be partially “glued” together by ice frozen tightly inside its crevices.

#### Relevance-

- The government should realize that the fragility of the Himalayan mountain’s ecosystems. Governments need to re-prioritize their projects based on the potential of the mountains, local and traditional knowledge as well as the aspirations of the place.
- Projects that are incompatible with the local environment and ecology should not be promoted just by giving due consideration to development or economic growth.
- National Mission for Sustaining the Himalayan Ecosystem (NMSHE) has been launched by the government under National Action Plan of Climate Change (NAPCC) with primary objective to develop

sustainable national capacity in a time-bound manner to continuously assess the health status of the ecosystem and draft policy formulations on that line has to be worked upon seriously taking into account the sensitivity of Himalayan ecosystem.

## 2. INTERNATIONAL RELATIONS

### 2.1 1st ASEAN-India Start-up Festival 2022 bolstered ASEAN-India cooperation

- The festival is part of the over-all ASEAN-India Science, Technology and Innovation Cooperation program between the ASEAN Committee on Science, Technology, and Innovation (COSTI) and the Department of Science and Technology (Govt of India) and is supported under the ASEAN-India Science and Technology Development Fund (AISTDF) of Govt of India which is jointly contributed by Department of Science and Technology and Ministry of External Affairs (MEA).
- The four-day event is being hosted in conjunction with the Indonesia Research and Innovation Expo at the Innovation Convention Centre, Cibinong Bogor, Indonesia. The AISF is part of a series of events to commemorate the 30th Anniversary of the ASEAN-India diplomatic relationship.
- Comprising of four main events ---startup exhibitions; seminar and talk show; G2G meetings and B2B meetings, as well as startup pitch battle, it has brought together government officials, startups, research institutes, universities, inventors and innovators, and other financial institutes. The festival provided a platform to further expand the national startup ecosystem to global networks, seeking cooperation for cumulative growth and creating of more opportunities.
- The festival commemorates and strengthens cooperation and collaboration in science, technology, and innovation between the ASEAN countries and India.

### ASEAN

- ASEAN officially the Association of Southeast Asian Nations is a political and economic union of 10 member states in Southeast Asia, which promotes intergovernmental cooperation and facilitates economic, political, security, military, educational, and sociocultural integration between its members and countries in the Asia-Pacific. The union has an estimated total population of about 668 million.
- ASEAN's primary objective was to accelerate economic growth and through that social progress and cultural development. A secondary objective was to promote regional peace and stability based on the rule of law and the principles of the UN Charter. With some of the fastest growing economies in the world, ASEAN has broadened its objective beyond the economic and social spheres.

### 2.2 India and Finland agree to carry mutual cooperation between the two countries to a new level and enhance partnership in areas such as Digital Partnership in Future ICT, Future Mobile Technologies and Digital Education

- India and Finland agreed to carry mutual cooperation between the two countries to a new level in a number of areas of bilateral as well as global interests. Two nations decided to enhance cooperation in areas such as Digital Partnership in Future ICT, Future Mobile Technologies and Digital Education. The two countries also emphasised on having institutionalised joint working groups on areas of mutual interest.

- The bilateral STI collaboration between the two countries is an attempt to stimulate innovative R&D projects that address a specific need or challenge; demonstrate high industrial relevance and commercial potential; and aim to deliver benefit to all participants, and more broadly, to both nations.
- **India is keen to develop research collaborations with Finnish R&D institutions and technology collaboration with Finnish Industry especially focusing on the application of Quantum Computing in areas such as:** Sustainable Energy Technologies (generation, conversion, storage and conservation), Environment and Clean Technologies, Bio-based Economy, Bio Banks and Bio based materials for different applications of water and Marine Technologies, Food & Agri Technologies, Affordable Healthcare (including Pharmaceuticals and Biomedical Instrumentation) and Technologies for Advanced Manufacturing Integration of AI and Machine Learning in all domains.
- Finland is keen to cooperate with India in 5G, Environment and Clean Technologies, Bio-based Economy, BioBanks and Affordable Healthcare.
- India and Finland have strong bonding in Science, Technology and Innovation. Within the framework of S&T agreement, the Department of Science and Technology, Department of Biotechnology, Government of India and the Ministry of Economic Affairs and Employment of Finland together with Business Finland and Academy of Finland have been successfully collaborating for over a decade.

### **2.3 Cabinet approves signing of a Memorandum of Understanding between India and Denmark on cooperation in the field of Water Resources Development and Management**

The Union Cabinet, chaired by the Prime Minister Shri Narendra Modi, was apprised of a Memorandum of Understanding (MoU) signed between India and Denmark on cooperation in the field of Water Resources Development and Management.

Broad areas of cooperation envisaged in the MoU are:

- Digitalisation and ease of information access
- Integrated and smart water resources development and management;
- Aquifer mapping, groundwater modelling, monitoring and recharge;
- Efficient and sustainable water supply at household level, including reduction of non-revenue water and energy consumption;
- River and water body rejuvenation to enhance liveability, resilience and economic development;
- Water quality monitoring and management;
- Sewage/wastewater treatment including circular economy for reuse/recycling of wastewater, including comprehensive sludge management and maximizing use of renewable energy in field of water supply and sanitation;
- Climate change mitigation and adaptation, including nature based solutions.
- River centric urban planning including urban flood management
- Nature based liquid waste abatement measures for peri-urban and rural areas.

- The MoU will thus broadly strengthen cooperation in the field of water resources development and management; rural water supply; and sewage/wastewater treatment through direct collaboration between officials, academics, water sectors and industry in the areas under scope of cooperation.

#### **2.4 GOA MARITIME SYMPOSIUM- 2022**

- Fourth edition of biennial Goa Maritime Symposium was conducted successfully by the Indian Navy at Goa from 31 October to 01 November 2022.
- Coming out of the shadows of global COVID-19 pandemic, the Indian Navy was delighted to witness physical participation of overseas delegates from all 12 invitees. Representatives from Navies and Maritime Agencies from 12 Friendly Foreign Indian Ocean littoral countries, which included Bangladesh, Comoros, Indonesia, Madagascar, Malaysia, Maldives, Mauritius, Myanmar, Seychelles, Singapore, Sri Lanka and Thailand, besides India, attended the Symposium, conducted by the Naval War College, Goa.
- Over the two days of the Symposium, the participants deliberated upon several maritime security aspects of contemporary relevance. The theme for GMS-22 was ‘Maritime Security Challenges in the Indian Ocean Region: Converting Common Maritime Priorities into Collaborative Mitigation Frameworks’. Through four panel discussions with dedicated sub-themes, the participants were successful to garner a clear vision for an outcome oriented agenda for the Goa Maritime Conclave which would be hosted by the Indian Navy in 2023.

#### **2.5 Commerce Minister calls for enhancing bilateral trade and deepening cultural relations between India and Kyrgyz Republic**

- 10th Session of the India-Kyrgyz Republic Inter-Governmental Commission on Trade, Economic, Scientific and Technological Cooperation (IKIGC)
- Both sides discussed mutual cooperation and steps to further enhance them in the fields of Trade & Economy, Development Partnership, Investment, Digitalization, Intellectual Property, Agriculture, Healthcare & Pharmaceuticals, Textiles, Education, Environment, Standardization & Metrology, Banking, Transport, Labour, Mining and Power sectors. Emphasis was given to increase the bilateral trade and investment opportunities. The sides agreed to take necessary measures to increase the interaction of exporters and importers of the two countries and expand the trading basket.

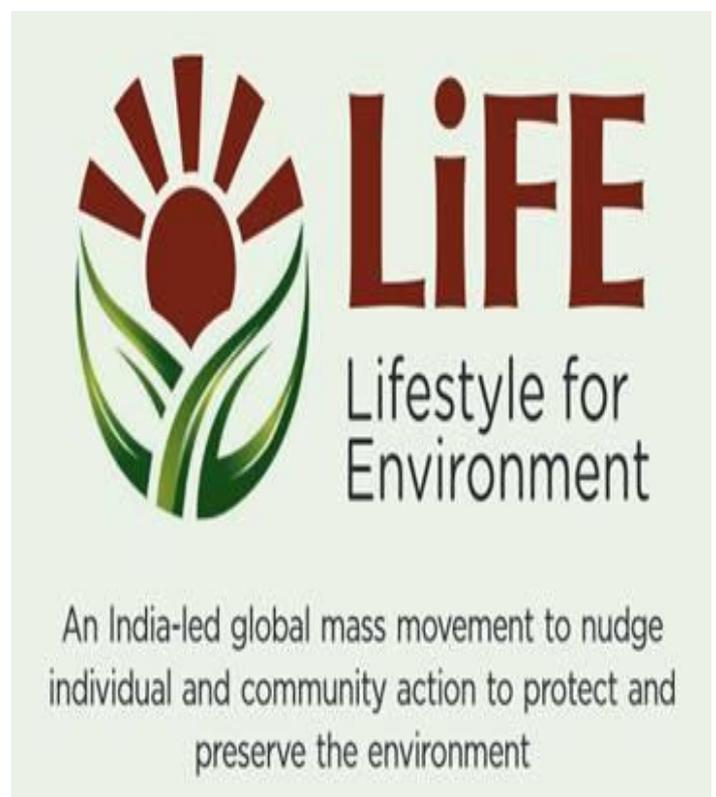
#### **2.6 Ninth Round of India-ROK CEPA Up-Gradation Negotiation held in Seoul**

- Sub Groups on Trade in Goods, Services, Rules of Origin, Investment, SPS/TBT issues hold in-depth discussions
- Both sides agree to work closely to address tariff and non-tariff barriers and deepen relationship in services sector.
- The 9th round of India-Republic of Korea (ROK) Comprehensive Economic Partnership Agreement (CEPA) up-gradation negotiation was held in Seoul.

- The two sides underlined the need to have negotiations, which are based on win-win approach, are forward looking and outcome oriented. Both sides shared the hope that the CEPA upgradation negotiations would play an important role in strengthening and deepening economic cooperation between both countries. Sub Groups on Trade in Goods, Services, Rules of Origin, Investment, SPS/TBT issues held in-depth discussions.
- India raised serious concerns on the growing trade deficit between the two countries and discussed market access issues. Both sides agreed to work closely to address tariff and non-tariff barriers and deepen the relationship in the services sector. They also shared a common view that both sides should make utmost efforts to expedite negotiations in order to reach a mutually beneficial and satisfactory outcome during 2023, while taking note of the importance of the upcoming 50th anniversary of diplomatic relations between the two countries.
- The Chief Negotiators also shared the view that both sides should promote conducive trade environment to enable both sides to fully utilize benefits under the CEPA. It was agreed that the 10th round of CEPA upgradation negotiations will be hosted by India in early 2023.

## **2.7 LiFE- Lifestyle for Environment, theme of India Pavilion at COP 27**

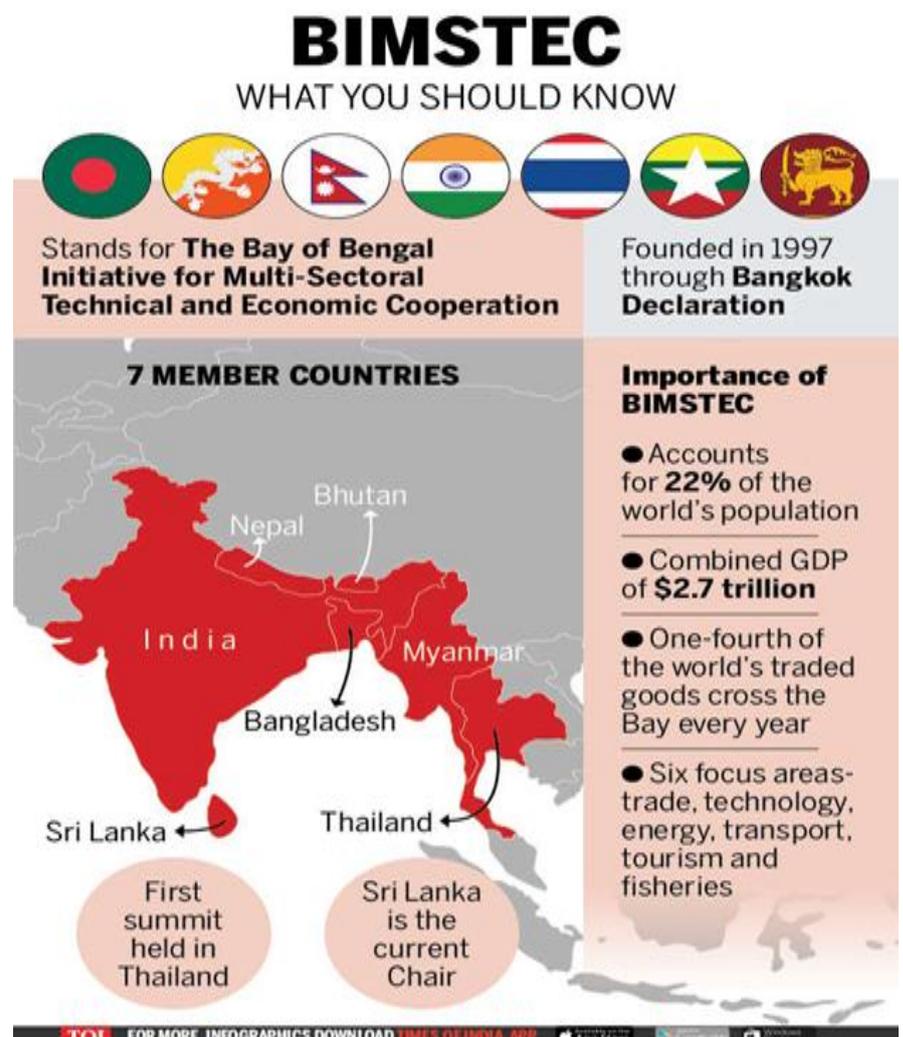
- India is hosting a pavilion with the theme of LiFE- Lifestyle for Environment at COP 27. The Pavilion has been designed to send out the message of LiFE through various audio-visuals, Logo, 3D models, set up, décor and side events.
- The guiding thought in the design of the pavilion is that for centuries, Indian civilizations have practised and led sustainable lifestyles. Eco-friendly habits are encoded in the Indian culture. Several practices are rooted in the daily life showing respect for the natural environment. They can prove to be invaluable in our fight against climate change.
- This deep-seated knowledge on sustainability passed through generations over a thousand years has led the Prime Minister of India, Shri Narendra Modi into giving the World a Mantra of LiFE - that aim to have a substantial impact on the health and wellbeing of the planet. LiFE movement is India's contribution to handling global climate crisis. The LiFE movement seeks to transform persons into 'pro-planet people', who would adopt sustainable lifestyles in the modern world.



- **Responsible Consumption** by taking only as much as is needed, using products to the end of their lives, and repurposing or recycling whatever is left over.
- **Circular Economy** to improve resource efficiency, minimize waste and emissions to reduce the carbon footprint and improve ecological handprint.
- **Living in Harmony with Nature** by practising the philosophy of 'Vasudhaiv Kutumbkam' (the World in One Family) and living a life with compassion for all living beings.
- **Sustainable Resource Management** through mindful and deliberate utilisation of the available resources and to reduce overconsumption and promote equitable access to resources.
- **Coexistence and Cooperation** among countries and communities through the promotion of science and innovation, knowledge exchange, dissemination of best practices, and conservation of traditional knowledge systems.

## 2.8 India hosted the 2nd BIMSTEC Agriculture Ministers meeting under the chairmanship of Union Agriculture Minister

- The 2nd BIMSTEC Agriculture Ministerial Meeting adopted the Action Plan for Strengthening BIMSTEC Agricultural Cooperation (2023-2027). An MoU between the BIMSTEC Secretariat and the International Food Policy Research Institute (IFPRI) has been signed and approval has been given to bring Fisheries and Livestock sub-sectors under the Agricultural Working Group. BIMSTEC member countries appreciated India's efforts to strengthen cooperation in agricultural research and development and for awarding six scholarships each for postgraduate and PhD programmes in agriculture.
- The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is an international organisation of seven South Asian and Southeast



Asian nations, housing 1.73 billion people. The BIMSTEC member states – Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand[8] – are among the countries dependent on the Bay of Bengal.

- Fourteen priority sectors of cooperation have been identified and several BIMSTEC centres have been established to focus on those sectors. A BIMSTEC free trade agreement is under negotiation also referred Similar to SAARC.
- Leadership is rotated in alphabetical order of country names. The permanent secretariat is in Dhaka, Bangladesh.

**There are 16 main sectors of BIMSTEC along technological and economic cooperation among South Asian and Southeast Asian countries along the coast of the Bay of Bengal.**

1. Trade & Investment
2. Transport & Communication
3. Energy
4. Tourism
5. Technology
6. Fisheries
7. Agriculture
8. Public Health
9. Poverty Alleviation
10. Counter-Terrorism & Transnational Crime
11. Environment & Disaster Management
12. People-to-People Contact
13. Cultural Cooperation
14. Climate Change

Sectors 7 to 13 were added at the 8th Ministerial Meeting in Dhaka in 2005 while the 14th sector was added in 11th Ministerial Meeting in New Delhi in 2008.

**Member nations are denoted as Lead Countries for each sector.**

- Provides cooperation to one another for the provision of training and research facilities in educational vocational and technical fields
- Promote active collaboration and mutual assistance in economic, social, technical and scientific fields of common interest

- Provides help to increase the socio-economic growth of the member countries

## **2.9 Capacity building Maldivian civil servants: a new chapter in India–Maldives relations**

- India's 'neighbourhood first' policy helping to build the capacity of civil servants of Maldives in good governance and public service delivery
- The capacity building programme for civil servants of developing countries aims at equipping them with cutting-edge knowledge, skills and tools to design and deliver effective public services in an increasingly complex and inter-dependent world. It is expected that this will establish good governance and ultimately achieve sustainable development apart from providing rich cross-country experience. The NCGG is sharing various initiatives being taken in the country such as e-governance, digital India, universalization of public services to achieve sustainable development goals, usage of Aadhaar in service delivery, public grievance redressal mechanism and disaster management with special reference to coastal region among other important areas.
- Eminent persons and domain experts from different fields conducted highly interactive sessions in the two-week programme, sharing their knowledge and experiences with the participants. The focus has been on priority sectors of India–Maldives relations, regional cooperation initiatives in Indian ocean region, improving service delivery: an essence to citizen centric governance, PM Jan Dhan Yojana: positive impact on citizens lives, total quality management, public policy and implementation, challenges in achieving SDGs, tourism, composite culture of India, constitutional foundation of decentralization in India, public grievances redressal mechanism, PPPs, reforms in governance, overview of security scenario, digital India, agro-based practices in coastal areas, etc.

## **2.10 India Submits its Long-Term Low Emission Development Strategy to UNFCCC**

**The salient features of the strategy are –**

1. The focus will be on the rational utilization of national resources with due regard to energy security. The transitions from fossil fuels will be undertaken in a just, smooth, sustainable and all-inclusive manner. The National Hydrogen Mission launched in 2021 aims to make India a green hydrogen hub. The rapid expansion of green hydrogen production, increasing electrolyser manufacturing capacity in the country, and three-fold increase in nuclear capacity by 2032 are some of the other milestones that are envisaged alongside overall development of the power sector.
2. Increased use of biofuels, especially ethanol blending in petrol, the drive to increase electric vehicle penetration, and the increased use of green hydrogen fuel are expected to drive the low carbon development of the transport sector. India aspires to maximise the use of electric vehicles, ethanol blending to reach 20% by 2025, and a strong modal shift to public transport for passenger and freight.
3. While urbanisation will continue as a strong trend from our current relatively low base, future sustainable and climate resilient urban development will be driven by smart city initiatives, integrated planning of

cities for mainstreaming adaptation and enhancing energy and resource efficiency, effective green building codes and rapid developments in innovative solid and liquid waste management.

4. India's industrial sector will continue on a strong growth path, in the perspective of 'Aatmanirbhar Bharat' and 'Make in India'. Low carbon development transitions in the sector should not impact energy security, energy access and employment. The focus will be on improving energy efficiency by the Perform, Achieve and Trade (PAT) scheme, National Hydrogen Mission, high level of electrification in all relevant processes and activities, enhancing material efficiency and recycling leading to expansion of circular economy, and exploring options for hard-to-abate sectors, such as steel, cement, aluminium and others.
5. India has a strong record of enhancing forest and tree cover in the last three decades alongside high economic growth. India's forest fire incidence is well below global levels, while its forest and tree cover are a net sink absorbing 15% of CO<sub>2</sub> emissions in 2016. India is on track to fulfilling its NDC commitment of 2.5 to 3 billion tonnes of additional carbon sequestration in forest and tree cover by 2030.
6. The transition to low carbon development pathway will entail several costs pertaining to the development of new technologies, new infrastructure, and other transaction costs. While several estimates exist, varying across studies, they all fall generally in the range of trillions of dollars by 2050. Provision of climate finance by developed countries will play a very significant role and needs to be considerably enhanced, in the form of grants and concessional loans, ensuring scale, scope and speed, predominantly from public sources, in accordance with the principles of the UNFCCC.

### **2.11 INDO - US JOINT TRAINING EXERCISE "YUDH ABHYAS 2022"**

Yudh Abhyas is a joint military exercise, bilaterally occurring between India and the US. It started in 2002 and is undertaken by the armies of both countries to promote defence cooperation.

The exercise aims to mobilise cooperation in defence to meet the unforeseen security contingency of the future across the globe.

#### **The following outcomes in the Yudh Abhyas exercise:**

- Military Training
- Cultural Exchanges
- Building of Joint Operational Skills
- Development of friendships
- Exchange of knowledge

India-US Defence Cooperation we should know some important points related to India-US defence cooperation:

1. India and the US participate in the following joint exercises apart from Yudh Abhyas:
  - 1) Cope-India (Air Force)

- 2) Vajra Prahar (Special Forces)
2. A few multilateral exercises that India and the US participate in are:
  - 1) MALABAR
  - 2) RED FLAG
  - 3) RIMPAC
3. To acknowledge the connectivity between the Indian Ocean and the Pacific Ocean, United States recently renamed its Pacific Command as the US Indo-Pacific Command (USINDOPACOM)
4. Maritime Cooperation in the western Indian Ocean is promoted between the Indian Navy and the US Naval Forces Central Command (NAVCENT).
5. Since 2008, India has purchased nearly US\$ 18 billion worth of arms from the US, including:
  - 1) C-17 and C-130J transport planes
  - 2) state-of-the-art P-8i maritime reconnaissance aircraft
  - 3) Harpoon missiles
  - 4) Apache and Chinook helicopters and
  - 5) M777 howitzers
6. India is focusing on the Make in India programme in defence manufacturing
7. India and USA have signed the following three agreements:
  - 1) General Security of Military Information Agreement (GSOMIA, 2002)
  - 2) Logistics Exchange Memorandum of Agreement (LEMOA, 2016) and
  - 3) Communications Compatibility and Security Agreement (COMCASA, 2018)

### **2.12 India- Norway join hands to for a GREEN MARITIME SECTOR**

- Discussion was held on use of alternative fuels like green ammonia and hydrogen for futuristic shipping. Norwegian Green Shipping Programme has been successful and the experience and expertise was shared in the meeting. Norway stated that it is committed to India for zero emission solutions.
- India Norway is part of Green Voyage 2050 project, both parties agreed on willingness, devotion, partnership and capacity building for achieving common goals.
- India is a signatory to Hongkong Convention for Recycling of Ships. In today's meeting India requested that EU regulation should not hinder to recycling non-European countries which is compliant as per International Convention. Norway was requested not to prolong Ship recycling to India as lot of investment has been made by Indian recyclers.
- India has pressed upon cooperation in the field of Maritime Training in latest maritime technology eg. MASS etc. The Indian side has requested Norway to extend Ship Board training and Ship Board training in the area of Polar Water Navigation.

### 3. ECONOMY

#### 3.1 7<sup>th</sup> ASEAN-India Ministerial Meeting (AIMMAF) on Agriculture and Forestry

##### **Steps towards Millets Production:**

- Referring to the importance of millet (nutritional-cereals) as a nutritious food and the international nutritional-cereal year 2023, India urged the ASEAN member countries to support the efforts of India in increasing the production, processing, value addition and consumption of millets.
- India will promote nutritious cereal products for the health and nutrition of the people.
- Nutritious cereals help in the creation of nutrients with low resource requirements and more efficient agri-food systems.

##### **Implementation of Various Programs:**

- The progress in implementation of various programs and activities under the Medium Term Action Plan of ASEAN-India Cooperation (Year 2021-2025) was reviewed.

##### **Cooperation in Agriculture:**

- The commitment to ASEAN-India cooperation in agriculture and forestry was reaffirmed.

#### 3.2 Department for Promotion of Industry and Internal Trade (DPIIT)

After Internal Trade was added to the mandate of DIPP, the department was renamed as the Department for Promotion of Industry and Internal Trade (DPIIT). Administered by the Ministry of Commerce and Industry, it is a nodal Government agency with a responsibility to formulate and implement growth strategies for the Industrial Sector along with other Socio-Economic objectives and national priorities.

##### **Why the New Mandate?**

- For a long time, the Confederation of All India Traders Association (CAIT) was demanding a separate Ministry of Internal Trade. The creation of a separate department by merging internal and external trade is a step forward in the creation of a separate Ministry.

##### **Role and Functions of DPIIT**

- Established in 1995, DIPP was mandated with the overall industrial policy formulation and execution, whereas the individual ministries take care of the specific industries' production, distribution, development, and planning aspects.
- From the regulation and administration of the industrial sector, the role of the Department has been transformed into facilitating investment and technology flows and monitoring industrial development in the liberalized environment.

**Industrial Policies**

- Formulating and implementing Industrial Policy in India introduced by the Government. Formulating and implementing strategies necessary for developing industries in compliance with development and National objectives.
- Monitoring the industrial growth, in general, and performance of industries specifically assigned to it, in particular, including advice on all industrial and technical matters.

**Foreign Direct Investment (FDI)**

- Formulating, promoting, and facilitating policies of Foreign Direct Investment (FDI).
- Encouraging collaborators at an enterprise level and formulating policy parameters for Foreign Technology.

**Intellectual Property Rights**

- Formulating policies related to Intellectual Property Rights.
- These policies are related to the following fields:
  - Industrial Designs
  - Patents and Trademarks
  - Geographical Indications of Goods
- Administrating the rules and regulations made under the Administration of Industries Act of 1951.
- Promoting industrial development of industrially backward areas and the North Eastern Region including International Co-operation for industrial partnerships and Promotion of productivity, quality, and technical cooperation.

**3.3 NHAI InvIT again surpasses all the expectations**

Recently, the National Highways Authority of India (NHAI) has decided to use Infrastructure Investment Trust(s) (InvIT) as a vehicle for mobilising funds for constructing road infrastructure.

**Key Points****Infrastructure Investment Trusts:**

- InvITs are instruments that work like mutual funds. They are designed to pool small sums of money from a number of investors to invest in assets that give cash flow over a period of time. Part of this cash flow would be distributed as dividend back to investors.
- The minimum investment amount in an InvIT Initial Public Offering (IPO) is Rs 10 lakh, therefore, InvITs are suitable for high networth individuals, institutional and non-institutional investors.
- InvITs are listed on exchanges just like stocks — through IPOs.

- However, the Indian InvIT market is not yet mature and has supported the formation of 10 InvITs till date of which only two are listed. The InvITs listed on the stock exchange are IRB InvIT Fund and India Grid Trust.
- InvITs are regulated by the Securities and Exchange Board of India (SEBI) (Infrastructure Investment Trusts) Regulations, 2014.

**Structure of InvIT:**

- Like mutual funds, they have a trustee, sponsor(s), investment manager and project manager.
- Trustee has the responsibility of inspecting the performance of an InvIT.
- Sponsor(s) are promoters of the company that set up the InvIT.
- Investment manager is entrusted with the task of supervising the assets and investments of the InvIT.
- Project manager is responsible for the execution of the project.

**Need:**

- In October 2017, the Centre had launched Bharatmala Pariyojana for the development of 24,800 km of roads at a total investment of Rs. 5,35,000 crore.
- In order to complete the projects, NHAI needs adequate funds and one of the options is to monetise the completed and operational National Highways assets and offer attractive schemes to private players to invest in construction of National Highways

**Benefit:**

- At a time when private sector investment in the economy has declined, fund-raising by NHAI and spending on infrastructure will not only provide a fillip to the economy, but will also crowd-in private sector investment.
- NHAI's InvIT offer, which is expected to come soon, is a way for the government to tap alternative sources of financing to boost public spending in the roads and infrastructure sector.
- An InvIT also offers the company the leeway to fulfil its debt obligations quickly.
- InvIT holders also benefit from favourable tax norms, including exemption on dividend income and no capital gains tax if InvIT units are held for more than three years.

**Safeguards for Investors:**

- There are certain rules that the InvIT issuers have to follow designed to safeguard the investor.
- First, the sponsor has to hold a minimum 15% of the InvIT units with a lock-in period of three years.
- Second, InvITs have to distribute 90% of their net cash flows to investors.
- Lastly, the InvIT is required to invest a minimum of 80% in revenue generating infra assets.

### **3.4 Bureau of Indian Standards signs MoU with Technical institutions for active engagement of academia in standards formulation**

- Bureau of Indian Standards (BIS) signed Memorandum of Understanding (MoU) with IIT Kanpur, IIT(ISM) Dhanbad and NIT Rourkela here today for establishment of 'BIS Standardization Chair Professor' at these institutes.
- This is an initiative towards institutionalizing its engagement with the eminent institutes of the country for securing active participation of academia in standards formulation and making teaching of Indian standards an integral part of the curriculum. This will promote excellence and leadership in teaching, research and development in the field of Science and various Engineering, disciplines.

#### **Bureau of Indian Standards Act**

- BIS Act allows multiple types of simplified conformity assessment schemes including self-declaration of conformity.
- BIS act provides enabling provisions for making hallmarking of precious metal articles mandatory.
- The Act enables the Central Government to appoint any authority/agency, in addition to the BIS, to verify the conformity of products and services with the established standard and issue certificate of conformity.
- There is a provision for repair or recall, of the products (bearing Standard Mark) that do not conform to the relevant Indian Standard.

#### **New areas identified in standardization are:**

- Alternate fuels
- E-mobility
- Medical Devices
- Smart Cities
- Digital Technologies (e.g. Industry 4.0, Artificial Intelligence, Block Chain etc.)
- New and Renewable energy.

#### **Important initiatives for effective implementation of the BIS Act, 2016 are**

- **BIS (Hallmarking) Regulations, 2018** under the BIS act calls for Hallmarking of:
  - Gold jewellery and gold artefacts
  - Silver jewellery and silver artefacts
- **Penal provisions** for better and effective compliance have been made stringent under BIS (Hallmarking) Regulations, 2018.

### **Bureau of Indian Standards**

- BIS is the National Standard Body of India for the harmonious development of the activities of standardization, marking and quality certification of goods.

**BIS has been providing traceability and tangibility benefits to the national economy in a number of ways by:**

- Providing safe reliable quality goods.
- Minimizing health hazards to consumers.
- Promoting exports and imports substitute.
- Control over proliferation of varieties etc through standardization, certification and testing.

### **3.5 Cabinet approves Mechanism for procurement of ethanol by Public Sector Oil Marketing Companies (OMCs) under Ethanol Blended Petrol (EBP) Programme**

#### **Ethanol Blended Petrol (EBP) Programme**

The Ethanol Blended Petrol Programme was launched in 2003 with an aim to promote the use of renewable and environmentally friendly fuels and reduce India's import dependence for energy security.

- Starting with 5% blending, the government has set a target of 10% ethanol blending by 2022 and 20% blending (E20) by 2030.
- The programme is implemented in accordance with the National Policy on Biofuels.
- Under this programme, oil marketing companies (OMCs) will procure ethanol from domestic sources at prices fixed by the government.
- Till 2018, only sugarcane was used to derive ethanol. Now, the government has extended the ambit of the scheme to include foodgrains like maize, bajra, fruit and vegetable waste, etc. to produce ethanol.
- This move helps farmers gain additional income by selling the extra produce and also broadens the base for ethanol production in the country.

#### **What is Ethanol Blending?**

- An ethanol blend is defined as a blended motor fuel containing ethyl alcohol that is at least 99% pure, derived from agricultural products, and blended exclusively with petrol.

#### **Benefits of ethanol blending:**

- The auto fuels we commonly use are mainly derived from the slow geological process of fossilisation, which is why they are also known as fossil fuels. Ethanol in comparison is a biofuel, that is, it is primarily derived from processing organic matter (hence, it is a biofuel). In India, ethanol is largely derived from sugarcane via a fermentation process.

- Since it is a plant-based fuel, ethanol is considered renewable.
- Since ethanol is high in oxygen content, engines using ethanol blends combust fuel more thoroughly reducing vehicular emissions. Hence, this process will also help reduce the country's carbon footprint.
- Mixing 20 percent ethanol in petrol can potentially reduce the auto fuel import bill by a yearly \$4 billion, or Rs 30,000 crore.
- Another major benefit of ethanol blending is the extra income it gives to farmers. Ethanol is derived from sugarcane and also foodgrains. Hence, farmers can earn extra income by selling their surplus produce to ethanol blend manufacturers.

### **Impact of E20 as a Fuel**

#### **Impact on Environment**

- The use of E20 as fuel reduces carbon monoxide emissions by 50% in two-wheelers and 30% in four-wheeler vehicles.
- Hydrocarbon emissions also reduce compared to unblended petrol.
- Ethanol blending can thus reduce emissions in vehicles.

#### **Impact on Consumers**

##### **The fuel efficiency of vehicles will reduce by:**

- 6-7% for 4 wheelers designed for E0 and calibrated for E10
- 3-4% for 2 wheelers designed for E0 and calibrated for E10
- 1-2% for 4 wheelers designed for E10 and calibrated for E20

However, with improvements in engines, the loss in fuel efficiency can be minimised.

#### **Impact on Vehicle Manufacturer**

- Engines and components will need to be tested and calibrated with E20 as fuel.
- No major change in the assembly line is required.
- Vendors need to be developed for the procurement of additional components compatible with E20.

#### **Challenges in Ethanol Blending Programme**

Although promising, the ethanol blending programme faces several challenges and concerns. Some of them are discussed below.

- **Availability of sufficient feedstock on a sustainable basis:** Current regulations in the country allow production of ethanol from sugarcane, sugar, molasses, maize and damaged foodgrains unfit for human consumption. Further, surplus rice with FCI is also allowed. Some states have demanded that rice

procured by state governments be allowed for ethanol production. However, there is the issue of diverting foodgrains from human consumption to ethanol production when hunger and malnutrition are still problems faced by many in the country.

- **Production Facilities:** Ethanol production facilities have to be augmented if the goals of 20% blending by 2030 are to be achieved. Currently, ethanol production is largely confined to the sugar producing states. Sugar mills, which are the key domestic suppliers of bio-ethanol to OMCs, were able to supply only 57.6% of the total demand. The mills also do not have enough financial stability to invest in biofuel plants.
- **Price uncertainty:** The prices of both ethanol and sugarcane are fixed by the government leading to concerns among investors regarding the price of bioethanol.
- **Availability of Ethanol:** Ethanol is not equally available all over the country. This leads to an increase in transportation and logistics costs. Moreover, handling and storage of ethanol are also risky as it is a highly flammable liquid.
- **Challenge for vehicle manufacturers:** Vehicle manufacturers must work with vendors to develop automobile parts compatible with ethanol. They should work on engine optimisation for higher ethanol blends.
- **Environmental clearances:** Currently, ethanol production plants/distilleries fall under the “Red category” and require environmental clearance under the Air and Water Acts for new and expansion projects. This often takes a long time leading to delays.

### **3.6 Scheme for Financial Support for Project Development Expenses of PPP Projects – ‘IIPDF Scheme’**

- The IIPDF Scheme was set up in 2007.
- It is a Central Sector Scheme with total outlay of Rs 150 crore for a period of three years from 2022-23 to 2024-25.
- It is available to the Sponsoring Authorities for PPP projects for meeting the project development costs.
- It would be necessary for the Sponsoring Authority to create and empower a PPP Cell to undertake PPP project development activities and also address larger policy and regulatory issues.

#### **Objective:**

- It is aimed to provide **financial support for quality project development activities.**

#### **Significance:**

- The Sponsoring Authority will, be able to **source funding to cover a portion of the PPP transaction costs**, thereby **reducing the impact of costs related to procurement** on their budgets.

**Financial Outlay:**

- The IIPDF will contribute upto 75% of the project development expenses to the Sponsoring Authority as an interest free loan. The balance 25% will be co-funded by the Sponsoring Authority.
- On successful completion of the bidding process, the project development expenditure would be recovered from the successful bidder.
- However, in the case of failure of the bid, the loan would be converted into grant.
- In case the Sponsoring Authority does not conclude the bidding process for some reason, the entire amount contributed would be refunded to the IIPDF.

**3.7 Centre formulates action plan to promote exports of millets and value-added products of millets**

- As per the government's robust strategy to promote millets, Indian missions abroad would be roped in branding and publicity of Indian millets, identification of international chefs as well as potential buyers such as departmental stores, supermarkets and hypermarkets for organizing B2B meetings and direct tie-ups.
- In addition, Ambassadors of Foreign missions in India of the targeted countries and potential importers would also be invited to showcase various millet-based products, including Ready to Eat millet products and facilitate B2B meetings.
- APEDA has planned to organize millet promotional activities in South Africa, Dubai, Japan, South Korea, Indonesia, Saudi Arabia, Sydney, Belgium, Germany, United Kingdom and United States of America by facilitating participation of different stakeholders from India in some of the significant food shows, Buyer Seller Meets and Road Shows.
- As part of the promotion of Indian millets, APEDA has planned to showcase millets and its value added product at various global platforms such as Gulfood 2023, Foodex, Seoul Food & Hotel Show, Saudi Agro Food, Fine Food Show in Sydney (Australia), Belgium's Food & Beverages Show, Germany's BioFach and Anuga Food Fair, San Francisco's Winter Fancy Food Show, etc.
- India is one of the leading producers of millets in the world with an estimated share of around 41 percent in the global production. As per FAO, world production of millets in the year 2020 was 30.464 million metric tones (MMT) and India's share was 12.49 MMT, which accounts to 41 percent of the total millet production. India recorded 27 percent growth in millet production in 2021-22 as compared to millet production in the previous year was 15.92 MMT.
- India's top five millet producing states are Rajasthan, Maharashtra, Karnataka, Gujarat and Madhya Pradesh. Share of export of millets is nearly 1% of the total millet production. Exports of millets from India include mainly whole grain and the export of value-added products of millets from India is negligible.

- However, it is estimated that the millets market is set to grow from its current market value of more than USD 9 billion to over USD 12 billion by 2025.
- The pre-launch of IYoM-2023 is scheduled for December 5, 2022 involving stakeholders of the supply chain such as FPOs, Start-ups, exporters, producers of millet-based value-added products. Besides, buyer seller meets would also be organized in the countries of Indonesia, Japan, United Kingdom, etc to promote Indian millets.
- APEDA would also organise food sampling and tasting at the retail level and in key local bazaars of targeted countries where individual, household consumers can gain familiarity with millet products.
- For promotion of Indian Millets and its value-added products, centre has developed 30 e-Catalogues on each of the targeted countries comprising information on various Indian Millets and range of their value-added products available for export, list of active exporters, start-ups, FPOs and importer/retail chain/hyper markets, etc that to be circulated to the Indian Embassy abroad, importers, exporters, start ups and stakeholders.
- Government is also mobilizing start-ups for export promotion of value-added products in the Ready to Eat (RTE) and Ready to Serve (RTS) category such as noodles, pasta, breakfast cereals mix, biscuits, cookies, snacks, sweets, etc.
- As per the centre's millet promotion strategy, major international retail supermarkets like Lulu group, Carrefour, Al Jazira, Al Maya, Walmart, etc. would also be roped in to establish millet corner for branding and promotion of millets.
- APEDA has also created a separate section for millets on its website and the country-wise and state-wise e-catalogues have been uploaded for information to the stakeholders.
- Government has also started formulating five-year strategic plan for the promotion of millets and value-added millet products in the international market in association with ICAR-Indian Institute of Millets Research (IIMR), Hyderabad, ICMR-National Institute of Nutrition, Hyderabad, CSIR-Central Food Technological Research Institute (CFTRI), Mysore and Farmer Producer Organizations (FPOs).
- Centre has created the Nutri Cereals Export Promotion Forum to give impetus to the export of potential products, including millets, and to remove the bottlenecks in the supply chain of Nutri cereals.
- Millets have superior nutritional values in comparison to highly consumed cereals such as rice and wheat. Millets are rich in calcium, iron, and fibers that help in fortifying essential nutrients for the healthy growth in children. Also, the usage of millets in infant food and nutrition products is increasing.
- As per the DGCIS data, India registered a growth of 8.02% in the export of millets in the financial year 2021-22 as the export of millets was 159,332.16 metric tonne against 147,501.08 metric tonne during the same period last year.

- India's major millet exporting countries are U.A.E, Nepal, Saudi Arabia, Libya, Oman, Egypt, Tunisia, Yemen, U.K and U.S.A. The varieties of millets exported by India include Bajra, Ragi, Canary, Jawar, and Buckwheat.
- The major millet importing countries in the world are Indonesia, Belgium, Japan, Germany, Mexico, Italy, the U.S.A, United Kingdom, Brazil and Netherlands.
- There are 16 major varieties of millet, which are produced and exported, including Sorghum (Jowar), Pearl Millet (Bajra), Finger Millet (Ragi) Minor Millets (Kangani), Proso Millet (Cheena), Kodo Millet (Kodo), Barnyard Millet (Sawa/Sanwa/Jhangora), Little Millet (Kutki), Two Pseudo Millets (BuckWheat/Kuttu), Amaranthus (Chaulai) and Brown Top Millet.
- APEDA has also signed a Memorandum of Understanding (MoU) with IIMR to boost value-addition and farmers' income. APEDA launched a variety of millet products for all age groups at affordable prices ranging from Rs 5 to Rs 15 during AAHAR food fair, which is Asia's biggest B2B international food and hospitality fair.

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## 4. ENVIRONMENT

### 4.1 United Nations Climate Change Conference COP27

#### **Introduction:**

- A breakthrough agreement was reached at the United Nations Climate Change Conference COP27 to provide “loss and damage” funding for vulnerable countries hit hard by climate disasters.
- Developing countries have for decades, made strong appeals for the establishment of a loss and damage fund, to compensate nations that are the most vulnerable to climate disasters, yet who have contributed little to the climate crisis.
- UN Secretary-General Antonio Guterres hailed it as a significant step – a much-needed political signal to rebuild broken trust.
- A package of other crucial decisions was also delivered by countries at the annual climate conference that was set against a difficult geopolitical backdrop.

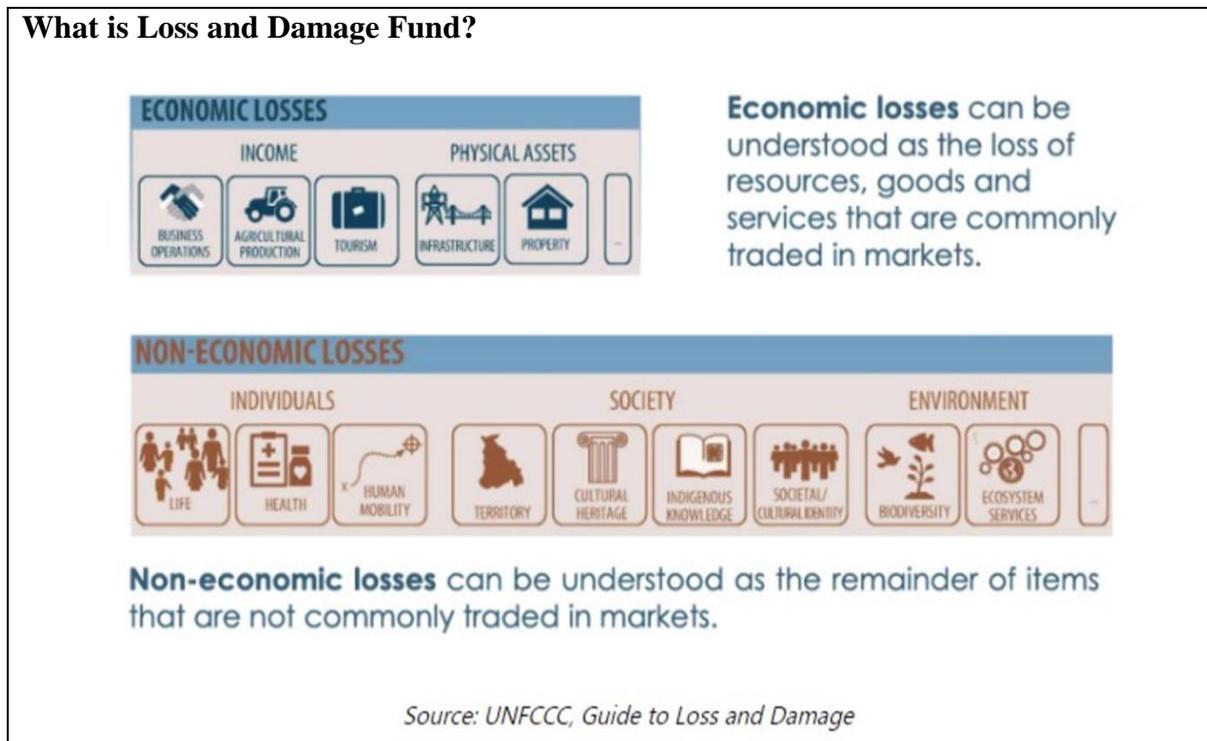
#### **Key Outcomes of COP 27:**

- A ‘Loss and Damage’ fund has been allocated, which was a long-held demand from countries that have suffered maximum because of climate change for no fault of theirs in the historical past.
- Collective action at least by the vulnerable countries to demand compensation should also be seen as progress.

#### **Loss and Damage Agreement:**

- The Loss and Damage Agreement is something that has been in talks for about three decades and it is only now that countries have agreed to it.
- The loss and damage agreement has been the only big thing to boast about in COP27. It is a historic agreement that is the outcome of the collective efforts of countries.
- A transitional committee will be established to work on the finer details of the agreement and the agreement will become operational by the year 2023.
- The concurrence of the member countries on the Santiago Network adoption should be appreciated.
- Some countries like Denmark and Sweden have come forward to provide some sort of voluntary funding to the Loss and Damage fund and vulnerable countries.
- However, various activists are of the view that loss of lives, entire ecosystems, and biodiversity due to changing climate cannot be compensated with money.
- It is also argued that all previous meetings and multilateral agreements of COP have failed and this agreement might also end with a similar fate. For instance, the Adaptation Fund that was agreed upon with a total amount of \$230 million still remains on paper.

- It should be noted that the details about its function, size, and responsibility are also not clearly specified. The finer details like the criteria to decide the vulnerable country, the extent of damage, etc. were not discussed.
- According to some research estimates, \$500 billion are required every year by high-risk countries and this should not be seen as a charity, rather it should be seen as a tax to reduce inequitable Loss and Damage.



### Setbacks:

- The climate-sensitive sectors like agriculture were not given adequate emphasis during the summit. It is important to climate-proof our lives, livelihood, and economies without ignoring the developmental trajectories.
- Inadequate discussion on the phase-down of fossil fuel was a major disappointment.
- Nothing much has been done on the Climate Finance front. Moreover, there should have been a much greater discussion on reducing the pace of climate change.
- The cap of the global temperature limit of 1.5 degrees is retained given the climate crisis.
- Even after 2022 experienced some of the adverse impacts of climate change in the form of extreme weather events in different parts of the world including Asia, Africa, and Europe, no strong decisions have been made in reducing greenhouse gas emissions.
- The actual outcomes of global warming are more horrifying than what was predicted in the IPCC's reports. However, this has not garnered adequate deliberations.
- The United Nations Secretary-General has rightfully stated that "The world still needs a giant leap on climate ambitions".

**Associated challenges:**

- The world is facing various sufferings in the form of lost agricultural productivity of various crops due to increased temperatures.
- Even the productivity of each individual will suffer in the coming future.
- The world has shifted into an era of Intellectual Property Rights, where the basic intent behind developing clean technology is profit and not the overall benefit of humankind.
- The majority of countries across the world are turning protectionist, making solutions like technology transfer a distant reality.

**Way ahead:**

- If the human race has to survive and the planet has to be saved, early and strong actions are required.
- Technology sharing is required along with co-development. Moreover, it should be put to correct use.
- There is also a need for developing technologies that are friendly, effective, and efficient for small and medium enterprises.
- The change in the mind-set of all the stakeholders is also a crucial step.
- Local solutions need to be adopted with the participation of people at all levels.
- Specific solutions and assistance should be arranged on a self-reliant basis. For example, India's approach to LiFE.
- Further, these individual solutions should be interconnected as climate change is a global challenge and requires integration in resolving it. A clear example is the COVID-19 pandemic.
- Availability, accountability, and accessibility of systems are required with appropriate and adequate schemes and policies.
- There is also a need for financial innovation and ensuring timely delivery of these finances for resilience, adaptability, and transition.
- India's efforts like the International Solar Alliance, Coalition of Disaster Resilient infrastructure, LiFE, etc. should be supported and emulated by other countries of the world.
- It is important to have a financial system that can generate economic returns like profits for sustainable technologies like electric vehicle rollout. This further requires policy reforms at national and international levels.

## **4.2 The severe climate disasters of 2022**

### **Context:**

- While COP 27 in Sharm el-Shaikh, Egypt, discusses methods of climate financing, the impacts of global warming and climate change have been witnessed globally. From devastating floods in Pakistan to the worst droughts in Europe, all indicate that the effects of climate change are emerging on the surface.

### **About the News**

- As global leaders discuss the finances for mitigating and adapting to climate change, there were several climate changes induced global catastrophes which severely impacted life on Earth during 2022.
- Although Loss and Damage funds were approved by the COP 27, which would be used to help developing countries recover from the effects of climate change they are already suffering, contribution commitments are yet to be ensured.

### **What were the major global catastrophic events witnessed this year?**

#### **Pakistan floods**

- As per World Meteorological Department, human-caused climate change increased the intense rainfall that flooded large parts of Pakistan.
- Pakistan recorded the warmest April preceding the monsoon season resulting in melting of glaciers, which led rivers to swell. Extreme rainfall between June to September triggered the most devastating floods.
- Over 1,500 people were killed, with millions being displaced and developing serious health issues such as skin infections, malaria and diarrhoea.

#### **Hurricane Ian in the USA**

- Warm ocean waters in the Gulf of Mexico powered Hurricane Ian in the US. The escalation brought severe floods, relentless rains and strong winds to southwestern Florida
- It resulted in the loss of 101 lives and monetary losses of more than USD 100 billion.

#### **European droughts**

- Europe was struck by two extreme heat waves in June and July. Following the deadly summer heat, many regions of Europe witnessed severe droughts since the beginning of this year.
- Water levels in Europe's biggest rivers – Rhine, Po, Loire, and Danube – shrunk, and dry conditions continued to prevail in different parts of the continent.

#### **Spain and Portugal: Driest climate in 1200 years**

- Atmospheric high-pressure system, which causes dry air to descend over subtropical regions in the Northern Hemisphere during winter and spring seasons, called Azores high, has the ability to block wet weather outlets.

- This caused dry conditions in Iberian Peninsula and Mediterranean region. Spain and Portugal hence faced the driest weather in 1,200 years, along with wildfires

### **India recorded extreme weather events almost every day in 2022**

- India recorded “extreme weather events on 241 of 273 days” in the first nine months of the year.
- Thunderstorms, persistent rains, cyclones, droughts, heat waves, lightning, floods and landslides occurred all throughout these months.
- Overall, these disasters claimed about “2,755 lives, affected 1.8 million hectares (ha) of crop area, destroyed over 416,667 houses and killed close to 70,000 livestock.

### **4.3 Zero tolerance against greenwashing**

#### **Context:**

- The United Nations Secretary-General at the COP27 summit has said that Commitments towards net-zero carbon emission cannot be a mere public relations exercise and if one wants to win the fight against climate change it is imperative to have zero tolerance for greenwashing.

#### **About COP27**

- The 27th session of the Conference of the Parties of the UNFCCC or COP 27 is being held at Sharm El-Sheikh in Egypt.
- The conference is an effort to build on previous successes and pave the way for effectively tackling global climate change.

#### **COP27 will focus on three main areas:**

- Reducing emissions
- Helping countries to prepare for and deal with climate change
- Securing technical support and funding for developing countries for the above

#### **About Greenwashing**



- Greenwashing is the process of conveying a false impression or misleading information about how a company's products are environmentally sound.
- It involves making an unsubstantiated claim to deceive consumers into believing that a company's products are environmentally friendly or have a greater positive environmental impact than is true.

**Examples:**

- The Volkswagen scandal, in which the German car company was found to have been cheating in emissions testing of its supposedly green diesel vehicles, was a case of greenwashing.
- Implications include presenting a false picture of the progress being made on the climate change front, thereby pushing the world towards disaster, while at the same time rewarding entities for irresponsible behaviour.

**Green marketing vs Greenwashing**

- Unlike greenwashing, green marketing is when companies sell products or services based on legitimate environmental positives.
- Green marketing is generally practical, honest, and transparent, and it means that a product or service meets the following criteria:
  - Manufactured in sustainable fashion
  - Free of toxic materials
  - Made from renewable materials
  - Designed to be repairable rather than disposable

But, it's easy for green marketing to translate to greenwashing in practice when an organisation doesn't live up to the standards of sustainable business practices.

The Carbon credit targets, to adhere the 'Climate Change' protocols have now been flagged for lack of integrity and double counting, in wake of Greenwashing

**Way forward****An expert group at the UN has recommended the following:**

- Corporations pursuing net zero targets must not be allowed to make fresh investments in fossil fuels, and must be asked to present short-term emission reduction goals on the path to achieving net zero.
- Corporations have been advised not to use offset mechanisms at the start of their journey to net-zero status.
- Creation of regulatory structures and standards.
- While the measures are likely to curb Greenwashing to some extent, it is imperative to create an entire architecture of the global fight against climate change based on trust.

#### 4.4 Adaptation Gap Report 2022

##### **Context:**

- The United Nations Environment Programme (UNEP), Adaptation Gap Report 2022, has clearly laid out that the Climate adaptation processes are massively deficient, thereby placing the world at greater risk.

##### **Adaptation Gap Report 2022**

- Global efforts in adaptation planning, financing and implementation are not enough to prepare vulnerable communities around the world to adapt to the rising risks from the impacts of climate change, according to the report.
- A third of the 197 parties to the UNFCCC have incorporated quantified and time-bound targets for adaptation.
- But, international adaptation finance flows are five-10 times lower than required and this gap continues to grow.
- Finance for adaptation increased to \$29 billion in 2020, only increasing by 4% from 2019.

##### **Reasons for shortcomings in Adaptation measures**

- Inadequate involvement of stakeholders through elite capture of resources and exclusion of marginalized groups, including women, indigenous peoples and local communities.
- Retrofitting development activities as adaptation actions without specifically addressing climate risks
- Short-term focus and neglect of future climate risks.
- Narrow definitions of adaptation success neglect diverse views regarding the purpose and effectiveness of adaptation interventions.
- Inadequate metrics reflect what is easily measurable but often difficult to validate and interpret in terms of climate risk reduction.

##### **Steps Suggested by the Report:**

- **A Nature-based Approach:** The report highlighted that the best way was to link actions on mitigation and adaptation in terms of planning, financing and implementation, which would provide co-benefits.
- **Climate Adaptation:** Countries need to back the strong words in the Glasgow Climate Pact with strong action to increase adaptation investments and outcomes, starting at COP 27.
- **Other Strategies:** The adaptation gap must be addressed in four critical ways:

- **Increase Financing for Adaptation:** There is a need for developed countries to provide a clear roadmap for their promise of doubling finance for adaptation to USD 40 billion, which was decided at COP 26 in Glasgow.
- **A New Business Model:** The world urgently needs a new business model for turning adaptation priorities into investable projects as there is a mismatch between what governments propose and what financiers consider investable.
- **Need for Data Implementation:** The availability of climate risk data and information, is an issue for adaptation planning in many developing countries.
- **Modified Warning Systems:** The implementation and operationalisation of early warning systems against extreme weather events and slow onset changes such as sea level rise.

#### **4.5 Climate Change Performance Index 2023**

**India has ranked 8th in the Climate Change Performance Index (CCPI) 2023.**

##### **CCPI:**

- Published by Germanwatch, the New Climate Institute and the Climate Action Network annually since 2005.
- It is an independent monitoring tool for tracking the climate protection performance of 57 countries and the European Union.
- These countries collectively account for more than 92% of global Greenhouse Gas (GHG) Emissions.
- It aims to enhance transparency in international climate politics and enables comparison of climate protection efforts and progress made by individual countries.
- The CCPI looks at four categories, with 14 indicators: GHG Emissions (40% of the overall score), Renewable Energy (20%), Energy Use (20%), and Climate Policy (20%).

##### **CCPI 2023:**

- No country performs well enough in all index categories to achieve an overall very high rating.
- The first three overall positions therefore remain empty.
- Denmark, Sweden, Chile and Morocco were the only four small countries that were ranked above India as 4th, 5th, 6th and 7th respectively.
- The ranking given by CCPI places India as the only G-20 country in the top 10 rankers.
- The United Kingdom ranked 11th in CCPI 2023.
- China falls ranked 51st in CCPI 2023 and received an overall very low rating.

- The United States (US) rises three ranks to 52nd that's still overall very low rating.
- The Islamic Republic of Iran ranked 63rd, hence, placing it last in the CCPI 2023.

**India's Status:**

- India has been ranked amongst top 5 countries in the world, and the best among the G20 countries.
- India's rank is the best amongst all large economies.
- India earns a high rating in the GHG Emissions and Energy Use categories, with a medium for Climate Policy and Renewable Energy.
- The country is on track to meet its 2030 emissions targets (compatible with a well-below 2°C scenario).
- However, the renewable energy pathway is not on track for the 2030 target.

**4.6 Global Methane Assessment: 2030 Baseline Report****Context**

- The Global Methane Assessment: 2030 Baseline Report, was launched at the Climate and Clean Air Ministerial Meeting at the 27th Conference of Parties (COP27) to the United Nations Framework Convention on Climate Change.

**About Methane Emissions**

- Methane (CH<sub>4</sub>) is a hydrocarbon that is a primary component of natural gas.
- Methane is generated when organic matter decomposes in an environment with little to no oxygen, for example underwater, or in an animal's intestine as food is digested, a process known as enteric fermentation.
- Also, Methane is also released through the exploitation of fossil fuels, during the process of oil, coal and gas exploration, extraction and processing.
- Methane is a greenhouse gas (GHG), so its presence in the atmosphere affects earth's temperature and its implications for Climate Change include:
  - It has a much shorter atmospheric lifetime than CO<sub>2</sub> (around 12 years compared with centuries for CO<sub>2</sub>), but it is a much more potent greenhouse gas, absorbing much more energy while it exists in the atmosphere.
  - It is more than 25 times as potent as carbon dioxide at trapping heat in the atmosphere.
  - Further, methane affects air quality because it is an ingredient in the formation of ground-level (tropospheric) ozone, a dangerous air pollutant.

## Report Findings

- The year 2021 saw the largest annual increase in Methane since global monitoring began four decades ago.
- IPCC's Sixth Assessment shows that human-driven methane emissions are responsible for nearly 45% of current net warming.
- Methane levels in the atmosphere in 2021 reached a record high of 1908 parts per billion, which is 262% of the preindustrial era levels.
- Agriculture, fossil fuels as well as solid waste and wastewater are the three major sources of methane.
- Achieving methane emissions reductions in the next decade will keep the planet significantly cooler, than attempts to cut carbon dioxide emissions alone, largely because CO2 emission reductions also remove cooling aerosols.

## Mitigation pathways in report include:

- Least-cost scenarios for limiting warming to 1.5°C require methane emissions reductions of about 60% from fossil fuels, 30-35% from waste, and 20-25% from agriculture by 2030, relative to 2020 emissions.
- The Global Methane Pledge (Announced in CoP 26) target is within the range of reductions needed. Hence, the world must implement methane reduction policies, covering all main anthropogenic sectors immediately to avoid the worst impacts of climate change.

## Measures to limit Methane Emissions

- The United Nations convened a Food Systems Summit in 2021, which aimed at launching bold new actions to transform the way the world produces and consumes food, as part of the Decade of Action to achieve the Sustainable Development Goals by 2030.
- The UN's Koronivia Joint Work on Agriculture initiative supports the transformation of agricultural and food systems, focusing on how to maintain productivity amid a changing climate.
- The Global Methane Pledge, launched in 2021 at CoP 26, aims to keep alive the 1.5 degrees Celsius goal.
- Under this, over 100 countries have committed to reducing global methane emissions by at least 30% by 2030 from 2020 levels. This reduction could eliminate over 0.2°C warming by 2050.
- Further, the Global Methane Hub, a philanthropic fund to support methane mitigation, has raised \$70 million to support critical research on reducing methane emissions from enteric fermentation.

## 4.7 Roadmaps for scaling solar investment

### Context:

The ISA releases \$1-t roadmap for scaling solar investment, deployment

**About the News:**

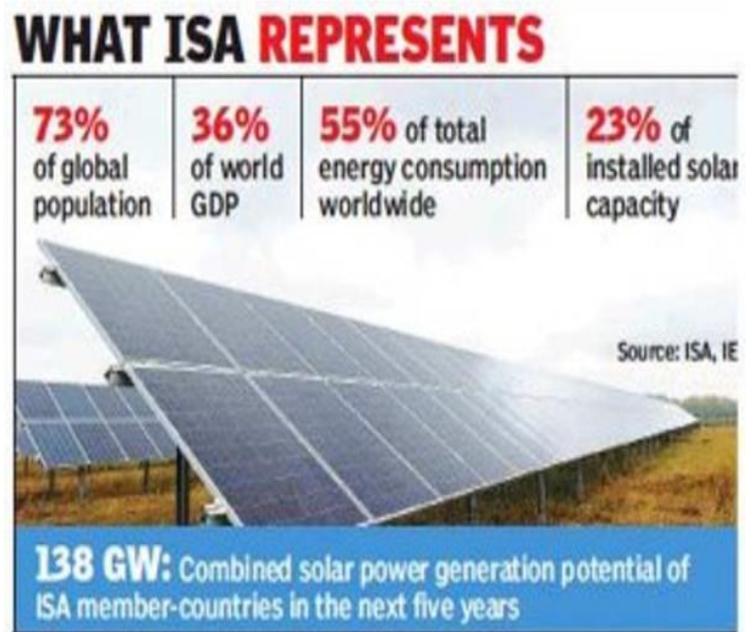
- The International Solar Alliance (ISA) has recently released a roadmap to mobilise \$1 trillion by 2030 to meet the investment requirements for scaling up the deployment of solar power projects.
- The roadmap “Our Solar Future: Roadmap to Mobilise \$1 trillion by 2030” was made at the COP27 meeting in Sharm El Sheikh by the ISA in association with World Resources Institute (WRI) and Bloomberg Philanthropies.
- The roadmap aims to provide a path to rapidly and equitably scaling global solar investment and deployment to exploit vast untapped solar energy potential in many regions
- It outlines priority actions by governments, development finance institutions, and other actors to rapidly scale solar investment.
- The roadmap is expected to improve the corpus of present investments in zero-carbon power to nearly six times at the current rate to put the world on a 1.5°C-compatible pathway.

**Major highlights of the roadmap:**

**Mobilising capital:** The roadmap aims to mobilise \$1 trillion in solar investments by increasing commitments by private investors, governments and donors to invest in renewable energy, battery storage and grid integration.

- **Scaling opportunities:** The roadmap will examine opportunities in market segments such as utility-scale solar projects, which offer a viable pathway to accelerate the shift away from fossil fuels, reduce energy cost, and improve reliability of electricity supply.

- **Harnessing solar potential:** Off-grid and decentralised solar applications are important to affordably reach the 785 million people who still need energy access and the 2.6 billion who need reliable grids.
- **Integration:** Energy storage and grid flexibility infrastructure investments including power transmission and distribution are essential to integrate solar energy resources into regional electricity infrastructure and facilitate load management.



- **Use of technology:** Utilizing advanced solar and storage technologies for scaling solar deployment in difficult-to-serve industries and locations and for addressing intermittency issues

**Major issues:**

- **Poor returns:** Cost declines for solar energy and battery energy storage have made solar technologies cost-competitive with fossil fuels and other renewable energy solutions.
- **Untapped potential:** Due to high cost of capital and limited financing models in many developing countries, there is vast untapped solar energy potential in many regions.
- **Need for capital:** There is a need for concerted efforts and innovative solutions to scale solar investments, especially in sub-Saharan Africa, South-East Asia and the Latin America and Caribbean region.
- **Poor infrastructure:** Limited scale of development finance institutions have hampered the mobilisation of investment for blended finance, concessional credit lines, and other risk mitigation instruments to help bring in private investors.

**International Solar Alliance (ISA)****About:**

- It is an international organisation of more than 80 member countries including India.
- **Headquarters:** Its secretariat is located in Gurugram, India.
- **Mechanism:** It supports governments around the world to improve energy access and security by promoting solar energy as a sustainable, affordable and resilient way to transition to a carbon-neutral future.
- **Objective:** It aims to facilitate energy access in every corner of the world by delivering cleaner electricity to all by 2030.
- **Mission:** It strives to unlock USD 1 trillion of investment by 2030 by reducing the cost of the technology and its financing and increasing the skills of people working in the industry.
- **Importance:** It will help deliver global relevance, local benefit to all countries through collaborations, risk mitigation & innovative financing instruments to facilitate the promotion and deployment of technologies in respective target markets.

**4.8 E-waste management rules:2022****Context:**

- Ministry of Environment Forest and Climate Change (MoEF&CC) has recently notified E-waste (management) rules 2022 under Environment (Protection) Act, 1986.

**Beyond News:**

- The rule is applicable to electrical devices and radiotherapy and nuclear medicine equipment and will come into force from 1 April 2023.

- It shall be applicable to every manufacturer, producer refurbisher, dismantler and recycler involved in the manufacturing, sale, transfer, purchase, refurbishing, dismantling, recycling and processing of e-waste or electrical and electronic equipment.
- The metal in e-waste includes mercury, lead, cadmium, polybrominated flame retardants, barium and lithium, all of which are hazardous to human health.
- According to a United Nations report, out of nearly 44 million tonnes worth of electronics produced annually, only 20 per cent is recycled sustainably.
- India generates nearly 3.2 million tonnes of e-waste last year, ranking third after China and the United States.

### Major highlights of the rule:

- **Ban on notified items:** The new rule has restricted the use of hazardous substances in manufacturing electrical and electronic equipment (EEE).
- **Need:** Exposure to hazardous toxins and radioactive material from e-waste scrap have an adverse impact on human health and the environment.
- **Mandate:** The rules make it obligatory on companies to reduce the use of lead, mercury, and cadmium among others in the manufacturing of electronic equipment.
- **Recycling:** The manufacturer shall use the technology or methods to make the end product recyclable.
- **Compatibility:** Manufacturers shall ensure that components or parts made by the different manufacturers are compatible with each other so as to reduce the quantity of e-waste.
- **Verification:** The Central Pollution Control Board (CPCB) will conduct random sampling of electrical and electronic equipment placed on the market to monitor and verify the compliance of reduction of hazardous substances provisions.
- **Permission for Imports:** New electrical and electronic equipment import or placement in the market will be permitted only for those which are compliant with provisions laid down by the government failure to which will lead to the withdrawal all samples from the market.

### E-waste in India:

- Electronic waste or e-waste are discarded electronic devices and gadgets such as discarded computer monitors, mobile phones, chargers, compact discs, headphones, televisions, air conditioners, refrigerators etc.,
- **Waste burden:** According to ASSOCHAM, the generation of electronic waste has been increasing faster than plastic waste, with e-junk witnessing 31% annual growth in India.
- **Poor recycling:** Out of the total e-waste produced annually, only 20 per cent (8.9 MT) is

documented to be collected properly and recycled, while there is no record of the remaining e-waste.

- **Advantage India:** India is the only country in Southern Asia with e-waste legislation, with laws to manage e-waste in place since 2011, mandating that only authorised dismantlers and recyclers collect e-waste.
- **Structural blockades:** Major reasons behind the poor state of e-waste management in India includes low level of infrastructure, legislation and framework.
- **Present legislations:** At present, there are various legislations to regulate the disposal and management of e-waste in India including Hazardous Wastes (Management and Handling) Amendment Rules, 2003, Guidelines for Environmentally Sound Management of E-waste, 2008 and E-waste (Management and Handling) Rules, 2011.
- **Extended Producer Responsibility (EPR):** The E-waste (Management) Rules, 2016 mandates collection targets and transferred responsibilities to the producers and put the onus on the brands to ensure that waste was brought back in.

**4.9 Mangrove Alliance for Climate (MAC)**

**Context:**

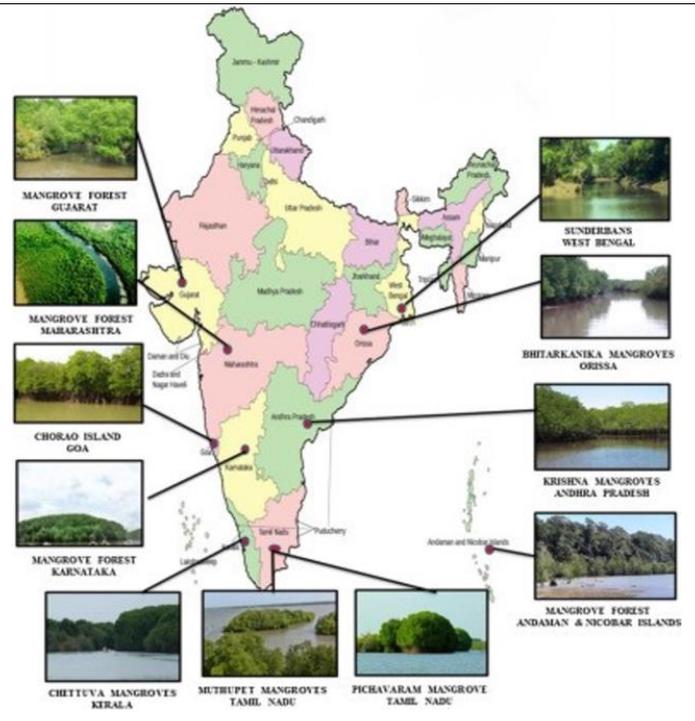
- The Union Minister for Environment Forest and Climate Change addressed the Launch of the Mangrove Alliance for Climate (MAC).

**What is the Mangrove Alliance for Climate (MAC)?**

- It is an alliance led by the United Arab Emirates (UAE) in partnership with Indonesia.
- MAC was launched at the COP27 Summit in Egypt to scale up and accelerate the conservation and restoration of the mangrove forests.

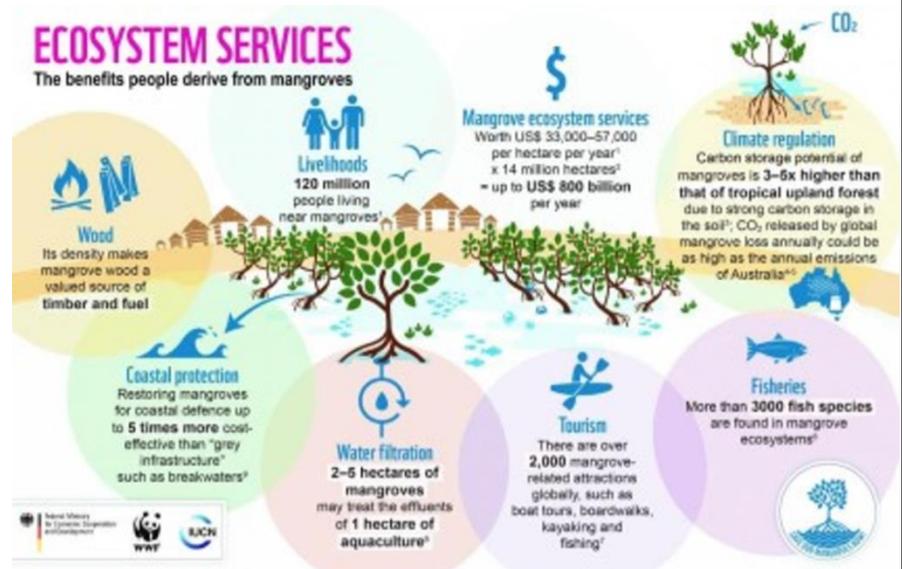
**What are Mangrove Forests?**

- A mangrove is a shrub or a small tree that grows along the coastlines and has roots in salty sediments, often underwater. They also grow in swamps.
- They are found in tropical and sub-tropical intertidal regions characterized by: High Rainfall (between 1,000 to 3,000 mm), temperature range (26OC-35OC) and calm water with sufficient sediments to set down roots.



**Features of Mangroves:**

- Mangrove forests can survive extreme weather conditions and require low oxygen levels to survive.
- But they cannot survive freezing temperatures.
- They act as natural barriers against rising tides and storms. Each year, they prevent property damages of over \$65 billion.
- They provide "breeding grounds for marine biodiversity and 80% of global fish populations depend on healthy mangrove ecosystems."



Source: UNEP, 2014; Giri et al., 2011; In the Indo-Pacific region: Daniels et al., 2011; Up to 450 million t CO<sub>2</sub> Pardolet et al., 2012; In 2010: ECGAP/4.12, 2010; Stevens, 2017; Spalding et al., 2016; Phonsavong et al., 2017; In Vietnam: Nguyen et al., 2016

- They can store ten times more carbon per hectare than terrestrial forests. Also, they can store carbon up to 400 per cent faster than land-based tropical rainforests.

#### **Where are they found?**

- They are found mainly in tropical and subtropical latitudes. Sundarbans in West Bengal in India is the largest mangrove forest in the world, followed by Gujarat and Andaman & Nicobar Islands.
- Asia has the largest coverage of the world's mangroves, followed by Africa, North and Central America, Oceania and South America.

- The alliance will raise awareness about the role of mangroves as a "nature-based solution to climate change".
- The MAC seeks to scale up, accelerate conservation, restoration and growing plantation efforts of mangrove ecosystems for the benefit of communities globally, and recognize the importance of these ecosystems for climate change mitigation and adaptation.

#### **Threats to Mangroves**

- **Primary Threat:** Coastal development, including the construction of shrimp farms, hotels, and other structures.
- Clearing forests for agricultural land and human settlements.
- Using them for firewood, construction wood, charcoal production, and animal fodder.
- Other Threats: Overfishing, pollution, and rising sea levels.

#### **4.10 Wetlands and Climate Change Challenges**

##### **Context:**

The 14th Conference of Parties (CoP 14) to the Ramsar Convention on Wetlands has adopted Wuhan Declaration.

##### **About the News:**

- Wuhan Declaration calls for practical actions to promote the conservation, restoration, management and sustainable use of wetlands worldwide.

##### **Objectives of the Declaration:**

- Take measures to halt and reverse wetland loss globally.
- Incorporate wetlands into national actions to contribute to domestic legislation, plans and implementation of SDGs.
- Define strategic goals and priority areas for wetlands in partnership with civil society stakeholders, academia and the private sector.

- Importance of healthy wetland ecosystems as nature-based solutions for climate mitigation, adaptation and disaster risk reduction.

**What are Wetlands?**

- Ecosystems that are continually or seasonally saturated with water are called wetlands.
- Mangroves, marshes, rivers, lakes, deltas, floodplains and flooded forests, rice fields, coral reefs, marine areas no deeper than 6 meters at low tide, as well as man-made wetlands such as waste-water treatment ponds and reservoirs, are all examples of wetlands.
- 40% of all plant and animal species live or reproduce in wetlands, despite the fact that they only make up about 6% of the Earth's land area.

**About Ramsar Site**

- Commonly known as the "Convention on Wetlands," is an international environmental agreement that was formed by UNESCO in 1971. It was named after the Iranian city of Ramsar, where it was signed, and defines a Ramsar site as a wetland of worldwide significance. So far, it has 172 Contracting Parties (countries).
- Ramsar recognition is the process of identifying wetlands that are of worldwide significance, particularly if they provide as a habitat for waterfowl (about 180 species of birds).
- As of June 30, 2022, there were 2,439 designated Wetlands of International Importance listed as 'Ramsar Sites'. These cover an area of around 254,689,088 hectares, slightly greater than the area of Algeria, the tenth-largest country in the world.

**4.11 Tamil Nadu gets its first biodiversity heritage site****Context**

- Recently, the Tamil Nadu Government declared Arittapatti in Melur block, Madurai district, a biodiversity heritage site under Section 37 of the Biological Diversity Act, 2002.

**What is a Biodiversity Heritage Site?**

- These are well defined areas which are unique, ecologically fragile ecosystems - terrestrial, coastal and inland waters and, marine having rich biodiversity comprising of any one or more of the following components:
  - richness of wild as well as domesticated species or intra-specific categories
  - high endemism
  - presence of rare and threatened species
  - keystone species
  - species of evolutionary significance

- wild ancestors of domestic/cultivated species or their varieties
- past pre eminence of biological components represented by fossil beds
- having significant cultural, ethical or aesthetic values; important for the maintenance of cultural diversity (with or without a long history of human association with them)

#### **About Biodiversity Heritage Site**

- The act, which was passed in 2002, intends to protect biological resources, manage their sustainable use, and enable a just and equitable distribution of benefits resulting from their usage and knowledge with the local populations.
- The act envisages a three-tier structure to regulate the access to biological resources:
- The National Biodiversity Authority (NBA): Central Level
- The State Biodiversity Boards (SBBs): State Level
- The Biodiversity Management Committees (BMCs) : Local Level
- As per Section 37 of the Biological Diversity Act, 2002 - Areas of importance for biodiversity may be declared BHS by state governments after consulting with "local bodies" and publishing a notice in the official gazette.
- Rules for the administration and preservation of BHS may be formulated by the State Government in consultation with the Central Government.
- State governments are able to create plans for rehabilitating or compensating anyone affected by such a notification.

#### **About Arittapatti**

- **Total area:** 193.21 hectares
- **In Kalinjamalai (located at Arittapatti):** Stone inscriptions written in Tamil Brahmi script dating back to Second Century BCE are found.

#### **Historical Significance:**

- Earlier the village was called "Paathirikudi"
- Two persons- Nalvazhi Sizhivan and Ilanji Imayavan had given shelter to Jain monks at this cave
- An ancient sculpture of Jain Tirthankara was found near the cave
- 8th Century rock-cut temple of Lord Shiva with a rare sculpture of Lakulisa was also found
- The Anaikondan tank: was built during the reign of Pandiyan kings in the 16th century

#### **Ecological Significance:**

- Rich in ecological and historical significance, houses around 250 species of birds including three important raptors -- birds of prey, namely the Laggar Falcon (Falco jugger), the Shaheen Falcon (Falco peregrines) and Bonelli's Eagle (Aquila fasciata).

- It is also home to wildlife such as the Indian Pangolin (*Manis crassicaudata*), Slender Loris (*Loris spp*) and pythons (*Python molurus*).
- It is surrounded by a chain of seven hillocks or inselbergs that serve as a watershed, charging '72 lakes, 200 natural springs and three check dams.

### Significance

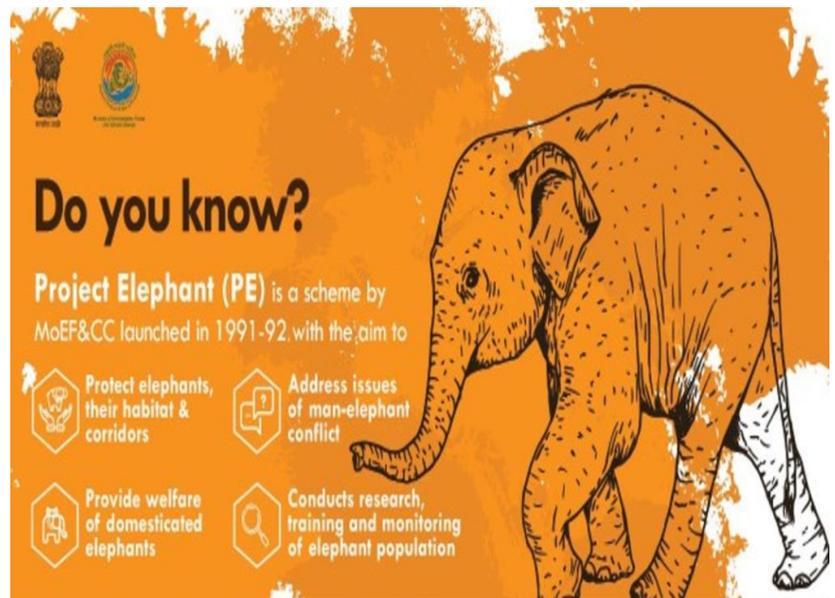
- The notification as a 'bio-diversity site' would strengthen the conservation efforts with the participation of the local communities.
- It would help to preserve the rich biological and historical repository of the area.
- It aims at instilling and nurturing conservation ethics in all sections of the society.
- It will put an end to over-exploitation of natural resources and avoid environmental degradation.

## 4.12 Elephant Reserves

Centre approves new Elephant reserve for Uttar Pradesh

### About the News:

- The Union Ministry of Forest and Environment (MoEF) has recently approved a new Terai Elephant Reserve (TER) in Uttar Pradesh.
- The TER is the third new elephant reserve that got approval in the past three months under Project Elephant with the other two being Lemru in Chhattisgarh and Agasthyamalai in Tamil Nadu.



- Project Elephant is a centrally sponsored scheme which supports elephant conservation in the country.
- At present, there are 32 notified Elephant Reserves (ERs) in the country spread over 15 states.
- Designation as an elephant reserve will help ensure better management of the reserve that also includes protected areas, forest areas and corridors for the conservation of wild elephants.

### Important features:

#### About:

- TER will be set up over a 3,049.39-square kilometre area, including the Dudhwa Tiger Reserve (DTR) and the Pilibhit Tiger Reserve (PTR) besides covering Kishanpur and Katarniaghat wildlife sanctuaries.

- **Importance:** The designation will help in conserving transboundary migratory elephant populations besides ensuring the conservation of especially four wild species including the tiger, Asian elephant, swamp deer and one-horned rhinoceros in the entire landscape.

- **Reduced conflict:** The reserve will implement human-elephant conflict mitigation strategies that will protect villagers living in the Indo-Nepal border areas of Uttar Pradesh.

- **Need:** Elephants requires large areas, very high amount of food and water and therefore their population can be supported only by forests that are under optimal conditions.

#### Asian elephants:

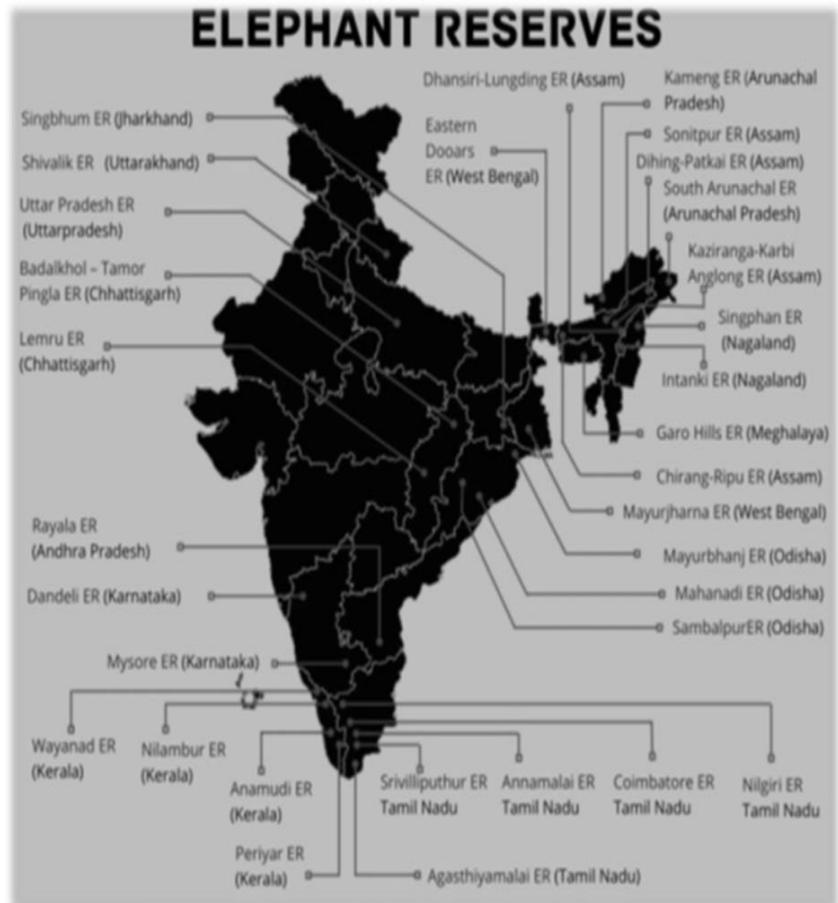
- **About:** Elephant (*Elephas maximus*) is the largest terrestrial mammal of India and they are the best indicator of the status of the forests.

- **Distribution:** These were believed to be widely distributed - from Tigris - Euphrates in West Asia eastward through Persia into the Indian sub-continent, South and Southeast Asia including Sri Lanka, Java, Sumatra, Borneo and up to North China.

- **Present status:** Currently they are confined to the Indian Subcontinent, South East Asia and some Asian Islands - Sri Lanka, Indonesia and Malaysia.

#### India:

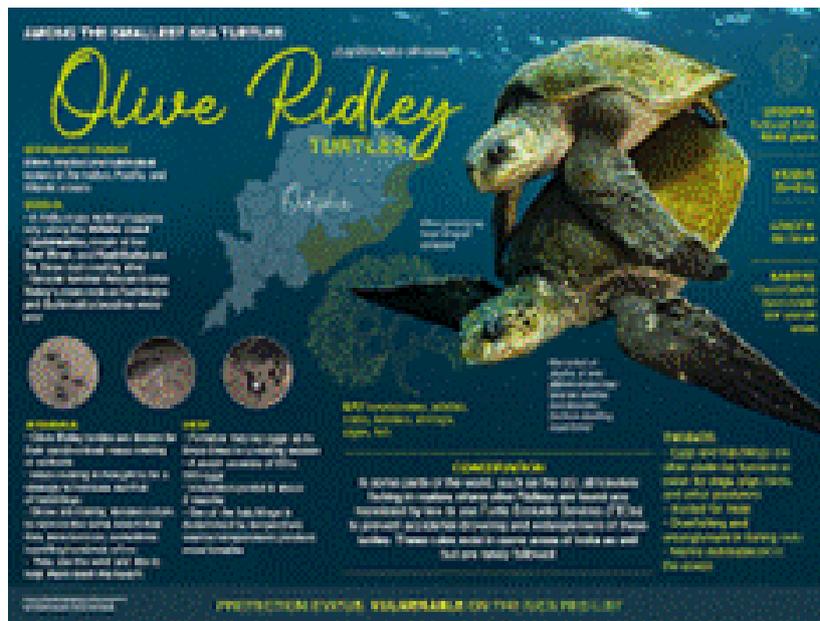
- It has the largest population of Asian elephants with 30,000 wild and about 3,600 captive ones making India home to 60% of the Asian elephant population
- **Status:** Elephant has been recognized as a National Heritage Animal of India and
- **Protection:** These have the highest degree of protection under the Indian Wildlife Protection Act, 1972.
- **States:** Tamil Nadu and Assam have the highest number of elephant reserves with five each in both the states followed by four in Kerala, three in Odisha, two each in Uttar Pradesh, Arunachal Pradesh, Chhattisgarh, Karnataka, Nagaland and West Bengal, and one each in Andhra Pradesh, Jharkhand, Meghalaya and Uttarakhand



#### 4.13 Olive Ridley Turtles

##### **Context:**

- Pairs of Olive Ridley Sea turtles have begun emerging on the sea waters off Gahirmatha along the Odisha coast, marking the commencement of the annual mass nesting of these endangered marine species.
- Gahirmatha in Kendrapara district, Odisha, is the world's largest rookery for Olive Ridley Sea turtles; they also turn up at the Rushikulya river mouth in Ganjam district and the Devi River mouth in Puri district for mass nesting.
- The female turtles swim to the beaches for laying eggs, the phenomenon described as 'arribada' or mass nesting and then leave the nesting ground.
- A single female can lay 80 to 120 eggs and sometimes even twice in a season; to increase the hatchling's survival rate, as approximately 1 hatchling survives for every 1000 hatchlings that enter the sea waters.
- Hatchlings emerge from these eggs after 45-60 days.



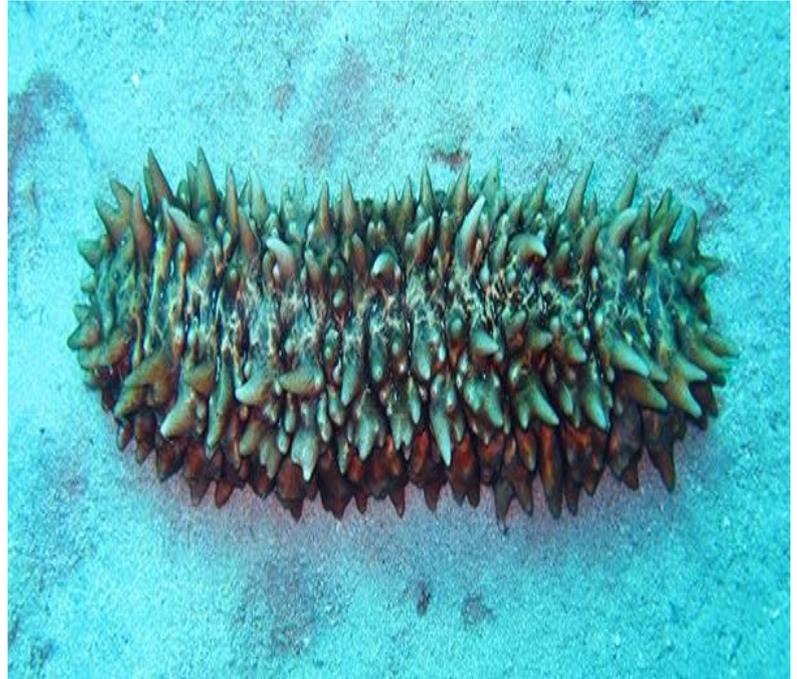
- The species is recognized as Vulnerable by the IUCN Red list & were accorded a Schedule-1 animal category under the Wildlife (Protection) Act for their highly threatened status.
- Olive ridleys face serious threats across their migratory route, habitat and nesting beaches, due to human activities such as turtle-unfriendly fishing practices, and the development and exploitation of nesting beaches for ports, and tourist centres.

#### 4.14 Sea cucumbers and CITES

**Context:** Recently CITES COP19 listed sea cucumbers as 'threatened' ie Appendix II of the Convention.

- Sea cucumbers are marine invertebrates that live on the seafloor found generally in tropical regions.
- There are about 1,250 species of sea cucumber, all of which belong to the taxonomic class Holothuroidea. However, only 3 of them have been added in the threatened category.

- This class falls under the Echinodermata phylum, which also includes many other well-known marine invertebrates, such as sea stars, sea urchins and sand dollars.
- Sea cucumber in India is treated as an endangered species listed under schedule I of Wildlife Protection Act of 1972.
- As per IUCN Red List Brown Sea Cucumber has been listed as Endangered
- Even in India, specifically in the Tamil Nadu coast, sea cucumbers are illegally smuggled from Gulf of Mannar region and the Palk Strait to various parts of the world which is a cause for concern.
- As deposit feeders, they play an important role in nutrient cycling. Their actions reduce organic loads and redistribute surface sediment.



#### **4.15 Champions of the Earth Award**

##### **Context:**

- Purnima Devi Barman has been honoured UN's highest environmental award, for her campaign to protect the 'hargila', or stork, in 2007, focusing on the villages in Assam's Kamrup District where the birds were most concentrated.
- The Champions of the Earth, since its inception in 2005, is to recognise innovative ways implemented by the awardees to support nature's extraordinary capacity for renewal.
- The awards celebrate inspirational and motivational examples of individual and collective action to change the world.
- Champions of the Earth award in the Entrepreneurial Vision category is the UN's highest environmental honour.
- Pursuing UN Decade on Ecosystem Restoration (2021-2030), this year's award is focused on efforts to prevent, halt and reverse ecosystem degradation globally.



**Ecosystem restoration is essential to:**

- Keeping global warming below 2°C and helping societies and economies to adapt to climate change.
- Crucial to fighting hunger: restoration through agroforestry alone has the potential to increase food security for 1.3 billion people.
- Restoring 15 per cent of converted lands could reduce the risk of species extinction by 60 per cent.

**4.16 World population crosses 8 billion****Context:**

- UN Department of Economic and Social Affairs has recently released a report on World Population Prospects.
- As per the findings, India is set to surpass China to become the world's most populous country by 2023.

**Important findings:**

- **Overall:** According to the report, the world's population crossed the 8 billion marks by the end of 2022 and is expected to reach 9.7 billion by 2050.
- **Demographic impulse:** About half of the increase in population from the present day to 2050 will be contributed by just 8 countries, including India.
- **Trajectory:** The world's population will hit 10.4 billion by the 2080s and will stabilise around that number by the end of the century.
- **Growth rate:** In 2020, the global population growth rate fell under 1 per cent per year for the first time since 1950.
- **Fertility rates:** There has been a stark decline in global fertility rates, which came down from around 5 births per woman in 1950 to 2.3 births per woman in 2021 and is expected to decline to just 2.1 births by 2050.

**Driving force:**

- The rise in global population, then, is largely driven by "the momentum of past growth that is embedded in the youthful age structure of the current population".

**Contrasting growth:**

- The global rise in population contrasts sharply with forecasts of population decline in many parts of the world.

**Declining trend:**

- Populations of many countries or areas are projected to decrease by 1 per cent or more between 2022 and 2050, owing to sustained low levels of fertility with countries like Ukraine, Bulgaria, Latvia and Lithuania to see population declines of 20% or more by 2050.

- **Life expectancy:** The global life expectancy at birth has increased steadily in past decades and shot up by 9 years between 1990 and 2019 to reach 72.8 years. However, this number fell to 71 years in 2021 as a result of the COVID-19 pandemic.
- **Slowing rate:** While it took the global population 12 years to grow from 7 billion to 8 billion, it will take approximately 15 years — until 2037 — for it to reach 9 billion — “a sign that overall growth rate of global population is slowing”.
- **Skewed distribution:** As of 2022, more than half the world’s population lives in Asia with China and India being the two most populous countries with more than 1.4 billion people each.
- **Focus area:** With population growth stabilising across the world, the focus should be on eliminating unmet need for contraception and freedom to women to make maternity choices.
- World population will peak in 2054 at 9.7 billion and start declining after that, reaching 7 billion in 2100.

#### **Findings on India:**

- **India’s fertility rate has hit 2.1 births per woman**, replacement-level fertility and is falling while China's population is no longer growing and “may start declining as early as 2023.
- **Growth pattern:** While India’s population growth is stabilising, it is “still growing at 0.7% per year” and is set to surpass China in 2023 as the world’s most populous country.
- India is likely to peak in 2048 at 1.7 billion population and then start declining to 1.1 billion at the end of the century.

## 5. SCIENCE & TECHNOLOGY

### 5.1 MOU signed between Ministry of Ayush and Ministry of Tribal Affairs to collaborate in Ayush sector

- Ayurveda Day celebrated on a grand scale across the country
- The 7th Ayurveda Day was celebrated on a magnificent scale in India and at international level. This year's 7th Ayurveda Day was celebrated with the theme "Har Din Har Ghar Ayurveda" so as to propagate benefits of Ayurveda to larger and grass root community. The six-week long celebration saw huge participation from across the country, more than 5000 events were organized by Ministry of Ayush institutes/councils with support of more than 26 ministries of Government of India and Ministry of External Affairs India missions and embassies.
- AYUSH is the acronym of the medical systems that are being practiced in India such as Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy. These systems are based on definite medical philosophies and represent a way of healthy living with established concepts on prevention of diseases and promotion of health. The basic approach of all these systems on health, disease and treatment are holistic.
- Ministry of AYUSH had issued an advisory on various immunity enhancing steps from the time-tested approaches of Ayurveda. The advisory is reiterated again in these testing times(covid-19) to support the efforts of all as a measure towards enhancing one's immunity.

#### **Significance of AYUSH in India in current times:**

- In the wake of the Covid 19 outbreak, entire mankind across the globe is suffering. Enhancing the body's natural defence system (immunity) plays an important role in maintaining optimum health.
- Prevention is better than cure: While there is no medicine for COVID-19 as of now, it will be good to take preventive measures which boost our immunity in these times.
- The Ministry of AYUSH recommended some self-care guidelines for preventive health measures and boosting immunity with special reference to respiratory health. These are supported by Ayurvedic literature and scientific publications.
- Following the AYUSH ministry initiative many state governments also followed up with healthcare advice on traditional medicine solutions to enhance immunity and disease-resistance, which are particularly relevant against the backdrop of the Covid-19 pandemic.
- The Ministry of AYUSH has also proposed to include AYUSH solutions in the district level contingency plans being drawn up to contain COVID -19 in all the districts across the country.
- The Odisha State Government has decided to rope in AYUSH doctors to strengthen the frontline medical teams in combating Covid-19 in their respective areas of posting.

**Challenges:****Non-integration into mainstream medicine:**

- Our efforts to mainstream AYUSH medicine has been to regard that the major problem lies in the fact that there is a very less proportion of AYUSH in the present mix. Hence, the integration of AYUSH into the health-care system has been focused on having more AYUSH facilities or having them in the place where there aren't any without worrying about the actual effectiveness of such a move.

**Status gap:**

- The subservient status of AYUSH has been the major hurdle. AYUSH has been fraught with multiple issues like including dishonest practices and claims by some AYUSH practitioners leading to the ridicule of AYUSH treatments and procedures by sceptics. The mindless cosmeticisation and export promotion of AYUSH products has led to a bad perception of AYUSH.
- **The isolationist approach goes** against the cherished ideal of modern medicine to embrace concepts that are backed by evidence. In the case of traditional medicine, an isolationist attitude could deter scientific scrutiny and block some potential value addition.

**Quality standards of Medicines:**

- Scientific validation of AYUSH has not progressed in spite of dedicated expenditure in past.

**Lack of human resources:**

- Practitioners are moving away from traditional system for better opportunities

**5.2 New technology for retrofitting non-earthquake-resistant buildings can prevent major damage in old settlements**

- Researchers have found a solution for retrofitting old non-earthquake-resistant buildings with a technology that can prevent major damage to such buildings from earthquakes without compromising on their strength.
- The technology called semi-confined unreinforced brick masonry (SC-URBM) can resolve the problem of spread of settlements in earthquake-prone areas with constructions that have been built without following earthquake-preventive building codes.
- Historically, most buildings, technically called unreinforced masonry (URM), were not built using modern building codes. Thus they are much more likely to experience damage or collapse during an earthquake. URM buildings have traditionally been widely adopted worldwide due to inexpensive and locally available construction materials.
- Just like in most developing countries located in earthquake-prone regions unreinforced brick masonry (URBM) has been a common practice in urban, semi-urban, and rural areas of India. Considering that major parts of India are under seismic zone III or above and most of the URBM buildings are old and

structurally deficient, strengthening of URBM buildings located in earthquake-prone areas is extremely important.

- Researchers from Indian Institute of Technology, Kanpur, have explored the extent to which retrofitting old buildings with SC-URBM technology can solve the problem. They found that SC-URBM can significantly enhance the energy dissipation capacity and ductility of the retrofitted building without compromising its strength. Hence such buildings would have resulting superior performance in comparison to URBM buildings during earthquakes.
- The idea of the technology emerged from confined masonry, an earthquake-resistant construction system where the masonry walls are built first, and the concrete columns and beams are poured in afterward to enclose (confine) the wall. SC-URBM technology has a similar concept but does not need to be implemented at the construction stage. It involves embedding of reinforced concrete (RC) bands through the partial thickness of the wall and can be implemented or retrofitted in old buildings.

### **5.3 Transport Aircraft for Indian Air Force to be made in India by Airbus Defence & TATA consortium**

- C-295MW is a transport aircraft of 5-10 tonne capacity with contemporary technology that will replace the ageing Avro aircraft of IAF. It has a rear ramp door for quick reaction and para dropping of troops and cargo. Short take-off/land from semi-prepared surfaces is another of its features. The aircraft will strengthen the logistic capabilities of the IAF.

#### **Aatmanirbharta**

- The project offers a unique opportunity for the Indian private sector to enter into technology intensive and highly competitive aviation industry. It will augment domestic aviation manufacturing resulting in reduced import dependence and expected increase in exports.
- Also, 96% of the total man hour work per aircraft that Airbus employs at its manufacturing facility at Spain will be undertaken in India by the TATA Consortium. Manufacturing of over 13,400 Detail Parts, 4,600 sub-assemblies and all the seven Major Component Assemblies will be undertaken in India, along with tools, jigs and testers. Various systems such as engines, landing gear, avionics, EW suite etc. will be provided by Airbus Defence & Space and integrated on the aircraft by the TATA Consortium. The aircraft will be tested as an integrated system by the TATA Consortium. The aircraft will be flight tested and delivered through a Delivery Centre at the TATA Consortium facility.
- All 56 aircraft will be fitted with indigenous Electronic Warfare suite of Indian DPSUs – Bharat Electronics Ltd and Bharat Dynamics Limited. After completion of delivery of 56 aircraft to IAF, M/s Airbus Defence & Space will be allowed to sell the aircraft manufactured in India to civil operators and export to countries which are cleared by the Government of India.

**Employment Generation**

- The TATA Consortium has identified more than 125 in-country MSME suppliers spread over seven states. This will act as a catalyst in employment generation in the aerospace ecosystem of the country and is expected to generate 600 highly skilled jobs directly, over 3,000 indirect jobs and an additional 3,000 medium skill employment opportunities with more than 42.5 lakh man hours of work within the aerospace and defence sector of India. Nearly 240 engineers will be trained at Airbus facility in Spain.

**5.4 Border Road Organization (BRO) uses Shredded Plastic in Road Construction during Special Campaign 2.0 on Cleanliness**

- Providing technological push to the Special Campaign 2.0 on the cleanliness being undertaken all over the country, Border Road Organization (BRO) has carried out trials to extensively use shredded plastic in bituminous road construction in India as well as in Bhutan. BRO is making endeavours to maximise the use of shredded plastic in surfacing and resurfacing of the roads.
- Plastic roads are roads that are made entirely from plastic or composites of plastic with other materials. Plastic roads are different from standard roads in the respect that standard roads are made from asphalt concrete, which consists of mineral aggregates and asphalt, while plastic roads are made of plastic. Most plastic roads sequester plastic waste within the asphalt as an aggregate. It is currently unknown how these aggregates will perform in the mid- to long-term, or what effect their degradation might have on surrounding ecosystems.
- Plastic roads were first developed by Rajagopalan Vasudevan in 2001, consisting of an asphalt mix incorporating plastic waste. The incorporation of plastics in roads could open an additional option for recycling post-consumer plastics. Australia, Indonesia, India, the United Kingdom, the United States, and many other countries have trialed technologies that can incorporate plastic waste into an asphalt mix.

**It involves;**

- a) Collecting waste plastics, including plastic carry bags, cups, soft and hard foams, and laminated plastics;
- b) Cleaning it by washing;
- c) Shredding it to a uniform size;
- d) Melting the waste plastics at 165 °C, blending it with hot aggregates and bitumen, and using this mixture to lay the road.

**5.5 India's first indigenous Overhauser Magnetometer may show the way towards reducing costs of sensing experiments essential for geomagnetic sampling**

- Indian scientists have developed an Overhauser Magnetometer, one of the most accurate magnetometers extensively used by all magnetic observatories around the world, making way for reducing the cost of sampling and sensing experiments essential for geomagnetic sampling. The sensor installed at Alibag Magnetic Observatory (MO) can absolve India's dependence on commercial OVH magnetometers for performing geomagnetic field measurements.

- OVH magnetometers are known for their higher accuracy, higher sensitivity, and efficient power consumption and hence find applications in all magnetic observatories worldwide as well as in international space programs. It has so far been imported for such purposes in India.
- In order to reduce dependence on imports, the Indian Institute of Geomagnetism (IIG), an autonomous research institution under DST, Government of India, has developed the magnetometer as part of its technology development program.
- A team from IIG's instrumentation division used various spectroscopic tools and theoretical simulations to understand the working of the OVH sensor. They further performed various control experiments, such as varying the sensor composition and examined the sensor's performance. This helped them to optimize the sensor parameters and its associated electronics, which finally led to a very efficient and stable OVH sensor.
- Experiments with the sensor installed at the Alibag Magnetic Observatory (MO) for geomagnetic sampling found that the sensor reproduced the geomagnetic diurnal variations accurately and precisely showed the signatures of various space weather events such as geomagnetic storms, sudden impulses, etc. The performance of this indigenously made magnetometer is at par with a commercial OVH sensor that is currently installed at the magnetic observatories of IIG.
- The sensor is currently being tested for its long-term stability. The group is further excited to adapt their sensor for the outer space environment to support the existing Indian space research program. In addition, the group feels that the understanding of this project, specifically the underlying mechanism of Dynamic Nuclear Polarization (DNP), would also be of potential help to develop a sensitive magnetic resonance imaging (MRI) instrument.

## **5.6 Notification of Standard Operating Procedures (SOPs) for regulatory review of Genome Edited**

### **Plants**

- Modern biotechnology has been advancing at a rapid pace with the advent of new molecular techniques and their potential applications. Plant genome editing is amongst one of the most promising technologies in terms of applied biological research and innovation with a huge economic potential in a wide range of sectors. Department of Biotechnology, Ministry of Science and Technology proactively initiated the development of draft Guidelines for the safety assessment of Genome Edited Plants through extensive deliberations.
- Considering huge growth and advancement in genome editing research and applications in the field of agriculture, these Guidelines & SOPs will be very valuable resource documents for the country. These Guidelines & SOPs are expected to speed up development of plant varieties and to reduce the time of approval. New plant varieties with improved traits would contribute towards increasing Farmer's income. Overall, this regulatory streamlining will bring transformational change in product development and

commercialization and thereby will contribute to agenda for Atma Nirbhar Bharat of Government of India. This has also paved the way for India as emerging global power in Genome Edited Plants based technology and its applications.

### **Genome editing;**

Genome editing enables modification of plants' owned genes, without insertion of external genes, as with GM crops. Genome-edited varieties possess no foreign DNA and are indistinguishable from crops developed through conventional plant-breeding methods, or using naturally occurring mutations.

- Several approaches to genome editing have been developed. A well-known one is called CRISPR-Cas9.
- CRISPR-Cas9 is short for Clustered Regularly Interspaced Short Palindromic repeats and CRISPR-associated protein 9.
- This tool has opened up various possibilities in plant breeding. Using this tool, agricultural scientists can now edit the genome to insert specific traits in the gene sequence.

### **What is the Difference between Gene Editing and Genetically Modifying?**

- To create genetically modified crops and animals, scientists will typically remove the preferred gene from one organism and randomly introduce it into another organism.
- A well-known genetically modified type of crop is Bt corn and cotton, where a bacterial gene was introduced that produces insecticidal toxins into the part of the plant where the insect eats, causing death to the insect.
- In simple terms, gene editing is a small, controlled tweak to a living organism's existing DNA versus the introduction of a new, foreign gene.
- It is nearly impossible to detect whether an organism's DNA has been edited or not because the changes are indistinguishable from naturally occurring mutations.

### **5.7 Government notifies Amendments to the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules 2021 for an Open, Safe & Trusted and Accountable Internet**

- Intermediaries to respect rights accorded to the Indian citizens under article 14, 19 & 21 of the Indian Constitution
- In a major push towards an Open, Safe & Trusted and Accountable Internet, the Ministry of Electronics and IT notified these amendments aimed at protecting the rights of Digital Nagriks. It also enhances due diligence requirements and ensuring accountability of social media and other intermediaries. They have been notified against the backdrop of complaints regarding the action/inaction on the part of the intermediaries on user grievances regarding objectionable content or suspension of their accounts.
- The intermediaries now will be expected to ensure that there is no uploading of content that intentionally communicates any misinformation or information that is patently false or untrue hence entrusting an important responsibility on intermediaries.

- The rules also have made it explicit for the intermediary to respect the rights accorded to the citizens of India under the Articles 14, 19 and 21 of the Indian Constitution

**Key changes effected in the rules are as under:**

- (a) Currently, intermediaries are only required to inform users about not uploading certain categories of harmful/unlawful content. These amendments impose a legal obligation on intermediaries to take reasonable efforts to prevent users from uploading such content. The new provision will ensure that the intermediary's obligation is not a mere formality.
- (b) For effective communication of the rules and regulations of the intermediary, it is important that the communication is done in regional Indian languages as well.
- (c) The grounds in rule 3(1)(b)(ii) have been rationalized by removing the words 'defamatory' and 'libellous'. Whether any content is defamatory or libellous will be determined through judicial review.
- (d) Some of the content categories in rule 3(1)(b) have been rephrased to deal particularly with misinformation, and content that could incite violence between different religious/caste groups.
- (e) The amendment requires intermediaries to respect the rights guaranteed to users under the Constitution, including a reasonable expectation of due diligence, privacy and transparency.
- (f) Grievance Appellate Committee(s) will be established to allow users to appeal against the inaction of, or decisions taken by intermediaries on user complaints. However, users will always have the right to approach courts for any remedy.

**5.8 Young researchers selected for support under SERB-N-PDF to work in frontier areas of science and engineering**

- A total of 301 young researchers have been selected for support under SERB-National Post-Doctoral Fellowship (N-PDF), to work for 2 years in frontier areas of science and engineering.
- The fellows will work under a mentor who is in a regular academic/research position in a recognized institution in India and this training will provide them a platform to develop as an independent researcher.
- Applications were received from 3,833 researchers against the invitations for proposals. The applications were reviewed by the designated expert committees and Science and Engineering Research Board (SERB), a statutory body, working under the umbrella of Department of Science and Technology (DST) announced the names of 301 awardees.
- The support which includes a monthly fellowship, an annual research grant and overheads for the host institution is broadly given in five thematic areas, namely Chemical Sciences, Earth & Atmospheric Sciences, Engineering Sciences, Life Sciences, and Physical & Mathematical Sciences. Candidates within the upper age limit of 35 years, with Ph.D/M.D/M.S degree from a recognized University and also those who have submitted their Ph.D/M.D/M.S thesis and are awaiting award of the degree, are eligible to apply.

### **5.9 CRISPR gene-editing possible in temperature sensitive organisms, plants & crop varieties**

- The CRISPR gene-editing technology that received the Nobel Prize in 2020 has witnessed a new height. Indian scientists have demonstrated for the first time that the associated Cas9 enzyme, which acts as molecular scissors to cut DNA at a location specified by a guide RNA, can bind to and cut the target DNA at very low temperatures.
- This work has shown the highly efficient functioning of this platform at temperatures as low as 4°C, making it possible to edit genes in temperature sensitive organisms, plants, or crop varieties.
- CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) are short DNA sequences found in the genome of prokaryotic organisms such as bacteria, which are reminders of previous bacteriophage (viruses) attacks that the bacteria successfully defended against. Cas9 enzyme (part of bacteria's defence mechanism) uses these flags to precisely target and cut any foreign DNA, thus protecting the bacteria from future attacks by similar bacteriophages. The unprecedented precision of targeting the DNA sequences and then efficiently cutting them is the basis for CRISPR-Cas9 technology, which has been recently demonstrated in editing genes in cells and organisms.
- CRISPR-Cas9 technology has been successfully used for many purposes, including basic studies of gene function, agriculture, and medicine to increase our knowledge of disease processes and their potential future therapies. So far, most binding trials were typically performed at 37 °C
- The research published in the Scientific Reports journal of the Nature Portfolio expands possible application of the Cas9-based genetic toolbox to a previously unexplored temperature range that would be compatible with long-term storage of biological samples.
- Their observations on high efficiency of Cas9 binding to target at very low temperatures also provide opportunities to edit genomes of the less explored organisms called cryophiles with an optimal growth temperature of 15°C. The results on Cas9-DNA binding and release mechanics will provide valuable insights for developing temperature-dependent applications of the CRISPR-Cas9 technology. It also builds a quantitative understanding of product release mechanism of this enzyme system.

### **5.10 New technique for efficient fabrication of liquid crystal display devices (LCD) with lowered cost**

- A new easier technique of manufacturing liquid crystal displays has been developed, which can reduce the cost of the devices.
- An essential requirement of liquid crystal devices (LCDs) is the unidirectional planar alignment of the constituent liquid crystals (LC) over large areas.
- Although the conventional polymer rubbing method yields quality LC alignment, it possesses unavoidable and undesirable drawbacks such as production of electrostatic charges and dust particles that interfere with display operation, and even cause damage to the electronic components of the display. While electrostatic charges increase the failure rate, dust creates defects which seriously compromises with the

performance of the device. Other problems include multistep process for coating and the necessity for high-temperature curing. This has led to a surge in demand to replace this rubbing method with new non-contact techniques.

### **5.11 Testing & evaluation facility for Sonar Systems of Indian Navy launched by DRDO**

- Termed as Hull Module of Submersible Platform for Acoustic Characterization & Evaluation facility becomes operational at NPOL, Kochi
- Giving impetus to the ‘Aatma Nirbhar Bharat’ and India’s ‘Make in India’ commitment, Defence Research & Development Organization (DRDO) launched Hull Module of Submersible Platform for Acoustic Characterization & Evaluation (SPACE) facility at Naval Physical & Oceanographic Laboratory (NPOL) Kochi recently. It is a state-of-the-art testing and evaluation facility for sonar systems developed for use by the Indian navy onboard various platforms, including ships, submarines and helicopters.
- The SPACE facility is based on the concept design and requirements projected by NPOL and has been constructed by M/s L&T Shipbuilding, Chennai. This will be mainly utilized for evaluating Sonar systems, allowing for quick deployment and easy recovery of scientific packages such as sensors and transducers.
- The SPACE is one-of-a-kind facility in the world. The uniqueness of this facility lies in the specially designed submersible platform, which can be lowered up to depths of 100 meters using a series of synchronously operated winches. The design and construction of the platform meet all the statutory needs of Indian Register of Shipping and the vessel classifying authority and strictly adhere to the inspection and registration criteria as per Kerala Inland Vessel Rules.

### **5.12 Certain mangrove species in east coast and west coast of India is likely to reduce and shift landward**

- Certain mangrove species in Chilika and Sundarbans along the east coast and Dwarka and Porbandar along the west coast of India is likely to reduce and shift landward by 2070 due to decline in suitable habitats in response to precipitation and sea level changes, said a study based on a prediction model. The study can help identify highly suitable areas for conservation and management and develop conservation strategies for the future.
- Mangroves support numerous ecosystem services and help reduce coastal ecological risks, yet they are one of the severely endangered ecosystems declining rapidly due to climate change, sea level fluctuations, and human activities. A limited understanding of mangrove spatial distribution and species habitat requirement has reduced the success of conservation initiatives in many parts of the Indian coastline. This underlines an urgent need to develop model-based studies to identify conservation target areas at Spatio-temporal scales, specifically in rich mangrove biodiversity regions along the Indian coastline.
- Scientists at the BSIP, an autonomous institution of the Department of Science and Technology (DST), used Ensemble species distribution model to study the past and current state of two mangrove species and

predict their future. They found significant reduction and landward shift of mangroves in the future (2070) due to decline in suitable habitats, specifically along the east and west coast of India in response to precipitation and sea level changes in the future. In contrast, the maximum range expansion of the mangroves was mapped in the past, which was validated by fossil pollen data.

- The findings would be useful in the implementation of mitigation and adaptation strategies in the identified hotspots for conserving the coastal wetlands and reducing the impact of climate change on the coastal vegetation along the Indian coastline.
- The Indian coastline is vulnerable to the impact of climate and sea level changes, and there is not much attempt for the coastal wetland species prediction and management, with limited research carried out for their future habitat mapping. To fill this gap, this study tried to project the potential impact of climate change on mangroves as coastal wetland species.

### **5.13 ISRO has taken initiatives for feasibility studies on missions to Venus as well as Aeronomy studies**

- Aeronomy is the scientific study of the upper atmosphere of the Earth and corresponding regions of the atmospheres of other planets. It is a branch of both atmospheric chemistry and atmospheric physics. Scientists specializing in aeronomy, known as aeronomers, study the motions and chemical composition and properties of the Earth's upper atmosphere and regions of the atmospheres of other planets that correspond to it, as well as the interaction between upper atmospheres and the space environment. In atmospheric regions aeronomers study, chemical dissociation and ionization are important phenomena.

#### **Aeronomy can be divided into three main branches:**

- Terrestrial aeronomy,
- Planetary aeronomy, and
- Comparative aeronomy.

#### **Terrestrial aeronomy;**

- Terrestrial aeronomy focuses on the Earth's upper atmosphere, which extends from the stratopause to the atmosphere's boundary with outer space and is defined as consisting of the mesosphere, thermosphere, and exosphere and their ionized component, the ionosphere. Terrestrial aeronomy contrasts with meteorology, which is the scientific study of the Earth's lower atmosphere, defined as the troposphere and stratosphere. Although terrestrial aeronomy and meteorology once were completely separate fields of scientific study, cooperation between terrestrial aeronomers and meteorologists has grown as discoveries made since the early 1990s have demonstrated that the upper and lower atmospheres have an impact on one another's physics, chemistry, and biology.
- Terrestrial aeronomers study atmospheric tides and upper-atmospheric lightning discharges such as red sprites, sprite halos, blue jets, and ELVES. They also investigate the causes of dissociation and ionization

processes in the Earth's upper atmosphere. Terrestrial aeronomers use ground-based telescopes, balloons, satellites, and sounding rockets to gather data from the upper atmosphere.

**Atmospheric tides;**

- Atmospheric tides are global-scale periodic oscillations of the Earth's atmosphere, analogous in many ways to ocean tides. Atmospheric tides dominate the dynamics of the mesosphere and lower thermosphere, serving as an important mechanism for transporting energy from the upper atmosphere into the lower atmosphere. Terrestrial aeronomers study atmospheric tides because an understanding of them is essential to an understanding of the atmosphere as a whole and of benefit in improving the understanding of meteorology. Modeling and observations of atmospheric tides allow researchers to monitor and predict changes in the Earth's atmosphere.

**Planetary aeronomy;**

- Planetary aeronomy studies the regions of the atmospheres of other planets that correspond to the Earth's mesosphere, thermosphere, exosphere, and ionosphere. In some cases, a planet's entire atmosphere may consist only of what on Earth constitutes the upper atmosphere, or only a portion of it. Planetary aeronomers use ground-based telescopes, space telescopes, and space probes which fly by, orbit, or land on other planets to gain knowledge of the atmospheres of those planets through the use of instruments such as interferometers, optical spectrometers, magnetometers, and plasma detectors and techniques such as radio occultation. Although planetary aeronomy originally was confined to the study of the atmospheres of the other planets in the Solar System, the discovery since 1995 of exoplanets has allowed planetary aeronomers to expand their field to include the atmospheres of those planets as well.

**Comparative aeronomy;**

- Comparative aeronomy uses the findings of terrestrial and planetary aeronomy — traditionally separate scientific fields to compare the characteristics and behaviors of the atmospheres of other planets with one another and with the upper atmosphere of Earth. It seeks to identify and describe the ways in which differing chemistry, magnetic fields, and thermodynamics on various planets affect the creation, evolution, diversity, and disappearance of atmospheres.