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PT 365

Classroom Study Material

ENVIRONMENT

JULY 2015 – APRIL 2016

NOTE: May 2016 and June 2016 current affairs for PT 365 will be updated on our website on second week of July 2016.

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A. CLIMATE CHANGE

A.1. MEETING OF LIKE-MINDED DEVELOPING COUNTRIES (LMDC)

What is LMDC?

The Like Minded Group of Developing Countries (LMDC) is a group of developing countries who organize themselves as block negotiators in international organizations such as the United Nations and the World Trade Organization.
LMDCs represent more than 50% of the world's population.
India for the first time, hosted the meeting of the LMDC on Climate Change.

Objective

- To prepare strategies and way forward for the negotiations in the run-up to Paris COP 21 Meet.
- To exchange, coordinate and harmonize views on the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) in Bonn negotiating.

Key Concerns of LMDC

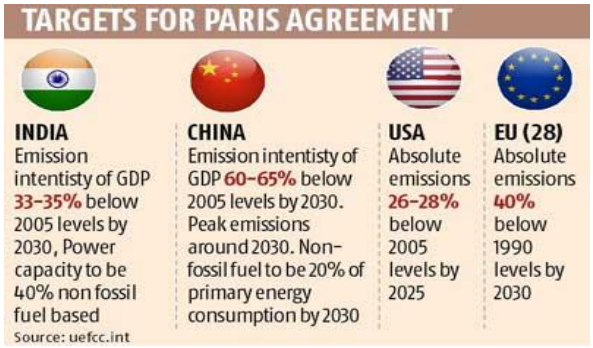
- The Paris Agreement should not be **mitigation-centric** but must address in a **balanced** and comprehensive manner the six elements identified in the Durban mandate –
  - ✓ Mitigation – with differentiated responsibility.
  - ✓ Adaptation,
  - ✓ Finance
  - ✓ Capacity-building,
  - ✓ Technology development and transfer,
  - ✓ Transparency of action and support, as well as loss and damage in a balanced manner.
- There is a need for protecting the long-term interest of developing countries, based on the principles of **equity** and common but differentiated responsibilities and respective capabilities (**CBDR**)
- Concern regarding shifting the financial burden to developing countries.
- Disappointment at the "lack of text-based negotiations" in the last round of negotiations held in Bonn.
- The LMDC expressed strong reservation against any obligatory review mechanism for increasing individual efforts of developing countries.

A.2 INDIA'S COMMITMENT TO CLIMATE CHANGE

Intended Nationally Determined Contribution (INDC)

What are INDCs:

- INDC outlines the post-2020 climate actions they intend to take under a new international agreement.



India's INDCs contains the following proposals:

- To reduce the emissions intensity of its GDP by 33 to 35 per cent by 2030, from 2005 levels.
- To create an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through additional forest and tree cover by 2030.
- Increase the Share of Non Fossil Fuel Based Electricity.
- Sustainable Lifestyles.
- Cleaner Economic Development.
- Technology Transfer and Capacity Building.

A.3. FROM CBDR TO INDC

- Common but Differentiated Responsibilities and Respective Capabilities (CBDR–RC) is a principle within the United Nations Framework Convention on Climate Change (UNFCCC) that acknowledges the different capabilities and differing responsibilities of individual countries in addressing climate change.
- The principle of CBDR–RC is enshrined in the 1992 UNFCCC treaty, which was ratified by all participating countries.
- CBDR-RC has served as a guiding principle as well as a source of contention in the UN climate negotiations. Reflecting CBDR-RC, the Convention divided countries into "Annex I" and "non-Annex I," the former generally referring to developed countries and the latter to developing countries. Under the Convention Annex I countries have a greater mitigation role than non-Annex-I countries.

Reasons behind collapse of CBDR-RC

- **Starting of discomfort among Annex-I countries:** Many western countries were not ready to put constraints on their economies for a global cause that had no direct and immediate returns.
- **Growth of China:** The rapid growth of China from the 1990s too had started to hurt the interests of the West. Stricter emission standards for their industries would have made their products even more non-competitive against Chinese goods. It helped their case that China's emissions had overtaken the US as the world's leading emitter of GHGs.
- **U.S role:** The US refused to ratify the Kyoto Protocol and, for the first time since the birth of UNFCCC, started playing a proactive role in shaping the global architecture on climate change. The argument was that without restraining the emissions of China-and India, Brazil, South Africa, Mexico, etc.-no effective fight against global warming could be launched.
- Some of these countries, including Japan, Australia and Canada, walked out of the Kyoto Protocol.
- After several rounds of bargaining, persuasion and threats, the current formulation-on the basis of which a new agreement is to be finalized in Paris next month-was decided in Durban in 2013.
- Emission cut an INDCs: Now every country needed to take demonstrable action, the quantum and extent of which was to be decided by the country itself.

A.4. US-CHINA CLIMATE DEAL

- US announced a new target to cut net greenhouse gas emissions 26-28 percent below 2005 levels by 2025.
- China announced targets to peak CO_2 emissions around 2030, with the intention to try to peak early, and to increase the non-fossil fuel share of all energy to around 20 percent by 2030.
- Together, the U.S. and China account for over one third of global greenhouse gas emissions.
- These actions will also inject momentum into the global climate negotiations on the road to reaching a successful new climate agreement next year in Paris.

A.5. PARIS CLIMATE CHANTGE CONFERENCE

The twenty-first session of the Conference of the Parties (COP) and the eleventh session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) will take place from 30 November to 11 December 2015, in Paris, France.

Current Members

Algeria, Argentina, Bangladesh, Bolivia, China, Cuba, Ecuador, Egypt, El Salvador, India, Jordan, Iraq, Kuwait, Indonesia, Iran, Malaysia, Mali, Nicaragua, Pakistan, Saudi Arabia, Sri Lanka, Sudan, Syria, Venezuela and Vietnam.

** Membership for the group is changeable

- Paris Agreement, biggest environment agreement ever, was adopted by more than 190 countries
- The overall goal of the Paris agreement, to keep global temperature rise to a specified quantum compared to pre-industrial levels, is pegged at either “below 1.5°C”, or, as “well below 2°C”.

Salient feature of Draft

- **Developed country as Role model-** Extent to which developing countries would effectively implement their commitments would depend on developed countries living up to their own commitments on financing, technology transfer and capacity building.
- **On peaking of greenhouse gas emissions-** The discussion is on making it “as soon as possible” with the caveat that peaking requires deeper cuts of emissions by developed countries and longer periods for developing countries
- **Achieving zero GHG emissions growth by 2060-80 is proposed**
- **Fund mobilization -** Appropriate pricing of greenhouse gas emissions in its many forms, is an important instrument for the reorientation of investment and finance flows consistent with a pathway towards low emission and climate resilient economies and societies.
- **Technology framework –** By providing overarching guidance to the work of the Technology Mechanism”. It would promote and facilitate enhanced action on technology development and transfer.
- The agreement is much more **comprehensive** than the Kyoto Protocol which was limited to assigning greenhouse gas emission reduction targets for a group of developed countries
- It asks every country to make **“nationally determined”** contributions in the fight against climate change.

- It also seeks to establish a mechanism by which the climate actions of all the countries can be periodically monitored and evaluated to see whether the world was actually able to combat climate change and whether the actions needed to be scaled up

Win- Win Situation for all

- **Developed Nation-** The developed countries have ensured that henceforth climate actions would be taken by every nation and not just them, as was the requirement in the existing climate framework represented by the Kyoto Protocol of 1997.
- **Developing Nation-** The developing countries were able to take heart from the fact that the all-important principle of 'differentiation' – that developed nations, being primarily responsible for greenhouse gas emissions, must take greater action to fight climate change – has been retained, even though in a diluted form
- **The island nations and least developed countries —** Most vulnerable to climate change were happy to have forced the rest of the world to acknowledge the need to take a 1.5 degree path instead of the 2 degree it is more comfortable with.

Few of contentious issues which remain unsolved are underneath

- Finance for developing countries
- Making explicit the responsibility of developing countries versus developed nations.
- **Binding targets:** Countries have pledged their emission reduction targets. But these are only pledges. EU and the US are strongly opposed to a legally binding road-map.
- **Periodic Revision of Target:** The emission reduction numbers don't add for now and they need to be revised every 5 years or so. Developed countries don't accept any criteria that includes historical accumulated emissions
- **Reporting action:** After 2020 once the agreement comes in to force countries will have to report back periodically how they are faring against their pledges. This could become the Trojan horse that brings parity between the two without saying as much.
- **Developing country targets:** most developing countries have made their targets for the Paris agreement conditional on the nature of the Paris agreement as well as the delivery of finance and technology. Developed countries want at least a part if not the full target from each developing country to be enshrined unconditionally.
- **Technology transfer:** Developed countries oppose the proposals from different developing country groups including India to address issues of intellectual property resources, future technology development and an institutional arrangement for this under the Paris agreement.
- **Adaptation:** Developed countries see the core agreement as only about reducing emissions and accounting for these reductions.

A.6. INDIAN LONG TERM ECOLOGICAL OBSERVATORIES (I-LTEO)

- India announced a programme to open **eight more long-term ecological observatories** to study the effects of climate change.
- Would assess the health of eight different biomes (types of habitat)

- To study long-term research findings on the changes that was happening due to climate change.
- **Objective is to** scientifically monitor flora and fauna to assess how climate change is affecting "natural and closely associated human systems in agriculture and pastoralism.
- **Operational Area -** Western Himalayas to Western Ghats; Eastern Himalayas to Andaman and Nicobar islands; Central India to the Sundarbans; Jammu and Kashmir to Rajasthan and Gujarat.

A.7. EL NINO AND WARM WINTER

- This winter was lesser cold and temperatures were 4-5 degrees Celsius above normal for this time.
- Western parts of Rajasthan that used to experience extreme coldness, the average temperature was 5 to 8 degrees Celsius above normal.

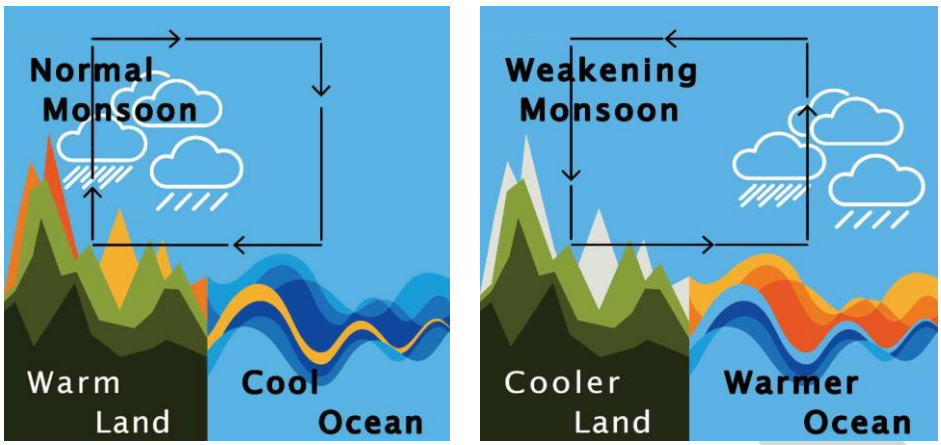
Reasons

- **Global factors:** Persisting El Niño phenomenon
  - ✓ Neutral conditions were expected to be established in the Pacific Ocean but the El Niño persisted for 15 months, spanning two seasons.
  - ✓ Winters that follow an El Niño event are slightly warmer than usual.
  - ✓ Scientists say the Pacific warming spreads to the Indian Ocean with a lag of about 2-3 months, leading to a warming over the subcontinent.
- **Regional Factors:** Usually westerlies bring rain system in most of Northern and Eastern India, pulling down temperatures. But this year, they were **kept north of the Indian landmass by two different wind systems.**
  - ✓ An **anticyclonic wind system** that is usually located south of the Indian peninsula was pushed northward, and was located where the westerlies were usually found in winter. This anti-cyclonic system was warmer and drier.
  - ✓ **Jet streams** that are located in higher atmosphere, and generally operate in the mid-latitudes, north of the Indian landmass. But this winter, they were positioned much to the south, aligned to the foot of the Himalayas and the Gangetic plains.

A.8. INDIAN OCEAN WARMING AND ITS CONSEQUENCES

- Recent studies have pointed out an increased warming over the Indian Ocean during the past half-century, the reasons for warming are not clear.
- Increased warming in the ocean enhances the large-scale upward motion of warm moist air over the equatorial ocean.

- This upward motion over the ocean is compensated by subsidence of dry air over the subcontinent resulting in surplus rains over the ocean at the cost of the monsoon rains over land, thereby **drying the Indian subcontinent.**



Schematic illustration of the mean conditions (left) and weakening trend (right) of the monsoon

- **Decline in the marine phytoplankton** in the Indian Ocean – microscopic plants in the ocean which sustain the aquatic food web, absorb the solar radiation thereby influencing climate processes and biogeochemical cycles, particularly the carbon cycle.
- **Food security issues** as large-scale distribution of fishes are associated with the phytoplankton's availability.

A.9. CLIMATE CHANGE: TEA INDUSTRY

Factors affecting tea cultivation:

- Elevation, precipitation, temperature, soil moisture, temperature and fertility, light duration and intensity, humidity, shelter, shade and CO2 concentration.
- Tea is a rain-fed perennial crop.

Impacts of climate change:

- Climate-risk is high in Assam, ranging from annual flooding of the Brahmaputra river due to intense monsoon rains and soil water-logging, to winter precipitation deficits with seasonal droughts.
- Regional trends indicate annual mean minimum temperatures have increased and annual mean precipitation has decreased in North east particularly in Assam.
- Such impacts will have a significant effect on tea crop productivity and directly affect the livelihoods of dependent communities (producers, laborers, traders, consumers).

Temperature: 21°C to 29°C is ideal for the production of tea. High temperature is required in summer. The lowest temperature for the growth of tea is 16°C.

- **Rainfall**: 150-250 cm of rainfall is required for tea cultivation.
- **Soil**: Tea shrubs require fertile mountain soil mixed with lime and iron. The soil should be rich in humus.
- **Land**: Tea cultivation needs well drained land. Stagnation of water is not good for tea plants. Heavy rainfall but no stagnancy of water, such mountain slopes

- Rainfall has traditionally been plentiful for growing tea, especially in India but with recent changes in the climate, surface and ground water are becoming important irrigation systems.
- Tea quality is suffering and pest-attacks are increasing.

A.10. GREEN BOND MARKET

- **What are Green Bonds:** Green bonds are fixed income, liquid financial instruments that are used to raise funds dedicated to climate-mitigation, adaptation, and other environment-friendly projects.
- **Growth of Green Bonds:** Since 2008, the World Bank has issued about $8.5 billion in green bonds in 18 currencies, and the International Finance Corporation has issued $3.7 billion in green bonds.

A.11. CLIMATE ENGINEERING SOLUTIONS

- Climate engineering refers to the deliberate and large-scale intervention in the Earth's climate system with the aim of limiting adverse climate change.
- Generally two categories of engineering solutions:
  - **Greenhouse gas removal:** Examples
    - ✓ **Carbon capture and storage (CCS)**, where some of the carbon dioxide being emitted by coal-fired power stations is recaptured by physically sucking it in and transporting it elsewhere (like oilfields) to be sequestered underground.
    - ✓ **Biochar** which is created by pyrolysis of biomass
    - ✓ **Enhanced weathering** involves a chemical approach to remove carbon dioxide involving land or ocean based techniques. Examples of land based enhanced weathering techniques are in-situ carbonation of silicates.
    - ✓ **Afforestation**
  - **Management of Sunlight:** Here the plan is to reduce global warming by cutting down the heat absorbed by our planet from the sun. Examples:
    - ✓ **Stratospheric aerosol injection (SAI):** SAI involves spraying into the stratosphere fine, light-coloured particles designed to reflect back part of the solar radiation before it reaches and warms the earth. Sulphur Dioxide gas is used for the process.
    - ✓ **Cirrus cloud manipulation**: Here the cirrus clouds are removed or thinned so that their long-wave trapping capacity is reduced and thus cools the surface.
    - ✓ **Marine cloud brightening**: The low warm clouds which are highly reflective to sunlight are modified to increase their reflectivity.
    - ✓ **Space sunshade**: Obstructing sunrays with space based mirrors
    - ✓ Using pale-coloured roofing material or growing high albedo crops.

A.12. INDIA IN ANTARCTICA

India currently has two permanent stations, **Maitri and Bharati, in Antarctica. The first Indian station, Dakshin Gangotri, located on shelf ice is now buried and lost.**

A.13. CLIMATE CHANGE – EFFECT ON ANTARCTIC ICE SHEET

- According to IPCC, in this century sea level will rise to 5cm.
- According to NASA report new modelling of glacier melting indicated that coastal cities could be uninhabitable within 50 years.
- According to a new research. Temperatures rise of just 1.5°C to 2°C above present levels, will result in a catastrophic collapse in Antarctic ice sheets.
- This collapse of Antarctic ice sheets will lead to rise in sea levels for not hundreds of years – but potentially thousands.

Reason

- Around 93 percent of the heat from anthropogenic [pollutant-based] global warming has gone into the ocean, and these warming ocean waters are now coming into contact with the floating margins of the Antarctic ice sheet.
- This will result in melting of ice-sheets. If we lose these ice shelves, the Antarctic contribution to sea-level rise by 2100 will be nearer 40 cm.

A.14. ANTARCTICA GAINING MORE ICE THAN IT'S LOSING: NASA

- Antarctica is currently gaining enough ice to outweigh the increased losses from the continent's thinning glaciers, a new NASA study has found.
- The research challenges the conclusions of other studies, including the Intergovernmental Panel on Climate Change's (IPCC) 2013 report, which says that Antarctica is overall losing land ice.

Its impact

- This net gain in ice would mean that Antarctica would not be contributing to sea level rises, but could help offset some of the major ice losses in places from Greenland and glaciers worldwide.
- Currently, it is believed that ice loss in Antarctica contributes to roughly 8% of global sea level rise. This rise can be seen in recent high tides in coastal cities like Miami.
- If this study is correct, and Antarctica is not contributing to this rise in sea level, that means scientists must be underestimating the impact from other sources of sea level rise-such as from melting from Greenland or the heating of the oceans.

Major concerns

- Authors of the study say the increasing loss of ice in the West Antarctic and the peninsula, plus slowing ice gains elsewhere on the continent, could mean that there will be overall losses of ice in the next 20 years.
- In fact, this may already be occurring, according to other researches which suggest the West Antarctic ice sheet is destabilizing, which would more than overcome the ice gains and could result in 3 meters of sea level rise.

A.15. SHRINKAGE OF GLACIER ICE SHEETS AT NORTH POLE

- Temperatures at the North Pole rose above freezing point in December, 20 degrees Celsius above the mid-winter norm and reflecting latest abnormality in a season of extreme weather events.
- This rise in Temperatures at the North Pole is estimated to be due to very violent and extremely powerful depression caused by **Storm Frank.**
- This deep depression has pushed hot air as far as the North Pole, where temperatures are at least 20 degrees above normal, at around freezing point, between zero and two degrees.

2015 HOTTEST YEAR ON RECORD

- Data released by NASA and NOAA (National Oceanic Atmospheric Administration) show that in 2015, the global mean surface temperature was the warmest on record and reach significant milestone of 1° Celsius above the pre-industrial era.
- In the Northern hemisphere (spring of 2015) the three-month global average concentration of CO2 crossed the 400 parts per million barrier for the first time.
- The year 2015 stands out because of the unusually strong El Niño.

- After tormenting the North Atlantic, the depression is expected to head towards Russia's Siberia, where the inhabitants can expect a heat wave of sorts.
- **El Niño has also been cited as a factor in the genesis of these devastating storms.**
- However, the sudden rise in winter temperatures in the North Pole **could interfere with the usual process of the growth of winter ice in the Arctic.**
- Sea ice during the winter maximum is becoming younger and thinner.

A.16. REASONS FOR RISING SEA COVER AROUND ANTARCTICA

- Recent observations present a contrary picture in the two poles of earth. While the sea cover around Antarctica is rising, the sea ice in Arctic sea is melting away.
- The **reason for this contrasting picture lies in the geology of Antarctica and the Southern Ocean**, a new NASA-led study has found.

What the Study Says

- **Two specific geological factors** in Antarctic region are playing a role.
  - ✓ The **topography of Antarctica** is influencing the flow of winds
  - ✓ The **depth of the ocean** around the landmass affect the circulation of ocean currents
- These two, in turn, affect the process of formation of Antarctica's sea ice cover and its sustainability.

How does it happen?

- The sea ice forms and builds up early in the sea ice growth season.
- This ice later due to winds gets pushed offshore and northward forming a protective shield of thicker, older ice that circulates around the continent.

- The persistent winds flowing down slope off the continent plays help in piling of ice up against the massive ice shield, enhancing its thickness.
- This thick band of ice protects and encapsulates the younger, thinner ice from being reduced by winds and waves.
- This ice drifts away from the continent as the sea ice cover expands creating ice factories conducive to rapid sea ice growth.

A.17. GREEN CLIMATE FUND

What is GCF?

- The **GCF** is a fund within the framework of the UNFCCC (United Nations Framework Convention on Climate Change) founded as a mechanism to redistribute money from the developed to the developing world, in order to assist the developing countries in adaptation and mitigation practices to counter climate change.
- It aims 'to make a significant and ambitious **contribution to the global efforts** towards **attaining the goals** set by the international community to combat climate change.'
- It was formally established by a UNFCCC decision in **Durban**, South Africa in December 2011.
- The groundwork for GCF was laid in the earlier, non-binding **'Copenhagen Accord'** of 2009.

Objective of GCF

- The objective of the GCF is to **raise $100 billion per year** in climate financing by 2020. The GCF will support projects, programmes, policies and other activities in **developing country** Parties.
- However, **disputes** remain as to whether the funding target will be based on **public sources**, or whether **leveraged private finance** will be counted towards the total. Only a fraction of this sum has been pledged so far, mostly to cover start-up costs.

A.18. GREENHOUSE GASES: INDIA FOURTH BIGGEST EMITTER

- The World Resources Institute (WRI) — a global research organization — has come out with its latest analyses of the country-wise emissions of climate-damaging greenhouse gases.
- Six of the top 10 emitters are developing countries.
  - ✓ **China ranks first,** contributing 25% of global emissions, making it the top emitter.
  - ✓ The **US and EU are the 2nd and 3rd largest emitters.**
  - ✓ India despite being the **4th largest carbon emitter** continues to be far behind the other three top big emitters in terms of per capita emission.

A.19. CARBON SEQUESTRATION

- Carbon Sequestration is the process by which CO2 is captured from the atmosphere for long-term storage to slow down the accumulation of greenhouse gases.
- A study by Gujarat Ecological Education and Research (GEER) has **prepared a hierarchy of local trees in India on the basis of their capacity for carbon sequestration**.
- **Teak has the highest capacity**. A normal teak tree can absorb 3.70 lakh tones of CO2 from the atmosphere in its life-time. It is followed by Nilgiri, Gando baval, Neem etc.

CARBON ELIMINATOR

Carbon sequestration in lakh tons for a tree with girth between 10-30 cm

Scientific name	Local name	Carbon sequestration
Tectona grandis	Sagwaan	3.70
Eucalyptus globulus	Nilgiri	2.47
Prosopis juliflora	Gando baval	1.67
Azadirachta indica	Limdo	1.45
Casuarina equsetifolia	Sharu	1.28
Acacia tortilis	Israeli baval	1.04

A.20. DECLINING POLLINATORS: UN REPORT

- A UN report, brought together by the Intergovernmental Platform on Biodiversity and Ecosystems Services (IPBES), has warned that **many species of wild bees, butterflies and other insects that pollinate plants are shrinking toward extinction**.
- Two out of five species of invertebrate pollinators are on the path toward extinction
- Pollinators are **important to growing fruits, vegetables and cash crops**.

Pollination is a process in which pollen is transferred to the female reproductive organs of seed plants, thereby enabling fertilization and reproduction. It is very important for food supply.

Reasons for the decline

- Changing nature of agriculture with reduced diversity and wild flowers for pollinators to use as food
- Pesticide use
- Habitat loss to cities
- Disease, parasites and pathogens
- Global warming

About IPBES

- Created in 2012, the IPBES seeks to provide scientific information about biodiversity and ecosystem services to policymakers of the member countries.
- Its secretariat is in Germany and is administered by the UN.

A.21. STRANDED CARBON

What is stranded carbon?

- It refers to fossil fuel energy resources that cannot be burnt if the world is to adhere to a given carbon budget. Therefore some of proven reserves of fossil fuels will never be burnt and will remain stranded.

How much Stranded Carbon?

- Within the 2°C target; we only have about 1,100 Giga Tonnes (gt) of carbon dioxide (CO_2) that can still be emitted.
- Current proven reserves of fossil fuels are about 812 billion tonnes of oil equivalent (oil, gas and coal).
- Just burning all these proven reserves would generate about 2,512 gt of CO_2 equivalent emissions.
- Thus no more than 40 per cent of the existing proven reserves of fossil fuels can ever be burnt.

A.22. THANE NAMED INDIA'S EARTH HOUR CAPITAL

- Thane represented India in the Global Earth Hour Capital Competition of 16 countries in Seoul. It was declared the winner and acknowledged as the Global Earth Hour Capital 2015.
- The year-long competition among cities is aimed at promoting renewable energy and preparing for climate change. In its third year in India, the contest had 13 participants.
- Last year, Coimbatore was selected as the National Earth Hour Capital.
    - The notable actions by the Thane city administration include the mandatory use of solar water-heating systems for municipal buildings and solutions such as wind-solar hybrid systems and use of solar energy for lighting and air-conditioning.

A.23. VULNERABLE 20 COUNTRIES IN CONTEXT OF CLIMATE CHANGE

Why in news ?

- The V-20 group has been formed after a meeting of the Finance ministers from the 20 countries most vulnerable to climate change in Lima.

What's the purpose of this group?

- The group calls for greater access to climate finance for adaptation and mitigation in the face of the most devastating effects of global warming.
- This group includes countries ranging from small Pacific nations, such as Vanuatu, to Bangladesh and the Philippines and have a collective population of 700 million people.
- In the absence of an effective global response, annual economic losses due to climate change are projected to exceed $400bn by 2030 for the V20 countries.

How will the group achieve its objectives?

- The bloc aims to mobilize climate funds through advocacy.
- It aims to develop and share best practices to prepare themselves against climate change.

- It has called for the fulfilment of the $100bn promised to developing countries to deal with climate change.
- The V-20 group also supported an international financial transaction tax to get additional resources to combat climate change.
- They also put forward the creation of a V20 climate risk pooling mechanism to distribute economic and financial risks in order to aid the countries' recovery from extreme weather events.
- Even if these 20 vulnerable countries don't represent a big economic power they represent a very important moral force.
- The V20 is made up of Afghanistan, Bangladesh, Barbados, Bhutan, Costa Rica, Ethiopia, Ghana, Kenya, Kiribati, Madagascar, Maldives, Nepal, Philippines, Rwanda, Saint Lucia, Tanzania, Timor-Leste, Tuvalu, Vanuatu and Vietnam.

B. POLLUTION

B.1. BIO-MEDICAL WASTE MANAGEMENT RULES 2016

Why in news?

Environment ministry released the new Bio-medical Waste Management Rules, 2016 which will bring in a wider and more comprehensive regime for bio waste management.

What is bio-medical waste?

Biomedical waste comprises human & animal anatomical waste, treatment apparatus like needles, syringes and other materials used in health care facilities in the process of treatment and research. This waste is generated during diagnosis, treatment or immunization in hospitals, nursing homes, pathological laboratories, blood bank, etc.

Salient features:

- **Bio-medical waste** classified in to 4 categories based on treatment options.
  - ✓ Untreated human anatomical waste,
  - ✓ animal anatomical waste,
  - ✓ soiled waste and,
  - ✓ biotechnology waste
- **Increase coverage:** The coverage has increased and also provides for pre-treatment of lab waste, blood samples, etc.
- **Separation of Waste**: It mandates bar code system for proper control. It has simplified categorization and authorization.
- **Pre-treatment:** of the laboratory waste, microbiological waste, blood samples and blood bags through disinfection or sterilization.
- **Better storage**: for a safe, ventilated and secured location for storage of segregated biomedical waste
- Phase out use of chlorinated plastic bags, gloves and blood bags within two years from the date of notification of these rules
- **Training and vaccination**: provide training to all its health care workers and other who are involved and immunize them against Hepatitis B and Tetanus that are likely to be transmitted by handling of bio-medical waste

Procedure of disposal:

1. Health care facilities (HCFs) must segregate biomedical waste at the individual level in colored bags—yellow, red, blue/white and black according to the category of the biomedical waste.
2. They can store this waste for up to 48 hours after which they either treat it in-situ (or)
3. A worker from a common biomedical waste treatment facility (CBMWF) comes to collect it.
4. The CMBWF then treats the waste according to the colour of the bag. Different colours call for different types of treatments—incineration, deep burial, autoclaving, shredding, chemical treatment, disposal in a landfill, etc.

B.2. MAJOR DECISIONS OF NATIONAL GREEN TRIBUNAL

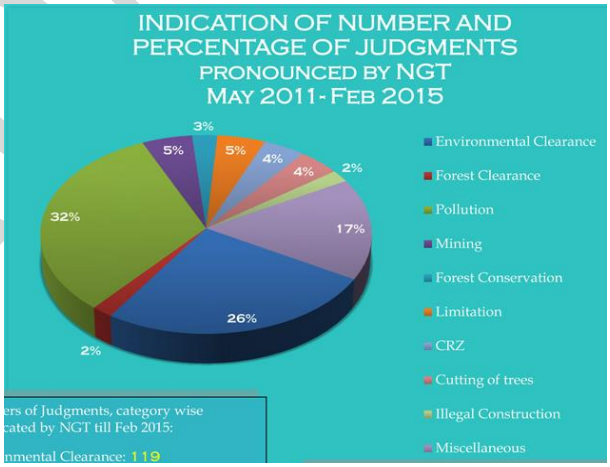
The Law Commission in its 186th Report recommended for setting up of environmental courts in each State against orders passed by the concerned authorities under the Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991.

The MoEF in line with recommendations has been established National Green Tribunal (NGT) under the NGT Act, 2010 on 18th October, 2010.

National Green Tribunal Act, 2010

- The Tribunal has the same powers as are vested in a civil court under the Code of Civil Procedure, 1908. But guided by principles of natural justice.
- The tribunal shall provide speedy environmental justice (disposal of applications within 6 months) and help reduce the burden of litigation in the higher courts.
- Also hears cases for acts such as Forest Conservation Act and Biological Diversity Act.
- The tribunal has original jurisdiction on matters of "substantial question relating to environment" and "damage to environment" due to specific activity like pollution.

Recent Decisions:
Pollution:



- In December 2015, NGT asks centre on policy to **move old vehicles** out of city if there was any policy for transferring old vehicles from Delhi to other cities that are less polluted. The NGT had suggested moving out old vehicles from Delhi as it banned those older than 10 years in the city.
- The National Green Tribunal's (NGT) bench in Kerala's Kochi district has ordered all diesel vehicles older than 10 years in six major cities of the state to be taken off the roads in the next 30 days. Six cities are- Thiruvananthapuram, Kollam, Kochi, Thrissur, Kozhikode and Kannur.
    1. Also, no new permits for vehicles with more than 2000 cc engine capacity except public transport will be given and violators will be fined Rs. 5000.

Mining:

- Sand mining order put a ban on all forms of Illegal River and Ocean bed sand mining which were rampant across the country are very important in sustainable development and environmental protection.

- Cancellation of coal block clearance in Hasdee-Arand forests overriding central government's decision.
- Cancelling clearance of CG coal mines in February 2014
- Vedanta and POSCO cases in Odisha in favour of tribals.

Illegal construction:

- National Green Tribunal imposed 5 crore fine in Delhi for the damage done to the Yamuna flood plain in the organization of **world culture festival.**
- Penalising the Construction companies with a penalty of nearly Rs. 140 crore on two builders constructing a Special Economic Zone (SEZ) on Bellandur wetlands.

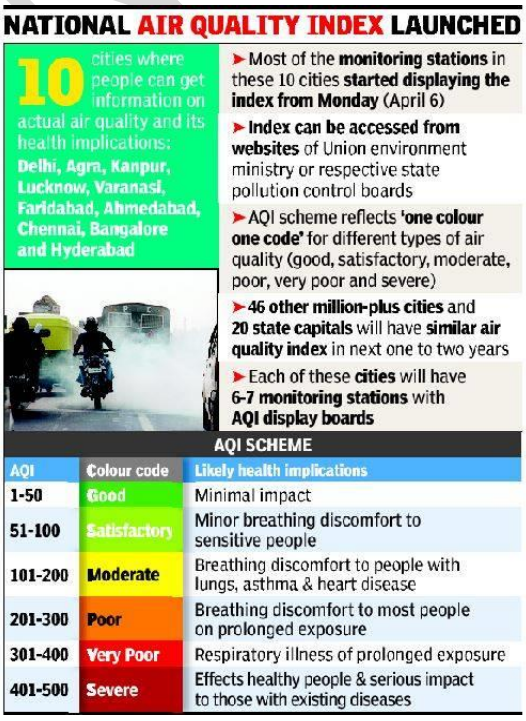
Conservation:

- Green Tribunal seeks Centre's response on ban of microplastics (are plastic pieces and fibres less than 1 mm) in March 2016.
- Only **bio-degradable material Ganesha idols** would be allowed for immersion and not plastic/ Plaster of Paris.
- Ordered to set up panel to monitor Sunderbans as NGT observed violation of Coastal Regulation Zone.
- Goa foundation case for implementation of western Ghat expert panel report,

B.3. AIR QUALITY INDEX

Why in news?

Rajasthan Chief Minister recently launched two apps. One, a mobile app '**RajVayu**' for sharing information about air quality index of Jaipur, Jodhpur and Udaipur. Another app '**Drishti**' for monitoring of pollution levels in industrial regions.



What is AQI?

- The minister for environment, forests & climate change launched the national air quality index (AQI) on 17 september 2014 under **the Swachh Bharat Abhiyan.**
- It is outlined as '**one number- one colour-one description'** for the common man to judge the air quality within his vicinity.
- There are **6 AQI categories** (refer fig).
- The proposed AQI will consider **eight pollutants** (PM_{10}, $PM_{2.5}$, NO_2, SO_2, CO, O_3, NH_3, and Pb) for which short-term (up to 24-hourly averaging period) National Ambient Air Quality Standards are prescribed.
- Now the coverage has been increase **to 23 cities from earlier 10 cities**.
- The value of the AQI, one of the experts said, is in it being comparable across cities and across pollutants in terms of health impact.

Results:

- Increased Public awareness and easy availability of information to public.
- Six months of AQI values for 11 Indian cities show that Kanpur, Varanasi and Chennai have worse air quality than Delhi, on average.
- Delhi and the rest of north India have higher particulate matter levels and cities such as Chennai find high concentrations of other toxic pollutants including sulphur dioxide and nitrogen dioxide.
- High levels of particulate matter in cities arise from construction and demolition activity (23%), burning of coal in thermal plants, as also biomass, and from the widespread use of diesel vehicles (20%), among other sources.

B.4. ENVIRONMENTAL CRIME IN INDIA

What is environmental crime?

As per National Crime Records Bureau (NCRB) it includes violations under only five laws:

- The Forest Act, 1927;
- Wildlife Protection Act, 1972;
- Environment (Protection) Act, 1986;
- Air (Prevention and Control of Pollution) Act, 1981;
- Water (Prevention and Control of Pollution) Act, 1974 (as amended in 1988).

B.5. BHARAT STAGE VI NORMS BY 2020

Why in news?

- In a move to curb vehicular pollution, Indian government has decided to move up to the toughest emission standards **of BS-VI from the current BS-IV by April 2020** skipping BS-V standard.
- By switching to BS-VI, **India will join the league of the US, Japan and the European Union,** which follow Euro Stage VI emission norms.
- Currently BS-IV norms are followed across 63 Indian cities for petrol and diesel, while the rest still use BS-III fuel.

Bharat Stage Norms

- Bharat stage emission standards are emission standards instituted by the Government of India **to regulate the output of air pollutants from internal combustion engine equipment**, **including motor vehicles.**
- The standards and the timeline for implementation are set by the Central Pollution Control Board under the Ministry of Environment & Forests and climate change.
- The standards, **based on European regulations were first introduced in 2000.**

BS VI Norms

- The BS-IV compliant fuels have Sulphur concentration of 50 parts per million (ppm).

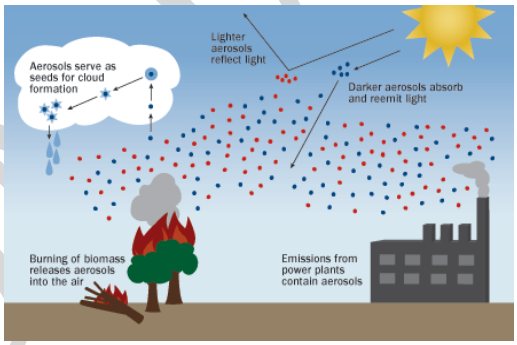
- This will come down to as low as 10 ppm in BS-VI compliant fuels and auto engines. This means a lower level of harmful emissions and reduced incidence of lung diseases.
- The switch to BS-VI norms will also reduce concentration of carbon monoxide, unburnt hydrocarbons, nitrous oxide and particulate matter from emissions.

Standard	Reference	YEAR	Region
India 2000	Euro 1	2000	Nationwide
Bharat Stage II	Euro 2	2001	NCR*, Mumbai, Kolkata, Chennai
		2003.04	NCR*, 13 Cities†
		2005.04	Nationwide
Bharat Stage III	Euro 3	2005.04	NCR*, 13 Cities†
		2010.04	Nationwide
Bharat Stage IV	Euro 4	2010.04	NCR*, 13 Cities†
Bharat Stage V	Euro 5	2017.04 (proposed)	Entire country

* National Capital Region (Delhi)

† Mumbai, Kolkata, Chennai, Bengaluru, Hyderabad, Ahmedabad, Pune, Surat, Kanpur, Lucknow, Sholapur, Jamshedpur and Agra

B.6. SAMAR

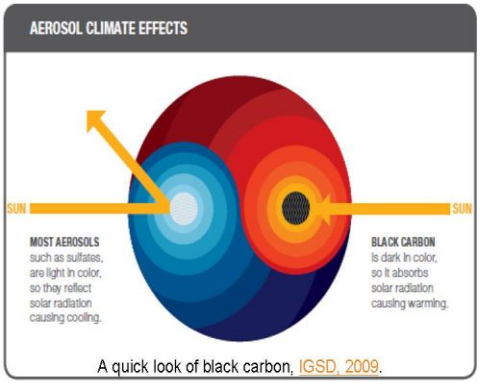


- The Indian Meteorological Department (IMD) has launched a **System of Aerosol Monitoring and Research (SAMAR)** which will help the country in studying concentration of black carbon in atmosphere due to air pollution and its impact on climate.
- It is a network of 16 Aethalometers, 12 Sky radiometers and 12 Nephelometers.

What are Aerosols?

- They are a subset of air pollution that contains gases, fumes and dust in harmful proportion.
- These particles can be both solid and liquid which also affects environmental visibility.
- They are suspended particulates in the atmosphere and have implications for climate and health through different mechanisms.
- Several studies have suggested that aerosols may be mitigating global warming by increasing the planetary albedo,

What is Black Carbon?



A quick look of black carbon, IGSD, 2009.

- Black carbon (BC) aerosol assumes importance due to its high absorption characteristics, which in turn depends on its production mechanism.
- In addition to exerting its own radiative impact, black carbon aerosol can substantially contaminate other aerosol species, thereby altering the

radiative properties of the entire aerosol system and in fact their ability to act as cloud condensation nuclei.

- The sources of BC are fossil fuel through burning of diesel and solid coal, indoor burning of biomass fuels for cooking and heating and outdoor burning of crop residues, savannas and forests.
- Black carbon warms the atmosphere due to its absorption and by reducing albedo when deposited on snow and ice

B.7. CATEGORIZATION OF POLLUTING INDUSTRIES

- India's environment ministry has sought to classify industrial units in a category of colours based on their pollution potential.
- The categorisation is based on a pollution index developed by the ministry taking into account the emissions, effluents, hazardous waste generated, and the resources it consumes.
- They would be classified on the basis of how they score on a scale ranging between 15 to 60:

Colour	Score	Examples
Red (Heavily Polluting)	60 and above	Petrochemicals, pharma, sugar, paper, nuclear and thermal power, tanneries, organic chemicals, fertilizers, fire crackers
Orange	Between 30-59	Coal washeries, glass manufacturing, paints, stone crushers, aluminum and copper extraction from scrap
Green	Between 15-29	Aluminum utensils, steel furniture, soap, tea processing
White (Non-polluting)	Below 15	Air cooler, AC units, Chalk factories, Biscuit tray units

- The classification is for entire industrial sectors and not individual units.
- The system of annual renewal of certification will also be scrapped with this. The Ministry has suggested five years renewal for red, ten years for orange and one time certification for green. White industries would not require any environmental clearance.

B.8. FLY ASH

Why in news?

- Recently an expert panel of MoEF has expressed concerns over use of fly ash for filling mines as this can have environmental consequences in the form of:
  - ✓ Contamination of ground water due to leaching of heavy metals in fly ash
  - ✓ Reduction in recharging of ground water due to fly ash filled mine voids
  - ✓ Ash-filled voids cannot support tree species because of poor root system development which in turn results in uprooting of trees even by low velocity winds.

About Fly Ash

- Fly ash is one of the coal combustion products and is composed of fine particles that are driven out of the boiler with flue gases. Ash that falls at the bottom of the boiler is called bottom ash.
- Fly ash includes substantial amounts of oxides of silica, aluminum and calcium. Element like Arsenic, Boron, Chromium, lead etc are also found in trace concentrations. It, thus, poses hazards to environment and health.
- Due to the presence of these minerals it has certain unique properties. It can be used as construction material, filling old mines, building railway embankments, and reclamation of low-lying areas.

B.9. MICROPLASTICS/MICROBEADS

- Microplastics or Microbeads are plastic pieces or fibre, which are very small, generally measuring less than 1mm.
- They have a variety of use, most notably being personal care products like toothpaste, body creams, clothing and industrial use.
- They have an ability to spread easily and provide silky texture and colours to the product. Thus adding visual appeal of the cosmetic products.

Issues with Microplastics

- They are non-biodegradable and flow through sewers to seas and oceans and **add to the huge chunk of "plastic soup" in the environment.**
- **They increase water pollution** and have a potential to disrupt the aquatic ecosystem.
- Once they enter water bodies **they accumulate as act as carriers for other pollutants**. They carry carcinogenic chemical compounds in the food chain.
- Due to their **small size they pass through the waste water treatment** filtration system as well.

B.10. INDIA'S 5TH LARGEST PRODUCER OF E-WASTE

- India is the 5th largest producer of e-waste in the world discarding roughly 18.5 lakh metric tonnes of e-waste each year, a joint study by Assocham-KPMG reveals.
- **12% of the waste is contributed by the telecom sector alone**, with 25% of the mobiles in circulation ending up in e-waste annually.

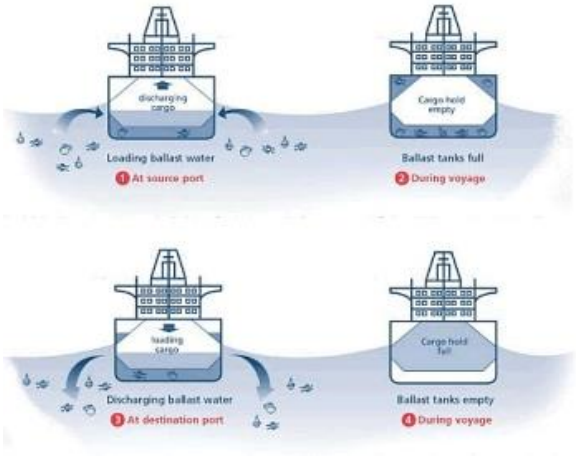
B.11.TAJ MAHAL TURNS GREEN

- The historical monument is turning green due to release of faeces and dirt by insect, Geoldichironomus (Chironomus calligraphus).
- Yamuna has become so stagnant due to pouring of waste directly into it, that fish that earlier kept insect populations in check are dying.
- This is resulting into "explosive breeding" of the insect, which is a biological indicator of water quality and localised water pollution.

B.12. BALLAST WATER AND ECOLOGICAL ISSUES

Why in news ?

- Ballast water , used by ocean bound ships to provide balance and stability while navigation has been found to be a major transporter of exotic species globally.



Ecological impacts of Ballast water discharged in ports

- On return to ports the vessels discharge the ballast water in the coastal waters, thus releasing many exotic species of flora and fauna in the ecosystem.
- As per experts, the ballast water are transporting more than 10000 exotic marine species across the globe.
- In India ,the experts have found more than 10 invasive exotic species in the coastal waters of Kerala which are very rich in bio diversity.
- The increase in number of ports and expansion of port activities has aggravated the situation recently.
- Species like sea weeds, mollusks and slugs have been found.
- If unchecked, such invasive species can cause tremendous damage to our coastal ecosystems and lead to severe loss of biodiversity.

C. BIODIVERSITY

C.1. DRAFT NATIONAL WILDLIFE ACTION PLAN 2017-2031

Why in news?

Ministry of Environment, Forests and Climate Change released the Draft National Wildlife Action Plan (2017-2031) on February 3, 2016.

- To review the implementation of the NWAP 2002-2016 and
- To develops a road map for conservation of wildlife for 2017-2031.

What are the important components?

- **Climate change:** Integrating climate change into wildlife planning,
- **Conservation:**
  - improving protected area networks,
  - landscape approach (for all uncultivated flora and undomesticated fauna that have ecological value)
  - Conservation of Habitats: coastal and marine ecosystems
- **Biodiversity:**
  - Rehabilitation of Threatened Species,
  - Wildlife Health (tiger as a new host for canine distemper, the geographic spread of endotheliotropic herpes virus among elephants and reports of goat pox in goat antelopes of north-eastern India)
  - Controlling poaching

- **Human – animal relation:** Mitigation of human-wildlife conflict,
- **Governance and laws**: Improving compliances with Domestic Legislations and International Conventions
  - Ensuring Sustained Funding for Wildlife Sector
  - Integrating National Wildlife Action Plan with other Sectoral Programmes
- **Research and Traditional knowledge**: Strengthening Research and Monitoring
  - Development of Human Resources
  - People's participation

Significance

- Since preservation of genetic diversity and sustainable utilization of species and ecosystems have a direct bearing on the country's scientific advancements and support to millions of rural communities, the draft has emphasized on conservation of biodiversity and their rehabilitation.
- The draft also takes note of concerns relating to effects of climate change on wildlife by integrating them into wildlife management planning.

- The reality is alarming erosion of natural heritage comprising of rivers, forests, grasslands, mountains, wetlands, deserts as well as coastal and marine habitats – and there is utmost necessity to improve compliance with laws and fund activities as envisaged in Draft NWAP.
- It also noted that despite being **"one of the 12 mega biodiversity" countries of the world**, national planning has not taken serious note of adverse ecological consequences of reduction and degradation of wilderness areas from the pressures of population, commercialization and development projects.

C.2. GANGETIC RIVER DOLPHINS

- A committee is being formed to examine in what way the community reserve would be set up in the Hooghly river between Malda and Sundarbans
- The Wildlife Protection Act had provisions to create such community reserve for protection of flora and fauna
- The number of dolphin is estimated to be less than 2,000 in the country.
- Often known as the 'Tiger of the Ganges', the river dolphin is an indicator animal, which has the same position in a river ecosystem as a tiger in a forest.

About SUSU:

- The Ganges River dolphin, or susu, inhabits the Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu river systems of Nepal, India, and Bangladesh.
- This dolphin is among the four "obligate" freshwater dolphins - the other three are the baiji now likely extinct from the Yangtze river in China, the bhulan of the Indus in Pakistan and the boto of the Amazon River in Latin America.
- Although there are several species of marine dolphins whose ranges include some freshwater habitats, these four species live only in rivers and lakes.

C.3. GREAT INDIAN BUSTARD

- Under an integrated collaborative effort, the Union ministry of Environment, Forest and Climate Change (MoEFCC) along with the state governments of Rajasthan, Gujarat and Maharashtra will soon undertake an artificial breeding programme for the Great Indian Bustard (GIB).
- It is considered as "critically endangered" by the IUCN Red data list.
- The first initiative, as part of the programme, will be to establish a captive stock of the bird, which will lay eggs.
- Technical expertise for the breeding programme would be provided by Dehradun-based Wildlife Institute of India (WII), an autonomous institution of the MoEFCC.
- The species is found in areas of India as well as Pakistan. Thar Desert in India is the only landscape in the world that provides viable breeding population to GIB's.
- It is the state bird of Rajasthan

Great Indian bustard

- A large bird with a horizontal body and long bare legs giving it an ostrich like appearance.
- This bird is among the heaviest of the flying birds.
- As few as 250 individuals were estimated in 2011.
- Now found in central India, western India and eastern Pakistan

Habitat: Arid and semi-arid grasslands, open country with thorn scrub, tall grass interspersed with cultivation. It avoids irrigated areas.

C.4. LOSS OF POLAR BEAR HABITAT

Reasons

- Global warming that's reducing polar bears summer sea ice habitat.
- Polar bears use sea ice for feeding, mating and giving birth. When the ice retreats in the summer, polar bears are forced to the land.
- The land-based food would not help it adapt to the loss of sea ice.

Features of Polar Bears

- Large, heavy bear weigh 350-700 kg.
- Status: vulnerable (IUCN Red Data Book)
- Habitat: native range lies largely within the Arctic Circle, encompassing the Arctic Ocean, its surrounding seas and surrounding land masses.
- Polar bears hunt their preferred food of seals from the edge of sea ice, often living off fat reserves when no sea ice is present.
- Polar bears are the largest land carnivores in the world, rivaled only by the Kodiak brown bears of southwestern Alaska.
- Polar bears are at the top of the food chain in Arctic, feeding primarily on fat of ice-dependent seals.
- The World Conservation Union (IUCN) estimates that there are 20-25,000 polar bears in the world.

C.5. AGASTHYAMALA BIOSPHERE RESERVE

- The Agasthyamala Biosphere Reserve has recently been included in UNESCO's list of World Biosphere Reserve Network.
- The area falls in the **Malabar rainforests** and is one of the noted hotspot in the **Western Ghats**.
- It covers about 3500 sq kms and is part of different districts of **Tamil Nadu and Kerala**.
- **Agastya Mala**, the peak after which the reserve is named, rises up to almost 1868 metres above sea level, in Thiruvananthapuram.
- There are many endemic and endangered species of flora and fauna in the reserve including endangered Nilgiri Tahr.
- It includes the Indian eco regions of **moist deciduous forests, montane rainforests and Shola forests and grasslands**.
- There are **three wildlife sanctuaries** within the reserve - **Shendurney, Peppara**, and **Neyyar**.
- The **Kalakkad Mundanthurai Tiger Reserve** was recently included as part of the biosphere reserve.
- It is also home to **Kanikaran,** one of the oldest surviving **ancient tribes** in the world.
- There are 18 biosphere reserves in India and 9 of them were included in the prestigious UNESCO World Biosphere Reserve Network. **Agasthyamala is the tenth one to be added to the list**. The others are Nilgiri, Gulf of Mannar, Sunderban, Nanda Devi, Nokrek, Pachmarh, Similipal, Achanakmar-Amarkantak and Great Nicobar.

C.6. KUDREMUKH NATIONAL PARK

- Kudremukh national park is located in Western Ghats and is part of the world's 38 'hottest hotspots' of biological diversity.
- It is named after the Kudremukh mountain range in Karnataka.
- Kuduremukh is **Karnataka's 3rd highest peak after Mullayangiri and Baba Budangiri**.
- The park is home to unique, threatened and endangered biodiversity including **lion-tailed macaques, tigers, Malabar civets and great pied hornbills.**
- Important **South Indian rivers Tunga, bhadra and Netravati** originate from the heart of this park.

C.7. CORINGA SANCTUARY

Reason

- Dwindling of mud ponds in the Pulicat.
- Low levels of water at the Point Calimere.

Coringa Sanctuary

- Second largest stretch of mangrove forests in India after Sundarbans, West Bengal.
- Home for 24 mangrove tree species.
- There are 266 bird species, including 94 species of migratory birds.
- Visitors (Birds) are coming from the Arctic region, Russia, China and Mongolia.

C.8. ARTHIRAPPILLY HYDROELECTRIC PROJECT

- Athirappilly hydroelectric project, proposed across the Chalakudy river, has received the go-ahead from the Expert Appraisal Committee (EAC) for River Valley and Hydroelectric Projects.
- Western Ghats Ecology Expert Panel had rejected it
- Endemic species -EAC observed that no endemic species specifically of project area
- Displacement of tribes - EAC felt that there were no tribal families in the submergence area of the Athirappilly reservoir.

C.9. THANE CREEK FLAMINGO SANCTUARY

- The Maharashtra government has declared the area along Thane Creek as Flamingo Sanctuary under Sec. 18 of the Wildlife Protection Act, 1972.
- It will be Maharashtra's second Marine sanctuary, after Malvan.
- By November over 30,000 birds come to this sanctuary. They stay here till May, after which most of them migrate to the Bhuj area of Gujarat for breeding.
- Almost 90% are Lesser Flamingos and the remaining are Greater Flamingos.
- Other Bird species: About 200 including Globally Threatened Species like the Greater Spotted Eagle.

C.10. CHENGALIKODAN BANANA

- Chengalikodan has been accorded the Geographical Indication (GI) status.
- It is known for its unique size, shape, colour and taste.
- **Other Products which have GI status**
  - ✓ Palakkadan matta rice, Vazhakkulam pineapple, Pokkali rice, Wayanadan scented rice varieties Gandhakasala and Jeerakasala and Central Travancore jiggery.
  - ✓ Nearly 200 unique goods have been registered as GIs in India.

C.11. PANAMA DISEASE IN BANANA CULTIVATION

- A soil borne fungus is causing **Panama disease** in the banana crops across Kerala.
- This is leading to a potential crisis for farmers which if not checked could turn into an epidemic.

Why a big concern

- Modern banana breeds cannot reproduce sexually because they have no seeds and develop through asexual reproduction by planting the fruiting stem. As a result, **banana plants are nearly identical genetically and thus have same susceptibility to diseases.**
- Once a pathogen overcomes the plant's defenses, it can quickly infect the whole cultivated area.
- Generally fungicides are used for controlling such diseases. However, experts have pointed out that this **pathogen is resistant to fungicides and cannot be controlled chemically**.

C.12. YELLOW- THROATED BULBUL

Laboratory for the Conservation of Endangered Species (LaCONES), a conservation arm of the Centre for Cellular and Molecular Biology (CCMB) will make efforts to conserve yellow throated bulbul

- Endemic to the southern part of India
- 'Vulnerable' status under the IUCN Red List

C.13. DOYANG LAKE, NAGALAND ATTRACTS AMUR FALCOM

- Amur Falcons are the migratory bird that stay every year at Doyang lake during their flight from Mongolia to South Africa
- **Pangti village in Nagaland is considered as the world's Amur Falcon capital**
- Centre will soon develop the Doyang Lake (Nagaland) area as an eco-tourism spot for bird-watchers across the world.
- Until recently, Amur falcons were hunted by Naga tribesmen for meat.

C.14. BLACK- NECKED CRANE

- Migratory bird most commonly found in China.
- It is legally protected in Bhutan and India and is considered sacred to certain Buddhist traditions.
- **IUCN status - Vulnerable;** Birdlife International - Threatened
- Listed in India's Wildlife Act as a Schedule 1 species
- It is locally known as **Dhung Dhung Karma**. Also it is the only high altitude crane amongst the 15 species found in the world.

C.15. NEW PRIMATE SPECIES SIGHTED

- A new species of primate called **White-Cheeked Macaque** was sighted by photographers in Arunachal Pradesh.
- Macaques are distant cousins of langurs and gibbons.
- Earlier Arunachal macaque (Macaca munzala) was discovered in 2005.

Kinds of monkeys in India

- Rhesus monkey; the most common found in urban and rural India
- Arunachal macaque, Assam Macaque, Pig-tailed macaque and stump-tailed macaque- found in north-eastern India
- Lion-tailed macaque- in western Ghats; IUCN status- Endangered
- Golden Langur in Assam, Capped langur in north-east India, Nilgiri Langur in Nilgiri hills
- Hoolock Gibbons in north-east India- only species of ape found in India
- Slender Loris- nocturnal primate found in southeastern ghats of India

C.16. KIKIKI HUNA

- Recently it has been found in Tamil Nadu, India.
- Smallest insect in the world, dimension: 0.16 mm
- A multicellular organism that is smaller than single-celled organisms.
- Like all fairyflies, Kikiki huna lays its eggs in the eggs of other insects.
- The entire life stage is passed in the single egg, from which it emerges as an adult.
- It was first discovered in Trinidad around 20 years ago and later Hawaii, Australia and Argentina.

C.17. IUCN RED LIST

- According to IUCN red list 2015, a total of 180 bird species in India are now threatened, as against 173 last year.
- Five species have been uplisted from the Least Concerned to the Near Threatened category, a sign of increased threat. These are Northern Lapwing (a grassland bird) and four wetland birds, namely Red Knot, Curlew Sandpiper, Eurasian Oystercatcher and Bar-Tailed Godwit.

- Two other wetland birds, Horned Grebe and Common Pochard have been uplisted from Least Concerned to Vulnerable.
- Steppe Eagle (a raptor from grasslands), which is a regular winter visitor to the Indian subcontinent, has been uplisted from Least Concerned to Endangered.

C.18. SNOWFLAKE CORAL

- Snowflake coral is posing a major threat to the coral reef colonies in the Gulf of Mannar, Gulf of Kutch and the Andaman and Nicobar Islands.
- It can destabilize the marine ecosystem because it may crowd out other species like corals, sponges, algae, ascidians that contribute to the marine biodiversity of the region.

What is Snowflake Coral?

- The snowflake coral, (Carijoa riisei) is a species of soft coral in the family Clavulariidae.
- It is **native to the tropical western Atlantic Ocean** and has spread to other areas as an invasive species.
- It was first reported as an invasive species from Hawaii in 1972. Since then, it has spread to Australia, Thailand, Indonesia and the Philippines.
- It is considered invasive because of its capacity to dominate space and crowd out other marine organisms.
- It is known to inhabit reefs and underwater structures such as shipwrecks and piers, attaching itself to metal, concrete and even plastic.

C.19. RAPTOR MOU

- The Government has approved signing of Memoranda of Understanding (MOU) on the Conservation of Migratory Birds of Prey in Africa and Eurasia, also called the Raptor MOU, with the Convention on Conservation of Migratory Species (CMS).

THREATS FACED BY RAPTORS

Habitat loss and degradation, illegal shooting, poisoning, collisions with aerial structures and electrocution by power lines.

- It aims to promote internationally coordinated actions to conserve and reserve the decline of birds of prey.
- Although legally non-binding, it will help India gain knowledge in effectively managing the habitats of these raptors.
- MoU extends its coverage to 76 species of birds of prey. Of these, 46 species, including vultures, falcons, eagles, owls, hawks, kites, harriers, are found in India.

About Convention on CMS

- Under the aegis of the United Nations Environment Programme (UNEP), CMS provides a global platform for the conservation and sustainable use of migratory animals and their habitats.

- CMS brings together the States through which migratory animals pass, the Range States, and lays the legal foundation for internationally coordinated conservation measures.
- **Appendix I -** Migratory species threatened with extinction.
- **Appendix II -** Migratory species that need or would significantly benefit from international co-operation.

C.20. BIODIVERSITY FINANCE INITIATIVE (BIOFIN)

- The idea behind implementing BIOFIN is to first assess the gap between the 'available funding' and the 'required funding' for biodiversity conservation and then to plan for resource mobilization.

What is Biodiversity Finance Initiative (BIOFIN)?

- Biodiversity Finance Initiative – BIOFIN, is a new global partnership seeking to address the biodiversity finance challenge in a comprehensive manner – building a sound business case for increased investment in the management of ecosystems and biodiversity.
- BIOFIN is managed by the UNDP Ecosystems and Biodiversity Programme, in partnership with the European Union and the Governments of Germany and Switzerland.
- The Global Environment Facility is a further partner financing parallel in-country projects in support of the revision of National Biodiversity Strategies and Action Plans (NBSAPs).

C.21. KASTURIRANGAN REPORT ON WESTERN GHATS

The government has said that as per the Kasturirangan report, commercial mining and polluting industries would be strictly banned in areas identified as eco sensitive zones.

Recommendations

- It sought to balance the two concerns of development and environment protection.
- The Kasturirangan panel was set up to study the Gadgil committee report on the Western Ghats.
- The Gadgil panel report had faced unanimous opposition from state governments for recommending that almost three-fourth of the hills, including plantations, cultivated lands and large habitations, be turned into a restricted development zone.
- The Kasturirangan report seeks to bring just 37% of the Western Ghats under the Ecologically Sensitive Area (ESA) zones — down from the 64% suggested by the Gadgil report.
- Recommended prohibition on development and commercial activities like mining, thermal power plants, polluting industries and large housing plans in Ecologically Sensitive Area (ESA) zones.
- The villages falling under ESA will be involved in decision making on the future projects. All projects will require prior-informed consent and no-objection from the gram sabha.

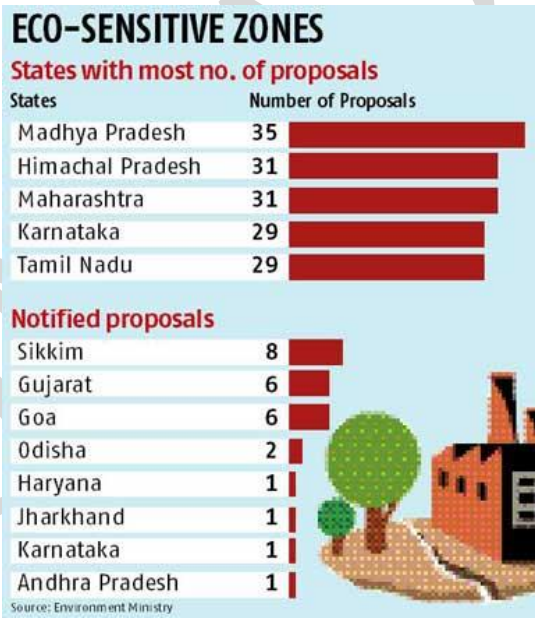
- A complete ban on mining activity in this zone and current mining activities should be phased out within five years.
- It has not recommended a ban on hydroelectric projects in the zone, but put a regime of stricter clearances for dams and other projects.
- For dams, it has demanded an uninterrupted ecological flow of at least 30% level of the rivers flow. Also, not more than 50% of the river basin should be affected affected at any time.
- It has also favoured a new authority to regulate the region's development and economic growth.

C.22. MAJORITY OF ECOLOGICALLY SENSITIVE ZONES STILL NOT NOTIFIED

- Total number of national parks and wildlife sanctuaries are 526
- ESZ has been notified only around 26 of them yet.

ESZ and its significance

- According to national wildlife policy, each of these wildlife zones was to have a protective zone (ESZ) around it, where polluting and detrimental activities would be restricted.
- The ESZ is based on the principles of providing sanctity to protected areas and strengthening the buffer zones and corridors around such areas.
- All forms of infrastructure projects of commercial or public purpose, including mining, industries and hydro-power projects, are prohibited within such zones.



Supreme Court order on ESZ

- All states and Union Territories were required to send proposals detailing the site-specific geographical extent of ESZs around environmentally protected areas falling within their boundaries.
- Unless site-specific ESZs are declared a 10-km area around each of these wildlife zones is treated as an ESZ.

C.23. ESZ AROUND OKHLA BIRD SANCTUARY NOTIFIED

- The Ecologically Sensitive Zone in the Okhla Bird Sanctuary will be the area up to 100 metres from the eastern, western and southern boundary and up to 1.27 km from the northern boundary of the Okhla Bird Sanctuary.
- Notification was issued after the National Board of Wild Life (NBWL) cleared the process of demarcating the ESZ.

Species

- Two critically endangered (CR) species: white-rumped vulture and Indian vulture
- Nine vulnerable (VU) species: Baikal teal, Baer's pochard, sarus crane, sociable lapwing, Indian skimmer, Pallas's fish eagle, lesser adjutant, bristled grassbird and Finn's weaver
- Seven near threatened (NT) species: ferruginous pochard, black-bellied tern, grey-headed fish eagle, erratically east to West Bengal and south to Kerala and Sri Lanka.

C.24. KYASANUR FOREST DISEASE

- The disease was first reported from Kyasanur Forest of Karnataka in 1957. It first manifested as an epizootic outbreak among monkeys. Hence locally known as Monkey Disease or Monkey Fever.
- The vector for disease transmission is Haemaphysalis spinigera, a forest tick (although ticks are commonly thought of as insects, they are actually arachnids like scorpions, spiders and mites. All members of this group have four pairs of legs as adults and have no antennae, whereas, an adult insects have three pairs of legs and one pair of antennae).
- Disease transmission to humans may occur after a tick bite or contact with an infected animal, most importantly a sick or recently dead monkey.
- Rodents, shrews, and monkeys are common hosts for KFDV after being bitten by an infected tick
- The disease has historically been limited to the western and central districts of Karnataka State, India. However, more recently (April, 2015) four persons have died of this disease in north Goa.

C.25. BLUE MORMON

- The Blue Mormon is a large, swallowtail butterfly found primarily in Sri Lanka and India, mainly restricted to the Western Ghats of Maharashtra, South India and coastal belts.
- It is reportedly the second largest butterfly found in India, just smaller than the southern birdwing. It is not thought to be threatened. It occurs throughout the year but more common in the monsoon and immediately after it.
- Maharashtra has become the first State in the country to have a 'State butterfly'.

C.26. SANGAI BROW-ANTLERED DEER

Why In News

- The scientists of Wildlife Institute of India (WII) have been assigned with the task of providing second home to Sangai due to its depleting population in the area.

About Sangai

- The Sangai is an **endemic, rare** and **critically endangered** subspecies of brow-antlered deer found only in Manipur.
- It is also the **state animal of Manipur**
- Its habitat is restricted to the marshy wetland of **Keibal Lamjao** over the floating biomass in **Loktak lake** which is locally called **'phumdi'.**
- While walking on the floating biomass, Sangai often balances itself which looks as if it is dancing on the green grassland and therefore popularly called as **'dancing deer' of Manipur.**
- It is classified as 'endangered' by the IUCN but is part of MoEF's 'Recovery Programme for **critically endangered** species and habitats'.

Reasons for Declining Sangai Population

- Change in water regime due to construction of artificial reservoir and barrage. This is resulting in thinning of phumdi which is unable to bear the weight of deers.
- The shelter plants are stunted, mainly due to constant floating of phumdis making Sangai vulnerable to poaching.

Related Information

- Manipur State Forest Department has decided to translocate a section of Sangai deer with an aim to save it from extinction. It will be translocated to Pumlen Pat which is close existing habitat.
- Loktak lake is one of the seven Ramsar sites of international importance.
- Keibal Lamjao is the only floating national park in India.
- Phumdi is the floating mass of entangled vegetation formed by the accumulation of organic debris and biomass with soil.

C.27. SACRED GROVES

What are sacred groves?

- Forest Fragments of various sizes, which are community protected and usually have a significant religious connotation for that community.

Significance of sacred groves

- Traditional uses
  - ✓ Medicinal use as it is a repository for plants with Ayurvedic properties.
  - ✓ Source of replenishable resources like fruits and honey
  - ✓ The groves are often associated with ponds and streams. They help in meeting the water requirement of communities and also in recharging aquifers.
  - ✓ Hunting and felling trees is a taboo. This vegetation cover helps in preventing soil erosion.
- Modern uses
  - ✓ In modern times, they have become biodiversity hotspots due to progressive habitat destruction in neighbouring areas.
  - ✓ They act as a rich gene pool including rare, threatened and endangered species.
  - ✓ Sacred groves in urban landscapes act as 'lungs' to the city as well

Threats

- Urbanization and encroachment
- Over-exploitation of resources like overgrazing and excessive firewood collection
- Religious practices; clearing them for construction of shrines and temples
- Invasion by invasive species

Protection measures

- The Wildlife (Protection) Amendment Act, 2002 had introduced a new protected area category called 'community reserve'. Sacred Groves have been put under this.
- Under this significant power is given to the local communities with respect to administration of these areas.

C.28. VERMIN

- Vermin means wild animals which are believed to be harmful to crops, farm animals, game or which carry diseases.
- Because of increasing man-animal conflict, the government had decided to declare certain animals as vermin. Once declared vermin, that particular species can be hunted or culled without restriction.
- Recently following animals were declared vermins - wild boar in Uttarakhand, Nilgai in Bihar and Rhesus Macaque monkeys in Himachal Pradesh.

C.29. SLOTH BEAR HABITAT PROJECT

- The sloth bear is a nocturnal (hunting at night) bear species, that feeds chiefly on insects, found wild within the Indian Subcontinent.
- IUCN estimates that less than 20,000 sloth bears survive in the wilds of the Indian subcontinent and Sri Lanka. IUCN classifies it as vulnerable.
- It is listed in Schedule I of Indian Wildlife Protection Act, 1972, which provides legal protection.
- International trade is prohibited as it is listed in Appendix I of the Convention on International Trade in Endangered Species.
- Gujarat government has launched the Sloth Bear Habitat project to provide better habitat by restoring the ecology of Jessore wildlife sanctuary, where more trees will be planted and unwanted vegetation removed.

C.30. SPECTACLED LANGUR

- India and Bangladesh have decided to take concerted conservation efforts to protect the rare Spectacled Langur along with other primates found in Patharia Hills Reserve Forest on either side of the fenced border along Assam's Karimganj district.
- The reserve forest is home to other conserved species like Hoolock Gibbon, Golden Langur etc.
- As per IUCN, the Spectacled Langur is nearly threatned.

C.31. LEOPARD CENSUS 2014

- Wildlife Institute of India conducted the India's first ever leopard census. Estimated leopard population is 12000 to 14000. It is a near threatened species according to IUCN.

C.32. DANCING FROG

- Dancing frogs, tropical frogs, and torrent frogs is a genus of frogs from that are endemic to the Western Ghats in India.
- Micrixalus frogs are popularly known as "dancing frogs" due to their peculiar habit of waving their feet to attract females during the breeding season.
- They are extremely vulnerable as their habitat is severely threatened.
- There is a persistent threat in the form of excessive hunting of tadpoles by tribals for food.

C.33. ASIAN WATERBIRD CENSUS DATA

What is it?

- The Asian Waterbird Census (AWC) happens every **January** across Asia and Australia.
- It runs parallel to other regional programmes of the **International Waterbird Census** (IWC), in Africa, Europe etc.
- In India, it is coordinated by **Bombay Natural History Society (BNHS)** along with **Wetlands International , where i**t began in 1987

Objectives Of Waterbird Census

- Obtain information of waterbird population on an annual basis **during non-breeding period of most species (January)** and use it as a basis for monitoring population and evaluate sites
- Annual monitoring of the status and condition of wetlands
- Encourage greater interest in waterbirds and wetlands amongst people and promote their conservation.

About Waterbirds

- Waterbirds are defined as species of birds that are ecologically dependent on wetlands.
- These birds are an **important health indicator of wetlands** of a region.

Why In News

- The year 2016 marks the 50th global International Waterbird Census (IWC). With this, it has become the **world's longest running biodiversity monitoring programme**.
- The observations pertaining to wetland birds of Kerala done over a period of 27 years were released. This happens to be the **first countrywide citizen science activity on natural history**.

About Wetlands International

- Wetlands International is a non-profit organization established in 1937 as 'International Wildfowl Inquiry' and HQ in Netherlands.

C.34. IMPACT OF KEN-BETWA LINK ON TIGER POPULATION

Background

- The Ken-Betwa river linking project aims to irrigate the drought-ravaged Bundelkhand region.
- It involves building a 288-metre **Daudhan dam**, and transfer of surplus water from the Ken river basin to the Betwa basin.
- This will submerge nearly 400 of the 4,300 hectares of the Panna tiger reserve.
- Experts suggest that the result could be drastic for the tiger population, as they have to adjust to the changes.
- Impact area will be far greater with associated activities like construction, power houses etc.
- A team of **wildlife experts have submitted a report** on the environmental impact of the project.
- While not endorsing or disapproving the project, the Panel has advised the government to ensure two things:
  - ✓ The proposed canal should not hinder tiger movement; and
  - ✓ There should be enough habitable forest land developed to compensate for the loss of tiger reserve land.

Benefits Of the Project

- New water will draw herbivores and thus additional prey and carcass in the region, resulting in benefits for tigers and vultures
- The area lost will be compensated; alternate forest land to the tune of double the area lost would be replenished with vegetation that had once existed in the region.
- The benefits to mankind is huge- additional water to 6.35 lakh hectares of land helping nearly 70 lakh people of the region.

About Panna Tiger Reserve

- Located in Madhya Pradesh
- Most notable for its tiger conservation programme. Tigers in the reserve had plummeted from 25 in 2006 to zero in 2009. Thereafter a spate of conservation efforts including translocation has resulted in increasing the population to 18 at present.
- Designated as **Biosphere Reserve** in 2011.

C.35. HIMALAYAN BROWN BEAR SPOTTED IN KARGIL

- Recently a group of eight Himalayan brown bears were spotted in Ladakh's Drass Sector.
- Earlier, the 1999 Kargil war had caused significant destruction to their habitats.
- ABOUT HIMALAYAN BROWN BEAR
  - ✓ Largest mammal in the Himalayan region
  - ✓ Critically endangered status under IUCN due to loss of habitat and human persecution.
- Wildlife In Ladakh Region
  - ✓ Tibetan Antelope and Snow Leopard are endangered species.
  - ✓ Bharal (Himalayan Blue Sheep), Tibetan Wild Ass and Ibex are prominent in the region.

C.36. INDIA BIODIVERSITY AWARDS 2016

About India Biodiversity Awards

- It is a joint initiative of the Ministry of Environment, Forest and Climate Change, National Biodiversity Authority and United Nations Development programme.
- The Awards recognise the contribution of a range of stakeholders towards the conservation of biodiversity and excellence in biodiversity governance

Notable Winners Of The 2016 Awards

- Nature Conservation Founder and the Ghora-Abhe society for **Hornbill Nest Adoption Programme** introduced in **Pakke Tiger Reserve** in Arunanchal Pradesh.
- Purnima Devi Burman and *Hargilla army* for protection of **Greater adjutant Bird**
- Mawkyrnot SHG for sustainable use of 52-feet long **living roots bridge** in Mawkyrnot, Meghalaya
- **Dudhai Biodiversity Management Committee** in Uttarakhand for banning illegal sand mining and reviving river ecosystems

About Pakke Tiger Reserve

- It is located in the **East Kameng district** in Arunanchal Pradesh
- It was earlier known as Pakhui Tiger reserve.
- It is adjacent to Nameri National Park of Assam and Sessa Orchid sanctuary and Eaglenest Wildlife Sanctuary in Arunanchal Pradesh.
- It is bounded by Pakke river and the Bhareli/Kameng river, both tributaries of Brahmaputra.

C.37. INDIAN WILD ORANGE

About

- It is a native Indian species of citrus with the scientific name 'citrus indica'.
- It is considered to be the most primitive citrus likely to be one of the ancestors of all citrus fruits in the world.
- It is an endangered species that require a specific microclimate.
- The Nokrek Biosphere Reserve is an important site for the species
- Major threat to the specie has been habitat destruction due to slash and burn (jhum) activity.

Why In News

- Earlier it was reported only from the Garo hills of Meghalya, where it is locally called 'Biurengthai' and is used for medicinal and spiritual purposes by the Garo people.
- However, recently it has been found in Manipur as well, in a remote village called Diolong.

C.38. HANGUL MAY GO EXTINCT

Hangul, also known as Kashmir Deer, is an endangered species mainly concentrated at Srinagar's Dachigam National Park.

D. SCHEMES AND POLICIES

D.1. DRAFT NATIONAL RENEWABLE ENERGY BILL, 2015

Objectives

- To consolidate the renewable energy sector and give it an institutional structure.
- It also aims to set up dedicated renewable electricity investment zones.

Provisions

- After it is passed by Parliament it would enable a National Renewable Energy Policy, Renewable Energy Corporation of India, an advisory group and a committee on the same.
- Till now, the renewable energy sector was governed by the Electricity Act 2003, which is also undergoing amendments.
- The law would cover all aspects of the renewable energy supply chain.
- The various segments, which are the focus of the policy, are: Renewable energy resource assessment, technical and safety standards, monitoring and verification, manufacturing and skill development and data management.
- Through a separate law, MNRE (Ministry of National Renewable Energy) would get freedom to execute projects and not depend on other ministries and departments for necessary clearances.
- Under the draft Bill, no license would be required to supply electricity from a renewable energy source.

National Renewable Energy Fund

To financially support the sector and the projects, the central government would set up a **'National Renewable Energy Fund' and also push states to set up their own 'State Green Funds'.**

The fund may be used for supporting all the objectives of this Act, such as, but not limited to, R&D, resource assessment, demonstrations and pilot projects, low cost financing, investments for skills development, supporting RE technology manufacturing, infrastructure development, promoting all forms of decentralised renewable energy etc. provided such activities are selected in a transparent manner, and in line with the provisions of the National RE Policy/Plan.

Renewable Energy Corporation of India

In June 2015, the Union Cabinet gave its approval to the Solar Energy Corporation of India (SECI) for converting it into a Section 3 company under the Companies Act, 2013 and renaming it as the Renewable Energy Corporation of India (RECI).

Indian Renewable Energy Development Agency

It is a "Mini Ratna" PSU under the Ministry of New and Renewable Energy (MNRE). It is a Public Limited Government Company established as a Non-Banking Financial Institution in 1987 under the administrative control of MNRE to promote, develop and extend financial assistance for renewable energy and energy efficiency /conservation projects.

D.2. NATIONAL GREEN HIGHWAY POLICY

Aim

- Developing a policy framework for the plantation of trees along highways
- Reducing the impact of air pollution and dust
- Providing shade on glaring hot roads during summer
- Reducing the impact of noise pollution and soil erosion
- Preventing the glare from the headlights of incoming vehicles
- Generating employment

Funding: A Green Highways Fund would be setup from contribution of 1% of the civil work of road project cost. NHAI would serve as fund manager.

Monitoring: by using ISRO's Bhuvan and GAGAN satellite systems.

D.3. NATIONAL OFFSHORE WIND ENERGY POLICY

- To promote electricity generation from offshore wind mills in the Exclusive Economic Zone (EEZ).
- **Nodal Ministry:** Ministry of New & Renewable Energy (MNRE).
- **Nodal Agency**: National Institute of Wind Energy.
- The policy will provide a level playing field to all investors/beneficiaries, domestic and international. All the processes would be carried out in a transparent manner by NIWE.
- It would help us achieve the target of 60,000 mw of wind energy by 2022.
- **Unique Feature:** Large Power Plants with capacity upto 1000MW could be built and there would be no need for diversion of land.

D.4. SOLAR ROOF TOP SUBSIDY

- Union Ministry of New and Renewable Energy (MNRE) has indicated that subsidy or central financial assistance (CFA) for solar rooftop projects will be provided only to projects in four categories.
- Domestic content requirement (for modules made in India) will be applicable to only those installations where the subsidy is provided.
- Private, commercial and industrial buildings rooftops will not be covered under the subsidy unless the solar system is owned by a government organization.
- **Other provisions for small solar power plant:** Custom duty concessions, 10 years tax holiday, provision for loans and also loans upto Rs.10 lakh for individual loans under priority sector lending.

Four categories

- Residential
- Institutional (schools, educational institutions, medical colleges and hospitals and R & D institutions – both public and private)
- Government (both central and state government organizations as also all Panchayati Raj buildings)
- Social sectors (old age homes, orphanages, common service centres and welfare homes, etc)

Subsidy: 15% of the benchmark cost

D.5. THE PUBLIC LIABILITY INSURANCE (PLI) ACT, 1991

- The Ministry of Environment, Forest and Climate Change has issued directions to Central Pollution Control Board (CPCB) to ensure better implementation of Public Liability Insurance (PLI) Act, 1991.
- The act mandates for a compulsory insurance policy for certain industries (handling specified chemical and inflammables). It is to hedge against any accidents and pay for any compensation to those affected people who are not the workers.
- The Act establishes an Environment Relief Fund (ERF), which is subscribed by all such user industries.
- All the State Pollution Control Boards (SPCBs)/Pollution Control Committees (PCCs) for UTs have been advised for including PLI insurance policy as one of the point in the check list before according or renewing NOC to an industry.

D.6. NATIONAL HYDROLOGY PROJECT

- It aims **to collect hydro-meteorological data across India and use it for efficient water management in the country**.

Features

- It will set up a system for timely and reliable water resource data acquisition, storage, collation and management
- It will help to build capacity of state and central organisations in water resource management through the use of information systems and adoption of state-of-the-art technologies like remote sensing
- Assist in promoting 'efficient and equitable' use of water, especially groundwater, down to the village level and provide information on quality of water as well
- help in gathering hydro-meteorological data which will be stored and analysed on a real-time basis and can be seamlessly accessed by any user at the state, district or village-level
- cover the entire country, unlike earlier hydrology projects that covered only 13 states
- Funding pattern - 50% would come from World Bank loans while the rest would be given as budgetary support.

D.7. DELHI'S ODD EVEN POLICY

What is Odd Even Policy?

- Odd numbered cars to ply on odd dates, even numbered cars on even dates.
- A fine of Rs 2000 will be imposed on people who violate the Odd-Even Formula.
- There are few exemptions such as Women driving alone, VIP's, VVIP's etc.

Need of such policy

- Levels of tiny particles known as PM 2.5 in the Indian capital often exceed those deemed safe by the United Nations World Health Organization.

- PM 10, which are smaller than 10 microns in diameter, enter the respiratory tract, and have been associated with risks like bronchitis, asthma, and upper respiratory tract infections. PM 10 aggravate symptoms of existing diseases more than triggering new conditions.
- PM 2.5 are considerably finer, penetrate into the lower respiratory tract or deeper in the respiratory tract, and the blood stream, causing cardiovascular problems.
- PM 1, which are so much finer than PM 2.5, can penetrate the cardiovascular stream even further, and give rise to lasting conditions, such as predisposing people to heart diseases.
- For the first time in the country, PM1 was monitored during the odd-even traffic scheme in New Delhi
- In the case of Delhi, the contribution of vehicles to air pollution is quite high. Certain studies estimate it to be up to 80% of the total.
- Base noise levels in the city have exceeded acceptable standards.

Challenges

- Vehicle emissions contribute only between 20% to 40% of the PM 2.5 in Delhi's air.
- To broaden the scope of this policy, government should also **try to consider the other sources of pollution such as power plants, fuel standards, agricultural pollution** etc. and try to minimize their impact on environment.
- **China** The policy of banning odd- and even-numbered vehicles on specific days has prompted households in Beijing to go for a second car. Same experience was also felt in **Mexico city.**
- Considering a very high per capita income in Delhi, Rs 2,40,849 in 2014–15, there is a possibility that most people may go for the purchase of second car if this policy is implemented for longer duration.

D.8. POLICY ON PROMOTION OF CITY COMPOST

What is compost?

- Compost is organic matter that has been decomposed and recycled as a fertilizer and soil amendment.
- At the simplest level, the process of composting simply requires making a heap of wetted organic matter known as green waste (leaves, food waste) and waiting for the materials to break down into humus after a period of weeks or months

Salient Features of the Policy

- Market development assistance of Rs. 1500 per tonne of city compost for scaling up production and consumption of the product. It would lower MRP of city compost for farmers.
- Eco-Mark standard for City Compost.
- Distribution:
  - ✓ Co-marketing by Fertilizer companies.
  - ✓ The companies will also adopt villages for promoting the use of compost.
- Information Education and Communication network
  - ✓ Concerned Ministry/Department will carry out IEC campaigns to educate farmers.
  - ✓ The Agricultural Extension Machineries including KVKs of ICAR

- Monitoring
  - ✓ A joint mechanism will be set up by Department of Fertilizers, Ministry of Urban Development and Department of Agriculture to monitor and facilitate availability of adequate City Compost
  - ✓ They will also be authorised to resolve any co-ordination related issue that may arise.
- The Public Sector undertakings will have to use City Compost for purpose of their horticulture.

Advantages of City Compost

- Soil health improvement –
  - ✓ It contains useful soil microbes and humus that aerates soil, and improves water retention and resistance to both drought and water logging, thereby reducing irrigation requirements.
  - ✓ It can restore India's 21.7 million hectares of saline and alkaline soils.
  - ✓ To counter the depletion of micro-nutrients in soil since heavy chemical-fertiliser use began.
  - ✓ Heavy-metal levels will come down when compost is used along with chemical fertilizers, since single super-phosphate and rock phosphate, for example, contain twice as much lead and 9-15 times more cadmium than the standards now specified for city composts.
- Protects from groundwater pollution
- Effective mechanism of solid waste management- Aligned with Swachh Bharat Mission – cleaner cities

D.9. NATIONAL MISSION FOR A GREEN INDIA

- This mission is one of the eight Missions outlined under the National Action Plan on Climate Change (NAPCC).

Mission goals

- To increase forest/tree cover to the extent of 5 million hectares (mha) and improve quality of forest/tree cover on another 5 mha of forest/non-forest lands.
- To enhance eco-system services like carbon sequestration and storage (in forests and other ecosystems), hydrological services and biodiversity; along with provisioning services like fuel, fodder, and timber and non-timber forest produces (NTFPs).
- To increase forest based livelihood income of about 3 million households.

Features

- It envisages a holistic view of greening and focuses on multiple ecosystem services, especially, biodiversity, water, biomass, preserving mangroves, wetlands, critical habitats etc. along with carbon sequestration as a co-benefit.

- This mission has adopted an integrated cross-sectoral approach as it will be implemented on both public as well as private lands with a key role of the local communities in planning, decision making, implementation and monitoring.
- It acknowledges the influence that forests have on environmental amelioration though climate change mitigation, food security, water security, biodiversity conservation and livelihood security of forest dependent communities.
- The mission is based on decentralized participatory approach involving grass root level organizations and community in planning, decision making, and implementation and monitoring.

Mission Organization

- At National level, an autonomous society under MEF with an inclusive governing council.
- At State and District Levels, State Forest Development Agency (SFDA) and District FDA linked to District Planning Committee will be revamped.
- Gram Sabha and its Committees will work at village Institutions level and in Urban Areas, Ward level Committees /RWAs with support from Municipal organizations and the Forest Departments.
- Monitoring will be done at 4 levels, namely self-monitoring by community and field staff, Remote Sensing and GIS, third party monitoring by key indicators

CAMPA

- Compensatory Afforestation Fund Management and Planning Authority (CAMPA) are meant to promote afforestation and regeneration activities as a way of compensating for forest land diverted to non-forest uses.
- National CAMPA Advisory Council has been established as per orders of The Hon'ble Supreme Court with the following **mandate**:
  - ✓ Lay down broad guidelines for State CAMPA.
  - ✓ Facilitate scientific, technological and other assistance that may be required by State CAMPA.
  - ✓ Make recommendations to State CAMPA based on a review of their plans and programmes.
  - ✓ Provide a mechanism to State CAMPA to resolve issues of an inter-state or Centre-State character.
- STATE CAMPA: The Supreme Court approved the guidelines prepared by the MoEF for utilizing CAMPA funds by an agency to be constituted in the states and to be known as The State CAMPA.

D.10. NEW RULES FOR MANAGEMENT OF CONSTRUCTION WASTE

- Construction activity is **one of the main reasons for high air pollution** in Indian cities.
- 530 million tonnes of construction and demolition waste is generated in India annually.
- Currently, managed under the existing solid municipal waste management rules which are inadequate. Thus, it is not managed properly.
- **Responsibility upon local authorities**
  - ✓ Permission for construction and demotion only after a complete waste management plan is presented to local authorities.
  - ✓ To keep a check on those who dispose waste illegally.

- **Responsibility upon large-scale generators:** they will have to pay relevant charges for collection, transportation, processing and disposal, as notified by the concerned authorities.
- **Emphasis on reuse**
  - ✓ Mandatory for local authorities to utilize 10-20% of construction and demolition waste in municipal and government contracts to lay drain covers etc.

D.11. NEW E-WASTE MANAGEMENT RULES

- Recently, the Ministry of Environment and Forests have proposed the E-waste (Management and Handling) Rules 2016 that will replace the earlier Rules of 2011

Main Features

- **Applicability**
  - ✓ Earlier it was applicable only to producers and consumers, dismantlers and recyclers. Now extended to Manufacturer, dealer, refurbishers and Producer Responsibility Organisation (PRO).
  - ✓ Earlier only Electric and Electronic equipments were covered. Now even their components and spare parts are also covered. Also Mercury containing lamps like CFLs also included.
- **Extended Producers' Responsibility (EPR)**
  - ✓ It is a strategy designed to promote the **integration of environmental costs associated with goods** throughout their life cycles into the market price of the products.
  - ✓ Under **E-waste exchange** independent companies could offer services of sale and purchase of end-of-life equipments.
  - ✓ Collection is now exclusive responsibility of the Producer. There is no separate authorization needed for this as was required earlier.
  - ✓ A target based approach has been mandated for collection. This is 30% of the quantity of waste generated in first phase and will eventually move to 70% in 7 years.
- **Bulk Consumer responsibility**: They have to file annual returns. Health facilities have been added to the definition.
- **Participation of State government**: Involvement of state government for effective implantation of the rules and simultaneously ensure welfare, safety and health of the workers involved in this sector.
- Provision on **Reduction of Hazardous Substances (RoHS) during manufacturing stage** has been brought in line with existing EU regulations. A provision for withdrawal and recall of the products in case of non-compliance is added.

D.12. NEW PLASTIC WASTE MANAGEMENT RULES

- **Increasing the minimum thickness of plastic carry bags** from 40 microns to 50 microns. This would increase the cost and the tendency to provide free carry bags would come down.
- **Responsibility of local bodies**: Rural areas are brought under the rules since plastic has reached rural areas as well. The *gram sabhas* have been given responsibility of implementation.

- **Extended Producer Responsibility**: Earlier, EPR was left to the discretion of the local bodies. First time, the producers and brand owners have been made responsible for collecting waste generated from their products.
- Producers are to keep a record of their vendors to whom they have supplied raw materials for manufacturing. This is to **curb manufacturing of these products in unorganised sector**.
- **Responsibility of waste generator:** All institutional generators of plastic waste shall segregate and store the waste generated by them in accordance with the Solid Waste Management Rules, and handover segregated wastes to authorized waste disposal facilities.
- **Responsibility of street vendors and retailers**: Not to provide such carry bags or fine would be imposed. Only the registered shopkeepers on payment of a registration fee to local bodies would be allowed to give out plastic carry bags on charge.
- To promote the use of plastic for road construction or energy recovery.

D.13. INVIOLATE FOREST POLICY

- It seeks to declare certain areas as out of bounds for activities like mining.
- It was originally called the 'go-no go' area policy.
- It used various criteria for classification of forests like forest density, forest type, biodiversity richness etc.
- However, with time and pressure the policy was diluted. It went through successive revisions with more dilution and opening of greater number of coal blocks for mining.
- In November 2014, expert panel under **TSR Subramanium** recommended it to be further pruned.

D.14. WETLAND MANAGEMENT IN INDIA

About the Management Framework

> Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life. They are defined as: *"lands transitional between terrestrial and aquatic eco-systems where the water table is usually at or near the surface or the land is covered by shallow water".*

- Earlier the Ministry of Environment and Forests was implementing two separate Centrally Sponsored Schemes (CSS), namely the National Wetlands Conservation Programme (NWCP) and the National Lake Conservation Plan (NLCP). This was later merged into a single scheme called National Plan for Conservation of Aquatic Eco-systems (NPCA).
- Under this scheme a central policy towards the conservation of wetlands is laid down, the programmes are monitored and an inventory of the wetlands is prepared.
- While the conservation and management of wetlands rests with the state governments, their plans are approved by the central government.

D.15. JAL MANTHAN -2

- It is an event organized by Ministry of Water Resources, River Development & Ganga Rejuvenation to dwell on issues of optimal use of water resources and accordingly refine the policies.
- It is marked by the participation of the union and state ministers of related ministries/departments, and other stakeholders like representatives of NGOs and eminent water experts.
- Its theme was '**Integrated Approach for Sustainable Water Management'**
- **Mission Kakatiya:** Helped in raising water levels in Telangana by restoring tanks and water bodies.

D.16. JAL KRANTI ABHIYAAN

- Jal Kranti Abhiyaan is a program of central government for creating awareness on aspects of water security and water conservation.
- Under Jal Kranti Abhiyan two villages, preferably facing acute water scarcity are being selected as "**Jal Grams".**
- An integrated water security plan, water conservation, water management and allied activities are being planned for these villages by Panchayat level committee.

It has the following objectives:

- Strengthening grass root involvement of all stakeholders including Panchayati Raj institutions and local bodies
- Encouraging the adoption/utilization of traditional knowledge
- To utilize sector level expertise from different levels in government, NGO's, citizens etc.
- Enhancing livelihood security through water security in rural areas.

- From each Jal Grams, one elected representative of Panchayat and another from the water users association will be identified as **Jal Mitra/ Neer Nari** and training imparted to them to create mass awareness about water issues as well as necessary guidance in tackling routine issues.
- **Sujalam Card** (with the logo "Water Saved, Water Produced") is being prepared for every Jal gram that would provide the yearly status/information on availability of water from all sources.
- Central Water Commission (CWC) and Central Ground Water Board (CGWB) are the nodal agencies for implementation.

D.17. INITIATIVES UNDER NAMAMI GANGE PROGRAMME

1. Ganga Gram Yojana Launched

- 1600 villages situated along the banks of river Ganga will be developed under this scheme.
- First phase of the programme will cover 200 villages.
- In these villages open drains falling into river Ganga will be diverted and alternative arrangements for sewage treatment will be made.

- The villages will have toilets in every household.
- These villages will be developed under the Sichewal model. Sichewal is situated in Punjab, where cooperation of the villagers has been solicited for the water management and waste disposal in a meticulous way.

2. Approval of Hybrid Annuity Based Public Private Partnership (PPP) Model

- In this model, a part of the capital investment (upto 40%) will be paid by government through construction linked milestones and the balance through an annuity over the contract duration upto 20 years

3. Deployment of Ganga Task Force

- The first company of Ganga Task force Battalion was deployed at Garhmukteshwar.
- Three such companies will be deployed soon at Kanpur, Varanasi and Allahabad.
- Jawans of the GTF will be deployed on the banks of Ganga to ensure that industry and civilians do not pollute the river.

D.18. PROJECT GREEN PORT

- With an aim to make major ports in India greener and cleaner, government has launched Project Green Ports. The project **has two verticals --- Green Ports Initiative and Swachh Bharat Abhiyan.**
- The Green Port Initiative comprises **12 time-bound sub-initiatives.**
  - ✓ Some of the plans are preparation and monitoring plan,
  - ✓ Acquiring equipment required for monitoring environmental pollution,
  - ✓ Acquiring dust suppression system, setting up of sewage/waste water treatment plants/ garbage disposal plant,
  - ✓ Setting up projects for energy generation from renewable energy sources,
  - ✓ Completion of shortfalls of Oil Spill Response (OSR) facilities (Tier-1), prohibition of disposal of almost all kind of garbage at sea,
  - ✓ Improving the quality of harbor wastes etc.

D.19. ILEDTHEWAY CAMPAIGN

It is a campaign of Indian government to save energy by switching to Led bulbs.

Tag line: To make India brighter and smarter

Importance of this micro site:

- The micro site will attempt to reach out to all citizens in India and spread awareness about the nation-wide movement of #iLEDtheway, spearheaded by **Energy Efficiency Services Limited (EESL).**
- Through this micro site, consumers can take a pledge of switching to LED bulbs, which are safer, brighter and consume less energy.
- EESL has launched Domestic Efficient Lighting Programme (DELP) and has distributed over 2.4 crore LED bulbs to consumers under the scheme.

- The government aims to replace 77 crore conventional bulbs and CFLs with the LEDs and 3.5 crore street lights over 3-year period, making it the largest LED based lighting programme in the world.
- Light-emitting diodes (LEDs) are advertised as environmentally friendly because they are energy efficient and mercury-free.
- The environmental burden associated with resource depletion potentials derives primarily from gold and silver, whereas the burden from toxicity potentials is associated primarily with arsenic, copper, nickel, lead, iron, and silver.

D.20. INTERNATIONAL SOLAR ALLIANCE (ISA)

Why in News

- On his recent visit to India, French president along with Indian Prime Minister has laid the foundation stone for an interim secretariat of the International Solar Alliance (ISA) in Gurgaon.

Sunshine Countries

The sunshine countries comprise all major countries which **come either completely or partly between the tropic of Cancer and the tropic of Capricorn.** It comprises 107 countries.

- Earlier, India and France had launched an International Solar Alliance (ISA) at the CoP21 Climate Conference Paris in Dec, 2015.
- The ISA Secretariat would be set up at National Institute of Solar Energy, Gurgaon in India.
- Indian government will provide land and $30 million to form a secretariat for the Alliance, and will support it for five years.

Objectives

- Promote solar technologies and investment in the solar sector to enhance income generation for the poor and global environment.
- Formulate projects and programme to promote solar applications.
- Develop innovative Financial Mechanisms to reduce cost of capital.
- Build a common Knowledge e-Portal.
- Facilitate capacity building for promotion and absorption of solar technologies and R&D among member countries.

D.21. GLOBAL APPOLLO PROGRAM

- The Global Apollo Programme aims to make the cost of clean electricity lower than that from coal-fired power stations across the world within 10 years.
- It calls for 15 billion British Pounds a year of spending on research, development and demonstration of green energy and energy storage, the same funding in today's money that the US Apollo programme spent in putting astronauts on the moon.
- India has shown willingness to join the programme. Notably, India and China, both are large economies powered by the fossil fuels, will be central to the plan.

D.22. GREEN BUS PROJECT

- India launched "The Green Bus project" in Nagpur with the launch of its first ethanol run, environment-friendly public bus.
- The bus will emit carbon dioxide as low as 15% to 90% and its emissions will be monitored by the Union government, Maharashtra state government and Nagpur Municipal Corporation.

D.23. NATIONAL SOLAR MISSION

- In August 2015, the Central Government revised the National Solar Mission target of Grid Connected Solar Power projects from 20,000 MW by 2022 to 1,00,000 MW by 2022.
- To achieve the 1,00,000 MW target, plan is to set up Distributed Rooftop Solar Projects and Medium & Large Scale Solar Projects.
- The Ministry of New & Renewable Energy has further set two categories under which the target will be achieved.
- Under category-I: harvest 40,000 MW solar energy by setting Rooftop Solar panels.
- Under category-II: 60,000 MW energy through the collective efforts like – Scheme for Decentralized Generation of Solar Energy Projects by Unemployed Youths & Farmers, through PSUs, Large Private Sector/IPPs, Solar Energy Corporation of India (SECI), Under State Policies, etc.

D.24. STATE OF FORESTS REPORT 2015

- State of Forests Report 2015: State of Forests Report is published by the Forest Survey of India (FSI) on a biennial basis since 1987. Forest cover of the country is mapped through indigenous RESOURCESAT -2 satellite data. Its salient features are:
  - ✓ Total forest cover in India: 7,01,673 sq km (increase of 3775 sqkm)
  - ✓ Total forest cover as percentage of geographical area: 21.34 per cent
  - ✓ Total tree cover in India: 92,572 sq km (increase of 1306 sq km)
  - ✓ Total tree cover as percentage of geographical area : 2.82 per cent
  - ✓ State with largest total forest cover: Madhya Pradesh having 77, 462 sq km
  - ✓ State having highest forest cover as % of its area: Mizoram (88.93 per cent)
  - ✓ Increase in carbon sink:103 million tonnes CO2 equivalent
  - ✓ It has recorded a net increase of 112 sq. km. of mangroves forest.
  - ✓ West Bengal, which has a total mangrove cover of 2,106 sq. km., accounts for 44.5 per cent, the highest in the country. It is followed by Gujarat with about 1,107 sq. km. . Andaman and Nicobar islands also has a considerable mangrove forest cover with 617 sq. km. of it.
  - ✓ As per the report, the very dense mangrove forest in the country comprises 1,472 sq. km. (31.05 per cent), moderately dense mangrove spans 1,391 sq. km (29.75 per cent) and open mangroves constitute 1,877 sq. km. (39.60 per cent).
  - ✓ The highest increase in the mangrove cover as per the FSI 2015 is from Maharashtra, which has added 36 sq. km.
- The maximum increase has been observed in open forest category mainly outside forest areas. Largest forest cover in terms of Area is Madhya Pradesh with over 77,463 sq km.

- Mangroves Cover: In world's total mangrove vegetation, India's share stands at 3%. Currently Mangrove cover in India is 4740 km² which is 0.14 % of the country's geographical area. Sundarbans in West Bengal accounts for almost half of the total area. As compared to 2013 there is a net increase of 112 sq km in the mangrove cover.
- Forest Survey of India assesses forest cover of the country every 2 years by digital interpretation of remote sensing satellite data and publishes the results in a biennial report called 'State of Forest Report'(SFR). SFR 2015 says India's forest and tree cover has increased by 5, 081 sq km. which is 24.16 percent of the total geographical area.
- Northeastern states have experienced a decline in forest cover except Manipur, due to encroachment and shifting cultivation, increase in biotic pressure.
- There's been a net increase of of 112 sq. km. in mangroves forest, in all very dense, moderate and open following conservation in Sundebans and Bhitarkanika forests. As of now, the overall mangrove cover in the country stands at 0.14% of India's overall geographical area.

D.25. RIVER INFORMATION SYSTEM

- Aiming to avoid any collision and accidents of vessels on inland waterway networks, shipping ministry is launching a river information system (RIS) on the line of air traffic control (ATC). The system will also provide information on fairway (waterway), metrology and river safety.
- To begin with the first such system developed by the Inland Waterways Authority of India (IWAI) will be operational on the 500 km stretch of the Ganga between Haldia and Farakka. This is part of National Waterway-1, which covers Haldia to Allahabad.
- The system enhances swift electronic data transfer between mobile vessels and shore (Base stations) through advance and real-time exchange of information. RIS aims to streamline the exchange of information between waterway operators and users. This would facilitate:-
    - ✓ Enhancement of inland navigation safety in ports and rivers
    - ✓ Better use of the inland waterways
    - ✓ Environmental protection

D.26. AWARE PROJECT

- The Atmospheric Radiation Measurement West Antarctic Radiation Experiment (AWARE) project of the United States studies how climate change and associated atmospheric physics are affecting Antarctica and how the effects are being felt even in the mid-latitudes and the tropics.
- The temperature gradient between equator and poles drives the atmospheric circulation in the southern hemisphere in the form of three north-south systems: the polar cell, the mid-latitude Ferrel cell and the tropical Hadley cell. These cells are dynamically linked together.
- The study examines the physics of the clouds over Antarctica, including cloud is composition of ice particles versus liquid water drops (liquid water can exist in temperatures colder than -30 centigrade in very clean air), how much total water content is in the cloud, how the cloud is formed etc.

D.27. COMPOSATORY AFFORESTATION FUND BILL, 2015

- The Bill establishes the **National Compensatory Afforestation Fund** under the **Public Account of India**, and a State Compensatory Afforestation Fund under the Public Account of each state.

Background

- Currently Reserved Forest or a Protected Area (PA) land may be diverted under the Forest (Conservation) Act, 1980 for non forest developmental activities like an industrial or infrastructure project with approval of central and state government.
- To compensate for diversion of forestland, afforestation must be done on a separate piece of land called as **compensatory afforestation**. In addition compensation must be paid for loss of forest ecosystem and biodiversity. Valuation of this forest ecosystem is called net present value.
- Cost for both is borne by agency responsible for diversion of forestland and money is collected by the state government for afforestation and forest development.
- In 2002, Supreme Court observed that these funds were not been utilized, and for this purpose an ad-hoc authority called compensatory afforestation fund management and planning authority (CAMPA) was set up.
- In the absence of permanent institutional mechanism more than Rs. 40,000 crores have accumulated which are being kept in Nationalized Banks and managed by CAMPA.

What bill does?

- Provides an institutional mechanism for safety and transparency in expeditious utilization of unspent amounts with ad hoc CAMPA to mitigate impact of diversion of such forest land.
- The National CAF and State CAFs will receive payments for: (i) compensatory afforestation (ii) net present value of forest (NPV), and (iii) other project specific payments.
- The National Fund will receive 10% and the State Funds will receive the remaining 90%.
- Establishes the National and State Compensatory Afforestation Fund Management and Planning Authorities to manage the National and State Funds.
- These Funds will be primarily spent on afforestation to compensate for loss of forest cover, regeneration of forest ecosystem, wildlife protection and infrastructure development.

D.28. GREEN BELTS BY NHAI

- A pilot project to develop greenbelts with 3 layers of trees has been approved by the **NHAI.**
- The project has been proposed by **National Environmental Engineering Research Institute (NEERI), Nagpur**
- The pilot project will be implemented between Jam and Hinganghat over a 5 km stretch on NH 7 in Nagpur region for a period of 5 years.
- 20,000 trees of various species will be planted on both sides of roads in multiple rows.
- The ecological impacts of the project will be monitored and studied by NEERI.

- Plants will be selected on the basis of their height,canopy cover,air pollution tolerance index and socialbility.
- Selection of Highways for the project will be based on soil type,water availability,traffic frequency,space available, climatic conditions and anthropogenic activities etc.

D.29. WHITE TIVER SAFARI IN M.P

- World's first white tiger safari was recently inaugurated at Mukundpur in Satna district of Madhya Pradesh.
- The safari is named after Maharaja Martand Singh of Rewa who helped in breeding of the white tigers.
- The world's first white tiger was spotted in this region of the Vindhyas about 100 years ago.
- Presently 3 white tigers including one male named Raghu and two females, Vindhya and Radha have been brought to the Safari open for public.
- The white tigers are variants of the Bengal Tigers due to the lack of pigment phelomelanin which gives the charming orange colour to the Bengal Tigers.
- They have been found in Assam,Bengal,Odisha,Madhya Pradesh,Chhattisgarh and adjoining areas.

E. MISCELLANEOUS

E.1. INDIA AND SENDAI AGREEMENT FOR DISASTER REDUCTION

- India has been designated as the Champion for Disaster Risk Reduction (DRR) for its efforts to facilitate regional support towards enabling community resilience in the Asia-Pacific region.
- United Nations Office for Disaster Risk Reduction (UNISDR), has declared India first regional champion after the **Sendai Agreement.**

What is Sendai Agreement?

The Sendai Framework for Disaster Risk Reduction 2015–2030 was adopted at the Third United Nations World Conference on Disaster Risk Reduction, held in March 2015 in Sendai (Miyagi, Japan).

- It is a 15-year non-binding agreement
- It says that state has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government and the private sector.
- It is improved version of the existing **Hyogo Framework.**
- It is a complementary framework to Hyogo Framework for Actions.
- While Hyogo Framework was voluntary, Sendai framework is binding over the parties.

Aim- The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

The Sendai Framework Priorities

1. Understanding disaster risk;
2. Strengthening disaster risk governance to manage disaster risk;
3. Investing in disaster risk reduction for resilience;
4. Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

Sendai Framework's seven global targets

1. Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortalities between 2020-2030 compared to 2005-2015;
2. Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015;
3. Reduce direct disaster economic loss in relation to global gross domestic product by 2030;
4. Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030;
5. Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020;

6. Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the framework by 2030;
7. Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

E.2. KAKRAPAR NUCLEAR PLANT SHUTDOWN

- The Kakrapar nuclear plant located in Gujarat was shut down after leakage of heavy water, which is used as coolant.
- The plant consists of two units of pressurised heavy water reactors of 220 MW each.
- The positive thing was that all safety systems kicked in soon after the leak was detected, the reactor shut down automatically and there was no radiological consequence.

Heavy water (Deuterium Oxide, D2O) is used as moderator and coolant in pressurized heavy water reactors, which is part of first stage of Indian nuclear energy program.

Measurement Of The Leakage

- The Atomic Energy Regulatory Board (AERB) classified it as a **Level 1** mishap on the International Nuclear and Radiological Event Scale (INES). This is the lowest in the seven-level classification scheme
  - ✓ Level 1-3 are termed as 'incidents'
  - ✓ Level 4-7 are termed as 'accidents'
- Level 1 is treated as an anomaly in the plant. By comparison the Nuclear accident in Fukushima, Japan in 2011 was Level-7 category.
- INES is developed by International Atomic Energy Authority (IAEA).

ABOUT AERB

- Atomic Energy Regulatory Board is a statutory body created by the President under s.27 of Atomic Energy Act, 1962 to carry out the regulatory and safety functions under the Act.
- It derives its regulatory powers from the rules and notifications promulgated under the Atomic Energy Act, 1962 and the Environmental (Protection) Act, 1986.

E.3. ORGANIC FARMING

- Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity.
- Thus Organic farming uses natural fertilizers and pesticides and strictly limits (not eliminates completely) the use of synthetic and non-natural processes.

Principles of Organic Agriculture

- **Principle of Health**: Organic agriculture should sustain and enhance the health of soil, plant, animal and human as one and indivisible.
- **Ecological Principle:** Organic agriculture should be based on and work with living ecological systems and cycles, emulate them and help sustain them.

- **Principle** of Fairness: Organic agriculture should be built upon relationships that ensure fairness with regard to the common environment and life opportunities.
- Principle of Care: Organic agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment.

Advantages of Organic Farming

- Organic farming is healthier and safe than non-organic farming.
- Organic farms have higher levels of soil biological activity and biodiversity.
- Farmers can reduce production costs because no need to buy expensive chemicals and fertilizers.
- Organic agriculture causes less pesticide contamination in food, people and the environment;
- In the long term, organic farms save energy and protect the environment.
- Pollution of ground water is stopped.

Disadvantages

- Lack of convenience.
- Organic food is more expensive.
- Food safety concerns.

Scope

- About 1-2% of the world's food is produced with organic methods. The market however is growing very quickly - by about 20% a year. In Europe, Austria (11%), Italy (9%) and the Czech Republic (7%) are some countries in which organic food production is highest.

E.4. ASSESSMENT OF CITIES UNDER SWACHH BHARAT MISSION (SBM)

- To assess the Swachh Bharat Mission, the Ministry of Urban Development has decided to study and rank 75 cities under the mission "Swachh Survekshan".
- The task of executing the mission has been entrusted with the Quality Council of India.
- It will cover all state capitals and 53 other cities.
- There will be three streams of data collection
  - Citizen feedback,
  - Municipality self-evaluation
  - Independent assessment
- The results are to be announced on the MyGov website.
- It will be helpful in measuring the impact of the mission year-on-year basis.
- Based on the findings, rules can be modified and new steps can be taken to correct the measures and effective and efficient implementation cab be ensured.

Parameters for evaluation

- Strategies to stop open defecation and integrate the city's solid waste management systems.
- Efficacy of communication strategies on information, education and behaviour change.
- Effectiveness of systems for sweeping, door-to-door collections and transportation of waste.
- Efficiency in processing and disposal of waste.
- How good is deployment of public and community toilets?
- Progress made in construction of household individual toilets.

E.5. BLUE ECONOMY

- The concept 'Blue Economy' was introduced **by Gunter Pauli's** book, "The Blue Economy: 10 years - 100 innovations - 100 million jobs".
- The concept is based on using "locally available" resources to shift the society from scarcity to abundance and thus achieving social inclusion and environmental sustainability.

> The **National Maritime Foundation** defines the **blue economy** as "marine-based economic development that leads to improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities".

- The blue economy encompasses in it the "green economy", with focus on the environment, and the "ocean economy" or "coastal economy".

Blue economy seeks to achieve sustainability by

- Cascading nutrients and energy the way ecosystems do.
- By reducing or eliminating inputs, such as energy, and eliminating waste and its cost
- Emulating natural systems will mean the deployment of humans rather than machines.
- Includes ideas like eliminating air in freezing, use of food-grade ingredients as fire retardants, g, silk as a replacement of titanium, electricity generated by walking, etc.

E.6. YAMUNA FLOODPLAINS

What is floodplain?

- Floodplain is the area adjacent to a river that is not always under water, but is prone to flooding. It is an extension of the riverbed and is an integral part of any river-system
- It is an ecologically sensitive area.
- In the case of the Yamuna in Delhi, the area that is likely to get submerged at least once in a 25-year period has been classified as its floodplain.

Significance of Floodplain

- **Flood protection**: As it provides more room to the river in the event of its rise
- **Improve water quality**: When inundated, it acts as natural filters removing excess sediments and nutrients.
- **Recharged Aquifers**: Outside of a river's main channel, water flow is slowed and has more time to seep into the ground where it can replenish underground water sources.
- **Wildlife Habitat**
- **Recreational Industries and Eco-tourism**: fishing, camping, hiking, boating, etc.

E.7. WORLD WATER DAY

- World water day is observed globally on **22nd March** to mark the importance of water to human civilization and nature.
- It is part of Decade for Water (2005-2015) activity by the United Nations.
- The **theme for 2016 is 'Water and Jobs'**

E.8. EARTH DAY

- Earth day is an annual event celebrated each year on April 22.
  - On this day events are held worldwide to raise the awareness about the climate change and support for environment protection.
- Theme for 2016 - 'Trees for the earth'
- The first celebration was held in 1970 after a devastating oil spill in US, and is widely regarded as the beginning of the modern environmental movement.
- It was made into an international day in 1990 and now is celebrated by over 193 countries every year.

E.9. GM MUSTARD

Why in news?

The Genetic Engineering Appraisal Committee (GEAC), of the ministry of environment and forests has deferred a decision on allowing commercial cultivation of Mustard DMH-11.

Technology behind GM mustard

- It has been created using GM technology (alteration of DNA), involving incorporation of "**Barnase**" gene isolated from a soil bacterium called **Bacillus amyloliquefaciens**.
- It codes for a protein that impairs pollen production and renders the plant into which it has been introduced male-sterile.
- This male-sterile plant is crossed with a fertile parental line, containing, in turn, another gene, "**Barstar**", from the same bacterium that blocks the action of the "Barnase" gene.
- The resultant progeny, having both the foreign genes, is a hybrid mustard plant that is not only high-yielding, but also fertile and capable of producing seed/grain.

What is GM Mustard?

- Mustard DMH-11 (Dhara Mustard Hybrid 11), a genetically modified (GM) crop, is a transgenic crop developed by Centre for Genetic Manipulation of Crop Plants at Delhi University and partly funded by the National Dairy Development Board.
- The resulting GM mustard, it is claimed, gives 25-30 per cent more yield than the best varieties such as 'Varuna' currently grown in the country.

GM Mustard - Bio Safety Data

- The Central Information Commission (CIC) has asked the Genetic Engineering Appraisal Committee (GEAC), under the Ministry of Environment to make public all the data pertaining to the safety of genetically modified (GM) mustard, except proprietary intellectual property data.
- It said that provisions of the Cartagena Protocol on Biosafety should be kept in mind.
- The transparency panel also directed that the data pertaining to all other GM crops in the pipeline be put in the public domain as that is part of voluntary disclosures under Section IV of the RTI Act.

- Activist groups claimed that GM mustard would be a gateway to other GM food crops - tomato, rice, brinjal, etc. Currently GM cotton is the only transgenic crop commercially available in fields.

Cartagena Protocol on Biosafety

- The first international regulatory framework for safe transfer, handling and use of Living Modified Organisms (LMOs) was negotiated under the aegis of the Convention on Biological Diversity (CBD)

Genetic Engineering Appraisal Committee (GEAC)

- It is a statutory body under Ministry of Environment, Forests and Climate Change (MoEFCC).
- The GEAC the apex body for approval of proposals relating to release of genetically engineered organisms and products into the environment including experimental field trials (Biosafety Research Level trial-I and II known as BRL-I and BRL-II).
- It is also responsible for approval of activities involving large scale use of hazardous microorganisms and recombinants in research and industrial production.
- The two-tier regulatory framework for GM crops includes a Review Committee on Genetic Manipulation (RCGM) under Department of Biotechnology and the GEAC under the MoEF.
- The GEAC considers proposals for trial only after approval from the RCGM, a body comprising scientists well versed with the technology.

E.10. WORLD ENVIRONMENT DAY

- World Environment Day (WED) is celebrated every year on 5 June to raise global awareness to take positive environmental action to protect nature and the planet Earth. It is run by the United Nations Environment Programme (UNEP).
- It was established by the United Nations General Assembly in 1972 on the day that United Nations Conference on the Human Environment began.

E.11. HYDROPONICS

- Hydroponics' means the technique of growing plants without soil or solid growing medium, but using water or nutrient-rich solution only, for a short duration. Kerala Dairy Development Department (KDDD) has recently introduced a scheme to produce hydroponic green fodder. Hydroponic fodder cannot substitute green fodder and hay completely, as it lacks in fibre content.

E.12. EXTREME ALTITUDE RESEARCH CENTRE

- The DRDO inaugurated an Extreme Altitude Research Centre at Chang La in Jammu and Kashmir at 17,600 ft above mean sea level, the world's highest terrestrial R&D centre.
- It has been established by Defence Institute of High Altitude Research (DIHAR), Leh, a constituent establishment of Defence Research and Development Organisation (DRDO).
- Numerous life sciences activities will be undertaken at this centre. This will include human physiological work, long term conservation of plant genetic resources, designing, testing and demonstration of mobile and portable greenhouses.
- The centre will also work towards the conservation and propagation of endangered extreme altitude medicinal plants and others.

E.13. WHITEFLY INFESTATION

- Whiteflly is a small (1-2 mm) white-coloured insect affecting cotton, and also occurring on vegetables and other crops in tropical and sub-tropical regions.
- The disease-affected plants are stunted, with fewer numbers of bolls and reduced yields. Besides, the infected plants serve as source of inoculums and infestation for the remaining healthy fields.
- The waxy coating protects whiteflies from most insecticides. On the other hand, many broad-spectrum insecticides like synthetic pyrethroids and mixtures kill a wide range of insects in the fields. That includes even beneficial insects known to control whiteflies naturally.
- The ineffectiveness of genetically modified (GM) cotton against the recent whitefly attack in Punjab and Haryana, which witnessed widespread protests by farmers, has raised concern among agricultural experts and farmers over the growing dependency on Bt cotton.
- Whiteflies are physically delicate and can be controlled even with water sprays. The best approach is to select methods causing least disturbance to beneficial insects that can control the whitefly naturally.
- It is better to rely initially on water sprays, followed by soap sprays, suction traps, yellow sticky traps and reflective sheets or sprays with preparations of neem oil, castor oil, fish oil and rosin soap.

E.14. MAWLYNNOG VILLAGE

- Mawlynnong is famous for its reputation as Asia's cleanest village. In the tiny hamlet of Mawlynnong plastic is banned and spotless paths are lined with flowers.
- Home to the Khasi tribal people, Mawlynnong is famous for being a rare matrilineal society, where property and wealth are passed on from the mother to her youngest daughter and children take their mother's surname.

E.15. HEAT WAVES AND DEFICIT YEAR

- As per the latest definitions issued by the Indian Meteorological Department :
  (a) When the temperature of a region touches 47 degree celcius or goes beyond it, a severe heat waveis said to have occurred. When the temperature of a region dips to 2 degree celcius or falls below this threshold, severe cold waves said to have occurred
  (b) From this year, if India's monsoon rainfall were to dip below 10 per cent of the normal and span between 20 and 40 per cent of the country's area, it would be called a "deficient" year instead of an "All India Drought Year" as the IMD's . A more severe instance, where the deficit exceeds 40 per cent and would have been called an "All India Severe Drought Year," will now be a "Large Deficient Year".

E.16. NOWCAST

- Under the "Nowcast-app" initiative, the extreme weather data originated from (Indian Meteorological Dept) IMD is being moved to m-Kisan portal using a web service.
- From m-Kisan Portal warnings regarding extreme weather conditions are automatically and instantaneously transmitted by SMS to farmers located in affected district/blocks.

E.17. BIOPLASTICS

- Bioplastic is moldable plastic material made up of chemical compounds that are derived from or synthesised by microbes such as bacteria or by genetically modified plants.
- Unlike traditional plastics, which are derived from petroleum, bioplastics are obtained from renewable source, and they are biodegradable.
- Bioplastics currently make up an insignificant portion of total world production of plastics. Commercial manufacturing processes are plagued by low yields and are expensive.
- However, improvements in metabolic and genetic engineering have produced strains of microbes and plants that may significantly improve yields and production capabilities.

E.18. CHANGED NOMENCLATURE FOR CLASSIFICATION OF RAINFALL

- In India, the "average" rainfall or the long-period average (LPA) is the average of rainfall between 1951 and 2000, which is 89 cm.
- Normal: ± 10 per cent of the long period average (lpa).
- Below normal: Rainfall lower than 10 per cent below average of the lpa.
- Above normal: Rainfall greater than 10 per cent above average of the lpa.
- Deficient year: Rainfall deficit between 10 and 20 per cent up to 40 per cent of India's spatial area.
- Large deficient year: Rainfall deficit of over 10 per cent across more than 40 per cent of India's area.

E.19. SAWEN

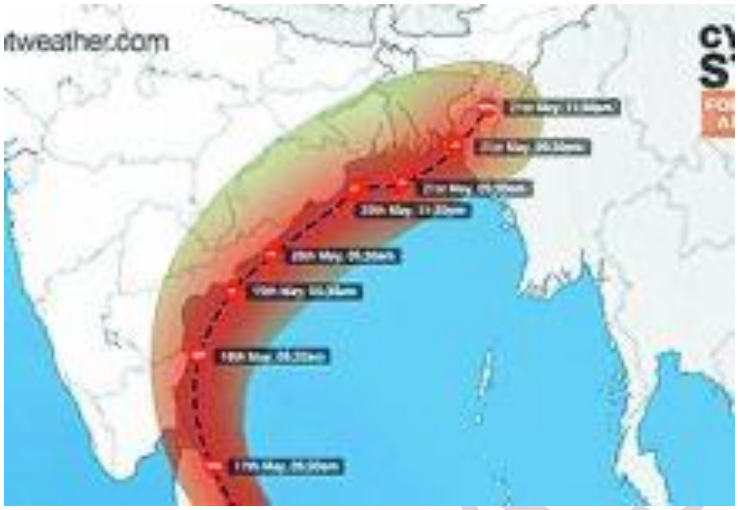
- SAWEN is regional inter-governmental wildlife law enforcement support body launched in 2011 in Bhutan. It aims at working collectively to combat wildlife crime by attainting common mutual goals and approaches for combating illegal trade in the region.
- SAWEN's regional network comprises of eight South Asia countries: Afghanistan, India, Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka and Maldives.
- Union Cabined recently passed the resolution to adopt SAWEN.

E.20. INDIA INSTALLS ITS FIRST EARTHQUAKE EARLY WARNING SYSTEM IN UTTARAKHAND

- India has installed an earthquake early warning system for the first time to detect earthquakes and disseminate warnings in Uttarakhand.
- The early warning system will issue warnings 1-40 seconds before earthquakes of magnitude 5 occur.
- All sensors system that warn of earthquakes are based on the detection of P and S waves generated during an earthquake. The P wave, which is harmless and travels faster than the S wave, is detected by the sensors for advance warning.
- The first earthquake early system has been installed in Dehradun, and the second will be established at Pithoragarh in the Kumaon region.

E.21. CYCLONE ROANU

What is it?



- Cyclone Roanu was the first tropical cyclone this cyclonic season.
- It originated in a deep depression area near Sri Lanka. It travelled closely along Indian coast and finally had landfall in Bangladesh.
- It caused heavy rainfall, flooding events, landslides and mudslides in Sri Lanka. It caused torrential rain falls in coastal regions of India like Odisha and Andhra-Pradesh.
- In Bangladesh it caused storm surge waves and heavy flooding.
- This resulted in many deaths and persons missing in Sri Lanka and Bangladesh.

E.22. REPORT ON COASTAL MANAGEMENT

- Recently, Central Information Commissioner (CIC) has directed the MoEF to release the report by expert committee report on coastal management

Background

- In 1991, the first coastal regulation zone (CRZ) notification was issued under the Environment Protection Act, 1986.
- It gave powers to the central government to restrict industrial activities and processes in an area for the protection of the environment along the Indian coastline.
- In 2014, the ministry constituted a committee under Shailesh Nayak to look into issues raised by various coastal states regarding the 2011 CRZ notification.

About Coastal Regualtion Zone

- As per the CRZ notification, the coastal land up to 500m from the High Tide Line (HTL) and a stage of 100m along banks of creeks, estuaries, backwater and rivers subject to tidal fluctuations, is called the Coastal Regulation Zone (CRZ).
- It seeks to ensure livelihood security to the coastal communities, to conserve and protect coastal stretches and marine areas and promote sustainable development on scientific principles taking into account the dangers of natural hazards in the coastal areas and sea level rise.

E.23. WHEAT BLAST

About Wheat Blast

- Wheat Blast is an agricultural disease that can cause more than 75 per cent yield loss in affected fields, rendering the region non-cultivable for years.
- It is caused by the *'Magnaporthe oryzae'* **fungus**, which also causes Rice Blast.
- It thrives in hot and humid climates.
- It was first identified in 1985 in Brazil and has since spread to other countries of South America.

Why In News

- The disease has recently entered the fields of Bangladesh. It can enter India by import, wind etc.
- However, experts say that the possibility is low because
  - ✓ Major wheat growing area is in north-western part
  - ✓ India is self-sufficient in wheat production and doesn't need to import
  - ✓ India's quarantine facility is much stronger than Bangladesh
- India can take measures like asking the Border States to not grow wheat in case the threat persists.

E.24. CANCER CAUSING CHEMICALS IN PACKAGED BREAD

Highlights of Centre for Science and Environment study

- Bread manufacturers are using Potassium bromate and potassium iodate in breads that may have potential health effects.
- Effects of Potassium bromate - International agency for research on cancer (IARC) classified it as class 2B – possible carcinogenic
- Effects of Potassium iodate - It can lead to excess intake of iodine which could affect thyroid function

Have manufactures violated norms?

In India, Potassium Bromate is permitted to be used up to certain levels in bread, flour and refined flour and according to CSE study, no bread had violated these limits

International norms

- Potassium bromate – banned in EU and China but permitted in US
- Potassium Iodate - banned in EU, UK, Australia

Reaction to study

FSSAI - announced its decision to remove potassium bromate from the list of permitted additives. Ban will be notified soon. It is examining evidence against potassium iodate before restricting its use

All India breadmakers association has decided voluntarily to stop using these and use safer alternatives – ascorbic acid, enzymes and emulsifiers.

E.25. COCHIN AIRPORT – COMPLETELY SOLAR

- It is the first Airport in the world to completely run on solar power.
- There are 46,000 solar panels installed in a 45 acre plot adjoining the airport , producing 12 Mw.
- The surplus power generated more than current requirement is sent to the state power grid for use at nights and on cloudy days.
- Problems may occur when expansion of the airport takes place, as additional power requirements would surface.
- The airport generates 8 million units of power from the sun annually which is enough to meet the energy needs of 10,000 homes for one year.
- Additional environmental benefits are reduction of carbon dioxide emissions by more than 300,000 metric tonnes which is equal to planting 3 million trees or not driving 750 million miles.

E.26. BIOFUELS

Why in News

- World Biofuel Day was celebrated on 10th August and will now be celebrated every year.
- Recently Railways started a facility to blend High Speed Diesel with biofuel upto 5 % for consumption in diesel locomotives.
- South Western Railways has also flagged off a train running on biodiesel.

What are biofuels?

- Fuels that have been extracted from plants and crops are known as biofuels.
- Biofuels are produced from wheat, corn, soya beans and sugarcane which can be produced again and again on demand, so they are sustainable.
- Of these, the most commonly extracted and used one is Bioethanol or simply Ethanol and Biodiesel.

What are the benefits of biofuel?

- Carbon emissions are greatly reduced and sulphur dioxide emissions are almost nil.
- It saves valuable foreign exchange which would have been spent in importing oils.
- Biofuels help in generation of employment as it is based on agriculture.
- It can help in pushing growth in agriculture sector by increasing market for sugarcane based ethanol plants.

Biofuel policy in India:

- There is a National Biofuels Policy in place which aims at mainstreaming of biofuels and, therefore, envisions a central role for it in the energy and transportation sectors of the country in coming decades.
- The Goal of the Policy is to ensure that a minimum level of biofuels become readily available in the market to meet the demand at any given time.
- An indicative target of 20% blending of biofuels, both for bio-diesel and bio-ethanol, by 2017 has been proposed.
- The policy encompasses bio-ethanol, bio-diesel and other biofuels.

- It envisages participation of all stakeholders from production , marketing and consumption of biofuels to mainstream them.

Challenges:

- Inspite of all that has been done only 5 % blending has been achieved till now as a part of policy.
- Actual blending has been around 2 % as per various reports.
- Cost of production is much higher for farmers to switch to their production.
- There are other challenges related to the production like the decline in fertility of the soil in the long run.
- Diversion of land from food production to biofuels will always be a challenge in a country facing scarcity of important food items like pulses and oilseeds.

F. PREVIOUS YEAR PRELIMS QUESTION:

1. Which one of the following is not a Biosphere Reserve?
   (a) Agasthyamalai (b) Nallamalai
   (c) Nilgiri (d) Panchmarhi

2. Where is Bundala Biosphere Reserve which has been recently added to the UNESCO's Man and Biosphere (MAB) network, located?
   (a) Russia (b) India
   (c) Sri Lanka (d) Bangladesh

3. "Other than resistance to pests, what are the prospects for which genetically engineered plants have been created?
   1. To enable them to withstand drought.
   2. To increase the nutritive value of the produce.
   3. To enable them to grow and do photosynthesis in spaceships and space stations.
   4. To increase their shelf life.

   Select the correct answer using the codes given below:
   (a) 1 and 2 only (b) 3 and 4 only
   (c) 1, 2 and 4 only (d) 1, 2, 3 and 4"

4. In a particular region in India, the local people train the roots of living tree into robust bridges across the streams. As the time passes these bridges become stronger. These unique 'Living Root Bridges' are found in:
   (a) Meghalaya (b) Himachal Pradesh
   (c) Jharkhand (d) Tamil Nadu

5. Recently Uttar Pradesh and Madhya Pradesh governments signed a Memorandum of Understanding for the linking of two rivers as a link project. Which are these two rivers?
   (a) Betwa and Chambal (b) Betwa and Ken
   (c) Chambal and Son (d) Ken and Narmada

6. Consider the following kinds of organisms:
   1. Bat
   2. Bee
   3. Bird

   Which of the above is/are pollinating agent/agents?
   (a) 1 and 2 only (b) 2 only
   (c) 1 and 3 only (d) 1, 2 and 3

7. Which of the following National Parks is unique in being a swamp with floating vegetation that supports a rich biodiversity?
   (a) Bhitarkanika National Park
   (b) Keibul Lamjao National Park
   (c) Keoladeo Ghana National park
   (d) Sultanpur National park

8. Consider the following pairs:

National Park	River flowing through the Park
1. Corbett National Park	Ganga
2. Kaziranga National Park	Manas
3. Silent Valley National Park	Kaveri

   Which of the above pairs is/are correctly matched?
   (a) 1 and 2
   (b) 3 only
   (c) 1 and 3
   (d) none

9. Which one of the following groups of animals belongs to the category of endangered species?
   (a) Great Indian Bustard, Musk Deer, Red Panda and Asiatic Wild Ass.
   (b) Kashmir Stag, Cheetal, Blue Bull and Great Indian Bustard.
   (c) Snow Leopard, Swamp Deer, Rhesus Monkey and Saras (Crane).
   (d) Lion-tailed Macaque, Blue Bull, Hanuman Langur and Cheetal.

10. What is the difference between a CFL and an LED lamp?
    1. To produce light, a CFL uses mercury vapour and phosphor while an LED lamp uses semi-conductor material.
    2. The average life span of a CFL is much longer than that of an LED lamp 3. A CFL is less energy-efficient as compared to an LED lamp.

    Which of the statements given above is/are correct?
    (a) 1 only
    (b) 2 and 3 only
    (c) 1 and 3 only
    (d) 1, 2 and 3

11. Consider the following agricultural practices:
    1. Contour bunding
    2. Relay cropping
    3. Zero tillage

    In the context of global climate change, which of the above helps/help in carbon sequestration/storage in the soil?
    (a) 1 and 2 only
    (b) 3 only
    (c) 1, 2 and 3
    (d) None of them


VISIONIAS
INSPIRING INNOVATION
CSE 2013
CSE 2014
GAURAV AGRAWAL
AIR-1
NIDHI GUPTA
AIR-3
VANDANA RAO
AIR-4
SUHARSHA BHAGAT
AIR-5
AIR-1
TINA DABI
AIR-4
ARTIKA SHUKLA
AIR-6
ASHISH TIWARI
AIR-5
SHASHANK TRIPATHI
AIR-9
KARN SATYARTHI
Interview Guidance Prog
Foundation Course
All India PRELIMS MAINS Test Series
PT 365: 1 year Current Affairs Prog