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SPECIAL SUPPLEMENT

UPSC CSE Mains
Environment & Ecology

- Current Affairs
- To The Point
- Target Mains
- Academic Vitamins
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THIS MAGAZINE IS A RESULT OF TEAM COLLABORATION. WE EXPRESS OUR GRATITUDE TO ALL OUR TEAM MEMBERS. APART FROM THE GIVEN NAMES, SEVERAL FREELANCE WRITERS HAVE ALSO MADE IMPORTANT CONTRIBUTIONS.

Dear Aspirants,

As you hold this edition of Drishti Current Affairs Today, the new year of 2021 must have dawned. The passing year i.e. 2020 threw its own set of challenges for the mankind. The repercussions associated with the COVID-19 pandemic, it appeared, brought the whole world to a standstill. But as we enter 2021, there is expectation that things will improve and life will be back to normal. With this, we wish all our readers a very happy and prosperous new year 2021.

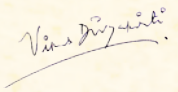
When it comes to the Civil Services Examination (CSE), 2021 has begun with the CSE Mains which was delayed for around four months due to the pandemic. The next cycle of CSE will begin with the Preliminary examination scheduled to be conducted on June 27th. So, those who are freshers and those who have not been able to clear the 2020 Prelims should start focussing on their preparation. One must learn from the mistakes made in the past and try to incorporate them into their preparation strategy and move forward with greater resolve.

Cognisant of the requirements, we, at Drishti, endeavour to provide our readers study materials relevant to CSE. These not only help one understand the demand of the CSE but also keep him/her focussed during the preparation journey. This edition of the Drishti Current Affairs Today comes with a special supplement on Environment and Ecology. The current affairs oriented this supplement compiles the important happenings of past one year which are relevant for the Environment and Ecology section of the CSE Mains. It will be of immense use to our readers.

Wishing you all the best in your future endeavours.

We look forward to your feedback and suggestions.

With Best Wishes



(Dr. Vikas Divyakirti)

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Contents

05 Current Affairs

- Polity & Governance (7)
- Nation & States (20)
- Economic Scenario (30)
- International Relations (40)
- Environment & Ecology (51)
- Science & Technology (57)
- History, Art & Culture (65)
- Social Issues (71)
- Did You Know? (77)

87 Academic Vitamins

- **Economic and Political Weekly (87)**
  - Infrastructuring Floods in the Brahmaputra River Basin (87)
  - Tax on Agricultural Income (88)
  - Disastrous Decade for Data (89)
  - Post-COVID-19 Challenges in the Indian IT Industry (91)
  - The Supreme Court : Then and Now (92)
- **Yojana (94)**
  - Equality on Workplace and Home (94)
  - Multidimensional Poverty Index (94)
  - Gandhian Paradigm of Indian Villages (95)
  - Urban Migrants and Linguistic Heterogeneity (96)
  - Food for All (97)
  - Substance Use: Challenges and Way Forward (98)
- **Kurukshetra (99)**
  - Realising 'Digital India' through its Different Pillars (99)
  - Sturdy Progress in Rural e-Governance (101)
  - Precision Agriculture and IoT based Solutions (102)
- **Down to Earth (104)**
  - Foggy Superstructure (104)
  - District Development Councils in Jammu and Kashmir (105)
  - Coloured Cotton (105)
  - New Light on Dark Matter (106)
  - Honey Adulteration (107)

108 Learning Through Maps

- Map 1 (108)
- Map 2 (109)

110 Essay

111 To The Point

- Foreign Travellers in Indian History (111)
- Biotechnology in Agriculture (113)

114 Target Mains

119 Supplement- UPSC CSE Mains Environment & Ecology

CURRENT AFFAIRS

(Coverage from 24th November to 23rd December)

CONTENTS

Polity & Governance 7-19

- Gender Gap and Sensitisation in Judiciary (7)
- SC Stays Andhra HC Order to Examine Constitutional Breakdown (8)
- President's Powers to Pardon (9)
- Parliament Sessions (10)
- Parliamentary Committee on Management of Covid-19 (10)
- PM WANI: India's New Public Wi-Fi Project (12)
- Right to Vote for NRIs (13)
- Suggestions for Delimitation Exercise (15)
- Recognition of Prior Learning Programme (15)
- Human Development Index: UNDP (16)
- Technical Education in Mother Tongue (18)

Nation & States 20-29

- 12th GRIHA Summit (20)
- Early Health Warning System (20)
- Tobacco Ban in Jharkhand (21)
- Centre's Power for Land Acquisition for Highway: SC (22)
- Waqf Boards in Jammu and Kashmir (23)
- Scheme for Special Assistance to States for Capital Expenditure (24)
- Problems of Punjab's Monoculture (25)
- North Eastern Region Power System Improvement Project (26)
- NGT Panel for Protection of Mahanadi Floodplain (27)
- UP Ordinance on Unlawful Conversion (27)
- Goa Liberation Day (28)
- District Mineral Foundation Trust Funds (29)

Economic Scenario 30-39

- Monetary Policy: RBI (30)
- Municipal Bonds (31)
- Lottery, Gambling, Betting Taxable under GST Act: SC (33)
- Database of Migrants (34)
- Cabinet Approves Capital Infusion into NIIF (35)
- Fraud Cases in Public Sector Banks (37)
- Bitcoins (38)

International Relations 40-50

- Criticism of Policies on Kashmir: OIC (40)
- SCO Online International Exhibition (41)
- ASEAN Defence Ministers' Meeting Plus (42)
- SAARC Charter Day (43)
- India-Bangladesh Virtual Summit (43)
- US Puts India on Currency Watchlist (45)
- Agreements Between India-Bahrain (46)
- China-Nepal Bilateral Cooperation (48)
- Morocco Normalises Relations with Israel (49)
- Israel-Bhutan Ties (50)

Environment & Ecology 51-56

- Climate Change Performance Index (51)
- Emissions Gap Report 2020: UNEP (52)
- National Energy Conservation Day 2020 (53)
- Myristica Swamp Treefrog (54)
- Lakshadweep Declared an Organic Union Territory (55)

Science & Technology 57-64

- Surgery and Ayurveda (57)
- Chang'e-5 Mission: China (58)
- Dust Samples from Hayabusa 2 (59)
- Jupiter Saturn Great Conjunction (60)
- Beresheet 2: Israel (61)
- IRNSS: Part of World Wide Radio Navigation System (62)
- SRO's Satellite Launch: CMS-01 (62)
- Mutated Novel Coronavirus (63)
- P Ovale Malaria (64)

History, Art & Culture 65-70

- Tharu Tribals (65)
- Indegenous Games & Khelo India (66)
- Guru Nanak Jayanti (67)
- Indus Valley Diet (68)
- International Bharati Festival 2020 (69)
- 64th Mahaparinirvan Diwas (70)

Social Issues 71-76

- National Family Health Survey-5 (71)
- Assistance to Disabled Persons Camp (73)
- National Organ Donation Day (74)
- Hidden Epidemic (75)
- Virtual Aadi Mahotsav (76)

Did You Know? 77-86

- Mock Egg (77)
- Legion of Merit: USA (77)
- Kilauea Volcano: Hawaii (77)
- Chillai Kalan (77)
- Monkey Rehabilitation Centre (78)
- India-Indonesia Coordinated Patrol (78)
- Vijay Diwas: 50 Years of Indo-Pak War (78)
- World AIDS Day 2020 (78)
- BSF Raising Day (79)
- Global Teacher Prize 2020 (79)
- United Nations Population Award 2020 (79)
- Human Rights Day (79)
- Srinivasa Ramanujan (80)
- UMANG International (80)
- Malayan Giant Squirrel (80)
- Peacock Soft-shelled Turtle (81)
- Cyclone Burevi (81)
- Mystery Illness of Eluru (81)
- Deteriorating Great Barrier Reef (82)
- Hampi Stone Chariot (82)
- United Nations Investment Promotion Award 2020 (83)
- Elephants (83)
- New Height for Mount Everest (84)
- Himalayan Serow (84)
- San Isidro Movement (MSI): Cuba (85)
- Havana Syndrome (85)
- Mucormycosis Fungal Infection (85)
- Hygiene Rating Audit Agencies (86)
- Green National Highways Corridor Project (86)

Polity & Governance

Gender Gap and Sensitisation in Judiciary

Recently, the **Attorney General** (AG) **K K Venugopal**, in his written submission to the **Supreme Court** (SC), has emphasised the need for greater **gender sensitisation among members of the judiciary**.

- He also highlighted that the **figure of female judges has been consistently low** across the Higher Judiciary.

Key Points

- **Background:**
  - The SC had asked AG and others to **recommend ways to improve gender sensitivity towards victims** while laying down **bail conditions for sex crime offenders**.
  - The Bench had sought view on a plea about courts **imposing bail conditions** for sex crime offenders which **end up further harassing, objectifying their victims**.
    - The **Madhya Pradesh High Court** (HC) **asked a man** (accused in a case of attempting to outrage the modesty of a woman) **to visit the home of the alleged victim and request her to tie a rakhi**.
- **Data on Gender Gap in Judiciary:**
  - The **SC** only has **2 women judges**, as against the **34 seats reserved for women judges** and there has **never been a female Chief Justice of India** (CJI).
  - There are **only 80 women judges** out of the **total sanctioned strength of 1,113** judges in the **SC and the HCs**.
    - Out of these 80 women judges, there are only two in the SC, and the other 78 are in various HCs, comprising only 7.2% of the total number of judges.
    - Of the 26 courts whose data was accessed, including the SC, the **Punjab and Haryana HCs has the maximum strength** of women judges (11 out of 85 judges) in the country, **followed by the Madras HC** (9 out of 75 judges). Both Delhi and Bombay HCs have 8 women judges.
    - The **HCs of Manipur, Meghalaya, Patna, Tripura, Telangana, and Uttarakhand**, **do not have any women** in the sitting judges.
  - Currently, **no data is centrally maintained** on the number of **women in tribunals or lower courts**.
  - In the **senior designation of lawyers**, there are **only 17** women senior counsel designates in the SC as **opposed to 403 men**.
    - The Delhi HC has 8 women and 229 men designates. Similarly, in the Bombay HC, there are 6 women and 157 men designates.
- **Importance of Women in Judiciary:**
  - The **2030 Agenda for Sustainable Development**, and **Sustainable Development Goals** (**SDG 5** and **SDG 16** in particular), address the global responsibility of having **gender equality and women's representation in public institutions** such as the **judiciary**.
  - Achieving equality for women judges is important not only because it is a **right for women**, but also because it is **right for the achievement of a more just rule of law**. Women judges **strengthen the judiciary and help to gain the public's trust**.
  - The entry of women judges is a positive step in the direction of **judiciaries being perceived as being more transparent, inclusive, and representative** of the people whose lives they affect.
  - Women judges **enhance the legitimacy of courts**, sending a powerful signal that they are **open and accessible to those who seek recourse to justice**.
  - Women judges **bring those lived experiences to their judicial actions, experiences that tend toward a more comprehensive and empathetic perspective**.
  - **Adjudication is enhanced** by the presence of women who **bring to the fore considerations that would not have been taken into account in their absence** and the scope of the discussion is hence enlarged, possibly **preventing ill-considered or improper decisions**.

12th GRIHA Summit

Recently, the inaugural session of the **12th Green Rating for Integrated Habitat Assessment (GRIHA) Summit** was organised virtually.

Key Points

- **12th GRIHA Summit:**
  - **Theme:** Rejuvenating Resilient Habitats.
  - **Purpose:** To serve as a platform to deliberate on innovative technologies and solutions which shall help in creating robust mechanisms for developing sustainable and resilient solutions for the benefit of the entire community.
  - **Launch Event:** The Vice President of India launched the SHASHWAT magazine and the book '30 Stories Beyond Buildings' during the event.
- **Green Rating for Integrated Habitat Assessment (GRIHA):**
  - It is the **national rating system of India** for any completed building construction.
    - GRIHA is recognised as India's own green building rating system in India's Intended Nationally Determined Contributions (INDC) submitted to the United Nations Framework Convention on Climate Change (UNFCCC).
  - **Created By:** It was conceived by The Energy and Resources Institute (TERI) and developed jointly with the Ministry of New and Renewable Energy.
- **Benefits:**
  - This system, along with the activities and processes that lead up to it, benefits the community with the improvement in the environment by reducing GHG (greenhouse gas) emissions, reducing energy consumption and the stress on natural resources.
- **Other Related Initiatives:**
  - **Global Housing Technology Challenge (GHTC)**
    - **Organised by:** The Ministry of Housing and Urban Affairs.
    - **Launched:** January 2019
    - **Aim:** To identify and mainstream best available and proven construction technologies that are sustainable, green and disaster-resilient to enable a paradigm shift in housing construction.

The Energy and Resources Institute

- The Energy and Resources Institute (TERI) is a **non-profit research institute** which conducts research work in the fields of energy, environment and sustainable development for India and the global south.
- It was established in **1974 as Tata Energy Research Institute** and renamed to The Energy Resources Institute in 2003.
- **Objective:** To help design green buildings and, in turn, help evaluate the 'greenness' of the buildings.
- **Mechanism:**
  - The system has been developed to help 'design and evaluate' new buildings (buildings that are still at the inception stages). A building is assessed based on its predicted performance over its entire life cycle.
  - **Parameters used:**
    - Site selection and planning
    - Conservation and efficient utilization of resources
    - Building operation and maintenance
    - Innovation points

  - **Affordable Sustainable Housing Accelerators (ASHA)**
    - Under this initiative five Incubation Centers have been set up for identifying innovative materials, processes and technology for resource-efficient, resilient and sustainable construction.
  - **Smart Cities Mission**
    - It is an innovative initiative under the Ministry of Housing and Urban Affairs, Government of India to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology as a means to create smart outcomes for citizens.
    - It is working towards integrated and comprehensive development of cities

Early Health Warning System

The **Ministry of Earth Sciences (MoES)** is developing an unique **Early Health Warning System** which is expected to forecast the possibility of disease outbreaks in the country.

Economic Scenario

Monetary Policy: RBI

Recently, the **Monetary Policy Committee** (MPC) of the **Reserve Bank of India** (RBI) has left the **repo rate unchanged** and **maintained an accommodative policy stance** as it prioritised support for the economy's recovery over inflation amid the **Covid-19 pandemic**.

- It has also announced various other **liquidity management measures** and steps to **improve regulatory oversight** of the financial system.
- The MPC is a **statutory and institutionalized framework** under the **RBI Act 1934**, for maintaining price stability, while keeping in mind the objective of growth. It **determines the policy interest rate** (repo rate) **required to achieve the inflation target** (4%).

Key Points

- **Repo Rate:**
  - The MPC has kept the RBI's key lending rate, the **repo rate**, **steady at 4%** and **reverse repo rate** at **3.35%**.
    - The **repo rate**, also known as the **policy rate**, is the interest rate at which the RBI provides loans to banks.
    - The **reverse repo** is the rate at which commercial banks park their money with the central bank.
  - It has left key policy rates **unchanged for the third time in a row** in the wake of persistently high retail inflation, even as it pointed to the economy, which contracted in the last two quarters, showing signs of early recovery.
  - The central bank has **slashed the repo rate by 115 basis points** (bps) **since late March** to cushion the economy from the fallout of the Covid-19 and the resultant **lockdowns**.
    - Generally, **a low repo rate translates into low cost loans** for the general masses.
- **GDP Projections:**
  - The **real Gross Domestic Product** (GDP) for FY 2020-21 has been projected at **-7.5%**.
    - **Real GDP** is an **inflation-adjusted measure** that reflects the value of all goods and services produced by an economy in a given year.
  - However, with the country gradually opening up after the lockdown and the improvement in activity in the second quarter, GDP is expected to **expand by 0.1% in the December quarter** and **0.7% in the March quarter**.
    - **GDP growth contracted by 23.9%** in the Q1 of 2020 compared to the same period (April-June) in 2019.
- **Inflation:**
  - **Inflation** still remains a concern for policymakers as the **supply-side bottlenecks had fuelled inflation** and **large margins were being charged** to the consumer.
  - **Cost push pressure or cost push inflation** continue to impinge on core inflation, which has not changed much and could firm up as economic activity normalises and demand picks up.
    - **Cost-push Inflation:** Spurt in production prices of certain commodities also causes inflation as the price of the final product increases.
    - **Core Inflation:** It **excludes volatile goods** from the basket of commodities tracking **Headline Inflation.** These volatile commodities mainly comprise **food and beverages** (including vegetables) and **fuel and light (crude oil)**.
  - RBI **projected retail inflation to average 6.8% in Q3**, before moderating to 5.8% in Q4 and 5.2% to 4.6% in the first half of the fiscal year 2021-22, with risks broadly balanced.
  - This **constrains monetary policy at the current juncture from using the space available to act in support of growth**. At the same time, the signs of recovery are far from being broad-based and are dependent on sustained policy support.
  - **Consumer Price Inflation** (CPI) at a **six-year high of 7.6% in October**, which is well above its medium target level of 4% within a band of plus/minus 2%.
- **Accommodative Stance:**
  - The MPC had decided to **continue with the accommodative stance** as long as necessary, at least during the current financial year and into the

Criticism of Policies on Kashmir: OIC

India has 'strongly' rejected the criticism of its Kashmir policy by the **Organisation of Islamic Cooperation (OIC).**

- The **47th session of the OIC** Council of Foreign Ministers, held at **Niamey (Niger)**, had made a reference to India over its policies on Jammu and Kashmir.

Key Points

- **47th Session of OIC:** A report submitted at the 47th session referred to the situation in Jammu and Kashmir.
  - **Change in Demography and Geography:** It said that the decision of the Indian government to **repeal special status** (in 2019) was aimed towards **changing the demographic and geographic composition** of the territory.
  - **Human Rights Abuses:** The continuous blockade and restrictions together have led to **human rights abuses.**
  - **Supported Pakistan:** The statement acknowledged the support that Pakistan has been providing to keep the Kashmir issue on the agenda of the organisation.
- **India's Stand:**
  - India strongly hit out at the OIC, accusing it of making "**factually incorrect and unwarranted"** references to Jammu and Kashmir in resolutions adopted by the grouping at the session.
  - India asserted that the union territory is an **integral and inalienable part** of the country.
  - India advised the OIC to refrain from making such references in future and said it is regrettable that the grouping continues to allow itself to be used by a certain country **"which has an abominable record on religious tolerance, radicalism and persecution of minorities"** in a clear reference to Pakistan.
    - Over the last one year, Pakistan has tried to rouse sentiments among the Islamic countries, but only a handful of them, *Turkey and Malaysia* publicly criticised India.
    - **Saudi Arabia and the UAE**, both top leaders among the Muslim countries, were not as critical of India as Pakistan had hoped.
- **Significance of India's latest statement:**
  - India believes to bust the double standard of OIC, where it supports the agenda of Pakistan in the name of human rights.
  - India now sees the duality of the OIC unjustifiable, since many of the member countries of the OIC have good bilateral ties and convey to India to ignore OIC statements but sign off on the joint statements which are largely drafted by Pakistan.
  - India also wants to challenge this issue because of the **Joe Biden administration in the US** which may have a strong view on human rights in Kashmir and may issue statements that may complicate India's image at the global stage.
  - With India as a non-permanent member's seat at the **UN Security Council**, it wants to use its diplomatic clout and goodwill to bury this issue at the global body in the next two years and bring up the Pakistan-sponsored cross-border terrorism high on agenda.

Organisation of Islamic Cooperation

- OIC is the **second largest intergovernmental organization after the United Nations with a membership of 57 states.**
  - **India is not a member of the OIC.**
- It is the collective voice of the Muslim world. It endeavors to safeguard and protect the interests of the Muslim world in the spirit of promoting international peace and harmony among various people of the world.
- It was established upon a decision of the historical summit which took place in Rabat, Kingdom of Morocco, in 1969.
- **Headquarters:** Jeddah, Saudi Arabia.

India and OIC

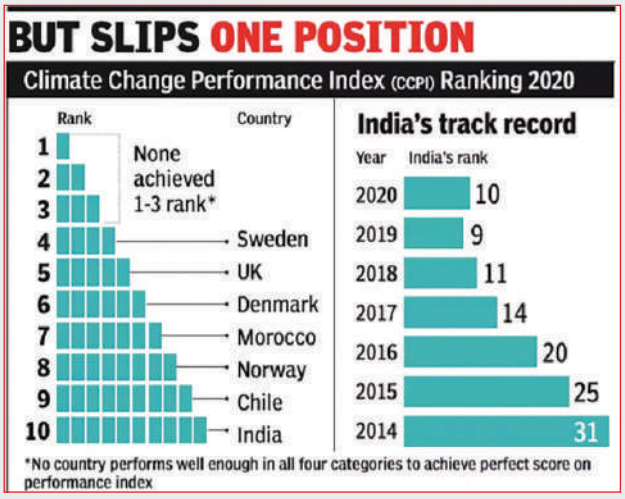
- **India's Relationship with OIC as an Organisation:**
  - At the 45th session of the Foreign Ministers' Summit in 2018, Bangladesh, the host, suggested that India, where more than **10% of the world's Muslims**, should be given **Observer status**, but Pakistan opposed the proposal.

Environment & Ecology

Climate Change Performance Index

India ranked **10th** in **Climate Change Performance Index (CCPI) 2021.**

- India, for the **second time in a row,** continued to remain in the **top 10.**
- Last year, India had been ranked at the **ninth position.**



Key Points

- **About Climate Change Performance Index (CCPI):**
  - **Published by: Germanwatch**, the **New Climate Institute** and the **Climate Action Network** annually since **2005.**
  - **Scope:** It is an independent monitoring tool for tracking the climate protection performance of **57 countries and the European Union.**
    - These countries together **generate 90%+ of global greenhouse gas emissions.**
  - **Aim:** It aims to **enhance transparency** in international climate politics and enables comparison of climate protection efforts and progress made by individual countries.
  - **Criteria:** The CCPI looks at **four categories**, with 14 indicators: **Greenhouse Gas Emissions** (40% of the overall score), **Renewable Energy** (20%), **Energy Use** (20%), and **Climate Policy** (20%).
- **CCPI 2021:**
  - **Top three ranks were empty** as **no country had met the criteria** to get placed high enough on the index.
  - Only two **G20 nations**, the **United Kingdom and India** are among the high rankers in **CCPI 2021, which covers the year 2020.**
  - Six other **G20 nations** including the **USA, Canada, South Korea, Russia, Australia and Saudi Arabia** are **ranked at the bottom** of the index.
    - This is the **second time in a row** that the USA (ranked last), which is the **largest historical polluter**, is ranked at the bottom.
  - **China**, which is the biggest current emitter of greenhouse gases, is ranked at the **33rd position** on the **CCPI 2021 report**.
- **India's Performance:**
  - **Overall Performance:** India ranked **10th** and scored **63.98 points** out of 100.
  - **Renewable Energy:** India has been ranked at **27th** out of 57 countries under the category this time. **Last year**, the country was ranked at **26th**.
    - In September 2019, at the United Nations Climate Action Summit, India announced **increasing the renewable energy target to 450 GW** by 2030 from 175 GW by 2022.
    - In its **Intended Nationally Determined Contribution (INDC)**, India has pledged to increase the **share of non-fossil fuels-based electricity to 40% by 2030.**
  - **Emissions**: Per capita emissions stayed at a comparatively **low level.** India was **ranked 12th.**
    - **BS-VI Emission Norms:** India moved to **BS-VI Emission Norms** to control the emissions from the automobiles.
  - **Climate Policy:** India's performance was rated as **medium (13th)**.
    - The **National Action Plan on Climate Change** (NAPCC) was launched in 2008 which aims at creating awareness among the representatives of the public, different agencies of the government, scientists, and the industry on the threat posed by climate change and the steps to counter it.
  - **Energy Use**: India was ranked **High (10th)** under this category.

Science & Technology

Surgery and Ayurveda

Recently, a government notification listed out **specific surgical procedures** that a postgraduate **medical student of Ayurveda** must be practically trained to acquaint with, as well as to independently perform.

- The notification has been criticised by the **Indian Medical Association (IMA)**.
- IMA is a **national voluntary organisation of Doctors of Modern Scientific System of Medicine**, which looks after the interest of doctors as well as the well being of the community at large.

Key Points

- **History of Surgery in Ayurveda:**
  - The **Rigveda** is the earliest account of ancient Indian civilization which mentions that **Ashwini Kumaras known as Dev Vaidya were the chief surgeons** of Vedic periods, who had performed rare legendary surgical operations**.**
  - There are many Granthas and Samhitas dealing with Ayurveda; among them, **Charak Samhita, Sushrutaa Samhita,** and **Ashtanga Sangraha are the three main pillars of Ayurveda.**
    - **Charak Samhita and Ashtanga Samhita** mainly deal with **medicine knowledge** while **Sushrutaa Samhita** deals mainly with **surgical knowledge**.
    - **Sushruta is the father of surgery**, his works are compiled as Sushrutaa Samhita. He described 60 types of upakarma for treatment of wounds, 120 surgical instruments and 300 surgical procedures.
    - Sushruta considered **surgery the first and foremost branch of medicine** and stated that surgery has the superior advantage of producing instantaneous effects by means of surgical instruments and appliances and hence is the highest in value of all the medical tantras.
- **The Current Debate:** It revolves around allowing postgraduate students in Ayurveda undergoing **'Shalya' (general surgery) and 'Shalakya' (dealing with eye, ear, nose, throat, head and neck, oro-dentistry)** to perform **58 specified surgical procedures.**
- **Arguments in Favour:**
  - There are **two branches of surgery** in Ayurveda, **Shalya Tantra** and **Shalakya Tantra.** All **postgraduate students** of Ayurveda **have to study** these courses, and some go on to specialise in these, and become **Ayurveda surgeons.**
  - Postgraduate education in Ayurveda is guided by the **Indian Medical Central Council (Post Graduate Education) Regulations.**
    - The 2016 regulations **allow postgraduate students** to specialise in Shalya Tantra, Shalakya Tantra, and Prasuti evam Stree Roga (Obstetrics and Gynecology).
    - Students of these three disciplines are **granted MS (Master in Surgery in Ayurveda) degrees.**
  - The process of education, internship and learning for Ayurveda students is **similar to that of Modern Medicine students.**
    - Medico-legal issues, surgical ethics and informed consent is also part of the course apart from teaching Sushruta's surgical principles and practices.
  - For several surgeries, **Ayurvedic procedures almost exactly match those of modern medicine**, however there is significant divergence in post-operative care.
  - **National Institute of Ayurveda** in Jaipur, claims that at least **1,000 major surgeries are performed every year at the hospital.**
  - As per the Ayurveda practitioners, the latest notification just **brings clarity to the skills that an Ayurveda practitioner possesses.**
    - A patient is usually not clear whether an Ayurvedic practitioner has the necessary skill to perform one of these operations, after the notification, they know exactly what an Ayurveda doctor is capable of.
- **Objections:**
  - **IMA** doctors claim that the new notification gives the impression that the **skills or training of the Ayurveda doctor in performing modern surgeries are the same as those practising modern**

Tharu Tribals

The **Uttar Pradesh (UP) government** is working to **connect Tharu villages** in the districts of Balrampur, Bahraich, Lakhimpur and Pilibhit bordering Nepal, **with the home stay scheme** of the UP Forest Department.

- The idea is to **offer tourists an experience of living in the natural Tharu habitat**, in traditional huts made of grass collected mainly from the forests.
- This is expected to **create jobs and bring economic independence** for the tribal population.

Key Points

- **Meaning of 'Tharu':** The word tharu is believed to be **derived from sthavir**, meaning followers of **Theravada Buddhism**.
- **Habitat:** The Tharu community **belongs to the Terai lowlands**, amid the Shivaliks or lower Himalayas.
  - Terai is a **region of northern India and southern Nepal** running **parallel to** the **lower ranges of the Himalayas.**
  - In the Indian terai, they **live mostly in Uttarakhand, Uttar Pradesh, and Bihar.**
- **Scheduled Tribe:** Tharu is a scheduled tribe in the states of **Uttarakhand, Uttar Pradesh** and **Bihar.**
- **Occupation:** Most of them are **forest dwellers**, and some practice **agriculture**.
- **Culture:**
  - They **speak various dialects of Tharu**, **a language of the Indo-Aryan subgroup**, and variants of Hindi, Urdu, and Awadhi.
  - Tharus **worship Lord Shiva** as Mahadev, and call their supreme being **"Narayan"**, who they believe is the provider of sunshine, rain, and harvests.
  - **Tharu women have stronger property rights** than is allowed to women in mainstream North Indian Hindu custom.
  - Standard items on the Tharu plate are **bagiya or dhikri** – which is a steamed dish of rice flour that is eaten with chutney or curry – **and ghonghi,** an edible snail that is cooked in a curry made of coriander, chili, garlic, and onion.

Theravada Buddhism

- It is **strongest in** Sri Lanka, Cambodia, Thailand, Laos and Myanmar. It is sometimes called '**Southern Buddhism**'.
- The name means '**the doctrine of the elders**' the elders being the senior Buddhist monks.
- This school of Buddhism **believes that** it has remained closest to the original teachings of the Buddha. However, it **does not over-emphasise** the status of these teachings in a fundamentalist way - they are **seen as tools to help people** understand the truth, **and not as having merit of their own**.
- It emphasises **attaining self-liberation through one's own efforts**. The **follower is expected to** "abstain from all kinds of evil, to accumulate all that is good and to purify their mind".
  - The **ideal of Theravada Buddhism is the arhat**, or perfected saint, who attains enlightenment as a result of his own efforts.
- **Meditation** is one of the **main tools** by which a Theravada Buddhist transforms themselves, and so a monk spends a great deal of time in meditation.

Scheduled Tribe

- **Article 366 (25) of the Constitution** refers to **Scheduled Tribes** as those communities, who are **scheduled in accordance with Article 342 of the Constitution**.
- **Article 342** says that only those communities who have been declared as such by the President through an initial public notification or through a subsequent amending Act of Parliament will be considered to be Scheduled Tribes.
- The **list of Scheduled Tribes is State/UT specific** and a community declared as a Scheduled Tribe in a State need not be so in another State.
- The **Constitution is silent about the criteria** for specification of a community as a Scheduled Tribe. **Primitiveness, geographical isolation, shyness and social, educational & economic backwardness** are the traits that distinguish Scheduled Tribe communities from other communities.
- There are certain Scheduled Tribes, **75 in number known as Particularly Vulnerable Tribal Groups (PVTGs)**, who are **characterised by**:- a) pre-agriculture level of technology; b) stagnant or declining population; c) extremely low literacy; and d) subsistence level of economy.
- **Government Initiatives:** The **Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act,** 2006 (FRA); The **Provision of the Panchayats (Extension to the Scheduled Areas) Act**, 1996; Minor Forest Produce Act 2005; SC And ST (Prevention Of Atrocities) Act; and the Tribal Sub-Plan Strategy are focused on the socio-economic empowerment of STs.

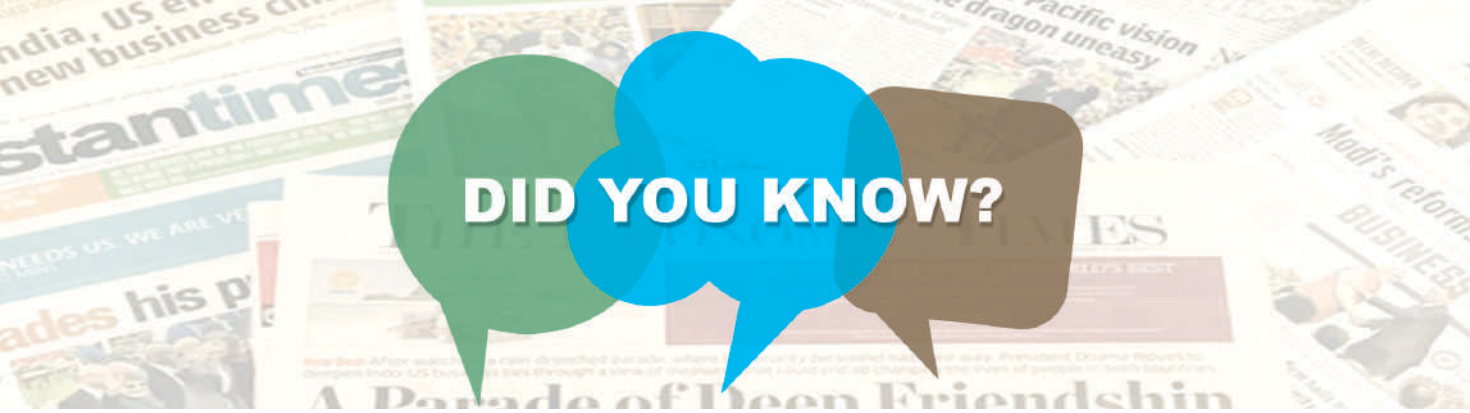
Social Issues

National Family Health Survey-5

Recently, the **first-phase data** of the **National Family Health Survey-5** (NFHS-5) 2019-20 has been released by the **Ministry of Health and Family Welfare**.

Key Points

- **Worsening Child Malnutrition:**
  - Several states across the country have **reversed course and recorded worsening levels of child malnutrition despite improvements** in sanitation and better access to fuel and drinking water.
    - Several states have either witnessed **meagre improvements** or **sustained reversals** on **four key metrics** of child (under 5 years of age) malnutrition parameters.
    - These four key metrics are **child stunting**, **child wasting**, **share of children underweight** and **child mortality rate**.
  - **Child Stunting:**
    - The **most surprising reversals** have happened in child stunting, which reflects **chronic undernutrition**, and refers to the **percentage of children who have low height for their age**.
    - Stunting, more than any other factor, is likely to have **long-lasting adverse effects on the cognitive and physical development** of a child.
    - **Telangana, Gujarat, Kerala, Maharashtra, and West Bengal** saw increased levels of child stunting.
  - **Child Wasting:**
    - It reflects **acute undernutrition** and refers to **children having low weight for their height**.
    - India has always had a high level of child wasting.
    - **Telangana, Kerala, Bihar, Assam and Jammu-Kashmir** witnessed an **increase** and **Maharashtra and West Bengal** have been **stagnant**.
  - **Share of Children Underweight:**
    - In the proportion of underweight children, big states like **Gujarat, Maharashtra, West Bengal, Telangana, Assam and Kerala** have seen an **increase**.
  - **Child Mortality Rate:**
    - **Infant Mortality Rate** (the number of deaths per 1000 live births for children under the age of 1) and **Under 5 Mortality Rate** data is mostly **stagnant**. Over 60% of child mortality is explained by child malnutrition, which is the central problem and needs to be addressed
    - **Between NFHS-3** (2005-05) and **NFHS-4**, there was **progress on mortality reduction** but between **NFHS-5 and NFHS-4**, there is still **very little progress** in many states.
    - In **Maharashtra**, the under-5 mortality rate is basically the same in NFHS-4 and in **Bihar**, it **reduced by just 3%** over five years.
- **Anaemia among Women:**
  - More than half of the **children and women** are anaemic in 13 of the 22 States/UTs.
  - It has also been observed that anaemia among pregnant women has increased in half of the States/UTs compared to NFHS-4.
  - In all the states, anaemia is much **higher among women compared to men.**
- **Child Marriages:**
  - There has been an **increase in child marriages** in Tripura (40.1% from 33.1% in 2015-16), Manipur (16.3% from 13.7% in 2015-16) and Assam (31.8% from 30.8 % in 2015-16),
  - States like **West Bengal (41.6%) and Bihar (40.8%)** still have high prevalence of child marriages.
  - States such as Tripura, Manipur, Andhra Pradesh, Himachal Pradesh and Nagaland have also shown an increase in teenage pregnancies.
- **Domestic/Spousal Violence:**
  - It has generally declined in most of the states and UTs. However, it has witnessed an increase in five states, namely Sikkim, Maharashtra, Himachal Pradesh, Assam and Karnataka.
  - **Karnataka witnessed the largest increase in spousal violence,** from 20.6% in NFHS 4 to 44.4% in NFHS-5.



Mock Egg

- Recently, a team of scientists from IIT Delhi won an **innovation contest (Innovate 4 SDG)** organised by the **United Nation Development Programme (UNDP) Accelerator Lab India** for their innovation of a **"plant based mock egg"**.
- It has been developed from very simple farm based crop proteins, which not only looks and tastes like an egg but is also very close in nutritional profile to poultry eggs.
- The development of the mock egg meets the protein needs of the diet-specific, health conscious, vegan and vegetarian people.
- The team has also developed meat analogues for chicken and fish from plant sources using **fruits and vegetables.**
- The plant based textured foods which resemble egg, fish and chicken have been developed with an aim to address the **longstanding battle for malnutrition** and **clean protein food for people.**

Legion of Merit: USA

- Recently, the USA has awarded the **'Legion of Merit'** to the **Prime Ministers of India, Japan and Australia**. All these four countries (India, Australia, the US, and Japan) also form **Quadrilateral grouping.**
- It is one of the USA's highest military decorations, the award was instituted in 1942 by former President Franklin D. Roosevelt.
- It is awarded to members of the **US armed forces** and also members of **foreign (i.e. non-USA) armed forces** and sometimes **heads of state or government.**
- There have been **two Indian recipients** of the honour in the past: Field Marshal K M Cariappa in 1950, and Gen S M Srinagesh in 1955.
- Indian PM has been given this award for his role in **"advancing the India-US relationship".**

Kilauea Volcano: Hawaii

- Recently, **Kilauea volcano in Hawaii's Big Island** erupted which was followed by an earthquake of magnitude 4.4.
- Kilauea, also called **Mount Kilauea ("Much Spreading" in Hawaiian)**, is located in **Hawaii Volcanoes National Park** on the southeastern part of the island of Hawaii, U.S.A.
- It ranks among the **world's most active volcanoes**. It is an elongated dome built of lava eruptions from a central crater and from lines of craters extending along east and southwest rifts, or fissures.
- The volcano's 4,090-foot (1,250-metre) summit has collapsed to form a caldera. A **caldera is a depression** created after a volcano partially collapses after releasing the majority of its magma chamber in an explosive eruption.
- Since 1952, Kīlauea has erupted 34 times. From 1983 to 2018 eruptive activity was nearly continuous along the volcano's East Rift Zone.

Chillai Kalan

- The **40-day intense winter period "chillai kalan"** started in Kashmir valley on 21st December with sub-zero night temperatures across the region. It will continue till January 31.

ECONOMIC AND POLITICAL WEEKLY

SUMMARY OF EDITORIALS AND ARTICLES: 26 SEPTEMBER AND 3, 10, 17, 24 OCTOBER

Infrastructuring Floods in the Brahmaputra River Basin

The downstream communities of Assam experience catastrophic flash floods, due to dams, in the monsoon months, while for the rest of the year they see the river as a trickle.

Dam-induced flash flood

- Dam-induced flood hazards are spread across the Brahmaputra river basin, for instance, the Doyang and Kopili hydroelectric projects in Nagaland and Assam respectively.
- The several dam projects being built in upstream Bhutan, China, and the multitude of proposed small, medium and mega dams in Arunachal Pradesh.
- The basic point is that such catastrophic floods are not a single, localised or an episodic event, but the effect of multiple events and cumulative hazards spread across a particular river basin.
- **The reason behind flash floods are:**
  - The patterns of ocean and moisture-laden air currents, torrential rains, climate change and anomalies.
  - The anthropogenic interventions that are engineered and embedded in the river basin, deforestation, degradation of wetlands, and disruptions in wetland connectivity.

NOTE: **Flash floods** are typically associated with short, high-intensity rainstorms. As such, they are characterized by short response time and have the potential to severely impact and damage communities in different climatic settings all over the world.

Flood control embankments

- The Great Assam Earthquake of 1950 led to fundamental changes in the geomorphology and hydrological characteristics of the Brahmaputra river basin, leading to catastrophic flood events, especially in Assam.
  - This subsequently set in motion the makings of the labyrinth of flood control embankments that we see in the floodplains of the Brahmaputra today.
  - The maze of embankments severely reduced the space for the river during its peak flood season, and it often overtopped the embankments, causing breaches regularly.
- The locally rooted experiences of floods viewed embankments as being barriers, which make floods highly unpredictable with increased intensity, making floodwaters stay on for longer, where flood control mechanisms worsen the suffering of riverine communities.
- The layering of embankments over time on the Brahmaputra's riverbed has buried the traditional community knowledge of flood pulse and rhythms.
- The Brahmaputra has one of the highest sediment loads, especially as it descends from the eastern Himalayas, and therefore any dredging activity on the riverbed will be replenished with fresh silt deposits, and is a superficial solution.

Geopolitical container of rivers

- One of the major fallacies of understanding the impact of floods in any river basin is to view it within a geopolitical container, both in the international transboundary context as well as within the nation state's administrative boundaries.
- Such frames flow from a very reductionist and mechanistic understanding of the river and contribute to a fragmented and regimented analysis of the cause and effects of floods.
- The hydrocracies are intensely territorial in their riparian thinking and administrative functioning across national and province-level scales, which translates into their river control policies and mechanisms on the ground as well.

GIST OF MAJOR ARTICLES FROM THE DECEMBER 2020 ISSUE

Equality on Workplace and Home

Women have had to face inequality in homes and also in their workplaces. The emergence of COVID-19 pandemic has increased the risk of women who were already living in vulnerable situations before the emergence of the pandemic.

Key points

- Women across the world have reached heights in this male dominated world but on the other side there are also challenges that they face.
- With more women entering the workforce, sexual harassment at workplace has assumed different forms.
- The pandemic has shown us that as the definition of workplace changes so does the harassment of women in the professional space.
- Sexual harassment at workplace is not only a threat to women security buy also to the economy as it discourages women from taking up jobs forcing them to restrict opportunities available to them.
- Harassment at the workplace and lack of proper grievance redressal system creates an insecure and an apprehensive environment for women.
- As the work from home becomes the new norm therefore it becomes necessary that cyber workplace harassment also be taken into account.

Role of National Commission for Women (NCW)

- The National Commission for Women (NCW), under its mandate, reviews the existing provisions of the Constitution and other laws affecting women and thereafter recommends amendments to suggest remedial legisative measures to meet the changes needed.
- The Comssion also obserevd that the definition of sexual harassment at workplace needs to be expanded to include genedr based cybercrimes.
- Women safety stands to be one the prominent activities of the Commission and during imposition of lockdown over coronavirus, the Commission launched WhatsApp emergency helpline number.
- Under the joint collaborative programme of National Legal Service Authority and NCW, women especially belonging to the lower strata of the society are given practical knowledge about the basic legal rights and remedies provided under various women related laws.

Society, police and women

- A family is the smallest unit of the society and a violence free home is the key to a violence free society.
- The first step towards making women more comfortable in reporting about the violence against them is to change the mindset of police.
- Police also belong to the same patriarchal society and women often lack the courage to go to the police station.
- Any woman who gathers enough courage to step into a police station should not have to face uncomfortable questions.
- Our police system is a reflection of our society. So, to address the objective of making police more sensitive towards grievances of women, the Commission has conducted One day Gender Sensitisation Workshops across the country for police personnel.

Conclusion

We have come a long way when it comes to reaching genedr equality and elimination of violence against women. It is our collective responsibility as a society to ensure equality for women, no matter which background she comes from, and enable to live a free and dignified life.

Multidimensional Poverty Index

According to the Multidimensional Poverty Index (MPI), India, a lower middle-income country, has recorded the fastest reduction in poverty.

GIST OF MAJOR ARTICLES FROM THE DECEMBER 2020 ISSUE

Realising 'Digital India' through its Different Pillars

The Digital India programme has emerged not only as an initiative but also as an aspiration for the country.

Key points

- As per the Ministry of Electronics and Information Technology, it is a 'flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy'.
- The vision areas under this programme, as delineated by the Ministry, include 'Digital Infrastructure as a Core Utility to Every Citizen', 'Governance and Service on Demand' and 'Digital Empowerment of Citizens'.
- Considering the enormous size of the country, digitally connecting the remotest villages of the country - through broadband and high-speed internet - is one of the crucial infrastructure necessities of the nation.
- Through the National e-Governance Plan - 2005, India had recognised e-Governance as a way forward for ensuring delivery of public services to the masses.
- The Digital India Programme took one step ahead and aspired to provide seamlessly integrated services across departments or jurisdictions by adopting a single window framework.
- It also promotes the use of Open Sources and Open API, to ensure interoperability of all e-governance applications and provide access to data and services for promoting participation of citizens.
- The Unified Payments Interface could be considered a pathbreaking development, which is an example of open source application and proved to be a pivotal step for India towards becoming cashless.
- Digital literacy is widely recognised as a key element necessary to successfully implement the e Governance initiatives under the Digital India programme.

Pillars of Digital India

- **Broadband Highways**
  - The Internet being evolved as one of the basic necessities of modern life, ensuring access to broadband, has been a key responsibility of the Government.
  - Over 2,00,000 village panchayats are being brought under the ambit of the National Optical Fibre Network under the Broadband for Rural project.
  - Under the Broadband for Urban project, the Ministry aims to utilise Virtual Network Operators for service delivery and communication infrastructure.
  - The National Information Infrastructure aims to integrate India's Network and cloud Infrastructure to facilitate high speed connectivity as well as cloud platforms for different government entities.
- **Universal Access to Mobile Connectivity**
  - The rapidly growing smartphone penetration and consistently declining data rate have provided a boost to the mobile connectivity across India.
  - Under this pillar, the Ministry aims to connect over 50,000 villages which do not have mobile coverage, with an aim to bridge the digital divide.
  - Mobile coverage to remaining uncovered villages would be provided in a phased manner.
- **Public Internet Access Programme**
  - The Public Internet Access Programme aims to establish the infrastructure mechanism for enabling access to public internet for the common people.
  - The Ministry under the CSC 2.0 project aims to establish a self-sustaining network of 2.5 lakh CSC centres at gram panchayat level.
- **e-Governance - Reforming government through Technology**

GIST OF MAJOR ARTICLES FROM 30 NOVEMBER AND 15 DECEMBER ISSUES

Foggy Superstructure

Recently, the President signed an Ordinance to form the Commission for Air Quality Management in the National Capital Region and Adjoining Areas.

Commission for Air Quality Management

- **Composition**
  - The 15-member commission, headed by M M Kutty, former secretary to the Ministry of Petroleum and Natural Gas, includes chief secretaries of states in the National Capital region (NCR), independent air pollution experts, representatives from non-profit organisations, and technical experts from the Central Pollution Control Board, the Indian Space Research Organisation and the NITI Aayog.
  - The chairperson and the members of the commission are appointed on the recommendation of a selection committee, headed by the Union Minister for Environment.
  - The selection committee includes the cabinet secretary, commerce and industries minister, road and transport minister and minister of science and technology.
  - The chairperson and the members will serve for a term of three years or up to the age of 70, whichever is earlier.
- **Function**
  - The Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance, 2020, provides for setting up of the commission to improve identification, research and resolution of issues that impact air quality in NCR and the neighbouring states of Punjab, Haryana, Uttar Pradesh and Rajasthan.
  - The Commission will have powers to curb activities that affect air quality, prepare guidelines to check air pollution and issue orders to concerned individuals or authorities.

Supra-governance

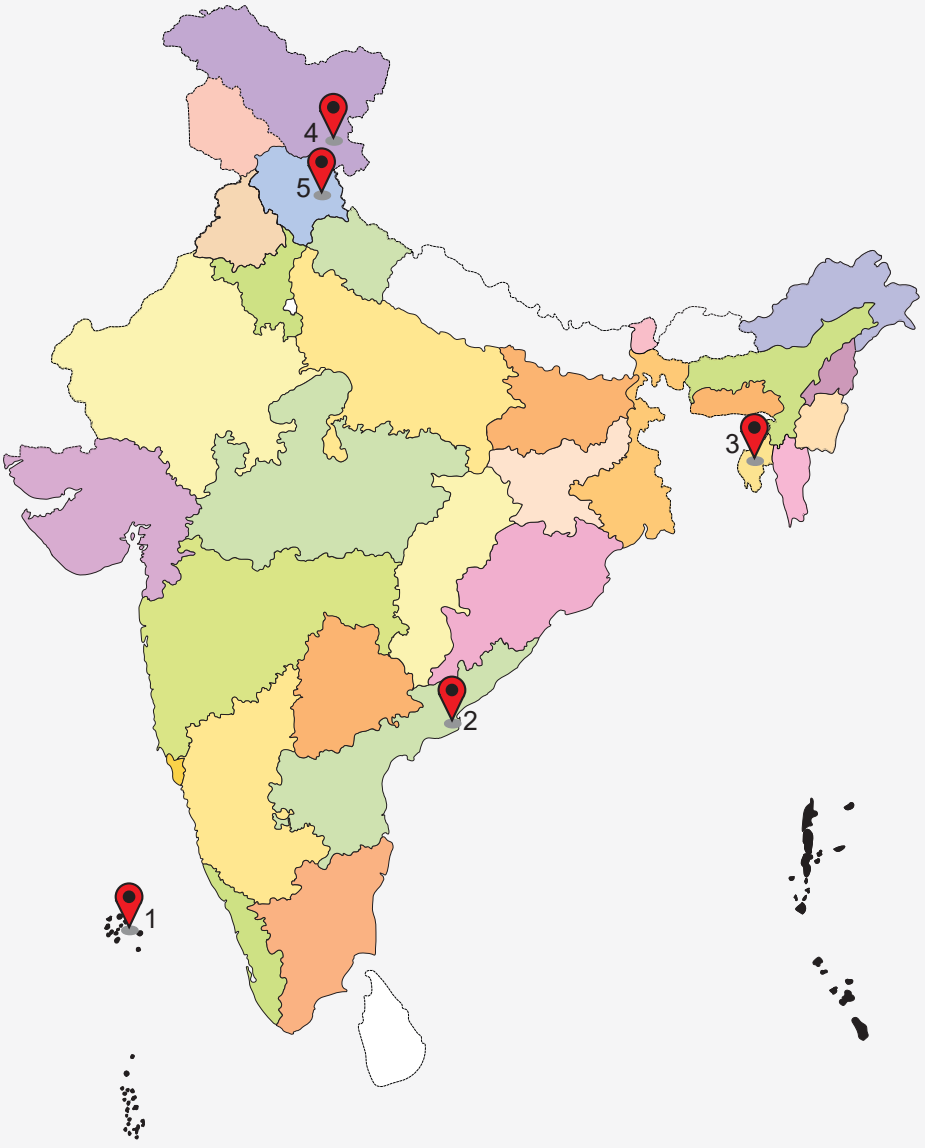
- Everyone likes the idea of good governance and an effective executive. If this is an occasion to redefine the role of the government and its enabling powers for the regional clean-up, it is important to consider what has stopped the executive from doing it till now under the current legislative framework.
- Even measures recommended and monitored by the Supreme Court-appointed Environment Pollution (Prevention and Control) Authority (EPCA) and backed by Supreme Court directives have faced resistance, often slowing down action.

Way forward

- Legal provisions to control air pollution already exist in the Air (Prevention and Control of Pollution) Act, 1981, and the Environment (Protection) Act, 1986.
- They just need to be implemented effectively. If it is assumed that the earlier laws were weak, then the governments should answer whether it was able to implement even those weak laws.
- The action taken so far (and some of these were tough) could be implemented only with the backing of the Supreme Court based upon the Fundamental Right to Life, among others.
- As the Commission now takes the agenda forward, the interest would be to know how the executive can push urgent solutions, speed up sectoral reforms and investments and ensure effective compliance and a deterrence framework.
- Criminal prosecution is possible if the Commission complaints. So far, nationally, criminal prosecution under the Air (Prevention and Control of Pollution) Act, 1981, has been the toughest to implement.
  - This will require establishment of vertical and horizontal accountability across the region.
- Special care is needed in the post-COVID-19 times to ensure that "ease of doing business" policy and

LEARNING

MAP-1

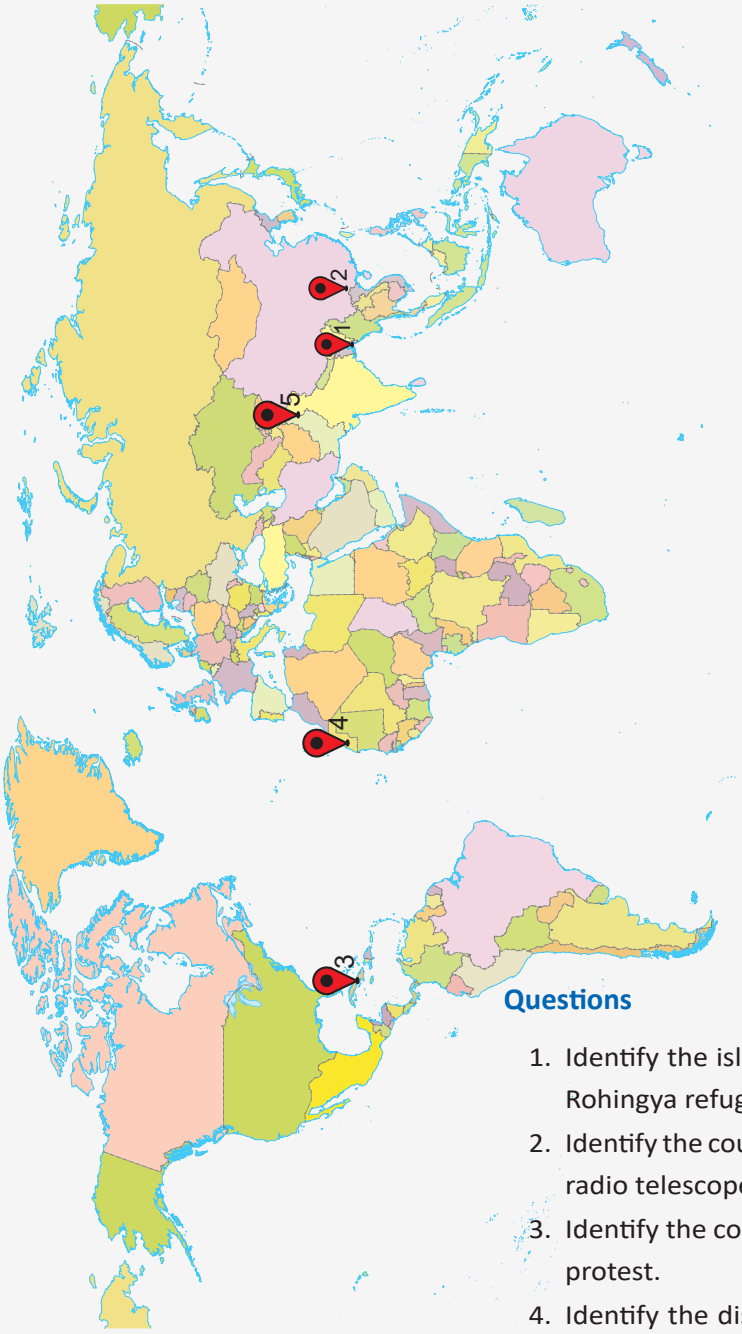


Questions

1. Identify the Union Territory which has been recently declared an organic agricultural area under the Participatory Guarantee System (PGS).
2. Identify the deepest off-shore gas field in Asia, where recently production has been announced.
3. Identify the state where the Bru tribe has recently protested.
4. Identify India's 42nd Ramsar site which has been recognised recently.
5. Identify the region where Himalayan Serow was sighted for the first time.

(Answers : Refer to Page No. 162)

THROUGH MAPS



Questions

1. Identify the island where Bangladesh has transported Rohingya refugees.
2. Identify the country which is opening the world's largest radio telescope.
3. Identify the country of the San Isidro Movement (MSI) protest.
4. Identify the disputed region in Africa which has been recognised by the US under a peace deal.
5. Identify the region where the Azad Pattan Hydropower Project is being constructed.

(Answers : Refer to Page No. 162)

MAP-2

ESSAY WRITING
COMPETITION
"A drop of ink may make a million think."

- PAPER-I (250 Marks, UPSC CS Main Examination): "Essay: Candidates may be required to write essays on multiple topics. They will be expected to keep closely to the subject of the essay to arrange their ideas in orderly fashion and to write concisely. Credit will be given for effective and exact expression." That is what the UPSC says about the Essay paper in the CSE notification. Through an essay, the commission wants to know if you will make the right civil servant who has balance of judgement, variety and depth of interest, logical exposition and other such bureaucratic qualities.
- Keeping this in mind, we present a forum where you are asked to practice your writing skills by writing essays on the given topics. The topics are decided keeping in view the thematic trends in CS (Mains) examination.
- If that is not all, the best essays shall be rewarded and published. We'll judge the essay based upon four parameters viz. Structure of the essay, Content, Flow and Language.
- The prize details are as follows:

First Prize: 6 Months Subscription **Second Prize: 4 Months Subscription** **Third Prize: 2 Months Subscription**

Essay Writing Competition—57

Topic:

'Multinational Corporations - saviours or saboteurs.'

Terms and Conditions—

1. The essay shall be of length between 1000-1200 words.
2. It should be neatly written or printed on A4 sheets.
3. Only one entry per participant is allowed.
4. Entries are to be sent by Registered/speed post only on following address: EXECUTIVE EDITOR, DRISHTI CURRENT AFFAIRS TODAY, 641, FIRST FLOOR, DR. MUKHERJEE NAGAR, DELHI-110009. Please mention 'For Essay Competition' in capital letters on the envelope.
5. Remember to submit your personal details on the form printed on this page after neatly tearing it off the marked pointers. Submissions without this form shall not be entertained.
6. Your essay must reach the given address before **20th January, 2021**. Entries reaching us after the given date will not be accepted.
7. Essays should be original and not plagiarized or copied except for properly quoted references. Prior published or awarded essays will not be accepted.
8. All rights related to the results of the competition are secure with 'Drishti Current Affairs Today'. The winners shall be announced in the subsequent issue of the magazine and the winners shall be contacted by email and telephone.
9. Copyrights of the rewarded essays will lie with the magazine which may be used in any way by 'Drishti Publications'.

Form for Essay Competition-57

(Kindly cut and attach this form along with your essay. Use original form and not photocopy.)

Name of participant: ..... Mobile no. .....

Address: .....

.....

Pin code: ..... Email ID: .....

TO THE POINT

Designed to hit the bull's eye: Point wise, short, crisp material in an easy-to-understand format.

Foreign Travellers in Indian History

Throughout history, India has been visited by many foreign travellers/envoys. They have helped us in a better understanding of history by providing us with written evidence of the art & culture, policies, caste system, economic wealth, religion, military might of that particular region.

Chinese Travellers

- **Fa-Hien (405-411 AD)**
  - He was a follower of Buddhism. The goal of his journey to India was to find the true copy of the book detailing the traditions in Buddhism and to visit the Buddhist pilgrimage centres here.
  - His voyage is described in his travelogue "Record of Buddhist Kingdoms".
  - He came to India in the reign of Chandragupta II Vikramaditya.
- **Hiuen Tsang (630-645 AD)**
  - He came from China to India in search of Buddhist belief and practice. He has been described as the "prince of pilgrims" and his accounts carry a lot of information on the political, social and religious set up of India.
  - He visited India during the reign of Harshavardhana. Si-yu-ki or 'The Records of the Western World' was written by him.
  - He studied at the University of Nalanda and traveled through the Deccan, Orissa, and Bengal.
- **I-tsing (673- 695 AD)**
  - I-tsing was a Chinese traveler, I-tsing visited India in connection with Buddhism.
  - The account of his travels is an important source for the history of the medieval kingdoms along the sea route between China and India, especially Srivijaya in Indonesia.
  - A student of the Buddhist university at Nālandā (now in Bihar, India), he was also responsible for the translation of many Buddhist texts from Sanskrit and Pali into Chinese.

Arab Travellers

- **Al-Masudi (957 AD)**
  - Al-Mas'udi, the 'Herodotus of the Arabs', travelled widely and wrote influential works of history. He was from Iraq.
  - He gave an extensive account of India in his work "Murūj al-dhahab".
- **Al-Beruni/Abu Rehan Mahamud (1024-1030 AD)**
  - He was the first Muslim Scholar to study India. Also known as founder of Indology and visited India along with Mahmud Ghazni from Persia.
  - He read the major Indian religious and astronomical texts and highlighted parts of the Gita, the Upanishads, Patanjali, Puranas, the Vedas, the scientific texts by Nagarjuna, Aryabhata, etc.
  - Al-Beruni also recorded some of the more egregious plundering by Mahmud of Ghazni, especially at Mathura and Somnath.
  - His accounts are mentioned in the book 'Tahqiq-i-Hind / Kitab al Hind'.
- **Ibn Batuta (1333-1347 AD)**
  - Ibn Batuta, a Moroccan traveller, visited during the Tughlaq dynasty of the Sultanate period. He explains the life during Mahmud Bin Tughlaq especially law and order in the kingdom.
  - He even functioned as the chief Qazi during his stay in Delhi.
  - He also travelled across India and was able to mention life in the deep south, especially the Pallavas. He mentions his experiences in the book 'Rihala'.
- **Shihabuddin al-Umari (1348 AD)**
  - Shihabuddin al-Umari was a traveller from Damascus, Syria.

TARGET MAINS

PAPER-I

Question 1. *Hoysala temples are a blend of Dravida and Nagara style of temple architecture. Explain with examples.*

Answer: Hoysala temples are sometimes called hybrid or vesara as their unique style seems neither completely dravida nor nagara, but somewhere in between.

Some of the features of Hoysala temples:

- The temples have a star shaped base with the main structure standing on a raised platform.
- There are three shrines structured around a central pillared hall, each with a tower.
- Pillars with horizontal mouldings, produced by a mechanical process.
- There are intricate grille windows, an abundance of sculptural details.
- The sikharas, unlike the northern style (parabolic) are constructed in well defined horizontal tiers.
- The temples are almost entirely covered with intricate sculptural carvings. This was mainly possible, for the temples were constructed out of a very fine grained soapstone (chloritic schist).

The Hoysala architectural style manifests itself prominently in the Chennakesava Temple at Belur, the Hoysaleswara Temple at Halebidu, and the Kesava Temple at Somanathapura.

- **Chennakesava Temple, Belur**
  - Vishnuvardhana, who defeated the imperial Cholas in A.D. 1116, in the memory of the establishment of his dynasty and this victory, built a temple for Kesava, or Chennakesava, at Belur.
  - The temple is a classic example of the ornate style of temple art under the Hoysalas.
- **Hoysaleshwara Temple, Halebid**
  - It was built between AD 1121 and AD 1160 in the area of Halebid, known then as Dorsamudra, which was the capital of the Hoysalas. It was built during the reign of Vishnuvardhana.
  - The temple is Dvikuta, which means two shrines which are called "Hoysaleswara" and "Shantaleswara". Shantala was queen of Vishnuvardhana.
  - The temple is best known for sculptures on the outer walls.
- **Chennakesava Temple, Somanathapura**
  - Chennakesava Temple, Somanathapura was built by Soma, a commander of the Narsimha III.
  - The interior of the temple is also ornately decorated with huge intricately carved lathe-turned pillars holding a domed ceiling which is also elaborately carved.

Question 2. *"Do not show the face of Islam to others; instead show your face as the follower of true Islam representing character, knowledge, tolerance and piety."*

With reference to the above statement, discuss the role of Sir Syed Ahmed Khan in transforming the life and society of Muslims in India.

Answer: Sir Syed Ahmed Khan pushed for educational and social reforms and was a champion of democratic ideals and freedom of speech.

- **He helped in transforming the life and society of Muslims in India:**
  - He is best known for the Aligarh Movement - a systemic movement aimed at reforming the social, political and educational aspects of the Muslim community.
  - He founded the Scientific Society in 1863 to translate major works in the sciences and modern arts into Urdu.
  - He released two journals to this end - The Aligarh Institute Gazette, which was an organ of the Scientific Society, and the Tehzibul Akhlaq, known as the Mohammedan Social Reformer in English.
  - Khan's most notable contribution to the field of education is establishing the Madarsatul Uloom in Aligarh in 1875, now known as the Aligarh Muslim University, a premier educational institution of the country.
  - He attempted to model the college on the lines of universities like Oxford and Cambridge.
  - His work on Muslim education was not limited to this alone - he wanted to create a network of educational institutions managed by Muslims and founded the All India Muslim Educational Conference.

- An avid historian, he was the first person to publish an archaeological study in an Indian language. As a result, he was also named as an honorary member of the Royal Asiatic Society. He also collected sculptures and rare artefacts, including those related to Hindu beliefs.

Thus, by means of promoting education and scientific thought among the Muslims, Sir Syed Ahmad Khan contributed a lot towards transforming the life and society of Muslims in India.

Question 3. *Flash floods are becoming more frequent these days than earlier. What is meant by flash floods? Enumerate the reasons behind their occurrence and also suggest measures to minimise their impacts.*

Answer: A flash flood, in short, is a sudden local flood of great volume and short duration which follows within a few (usually less than six) hours of heavy or excessive rainfall, or due to dam or levee failure, or the sudden release of water impounded by an ice log jam.

Reasons of occurrence

- Intense rain, particularly when it takes place in a saturated area where rain has previously fallen or the ground is frozen, causes run off over the surface and accumulates in streams and rivers at a much accelerated pace.
- Particularly in highland areas, after heavy snowfall in winter, a sudden rise in temperature and rainfall in the winter/spring period causes a hastening of confluence of the rain and melting snow, and consequently a flood.
- A flash flood can also result from a failure of dams, embankments, or other hydraulic infrastructure.

Measures

- **Structural measures**
  - Small scale structural measures can play an essential role in delaying the flow of water, allowing it to be locally retained, or diverting it from places where it could pose a threat to people or properties.
  - Operations to limit the shifting of debris, or to stabilize hillsides in areas at risk of landslides are important.
  - The flood resistance of buildings potentially at risk (flood-proofing) should also be secured.
- **Non-structural measures**
  - Flash flood warnings are generated on both national (and international) level, generally assigned to meteorological and hydrological services, and on a local level.
  - The activity of local authorities in warning and responding to floods is essential to limit the danger to human lives and property.
  - It may include local monitoring networks, systems to warn and inform residents through communication networks, automatic systems signalizing danger and closing off the roads backed by stream gauges, or use of volunteers.

It is essential that the state creates a coherent legal framework and support for local activities, particularly in terms of division of competencies between particular administrative levels and sectors.

Paper-II

Question 4. *What do you understand by radicalism? Discuss the factors responsible for the rise of radicalism. How does radicalism threaten society?*

Answer: Radicalism indicates a way of thinking or behaving that is based on the belief that important political or social changes are necessary. Radicalism has a long history, but its systematic analysis has a short past. The concept radicalism, therefore, interchanges often with violent extremism, terrorism, and political violence.

Factors:

- **Relative deprivation:** One group feelling more deprived and disadvantaged than others may lead to radicalisation. For example, Maoist groups often argue that they had long drawn deprivation since British Indian Regime.
- **Western occupations and support for oppressive regimes:** Western world for their own interest support many groups which could result in radicalisation. For example, the Middle East has suffered from such groups for so long that it has resulted in homicide and devastation on a large scale.
- **Poor political and socio-economic integration:** Poor socioeconomic conditions, such as poverty, economic inequality and lack of education can act as radicalising elements. One reason could be government ineffectiveness in providing services - such as health and education.

and liberties should not be gagged. Moreover, the purpose of regulation for the OTT content is to prevent the underage people from watching certain contents. There shall be awareness from viewers' side on what to watch and what not to watch.

Question 9. *Discuss the criterion and significance of demarcating Eco-Sensitive Zones (ESZs). How does ESZ impact the Western Ghats? Discuss in light of recent developments.*

Answer: Eco-Sensitive Zones or Ecologically Fragile Areas are areas within 10 kms around Protected Areas, National Parks and Wildlife Sanctuaries. ESZs are notified by the Union Ministry of Environment, Forests and Climate Change (MoEFCC), under the Environment Protection Act (EPA), 1986.

Criteria:

- There is no explicit mention of ESZs in EPA, 1986.
- MoEFCC notified ESZ notification, 2012 and a set of guidelines based on criteria which include:
  - Species based (endemism, rarity etc.).
  - Ecosystem based (sacred groves etc.).
  - Geomorphologic feature based (origin of rivers etc.).
- The notification also asked all states to notify the 10 km area around protected areas as an ESZ.

Significance of ESZs:

- To minimise the impact of urbanisation and other developmental activities, areas adjacent to protected areas have been declared as Eco-Sensitive Zones.
- The purpose of declaring Eco-Sensitive Zones around protected areas is for creating some kind of a 'Shock Absorber' for the protected area.
- They also act as a transition zone from areas of high protection to areas involving lesser protection.

Impact of ESZ

Recently an NGO sought the draft ESZ notification on Western Ghats be declared unconstitutional due to following reasons:

- **Vast area:** The unique and specific nature of the Western Ghats eco-sensitive area and the vastness of the region comprising six different States with state specific developmental and conservation obligations and aspirations had to be taken into consideration.
- **Data:** The high-level working group (that recommended various aspects of the eco-sensitive area within the Ghats) took into consideration the 2001 Census data while finalising its report, but ground realities have changed significantly during the last two decades.
- **Reports:** As Gadgil report was more environment-friendly, Kasturirangan report appeared biased towards development. Also, the Kasturirangan panel used remote sensing and aerial survey methods instead of examining the ground reality. Hence, there has been demand for implementation of Gadgil report.
- **Land and People:** The large part of ESZ covers the private land in Western Ghats which outrages the locals of the region. The draft notification would declare 123 agricultural villages in Kerala as ESZ. It will affect 22 lakh people and cripple the economy of Kerala.

Though ESZ is for protection of Western Ghats but the recent developments reduce the areas under ESZ connecting developmental processes. Thus, ESZ notification requires review to mark areas with public interest and ecological balance

Paper-IV

Question 10. *What does the following quote mean to you?*

"Truth cannot be hidden for fear that somebody would exploit it." - Atal Bihari Vajpayee

Answer: Truth cannot be hidden, it will get revealed someday anyhow so one should not hide truth for the fear of anything. One should believe in oneself and should not be frightened of telling the truth.

- Mahatma Gandhi always believed in truth. For him, truth is the ultimate objective of every mean.
  - If one thinks the truth could make life miserable, let it be. Because, the end of truthful means is always beyond parity.
- In the civil code of ethics truthfulness is necessary to efficiently deliver services to the public.
  - Truthfulness allows a civil servant to take decisions without fear or favour. Ultimately it leads to upliftment of society and the underprivileged section.

The Republic of India has its motto as "Satyameva Jayate". It cautions that honesty and truthfulness have a cost but truth always prevails.

DCAT

UPSC CSE MAINS ENVIRONMENT & ECOLOGY

The Mains Capsule for Environment & Ecology has been prepared with the aim of revisiting the important topics from this segment that have been in news over the past one year. In the preparation for Mains exam, it is almost always a case of racing against time as the syllabus is quite vast. The smart way to cover the syllabus is to link the conventional areas of the syllabus with current developments.

In preparing this supplement we have gone through the current developments of past one year with respect to the syllabus of Environment & Ecology and have curated the most important and relevant topics which have a higher probability of being asked in this year's Mains by UPSC. We have tried to organise the study material in a crisp format to enable a quick read and revision. The coverage of the topics has been done in both brief and detailed formats as per the requirement of the issue, covering most important ones holistically along with their various dimensions, critiques, way forward etc., while others have been covered keeping in mind that even if they may not be asked directly, they might help as extra feeder points to supplement and enrich your answers.

This exercise will serve you the purpose with which it has been prepared and will help you successfully tide over this most formidable but exciting phase of the UPSC exam.

All the very best!!!

CONTENTS

1. **Wildlife** 120
2. **Man-Wildlife Interactions** 123
3. **Pollution And Environmental Degradation** 126
4. **Reports And Findings** 132
5. **Conventions And Conferences** 135
6. **Extreme Weather Events** 141
7. **Policy Initiatives** 146
8. **Miscellaneous** 152

WILDLIFE

Planting of Exotic Trees Harmful to Nilgiris

There is a growing trend of contribution towards the rejuvenation of the green cover in the Nilgiris. But, mass plantation of exotic trees is creating pressure on Nilgiri's Shola forest land.

Key points

- Exotic trees are tree species growing outside natural vegetation zone or region. These are introduced for the purpose of forestry horticulture etc.
- Exotic trees have a huge impact on soil chemistry on the ground where they are planted, preventing native grass, plants and herbs from taking root underneath the canopy.
- They have a **knock-on effect** on wildlife, resulting in their vacating the areas. When exotic trees take root in a particular area, they increase the water demand in that region, impacting not just the Nilgiris but other districts further downstream that rely on rivers emanating from the hills.
- According to a study published in 2019 in the international journal Biological Conservation, the **Western Ghats have lost almost one-fourth of high-altitude grasslands over four decades**, primarily due to exotic invasive trees, such as pine, acacia, and eucalyptus.
- The satellite images reveal that 60% of the Shola-grassland landscape has changed and almost 40% of native high-elevation grasslands have disappeared.
- Shola-grasslands across the Ghats – from the **Baba Budan Hills in Karnataka to Tamil Nadu's Ashambu Hills** – showed the highest rates of invasion.
- Most of this loss occurred on the mountain tops of **Nilgiri, Palani and Annamalai hill** ranges, which comprise more than half of the Ghat's Shola-grassland ecosystems.
- Even though no plantations were established between 2003-2017, **invasion by existing trees increased areas.**

How do exotic species help local biology?

- Introduction of exotic species can help in combating reducing desertification. But, cautions must be taken while choosing the species.
- They also provide alternative food resources to animals, for example, *Acacia* is used as a staple food for goats in arid regions.
- Exotic trees can produce more wood per unit of area and time which can be used in carpentry, thus creating livelihood opportunities.

Way forward

- The government should come up with a policy that stipulates that only native flora such as Shola trees should be planted in public spaces in the Nilgiris because of its ecological significance and its unique biodiversity.
- Besides, there needs to be a better understanding of the best ecological restoration practices that can be implemented when working in a landscape as crucial and sensitive as the Nilgiris.

Invasive Species: Charru Mussel

An invasive species named **Charru mussel (*Mytella strigata*)**, native to the **South and Central American coasts**, is spreading quickly in the backwaters of Kerala.

Invasive Species

- An invasive species is an organism that is not indigenous, or native, to a particular area and causes harm.
- They are capable of causing extinctions of native plants and animals, reducing biodiversity, competing with native organisms for limited resources, and altering habitats.
- They can be introduced to an area by ship ballast water, accidental release, and most often, by people.

Mussel

- Mussel is a common name for numerous bivalve mollusks.
- Mollusks are soft-bodied invertebrates, usually wholly or partly enclosed in a calcium carbonate shell secreted by a soft mantle covering the body.
- Worldwide, they are most commonly found in cool seas.

- India has the economic ability to consider restoring its lost natural heritage for ethical as well as ecological reasons.

Challenges

- The task of creating an African savanna-like ecosystem is not easy. The prey base for cheetahs in Kuno Palpur sanctuary is alleged to be inadequate. Also, much of its grasslands that were created by relocating villages have **naturally progressed to woodlands not suitable for the** African cheetah.
- The reintroduction of cheetahs in Rajasthan can **threaten the survival of the Great Indian Bustard** (GIB) in the region. GIB is one of the most gravely endangered birds in the world.
- Another **challenge will have to maintain genetic diversity**. A relocation of just a couple of cheetahs will not do, more cheetahs will need to be brought to ensure their genetic diversity. Genetic diversity helps a species to adapt to changing environments.

MAN-WILDLIFE INTERACTIONS

Money Laundering and the Illegal Wildlife Trade

Recently, the Financial Action Task Force (FATF) has released the **first global report** on the Illegal Wildlife Trade (IWT) namely, **"Money Laundering and the Illegal Wildlife Trade"**. The report described IWT as a **"global threat"**, which also has links with other organised crimes like modern slavery, drug trafficking and arms trade.

Key Points

- **Transnational Organised Crime:**
  - The illegal trade is estimated to generate revenues of up to USD 23 billion a year.
  - According to the 2016 UN World Wildlife Crime report, criminals are illegally trading products derived from over 7,000 species of wild animals and plants across the world.
- **Origin and Route of IWT:**
  - Usually, the countries that are **rich in biodiversity** and/or where there may be weaker law enforcement oversight and criminal justice are treated as source countries for IWT.
  - Similarly, most parties involved in such crime transit the wildlife through other countries to blur the exact end destination.
  - Transit countries typically include trade and transport hubs or **countries with higher levels of corruption**. The laundering of the proceeds occurs across source, transit and destination countries.
- **Methods Used for IWT:**
  - It has been observed that the criminals are relying on **"established" methods** to launder proceeds from IWT, including mobile or social media-based payments, third party payments and the placement and layering of funds through the formal financial sector.
  - IWT also uses shell and front companies to conceal payments and launder their money.
  - Shell company is an inactive company used as a vehicle for various financial manoeuvres or kept dormant for future use in some other capacity.
  - A front organization is any entity set up by and controlled by another organization, such as, organized crime groups, banned organizations, religious or political groups, advocacy groups, or corporations.
  - Additionally, the role of online marketplaces and mobile, social media-based payments and darknets have facilitated the fast and movement of illegally traded animals.
- **Link with Zoonotic Diseases:**
  - The spread of zoonotic diseases underlines the importance of ensuring that wildlife is traded in a legal, safe and sustainable manner and that countries remove the profitability of illegal markets.
  - The exact connection between the trading of pangolins and its scales to the COVID-19 outbreak is yet to be established but it has been noted that the price of pangolins has increased between 100% to 600% mark-up.
  - Further, India has also been a source country for illegal pangolin trading.

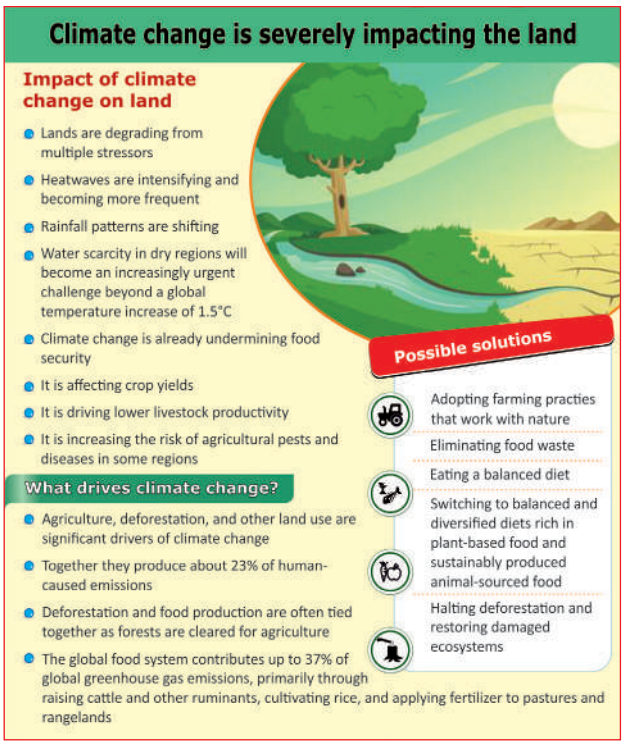
REPORTS AND FINDINGS

IPCC Report on Climate Change and its Effect on Land

Recently, the Intergovernmental Panel on Climate Change (IPCC) released a new report titled '**Climate Change and Land**'. The report looks at the role of land-based activities such as agriculture, forestry, cattle-rearing and urbanization in causing global warming, and also the manner in which they are impacted by climate change.

Key points

- Land acts as both - the source as well as sink of carbon. Thus, any large scale land-use changes like deforestation or urbanization, or even a change in cropping pattern, have a direct impact on the overall emissions of greenhouse gases.
- Climate change has already affected food security due to global warming, changing precipitation patterns, and increased frequency of extreme events.
- The global rise in temperature has been much faster over land than over the entire planet.



- This additional warming over land could have led to increased frequency, intensity and duration of heat-related events such as heatwaves.
- The process of producing food and making it available to everyone could be contributing to over a quarter of the global emissions of greenhouse gases every year. A quarter of the food produced is either lost or wasted. Even during its decomposition, it causes emissions.
- Thus, measures such as reduction in food wastage, sustainable agriculture practices and shifting of dietary preferences such as including more plant-based food could reduce emissions without jeopardizing food security.

IPCC's Special Report on Cryosphere

The Intergovernmental Panel on Climate Change has released its **'Special Report on the Ocean and Cryosphere in a Changing Climate' (SROCC).**

Key highlights

- The report **updated the IPCC's 5th Assessment Report** – and summarised the disastrous impacts of warming based on current projections of global greenhouse gas emissions.
- Over the 21st century, the **ocean is projected to transition to unprecedented conditions with increased temperatures**, further ocean acidification, marine heatwaves and more frequent extreme El Niño and La Niña events.
- Global ocean has warmed unabated since 1970 and has taken up more than 90% of the excess heat in the climate system. Since the 1980s, the rate of ocean warming and marine heatwaves have doubled in frequency and intensity.
- **Global mean-sea level has increased by 16 cm** between 1902 and 2015, and that rate of increase had doubled of late.
- The **melting glaciers are the dominant source of sea-level rise**, exceeding the effect of thermal expansion of ocean water (due to rising temperatures). Hindu Kush Himalayan region, an area covering high

KEY OUTCOMES FROM COP 25 AT MADRID

Positive Outcomes

Gender Action Plan (GAP)
- The GAP, created at COP 20 in Lima, seeks to advance women's full, equal and meaningful participation and to promote gender-responsive climate policy in the implementation of the UNFCCC.
- A new five-year Gender Action Plan (GAP), intended to support the implementation of gender-related decisions and mandates in the UNFCCC process.

Periodic Review
- First agreed in 1992, it defines the review of long term goal of UNFCCC.
- The first periodic review was carried out from 2013 to 2015.
- At Madrid, it has been agreed to proceed with this in the later half of 2020.

Double Counting
- The question was how to account for trade between countries with different types of NDCs, given some target an emissions budget across multiple years and others aim for a particular level in a single target year.
- It was agreed to be done by making 'corresponding adjustments' to avoid 'double-counting'.
- It sets out several approaches to accounting, which parties can choose from, such as averaging the quantity of traded emissions across all years.

Koronivia Joint Work on Agriculture
- It consists of a series of workshops examining how to conduct agriculture in a world undergoing climate change.
- It is a three year programme which will end at COP 26 Glasgow.

Negative Outcomes

Common Metrics
- The question was how non-CO_2 emissions (such as methane and nitrous oxide) can be uniformly converted into CO_2 equivalent.
- The common metrics negotiations were postponed till 2020.
- For some observers its resolution needs more science.

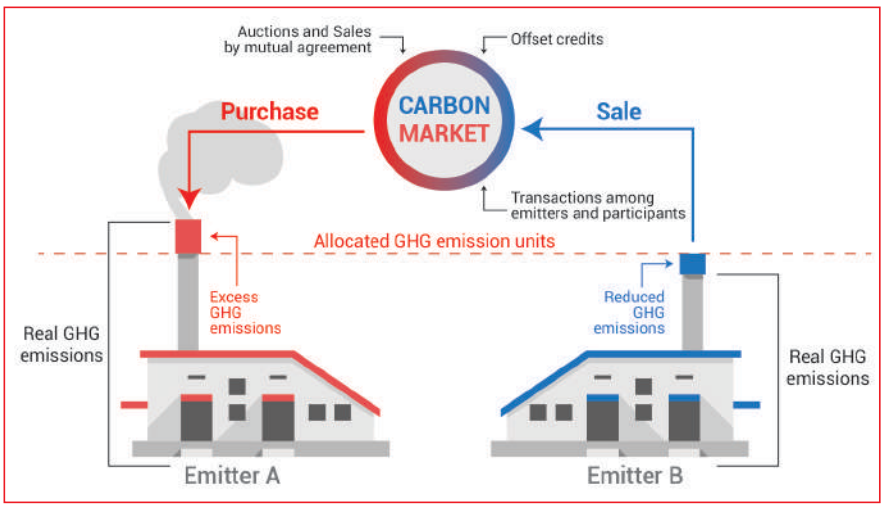
Common Timeframes
- Countries submitted their 'nationally determined contributions' (NDCs) in an ad hoc fashion, covering a range of timeframes (2025 to 2030).
- There have been incoherent views from different member countries.

Carryover of Kyoto Carbon Units
- The question was how to deal with billions of Kyoto-era carbon offset units.
- These were generated under the Clean Development Mechanism, where projects in developing countries created certified emissions reductions (CERs) in the developing world.
- The final agreement has not been settled upon.

Carbon Market
- It allows for buying and selling of carbon credits gained through emission reductions.
- There has been a disagreement over setting up of new carbon markets.

What is Carbon Market?

- The world evolved the **Clean Development Mechanism (CDM)** under the Kyoto Protocol agreement of 1997. It provided for buying and selling of carbon emissions with the objective of reducing global emissions.
- The amount of greenhouse gases that can be emitted by a given industry or sector of the economy is capped. Businesses are then given an allowance of how many metric tons of CO_2 they can emit. Those who emit less than their allotment can sell the extra to other businesses and those who emit more than their allotment can buy the extra from other businesses.
- In other words, developing world could put up projects - such as renewable energy or afforestation - that help reduce carbon dioxide emissions, and earn 'credits' (called **Certified Emission Reductions or CERs**) that could be sold in the market. It was expected that these credits would be bought by the developed countries that had committed to emissions cuts under the Protocol. Indian companies have accumulated about 345 million such credits.
- Like shares, the value of CER depends on the market price. At the best of times, CERs were selling for $25 a CER. In the last few years, several countries walked out of the Kyoto Protocol and the demand for CERs crashed. Today, a CER sells for less than a dollar. This market crash is inconsistent with climate action ambitions. Countries like India were left with projects generating CERs with no one to buy them.
- The global climate action is now set to shift epochs i.e. from the Kyoto Protocol regime, where only developed countries (excluding the US, which opted out) undertook emission reduction commitments, to the Paris Agreement regime, where all countries are bound by their own voluntary commitments, called the Nationally Determined Contributions, or NDCs.



Issues with Carbon Markets

- **Unsold Carbon Credits**
  - Developing countries have several million unsold CERs from the Kyoto regime. These countries want these credits to be valid in the new mechanism too.
  - For developed countries, the rules and verification procedures under the Kyoto Protocol were not very robust and the new mechanism should start with a clean slate. For them, carrying forward the accumulated carbon credits will dilute climate action as those who ought to be implementing emission reduction projects will just buy the cheap credits used under the CDM.
- **Double-counting or Corresponding Adjustment**
  - The **developed countries** argue that it is important to ensure that credits are not counted at more than one place; whoever sells carbon credits should not simultaneously count these as emissions it has reduced.
  - The **developing countries** argue that the country that reduced emissions should be able to show it even after selling the credits, and that adjustments should be made only for subsequent transfers, if any.
- **Coverage**
  - The coverage of carbon credits may not be comprehensive.
  - It is difficult for a carbon market mechanism to capture all GHG emissions, e.g. from transportation and other sectors where most emissions are at the end-user level.

Relevance of Carbon Markets

- Carbon markets can complement other policy instruments such as carbon taxes and energy-efficiency standards.
- Under the **Paris Agreement**, every country had to take action to fight climate change. These actions need not necessarily be in the form of **reduction in greenhouse gas emissions**, which constrain economic growth. The carbon market can potentially deliver emissions reductions over and above what countries are doing on their own. For example, a developed country can provide money or upgraded technology to a brick kiln in India to reduce its emissions, and then claim the reduction of emission as its own. Alternatively, the kiln can make the investment, and then offer on sale the emission reduction.
- With the world doing far less than what is required to prevent catastrophic impacts of climate change, the markets can be an important tool to close the action gap. The current reduction targets or NDCs are not enough with respect to 2 degrees celsius. Carbon markets could hold the key to more ambitious targets.

Way forward

- All NDCs should be ambitious enough to secure a well below 2° Celsius scenario. Only countries with Paris-aligned targets should be allowed to participate in carbon trading systems. It should be a system to really increase ambitions to bring about more emission reductions.
- The market mechanisms being proposed under the Paris Agreement are conceptually not very different, but are supposed to have more effective checks and balances, and monitoring and verification processes.

EXTREME WEATHER EVENTS

Cyclonic Storms

Cyclonic storms have become a regular feature striking the Indian coasts.

Cyclones

- Cyclones are caused by atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation. Cyclones are usually accompanied by violent storms and bad weather.
- The air circulates inward in an **anticlockwise direction in the Northern hemisphere** and **clockwise in the Southern hemisphere**.
- Cyclones are classified as **extratropical cyclones** (also called temperate cyclones); and **tropical cyclones**.
- Tropical cyclones are the progeny of ocean and atmosphere, powered by the heat from the sea; and driven by easterly trades and temperate westerlies, high planetary winds and their own fierce energy. They develop in the regions between the Tropics of Capricorn and Cancer.

Cyclones are classified into five different levels on the basis of wind speed

Cyclone Category	Wind Speed in km/h	Damage Capacity
1	120-150	Minimal
2	150-180	Moderate
3	180-210	Extensive
4	210-250	Extreme
5	250 and above	Catastrophic

Types of Cyclonic Disturbances

Type of Disturbances	Wind Speed in km/h	Wind Speed in Knots
Low Pressure	Less than 31	Less than 17
Depression	31-49	17-27
Deep Depression	49-61	27-33
Cyclonic Storm	61-88	33-47
Severe Cyclonic Storm	88-117	47-63
Super Cyclone	More than 221	More than 120

- Extratropical cyclones occur in temperate zones and high latitude regions, though they are known to originate in the Polar Regions.
- Cyclones are given many names in different regions of the world – they are known as **typhoons** in the China Sea and the Pacific Ocean; **hurricanes** in the West Indian islands in the Caribbean Sea and Atlantic Ocean; **tornados** in the Guinea lands of West Africa and southern USA.; **willy-willies** in north-western Australia and **tropical cyclones** in the Indian Ocean.

How cyclones are formed?

- The development cycle of tropical cyclones may be divided into three stages: **Formation and Initial Development Stage**; **Mature Tropical Cyclones**; and **Modification and Decay**.
- **Formation and Development Stage:** The formation and initial development of a cyclonic storm depends upon various conditions. These are:
  - A warm sea (a **temperature in excess of 26 degrees Celsius to a depth of 60 m**) with abundant and turbulent transfer of water vapour to the overlying atmosphere by evaporation.
  - Atmospheric instability encourages formation of massive **vertical cumulus clouds due to convection with condensation of rising air above ocean surface**.
- **Mature Tropical Cyclones:** When a tropical storm intensifies, the air rises in vigorous thunderstorms and tends to spread out horizontally at the tropopause level. Once air spreads out, a positive perturbation pressure at high levels is produced, which accelerates the downward motion of air due to convection. With the inducement of subsidence, air warms up by compression and a warm 'Eye' is generated.
- **Modification and Decay:** A tropical cyclone begins to weaken in terms of its central low pressure, internal warmth and extremely high speeds, as soon as its source of warm moist air begins to ebb, or is abruptly cut off. This happens after its landfall or when it passes over cold waters.

How are cyclones named?

- The World Meteorological Organisation/Economic and Social Commission for Asia and the Pacific Panel on Tropical Cyclones, at its twenty-seventh session

SUPPLEMENT

POLICY INITIATIVES

Guidelines to Monitor Sand Mining

The Ministry of Environment, Forests and Climate Change (MoEFCC) has released the Enforcement and Monitoring Guidelines for Sand Mining 2020 to monitor and check illegal sand mining in the country.

Key points

- The guidelines include directions to states to carry out **river audits**, put detailed **survey reports** of all mining areas **online** and in the public domain, conduct **replenishment studies of river beds**, constantly **monitor mining** with drones, **aerial surveys**, ground surveys and set up **dedicated task forces at district levels**.
- The guidelines also push for **online sales and purchase of sand and other riverbed materials** to make the process transparent.
- These propose **night surveillance of mining activity** through night-vision drones.
- The need for replenishment study for river bed sand is also required in order to nullify the adverse impacts arising due to excessive sand extraction. No riverbed mining will be allowed during the monsoon.
- The 2020 guidelines are to be enforced simultaneously with the **Sustainable Sand Management Guidelines, 2016**, but in instances where the two sets of guidelines may seem to be in conflict, the new set will hold legal precedence.
- The enforcement guidelines focus on the effective monitoring of sand mining from the identification of sand mineral sources to its dispatch and end-use by consumers and the general public and looks at a uniform protocol for the whole country.
- In cases where rivers become district boundaries or state boundaries, the districts or states sharing the boundary shall constitute a **combined task force** for monitoring of mined materials, mining activity and participate in the preparation of District Survey Reports (DSR) by providing appropriate inputs.

Background

- The **Mines and Minerals (Development and Regulation) Act, 1957** has empowered **state governments** to make rules to prevent **illegal mining,** transportation and **storage of minerals.**
- However, there were several illegal mining cases in the country and in some cases, many of the concerned government officials lost their lives while executing their duties to curb illegal mining.
- Illegal mining also leads to loss of revenue to the State and degradation of the environment.

Constitutional/legal frameworks for the mining sector in India

- **List I (Union List)** under the Seventh Schedule of the Constitution mandates the **central government to own the minerals within the exclusive economic zone of India (EEZ).**
- **List II (State List)** under the Seventh Schedule of the Constitution mandates the **State government to own the minerals located within their boundaries.**
- Also, **the Central Government notifies** certain minerals as **'minor'** minerals from time to time for which the absolute powers for deciding on procedures of seeking applications for and granting mineral concessions, fixing rates of royalty, dead rent, and power to revise orders rest **with the State Government.**
- Examples of minor minerals include building stones, gravel, ordinary clay, ordinary sand.
- For minerals specified in the **Schedule I** to the Mines and Minerals (Development and Regulation) Act, 1957 **approval of the Central Government is necessary.**
- **Schedule I** contains minerals such as **coal and lignite,** minerals of the **"rare earths"** group containing **Uranium and Thorium.**

Safeguarding the Cauvery Delta

The Cauvery delta region of Tamil Nadu has been declared as **Protected Special Agricultural Zone (PSAZ)** under the Tamil Nadu Protected Agricultural Zone Development Act, 2020.

- Without environmental rule of law and the enforcement of legal rights and obligations, environmental governance may be arbitrary, that is, discretionary, subjective, and unpredictable.
- The best way to ensure environmental rule of law is by adhering to the Environmental Impact Assessment (EIA) rules.

What is EIA?

- Environmental Impact Assessment (EIA) is a tool available with the planners to harmonise developmental activities with environmental concerns.
- EIA helps to foresee the potential environmental problems that would arise out of a proposed development and address them in the project's planning and design stage.
- EIA in India started with the impact assessment of river valley projects in 1978-79 and has subsequently been enhanced to cover other developmental sectors too.
- **The EIA process in India has the following phases:**
  - **Screening**: To see whether a project requires environmental clearance.
  - **Scoping and consideration of alternatives**: Scoping is a process of detailing significant issues to be addressed in the EIA studies.
  - **Baseline Data Collection**: describes the existing environmental status of the identified study area to be monitored for the identified parameters.
  - **Impact Prediction**: Mapping the environmental consequences of the significant aspects of the project and its alternatives.
  - **Assessment of alternatives, delineation of mitigation measures and environmental impact statement**: Identifying all possible alternatives for the project, comparing their environmental attributes and then ranking the best environmental options.
  - **Mitigation Plan**: A mitigation plan should be drawn up for the selected option and supplemented with an Environmental Management Plan (EMP) to guide towards environmental improvements.
  - **EIA Report**: Providing clear information on the different environmental scenarios without the project, with the project and with project alternatives.
  - **Public Hearing**: Law requires that any one likely to be affected by the proposed project must be informed and consulted.
  - **Decision Making**: The decision on environmental clearance is arrived at through a number of steps including evaluation of EIA and EMP.
  - **Monitoring the Clearance Conditions**: Monitoring should be done during both construction and operation phases of a project to ensure that the commitments made are complied with.

MISCELLANEOUS

IMD's Monsoon Forecast

The Indian Meteorological Department (IMD) releases its Monsoon forecast. IMD uses two models to make the monsoon forecast - Statistical Ensemble Forecasting System (SEFS) and the Climate Forecast System (CFS).

Key points

Statistical Ensemble Forecasting System (SEFS)

- SEFS uses five predictors. These predictors along with some equations are used by scientists to carry out statistical analysis to finally come out with a forecast.
- The five predictors are North Atlantic Sea Surface Temperature; Equatorial South Indian Ocean Sea Surface Temperature; East Asia Mean Sea Level Pressure; NW Europe Land Surface Air Temperature; and Equatorial Pacific Warm Water Volume.
- The problem with this model is that it uses data from the past 100 years to come up with a forecast when many of the relationships between global climate factors have changed.

Climate Forecast System (CFS)

The Climate Forecast System (CFS) is a model representing the global interaction between Earth's

- This scheme will **encourage plantation** by individuals outside the traditional forest area and will help in meeting international commitments such as Sustainable Development Goals and Nationally Determined Contributions.
- It will also help in solving complain of various industries that they find it hard to acquire appropriate non-forest land, which has to be contiguous to the existing forest.
- The scheme will also **supplement the Green India Mission**, which is one of India's initiatives to combat climate change.
- Nevertheless, it falls short of solving the core problems of compensatory afforestation and creates problems of privatising multi-use forest areas as monoculture plantation plots.

Green Finance in India

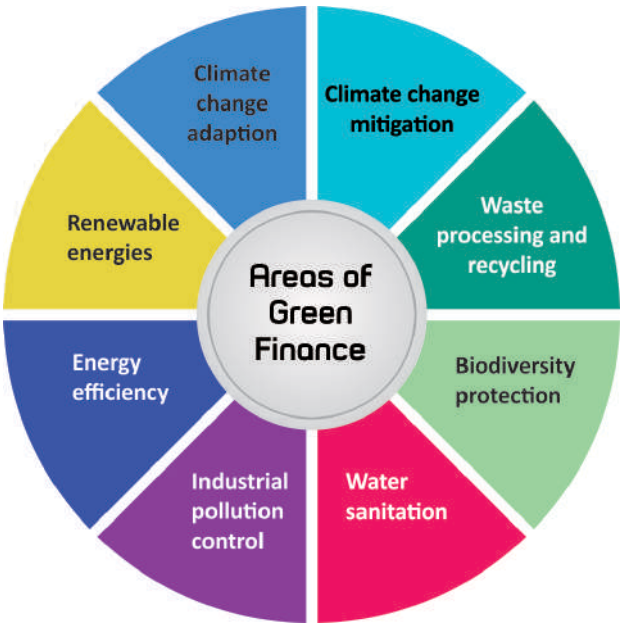
The recent Report on Trend and Progress of Banking in India (of RBI) highlighted the opportunities and challenges for green financing.

Background

- The impact of climate change is aggravating around the world.
- Its impact on the financial sector manifests through various risks such as
  - Loss or damage to tangible assets arising from frequent natural disasters and
  - Financial stability implications emanating from volatility in food prices due to erratic weather trends, inflation and precautionary saving by households.
- Enormous amounts are required to combat climate change and bring about a transformation towards sustainable and low carbon development.
- For such purposes, public finance alone may not suffice. Green finance is required to be harnessed for financing environment friendly mode of development.

What is green finance?

- Green Finance (GF) comprises all forms of investment or lending that take into account environmental impact and enhance environmental sustainability.
- The GF ecosystem seeks to raise financial flows from banking, micro-credit and insurance sectors as well as from the public, private and non-profit sectors.



Current state of green finance

- **Green bonds**, **carbon market** instruments, **sustainability bond** and FinTech-based green funds are now at the forefront of climate change financing.
- The market for green bonds has issuers from more than 50 countries, including multilateral institutions like the World Bank. India is the second largest issuer among Emerging Market Economies (EME).
- **Green loans** are another instrument, with issuances amounting to $60 billion in 2018.
- Green Climate Fund and Green Environment Facility are also the mechanisms set up for the purpose of green financing.
- Among such concerted efforts, advanced economies have formally agreed to **jointly mobilise $100 billion per year by 2020**, from a variety of sources, to address the pressing mitigation and adaptation needs of developing countries.

Global efforts for green financing

- European Central Bank has formally identified climate-related risks as one of the key risks facing the banking sector. It computes the impact of climate-

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