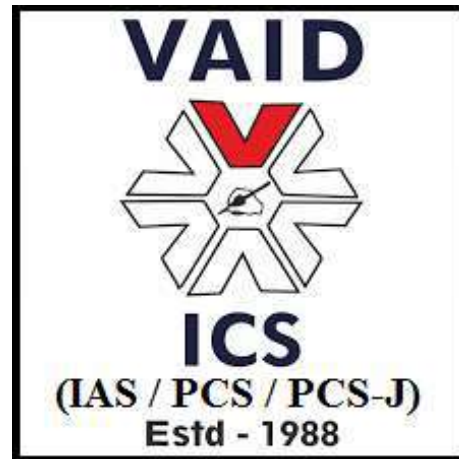


# VAID ICS LUCKNOW



## CURRENT AFFAIRS MAGAZINE

UPSC / UPPCS

November-2024



B-36, SECTOR-C, ALIGANJ, LUCKNOW-226024

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## Kodo Millet Plants / CPA (Cyclopiazonic Acid)

**Why in News?** According to the toxicology report of the 10 elephants that died at Bandhavgarh Tiger Reserve, they had consumed a “large quantity” of kodo millet plants that were infected with a fungus.

- Presence cyclopiazonic acid was detected in all pooled samples. Approximate concentration of cyclopiazonic acid detected in the sample was above 100 ppb. Further screening of all the samples is being made to estimate the exact concentration...
- The results indicate that the elephants might have consumed large quantities of kodo plant/grains.

### Key Finding of report :

According to a 2023 research paper titled ‘Potential Risk of Cyclopiazonic Acid Toxicity in Kodua Poisoning’, published in the Journal of Scientific and Technical Research, the kodo millet is **mainly cultivated in dry and semi-arid regions**.

But sometimes, “environmental conditions like spring and summer strike as being suitable for a certain kind of poisoning, which leads to greater economic crop loss”

- “CPA (cyclopiazonic acid) is one of the major **mycotoxins associated** with the kodo millet seeds causing kodo poisoning, which was first recognised during the mid-eighties.”
- **Millets are more prone to fungal infection**, followed by bacterial and viral; these infections adversely affect the grain and fodder yield.
- Ergot is a parasitic fungal endophyte that grows in the ear heads of various blade grass, most frequently on kodo millet. Consumption of such kodo grains is often found to cause poisoning.

### About Bandhavgarh Tiger Reserve:

- It is located in the **Umaria district of Madhya Pradesh**, India, is one of the most famous tiger reserves and national parks in India, known for its **high density of Bengal tigers**.
- Established as a national park in 1968 and later declared a tiger reserve in 1993 under Project Tiger, Bandhavgarh is celebrated for its successful tiger conservation efforts and diverse flora and fauna.

## The State of Food and Agriculture 2024' (SOFA 2024)

**Why in News?** The Food and Agriculture Organisation (FAO) has recently released 'The State of Food and Agriculture 2024' (SOFA 2024).

### Key Findings:

- **True Cost Accounting:** The report calls for the importance of true cost accounting in agrifood systems.
- It helps to uncover the hidden costs and benefits associated with food production and consumption, including environmental degradation, health impacts, and social inequalities.
- the hidden costs of agrifood systems amounted to approximately \$12 trillion annually.
- Globally, the dominant quantified hidden costs were those arising from unhealthy dietary patterns that lead to diseases and lower labour productivity.
- India's hidden costs are the third largest globally, following China and the United States, which have hidden costs of **\$1.8 trillion and \$1.4 trillion**, respectively.
- The health-related hidden costs, which include productivity losses due to dietary-related diseases, form a significant portion of the total.
- These costs are estimated to be around \$846 billion annually, reflecting the burden of disease and reduced labour productivity.
- **Dietary Risks and Non-Communicable Diseases:** Unhealthy diets are a major contributor to global hidden costs, accounting for approximately 70% (\$8.1 trillion) of these costs.
- The report underscores the link between dietary risks and non-communicable diseases, highlighting the need for healthier food environments.
- **Economic, Social, and Environmental Impacts:** Agrifood systems generate significant benefits for society but also have substantial negative impacts.
- The report identifies these hidden costs, which include economic losses from market and policy failures, and emphasises the need for comprehensive assessments to inform policy decisions.
- It calls for greater consumer awareness and engagement, as well as equitable roles for producers in the supply chain.

**Key Recommendations :**

- Promoting Healthier Diets:
- Sustainable Agricultural Practices:
- Improving Social Equity: .
- These include incentivising sustainable practices, improving institutional and fiscal capacities, and engaging stakeholders in the transformation process.

**About The SOFA:**

- The State of Food and Agriculture (SOFA) is an annual report published by **the Food and Agriculture Organization (FAO) of the United Nations**.
- The report provides an in-depth analysis of key issues affecting global agriculture, food security, rural development, and nutrition.
- It is a valuable resource for **policymakers, researchers, and stakeholders** in the agri-food sector, offering data-driven insights and policy recommendations to address challenges within the global food system.

## Booker Prize 2024

Samantha Harvey has won the prestigious **Booker Prize for her novel “Orbital”**. The award ceremony took place on **November 12, 2024**.

- Harvey’s book is a unique exploration of life aboard the International Space Station. It reflects on human connections and the beauty of Earth. The novel was inspired by the isolation experienced during the COVID-19 pandemic.

**About the Booker Prize :**

- It is one of the world's most prestigious literary awards, was established in 1969 to recognize outstanding works of fiction written in English.
- Initially, it was limited to writers from the Commonwealth, **Ireland, and South Africa**, **but in 2014**, eligibility was expanded to any novel written in English and published in the United Kingdom.
- This opened the competition to authors worldwide, increasing its influence and significance in the literary world.

## India Tests Fire Hypersonic Missiles

**Why in News?** India's Defence Research and Development Organisation (DRDO) successfully conducted the first flight test of a **long-range hypersonic missile**. The missile was launched from Dr. APJ Abdul Kalam Island, off the coast of Odisha.

### Key features:

**Speed:** Capable of traveling at speeds greater than Mach 5 (6,174 km/h)

**Range:** Greater than 1,500 km

**Target Capability:** Can hit both moving sea targets and static land targets.

### Countries with Hypersonic Technology

- **Russia and China** are ahead in the development of hypersonic missiles.
- The United States is actively working on hypersonic missile systems.
- Other nations like **France, Germany, Japan, Australia, Iran, and Israel** are also pursuing hypersonic missile projects.

### What Are Hypersonic Missiles?

**Hypersonic missiles** are advanced weapons that travel at speeds greater than **Mach 5** (five times the speed of sound, approximately **6,200 km/h** or **3,850 mph**) and are capable of maneuvering mid-flight. These features make them significantly faster and more agile than traditional ballistic or cruise missiles.

### Types of Hypersonic Missiles:

#### Hypersonic Glide Vehicles (HGVs):

- Launched atop a rocket and released at high altitudes.
- Glide through the atmosphere at hypersonic speeds, maneuvering unpredictably to evade missile defense systems.
- Example: China's **DF-ZF**, U.S. **Advanced Hypersonic Weapon**.

#### Hypersonic Cruise Missiles (HCMs):

- Powered by advanced air-breathing engines, such as scramjets, throughout their flight.
- Travel within the Earth's atmosphere, maintaining a sustained hypersonic speed.
- Example: Russia's **Zircon**, India's **BrahMos-II** (under development).



#### Extreme Speed:

- Travel faster than Mach 5, reducing the time for a target to react or defend.
- A missile could strike a target thousands of kilometers away in minutes.

#### Maneuverability:

- Unlike ballistic missiles that follow a predictable arc, hypersonic missiles can change their trajectory mid-flight, making them hard to detect and intercept.

#### Low Altitude:

- Fly closer to the ground than traditional intercontinental ballistic missiles (ICBMs), making them less visible to radar systems.

#### Dual-Use Capability:

- Can be equipped with conventional or nuclear warheads, adding strategic ambiguity.

#### Advantages of Hypersonic Missiles

##### Evasion of Defense Systems:

- Their speed and agility make them nearly impossible to intercept using current missile defense technology.

**Precision Targeting:**

- Designed for pinpoint accuracy, useful for destroying high-value targets like military bases, ships, or critical infrastructure.

**Strategic First-Strike Capability:**

- Allows nations to strike quickly and decisively, potentially neutralizing adversary defenses before retaliation.

## Why has CO<sub>2</sub> caused most of the global warming? What is Radiative Forcing (RF) ?

**Why in News?** Studies have shown that CO<sub>2</sub> has contributed more than any driver to climate change. In fact, CO<sub>2</sub> is responsible for about **70% of global warming**, according to an analysis by Facts on Climate Change, a Czech Republic-based independent think tank.

- In 2013, the Intergovernmental Panel on Climate Change (IPCC) — the United Nations body that advances scientific knowledge about climate change — compared the “**radiative forcing**” (RF) or heating effect of three different climate drivers: GHGs, aerosols, and land use change. It was found that between **1750 and 2011**, CO<sub>2</sub> had the highest positive RF, meaning it had the greatest warming effect on the planet.
- The analysis also showed that other GHGs such as CH<sub>4</sub> or Hydrofluorocarbons (an entirely human-made GHG) which are much more potent — while CH<sub>4</sub> is around 80 times more powerful than CO<sub>2</sub>, HFCs can be thousands of times more powerful — had less heating effect than CO<sub>2</sub>.

**There are two reasons for this.**

**One**, CO<sub>2</sub> is much more abundant in the atmosphere compared to CH<sub>4</sub> and HFCs. Since the onset of industrial times in the 18th century, human activities have raised atmospheric CO<sub>2</sub> by **50%**, which means the amount of CO<sub>2</sub> is **now 150% of its value** in 1750, according to a report in the National Aeronautics and Space Administration (NASA).

**Two**, CO<sub>2</sub> remains in the atmosphere longer than the other major GHGs emitted due to human activities. It takes about a decade for CH<sub>4</sub> emissions to leave the atmosphere (it converts into CO<sub>2</sub>) and about a century for nitrous oxide (N<sub>2</sub>O).



- “After a pulse of CO<sub>2</sub> is emitted into the atmosphere, **40%** will remain in the atmosphere for **100 years** and **20% will reside for 1000** years, while the final 10% will take 10,000 years to turn over,” a report by the Union of Concerned Scientists (UCS), a US-based non-profit organisation,
- Notably, water vapour is the most abundant GHG in the atmosphere. However, it has a short cycle (10 days on average) and does not build up in the atmosphere in the same way as CO<sub>2</sub> does. Therefore, water vapour does not have much heating effect compared to CO<sub>2</sub>. But as global temperatures continue to soar, more water evaporates into the atmosphere, causing more warming.

### What is Radiative Forcing (RF) ?

Radiative Forcing (RF) refers to the change in the balance between incoming energy from the sun and outgoing energy from Earth due to factors like greenhouse gases, aerosols, or solar radiation changes.

#### How it Works?

**Incoming Solar Energy:** The sun emits energy that reaches Earth. Some of this energy is reflected back into space by clouds, aerosols, and Earth's surface.

**Outgoing Infrared Energy:** Earth emits energy back to space as infrared radiation after absorbing solar energy.

**Imbalance:** Radiative forcing measures the change caused by factors that alter this balance.

#### For example:

**Positive RF** warms the planet (e.g., from CO<sub>2</sub> or methane trapping more heat).

**Negative RF** cools the planet (e.g., from aerosols reflecting sunlight away).

#### Types of Radiative Forcing:

##### Greenhouse Gases:

- Carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) are major contributors to positive radiative forcing, as they trap heat in the atmosphere.

**Example:** Increasing CO<sub>2</sub> from burning fossil fuels leads to a net warming effect.

##### Aerosols:

- Tiny particles like sulfate aerosols can reflect sunlight, causing negative RF and a cooling effect.

**Example:** Volcanic eruptions release aerosols, temporarily cooling the planet.

**Solar Radiation:**

- Variations in the sun's energy output can cause RF, although its contribution to recent warming is much smaller compared to greenhouse gases.

**Land Use Changes:**

Deforestation or urbanization alters Earth's albedo (reflectivity), contributing to RF by changing how much sunlight is absorbed or reflected.

## Fossil Fuel Non-Proliferation Treaty (FFPT)?

**Why in News ?** A group of governments and civil society organisations believe that fossil fuels should be regulated the way nuclear weapons are, and are pushing the idea of a **fossil fuel non-proliferation treaty (FF-NPT)**.

**What is Fossil Fuel Non-Proliferation Treaty (FFPT)?**

The **Fossil Fuel Non-Proliferation Treaty (FFPT)** is an international initiative aimed at addressing the global reliance on fossil fuels—coal, oil, and gas—by phasing out their production and use. It draws inspiration from successful global treaties like the **Nuclear Non-Proliferation Treaty** and seeks to tackle the root cause of climate change by focusing on the fossil fuel industry.

- The FF-NPT proposes to make it legally binding on nations to end fossil fuel extraction, wind down existing production, and manage a just transition to renewable energy.

**It operates on three pillars —**

- **Non-proliferation**, which is a global cooperation model to end the expansion of coal, oil and gas production;
- **a fair phase-out**, which comprises an equitable plan to shut down existing fossil fuel production in a way that nations with the capacity and historical responsibility for emissions transition fastest and empowers others;
- **'just transition'**, which calls for fast-tracking the adoption of renewable energy and economic diversification away from fossil fuels such that no worker, community or country is left behind.
- **Since it was conceptualised in 2016 and officially launched in 2019, the FF-NPT has hit the wall of finance.**

## Key Objectives of the FFPT-

### Prevent the Expansion of Fossil Fuels:

- Halt the development of new fossil fuel projects.
- End exploration and subsidies for coal, oil, and gas production.

### Phase Out Existing Production:

- Implement a fair and just transition plan to phase out existing fossil fuel production, ensuring it aligns with the **1.5°C target** under the Paris Agreement.

### Promote Clean Energy Transition:

- Support investments in renewable energy sources and technologies.
- Focus on equity, ensuring developing countries have access to resources for the energy transition.

## Why is FFPT Important?

### Rising Emissions:

- Fossil fuels account for over **75% of global greenhouse gas emissions** and are the largest contributors to climate change.

### Inadequate Global Action:

- Current climate agreements, like the Paris Agreement, focus on reducing emissions but do not explicitly address fossil fuel production.

### Inequities in Impact:

- Fossil fuel-dependent economies and vulnerable communities bear the brunt of climate change impacts, requiring a fair approach to transition.

## India's Perspective:

### Dependence on Fossil Fuels:

- India is the third-largest emitter of greenhouse gases, with coal being a dominant energy source.
- Global Carbon Project's report estimates that India's fossil fuel emissions are set to rise by 4.6 per cent in 2024.

### Energy Security Concerns:

- While committed to expanding renewable energy, India needs a phased approach to ensure energy access for its large population.

**Role in FFPT:**

- India could advocate for financial and technological support under the treaty, ensuring a just transition for its economy.

**National Asset Reconstruction Company Limited (NARCL)**

**Why in News?** The Finance Minister has recently urged lenders not to overburden customers with insurance products they do not require, and focus on mobilising deposits and lending; banks also nudged to be 'more assertive' on resolving distressed assets through NARCL.

**About the National Asset Reconstruction Company Limited (NARCL):**

- The National Asset Reconstruction Company Limited (NARCL), often referred to as a "**bad bank**", is an entity established by the Government of India to help resolve the issue of non-performing assets (NPAs) in the banking system.
- It focuses on **purchasing and managing large-value bad loans from commercial banks** to clean up their balance sheets and improve their capacity to lend to productive sectors of the economy.

**Why NARCL was Created?**

- **Rising NPAs:** Indian banks, especially public sector banks, have been burdened with high levels of NPAs. This limits their ability to lend and affects their financial stability.
- **Stalled Lending Cycle:** Banks stuck with bad loans cannot lend effectively to businesses, impacting economic growth.
- **Need for a Centralized Solution:** Individual banks handling bad loans on their own was inefficient. A specialized institution like NARCL was created to manage these loans centrally and systematically.

**Key Features of NARCL****Majority-owned by Public Sector Banks (PSBs).**

- It operates in collaboration with the India Debt Resolution Company Limited (IDRCL), which is tasked with managing and resolving the bad loans.
- It aims to take over large-value NPAs (Rs500 crores and above) from banks.

- The government provides a Rs **30,600 crore guarantee** to back security receipts issued by NARCL, minimizing risks for banks.
- NARCL buys NPAs from banks at a discounted rate, issues security receipts to banks for the purchased loans, and collaborates with IDRCL to recover or resolve the debts.

#### **The Acquisition Strategy:**

##### **Payment Structure:**

- **15% in Cash:** NARCL pays 15% of the agreed value of the bad loan upfront in cash to the bank.
- **85% in Security Receipts (SRs):** The remaining 85% of the payment is made in the form of **security receipts (SRs)**, which are financial instruments representing the loan's value.

##### **Government Guarantee:**

- The SRs issued by NARCL are backed by a **government guarantee** worth ₹30,600 crores.
- The guarantee is valid for **five years**, ensuring that banks receive the payment in case of shortfalls in recovery.

##### **Focus on Large-Value NPAs:**

- NARCL primarily targets loans worth ₹500 crores or more to maximize its impact.

##### **Value Determination:**

- The valuation of the bad loan is based on its **expected recovery value** rather than the loan's original or outstanding amount.
- This ensures that the pricing reflects the realistic chances of recovery.

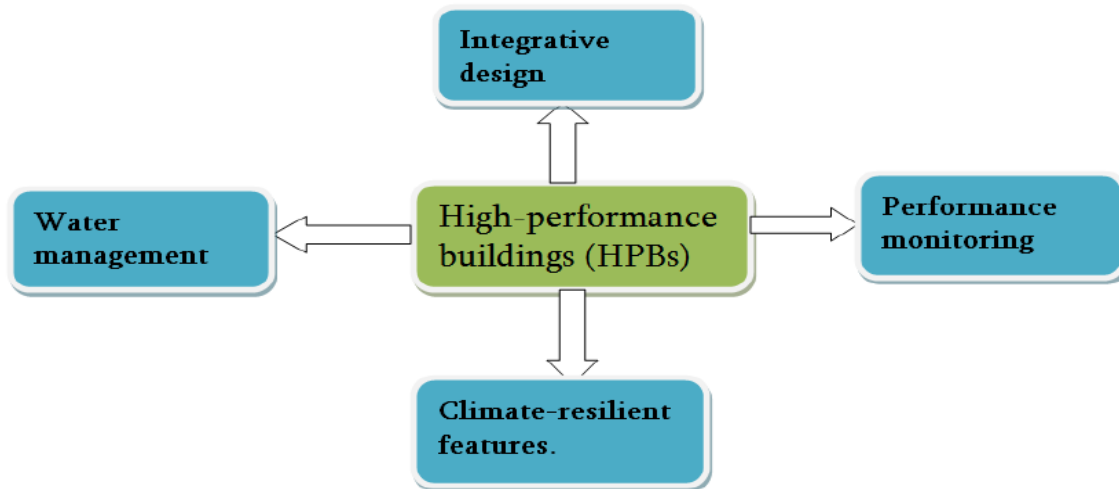
## **High-performance buildings (HPBs)/How can design help a building be more climate-resilient?**

**Why in News ?** High-performance buildings are at the forefront of sustainable construction, focusing on energy efficiency, resource conservation, and climate resilience through integrative design and the use of sustainable materials; they **employ passive and active strategies to minimise environmental impact**

**What are High-performance buildings (HPBs)?**

**High-performance buildings (HPBs)** are structures designed to deliver superior levels of energy efficiency, sustainability, comfort, and operational performance.

- High-performance buildings (HPBs) are at the forefront of sustainable construction, tackling urgent needs like energy efficiency, climate resilience and resource conservation. As climate change intensifies, resources become scarcer, and urbanisation increases, HPBs — built to consume less energy, conserve resources, and withstand unpredictable weather — are an important part of achieving and keeping sustainable living.



- Building an HPB requires key practices such as **integrative design**, **lifecycle-based materials**, efficient energy and water management, **performance monitoring**, and climate-resilient features.

#### What is integrative design?

- At the core of HPBs is an integrative design approach that encourages architects, engineers, sustainability consultants, and building owners to work together and set measurable performance goals.
- These goals might aim for, say, **90% daylighting in occupied spaces** or cooling in **700 sq. ft. per tonne** of air-conditioning in commercial buildings. This approach ensures all building systems — air-conditioning, lighting, and building envelope components like walls, roofs, and windows — work together smoothly.
- **Digital modelling also plays a crucial role** by creating a virtual representation of the project, allowing the team to predict performance outcomes, guide optimal system sizing, and test different strategies. With simulations, the team can adjust their strategies to meet energy-saving and thermal comfort goals before construction even

begins. This predictive approach helps achieve high operational efficiency, improves resilience, and reduces long-term costs.

- **An example of an integrative design process in HPBs** is the early use of passive design strategies, whereby designers make the most of **natural sunlight and plan** to use materials that retain heat (thermal mass). These strategies reduce heating and cooling demands, allowing designers to choose equipment of the right size.

## The Army Tactical Missile System (ATACMS)

**Why in News ?** The USA has recently allowed Kyiv to use the Army Tactical Missile System, also known as ATACMS, inside Russia.

### What is ATACMS?

- The Army Tactical Missile System (ATACMS) is a surface-to-surface missile developed by the United States.
- It is designed to provide long-range precision strikes against high-value, time-sensitive targets, such as enemy command centers, air defense systems, logistics hubs, and concentrations of troops. Manufactured by Lockheed Martin, ATACMS missiles are fired from mobile launchers like the M270 Multiple Launch Rocket System (MLRS) and the M142 High Mobility Artillery Rocket System (HIMARS).

### Key Features of ATACMS:

- Depending on the variant, ATACMS has a range of up to 300 kilometers (186 miles), enabling strikes far behind enemy lines.
- Equipped with either a unitary warhead (for precision strikes) or cluster munitions (dispersing submunitions over a wide area).
- Utilizes a combination of inertial navigation and GPS for precise targeting.
- Can be used in all weather conditions and against a variety of targets.
- Compatible with U.S.-supplied HIMARS and MLRS systems, widely used by NATO allies and partners.

### What is the Storm Shadow (SCALP EG)?

The Storm Shadow is a long-range air-launched cruise missile developed by MBDA, a European defense contractor.

- It is designed for precision strikes against high-value, well-protected targets such as bunkers, air defense systems, command centers, and infrastructure. The missile is primarily used by the **Royal Air Force (RAF)** of the United Kingdom, the French Air Force, and other NATO allies.

#### **Key Features of Storm Shadow (SCALP EG):**

- The Storm Shadow has an impressive range of **250-300 kilometers (155-186 miles)**, allowing it to strike targets deep within enemy territory while keeping the launch platform out of enemy air defenses' reach.
- It is equipped with a combination of inertial navigation, GPS, and a terrain reference navigation system (TERCOM), enabling it to follow precise flight paths, even in adverse weather conditions or GPS-jamming environments.
- The missile carries a 200-kg (440 lb) Broach warhead, which is capable of penetrating hardened targets, including bunkers, command and control facilities, and infrastructure.
- The Storm Shadow can be launched from twin-engine aircraft such as the Tornado **GR4, Eurofighter Typhoon, and Rafale**, which are equipped to carry and deploy the missile.
- Storm Shadow has been used in various military conflicts, including the Libyan Civil War (2011), Syria, and Iraq, demonstrating its effectiveness in modern warfare scenarios.

#### **Significance and Geopolitical Implications:**

- Storm Shadow/SCALP EG provides the military with a powerful means to project force at long distances with precision, allowing it to neutralize critical enemy assets without the need for ground invasion.
- Its ability to strike deep into enemy territory makes it an important deterrent against threats to national security, as it complicates an adversary's planning and response.
- The use of Storm Shadow is significant in the context of international defense cooperation, particularly within NATO, where its deployment in allied forces strengthens joint operations and interoperability.



## The G20 Summit 2024

**Why in News?** The G20 Summit 2024, held in Rio de Janeiro, Brazil, under the presidency of Luiz Inácio Lula da Silva

### Key Focused areas:

It focused on critical global issues with mixed outcomes.

### Climate Change:

- Despite high expectations, no significant breakthroughs were achieved. Leaders acknowledged the need to scale up climate finance from billions to trillions but did not specify sources or commitments. There was no reiteration of the pledge for an equitable transition away from fossil fuels

### Global Conflicts:

- The Ukraine war dominated discussions. The G20 supported peace initiatives but avoided explicitly condemning Russian aggression.
- Ceasefire calls were also made for conflicts in Gaza and Lebanon, with leaders urging resolutions that would allow citizens to return safely

### Hunger Alliance:

- President Lula spearheaded a global alliance against hunger, gaining support from 82 countries. The initiative aims to provide financial aid and replicate successful programs, targeting half a billion people by the decade's end.

**Taxing the Wealthy:** The summit endorsed cooperation on taxing ultra-high-net-worth individuals to reduce inequalities. This historic move aims to enhance tax transparency and counter tax avoidance while respecting national tax sovereignty.

**Digital and Economic Challenges:** Discussions included addressing rising digital economic disparities and fostering inclusive growth. The G20 also emphasized reforms in multilateral institutions like the IMF and World Bank to reflect contemporary economic realities.

### Key Highlights of PM Modi's Speech at the G20 Summit:

- Prime Minister Narendra Modi's speech at the G20 Summit in Rio de Janeiro highlighted India's strides in inclusive development, women empowerment, and global sustainability.

- He Advocated a '**Back to Basics and March to Future**' approach for tackling food security.

**Inclusive Development:**

- India has lifted 250 million people out of poverty in the last decade and provides free food grains to over **800 million citizens**.
- Around 550 million people are covered under the world's largest health insurance program, and free health insurance benefits have been extended to senior citizens over 70.

**Women-Led Empowerment:**

- More than 300 million women micro-entrepreneurs have gained access to banking credit.
- Special emphasis on women's nutrition and health under campaigns like **Saksham Anganwadi and Nutrition 2.0**.

**Agricultural Innovation:**

- India has developed over 2,000 climate-resilient crop varieties and initiated a **Digital Agriculture Mission**.
- Farmers received benefits through the world's largest crop insurance scheme, amounting to **\$20 billion in coverage for 40 million farmers**.

**Global Partnerships:**PM Modi endorsed Brazil's initiative for a "Global Alliance Against Hunger and Poverty" and reiterated India's commitment to global food security through humanitarian aid to countries like **Malawi, Zambia, and Zimbabwe**.

- India highlighted the importance of addressing the Global South's challenges in food, fuel, and fertilizer supply chains.

**Environmental Sustainability:**

- India focuses on natural, organic, and sustainable farming while promoting millets (Sri Ann) as a nutritional solution.

## Judicial reform in India: Challenges & Way forwards

### Responsive Judicial System:

Article published in Indian express: 22 Nov,2024

- Exactly one year ago, the Supreme Court's Centre for Research and Planning (CRP) published a report, 'State of the Judiciary', in which the current Chief Justice of India (CJI) Sanjiv Khanna's suggestions find a place.

### What are challenges that article highlights?

- ❖ The **administrative bottlenecks**
- ❖ Subordinate Court Backlogs - Over 45 million civil and criminal cases are pending
- ❖ **55 per cent of a judicial officer's day in the criminal courts** is spent on routine administrative tasks such as **issuing summons and setting dates**, rather than substantive judicial work.
- ❖ Case Management Problems -Poor case-flow management systems
- ❖ Structural Issues - Limited resources and infrastructure
- ❖ Administrative Overload on Judges
  - ❖ **Shortage of qualified people in the court registries.**
  - ❖ There is a **27 per cent shortage** of non-judicial staff across the country. Some states like Bihar, Rajasthan and Telangana had shortages veering nearer to **50 per cent**.

### Reforms Needed :

- ❖ Performance Metrics for Judges & positive reinforcement for performers (SC Centre for research and planning)
- ❖ Empower supervisory authorities (High Courts) to oversee subordinate court performance
- ❖ Leveraging Technology – VC facility – Summoning etc
- ❖ Induction of Experts from Outside the Judiciary
- ❖ **Divesting administrative responsibilities**
- ❖ **open reviews of case disposal**

**What is Open review?**

**Open reviews** involve a transparent and systematic examination of how cases are being managed and disposed of by lower courts.

This can include:

- **Performance audits** of judges and court staff.
- Monitoring the **pendency of cases** and reasons for delays.
- Identifying procedural bottlenecks or inefficiencies in case management.
- Ensuring accountability and adherence to prescribed timeframes for different case types.

**Case study: Cataract Blindness Project of the 1990s-**

**Steps Taken :**

- **e-filing**
- **digitization**
- **half the district courts**
- **Delhi High Court's Zero Pendency Courts project**

## One Nation One Subscription (ONOS)

**Why in News?** Prime Minister Narendra Modi-led Union Cabinet has recently approved 'One Nation One Subscription', a new central government scheme to ensure country-wide access to scholarly research articles and journal publications.

The Modi government has allocated Rs 6,000 crore for a period of three years for the initiative which is in line with the goals of **Viksit Bharat @ 2047**, National Education Policy (NEP) 2020 and Anusandhan National Research Foundation (ANRF).

**Key features of One Nation One Subscription (ONOS):**

- A total of 30 major international journal publishers have been included in the One Nation One Subscription scheme.
- All of the nearly **13,000 e-journals** published by these publishers will be accessible to more than 6,300 government higher education institutions and central government R&D institutions.
- The scheme will be administered through a simple, user-friendly and fully digital process.

- A total of about **Rs 6,000 crore** has been allocated for three calendar years — 2025, 2026 and 2027.
- The benefits of the scheme will be provided through a national subscription coordinated by a central agency, namely the **Information and Library Network (INFLIBNET)**, an autonomous inter-university centre of the University Grants Commission (UGC).
- The Department of Higher Education will have a unified portal, **One Nation One Subscription**, through which the institutions can access the journals.
- The **state governments** will also be requested to carry out campaigns at their level to **maximise usage of the unique** facility by students, faculty and researchers of all government institutions.

## PAN 2.0 Project

**Why in News?** The **Union Cabinet** approved the **PAN 2.0 Project** recently, for PAN to be made the “the common identifier for businesses” and to make PAN as the “single source of truth and data consistency”.

- The 10-digit alphanumeric Permanent Account Number (PAN), issued by the Income Tax Department, is set for an upgrade, with a QR code to be incorporated in all new and old cards, a completely online application process, a merger of all existing identification numbers to **make PAN as the common identifier** for businesses, in addition to a data vault system for data protection and cybersecurity purposes.
- **With the upgrade**, PAN is expected to become a strong source of identification and information for the authorities, as it is already linked to the other identification number of Aadhaar.
- The existing **PAN holders, which are around 78 crore in number**, can upgrade their PAN cards. The number or PAN will remain the same for existing users, but the card will need to be upgraded, which the government said would be free of cost for the users.

### What is the PAN 2.0 Project?

- Under the project, the existing PAN system will be upgraded completely, the IT backbone will be revamped and PAN will be made as a common business identifier for all digital systems of specified government agencies.

### What are the features of PAN 2.0?

- Apart from the QR-code feature for all new and existing PAN cards, the PAN 2.0 project aims to set up a unified portal along with a “**mandatory PAN data vault system**” for all entities using PAN data. This is being done for data protection and cybersecurity purposes.
- “One of the most important features would be a **PAN data vault system**. The PAN related information is used by many entities such as banks, insurance companies.
- Those (entities) who take details of PAN, they will have to keep PAN data safely, mandatorily through the data vault system.
- There will also be a unified portal as the existing software is nearly 15-20 years old.
- **The PAN 2.0 project will enable technology-driven** transformation of taxpayer registration services with an aim to improve ease of access and service delivery.
- This will be an upgrade of the current PAN/TAN 1.0 eco-system consolidating the core and non-core PAN/TAN activities as well as PAN validation service.

### What does this mean for individuals and businesses?

- Existing users will have the option to upgrade for the PAN 2.0 card. The details about the application process and the timeline are yet to be released by the Income Tax Department.
- The QR-code feature on new and old PAN cards will mean an **enhanced level of integration of financial transactions with the tax department**. The QR code was introduced in PAN in 2017.
- “The existing PAN card holders can regenerate the old PAN card to the QR code-enabled ones. PAN holders having an old PAN Card without QR code have an option to apply for a new card with QR code. In PAN 2.0, the submission of applications is going to be online (paperless),”

### What are the existing identification numbers of PAN and TAN?

- A 10-digit alphanumeric number, PAN, enables the Income Tax Department to link all transactions of a person with the department. These transactions include tax payments, **Tax Deducted at Source (TDS)** / Tax Collected at Source (TCS) credits,

returns of income, specified transactions. PAN, thus, acts as an identifier for the person with the tax department. Once PAN is allotted, it remains the same forever. It is mandatory to quote **PAN on filing of income tax return**.

- TAN stands for Tax Deduction and Collection Account Number, which is a 10-digit alphanumeric number issued by the Income Tax Department. TAN needs to be obtained by all **persons responsible for deducting or collecting tax at source**. It is compulsory to quote TAN in TDS/TCS return, any TDS/TCS payment challan, TDS/TCS certificates.

## Basic Statistical Return (BSR)

**Why in News?** The RBI has recently released quarterly Basic Statistical Return (BSR).

**What is Basic Statistical Return (BSR)?**

- It refers to a set of statistical returns that banks are required to submit to the Reserve Bank of India (RBI).
- These returns are designed to collect granular data about various banking activities, such as deposits, advances, and investments.
- The information is crucial for policy formulation, economic analysis, and regulatory purposes.

**Purpose of Basic Statistical Returns:**

**Policy Formulation:** Helps RBI in designing monetary policies and assessing their impact.

**Economic Analysis:** Provides data for analyzing banking sector trends and their influence on the economy.

**Regulation and Supervision:**

- Assists RBI in monitoring compliance with regulatory requirements.

**Data Dissemination:** Serves as a source of information for researchers, policymakers, and other stakeholders.

**Types of BSR Reports:**

- The BSR system primarily includes the following:

**BSR-1 (Advances Data):**

- Captures detailed information on loans and advances granted by banks.

- Parameters include borrower details (sector, size, purpose, etc.), interest rates, and type of loan.

**BSR-2 (Deposit Data):**

- Focuses on deposits held by banks.
- Includes information on types of deposits (savings, current, term), ownership (individuals, corporates, government), and interest rates.

**BSR-4 (Credit Monitoring Arrangement Data):**

- Covers large advances for credit monitoring.

**BSR-5 and Others:**

- Collects other banking-related statistical data.

## Global Cooperative Conference 2024:

**Why in News?** Prime Minister Narendra Modi launches the United Nations International Year of Cooperatives 2025 and released a commemorative postage stamp at **Bharat Mandapam in New Delhi**.

Prime Minister Shri Narendra Modi also launched the **United Nations' International Year of Cooperatives 2025**.

**Key Points of the conference:**

- The theme of the conference is based on '**Sahkar Se Samriddhi**' given by PM 3 yrs back.
- Through 2 lakh new **Primary Agricultural Credit Societies (PACS)**, almost all village panchayat will have cooperative society
- The farmers of India will be able to increase their access to the domestic as well as global market through National Cooperative Exports Limited (**NCEL**), National Cooperative Organics Limited (**NCOL**) and Bharatiya Beej Sahakari Samiti Limited (**BBSSL**)
- Indian Farmers Fertiliser Cooperative (**IFFCO**), Krishak Bharti Cooperative (**KRIBHCO**) and Amul have set examples in the field of cooperatives all over the world
- The government will establish a **cooperative university**



**Key Objectives:**

- Reaffirming the role of cooperatives as **people-centered and purpose-driven** organizations that contribute to social and economic equality
- Highlighting cooperatives' contributions to **tackling climate change**, including initiatives like planting 10,000 Peepal trees to offset carbon footprints and advocating for carbon neutrality
- Developing strategies to create **supportive policies and entrepreneurial ecosystems** that enhance the effectiveness of cooperatives
- **Establishing an Action Agenda to align cooperative initiatives** with the Sustainable Development Goals (SDGs)
- Encouraging purposeful leadership to **build just, equitable, and resilient societies**
- Offering a platform for **global participants to share ideas, showcase innovations**, and strengthen inter-cooperative collaborations.

**About the Primary Agricultural Credit Societies (PACS):**

- Primary Agricultural Credit Societies (PACS) are grassroots-level cooperative institutions in India, primarily catering to the financial needs of farmers.
- They are the **smallest and most basic units** in the three-tier structure of cooperative credit in India, which includes:
  - PACS at the **village level**.
  - District Central Cooperative Banks (DCCBs) at the **district level**.
  - State Cooperative Banks (SCBs) at the **state level**.

## Zantac/N-nitrosodimethylamine (NDMA)

**Why in News ?** GSK, a leading multinational pharmaceutical company was recently sued by the US Food and Drug Administration (FDA) and the European Medicines Agency (EMA) that banned Zantac sales due to high NDMA levels, a cancer-causing chemical.

**About Zantac:**

- Zantac (ranitidine) is a widely used medication previously prescribed to treat conditions like **heartburn, acid reflux, and stomach ulcers**.
- However, it became the subject of lawsuits and regulatory actions after it was discovered that **ranitidine products could contain NDMA** (N-nitrosodimethylamine), a

chemical classified as a probable human carcinogen by the World Health Organization (WHO) and other health bodies.

#### About NDMA:

- NDMA (N-nitrosodimethylamine) is a chemical compound that is considered a probable **human carcinogen**, meaning it can potentially cause **cancer in humans**.
- It is a member of the **nitrosamine family** of chemicals, which are often produced during certain chemical reactions, such as when organic compounds like **ranitidine** (the active ingredient in Zantac) degrade.

**Sources of NDMA:** NDMA can form naturally in some foods (like cured meats) and beverages, but it is also used in industrial processes.

- The compound can also form in drugs like ranitidine when they are exposed to heat or when they degrade over time. This is why it became a concern when it was found in Zantac and other similar drugs.

#### Health Risks:

- Long-term exposure to high levels of NDMA can increase the risk of cancer, particularly cancers affecting the liver, kidneys, and digestive tract.
- NDMA is known to be **toxic and can damage DNA**, which can lead to **cancerous cell growth**.

#### Regulatory Concerns:

- The discovery of **NDMA in Zantac** led to major concerns, prompting drug recalls and **bans** in various countries, including **the U.S. and Europe**.
- Regulatory bodies like the **U.S. FDA** and the **European Medicines Agency (EMA)** started investigating the presence of NDMA in ranitidine products, and in 2020, they recommended suspending sales of **Zantac and similar drugs due to unsafe levels of NDMA**.

#### Legal Implications:

- Lawsuits have been filed by consumers who claim that their cancer diagnoses were caused by taking Zantac, with accusations that the company did not adequately warn consumers about the risks.

## Successful Nationwide Implementation of E-Daakhil Portal

**Why in News ?** E-Daakhil Portal is now operational across all states and union territories of India.

**Recent Milestone:** The portal was launched in Ladakh on 22nd November 2024, making it a truly pan-India initiative.

### **Background on Consumer Protection Act, 2019:**

- The Consumer Protection Act 2019 was notified and enforced on 20th July 2020.
- The introduction of E-Daakhil was a response to consumer challenges, especially during the COVID-19 pandemic, providing a cost-effective, fast, and hassle-free way to file consumer complaints.

### **Purpose and Features of E-Daakhil Portal:**

- **E-Daakhil** is an online platform designed to simplify the consumer grievance redressal process.
- Consumers no longer need to travel to file complaints, as they can do so from the comfort of their home.
- **Paperless and Transparent:** The platform ensures transparency and a paperless process for complaint filing.
- **User-Friendly Interface:** Easy navigation for consumers and advocates to file complaints and track progress.
- **Authentication Process:** Users sign up via OTP or email activation to authenticate their identity before filing complaints.

### **Launch and Growth of E-Daakhil:**

- The portal was first launched on **7th September 2020** by the **National Consumer Dispute Redressal Commission (NCDRC)**.
- By end of 2023, it was operational in 35 States/UTs (excluding Ladakh).
- The portal's national rollout reached **Ladakh** on 22nd November 2024, providing coverage across all regions of India.

**Success Stories of E-Daakhil:**

- **Sambalpur District Commission:** A case was ruled in favor of a complainant in January 2024 for a faulty **Hero Electric Atria**, awarding Rs. 25,000 as compensation and Rs. 5,000 for litigation expenses.
- **Andaman District Commission:** A case filed on April 19, 2022, resulted in a refund of Rs. 3,980 and Rs. 10,000 for mental agony due to a failed UPI transaction, with interest.
- **Future Development:** E-Jagriti Portal
- The Government is also working on the development of **E-Jagriti**, an advanced system to further improve the case filing and management process.
- **E-Jagriti** will facilitate seamless communication between all parties involved, reduce delays, minimize paperwork, and ensure timely resolution of disputes.

**Current Statistics of E-Daakhil Portal:**

- 2,81,024 users have registered on the E-Daakhil portal.
- 1,98,725 cases have been filed through the platform.
- 38,453 cases have been successfully disposed of.

## Study on Wild/Bush Fire Pollution: Lancet

**Why in News?** The Lancet has recently published a report on Wild fire pollution and its impacts.

**Key findings:****Global Death Toll from Fire Pollution:**

- More than 1.5 million deaths annually are attributed to pollution from landscape fires globally.
- PM2.5 and ozone emissions from fires are the primary contributors to health impacts.

**India's Statistics:**

- On average, **1.2 lakh deaths** annually in India (2000–2019) are linked to air pollution from landscape fires.
- **25.54 lakh deaths during this 20-year period** in India were caused by respiratory and cardiovascular diseases due to fire-related air pollution.

- Agricultural burning in northern India is a significant contributor to this pollution.

#### Most Affected Countries:

The top five countries with the largest fire-related casualties:

- China
- Democratic Republic of Congo
- India
- Indonesia
- Nigeria

#### Causes and Impact of Landscape Fires:

- Landscape fires include **agricultural burning, forest fires, and wildfires** in natural or cultural landscapes like grasslands and vegetated areas.
- Fine particulate matter (**PM2.5**) and **black carbon** released during these fires can travel **hundreds or thousands** of kilometers, affecting vast populations.
- **Cardiovascular deaths:** 450,000 annually due to fire pollution.
- **Respiratory deaths:** 220,000 annually attributed to fire-related air pollution.

#### Socioeconomic Disparities:

- Deaths caused by fires are **four times higher** in **low-income countries** compared to **high-income** ones.
- Lower socioeconomic countries see **higher deaths** due to **respiratory diseases from fire pollution**.
- Cardiovascular deaths due to fire pollution have increased globally by **1.67% per year**.

#### Contribution to Climate Change:

- **About 90%** of **PM2.5** emissions from landscape fires are due to **wildfires**.
- **Black carbon** from fires contributes to global warming and climate change.
- Climate change exacerbates fire frequency and severity, creating a feedback loop.

#### Preventive Measures:

- In Maharashtra, fire watchers from forested villages are appointed to monitor and control fires.
- Awareness campaigns are conducted to discourage burning agricultural waste, especially during winter.
- In 2019, fewer fire incidents were reported in Maharashtra due to heavy rains.

**Expert Opinions:**

**Prakash Doraiswamy:** Fires contribute significantly to air pollution and long-term climate impacts. Fine particles from fires cause severe respiratory and cardiovascular health effects.

**Professor Yuming Guo:** The global health burden from fire pollution is expected to rise with increasing fire incidents due to climate change.

**Importance of Action:**

- **Enhanced air quality monitoring** and preventive strategies are essential to mitigate the health and climate impacts of fire pollution.
- Addressing root causes like agricultural practices and climate **change** is critical to reducing fire incidents and their consequences.

## Marine Carbon Dioxide Removal (mCDR)

**Why in News ?** The term was recently in news regarding the role of ocean in mitigating the climate change.

About Marine Carbon Dioxide Removal (mCDR): A Comprehensive

- Marine Carbon Dioxide Removal (mCDR) encompasses a set of strategies aimed at reducing atmospheric carbon dioxide (CO<sub>2</sub>) levels by enhancing the ocean's natural capacity to absorb and store CO<sub>2</sub>. These methods leverage the ocean's role as a significant carbon sink, which absorbs approximately 25% of global CO<sub>2</sub> emissions annually.

**Key mCDR Approaches:****Ocean Alkalinity Enhancement (OAE):**

- Adding alkaline substances like silicate or carbonate minerals to seawater increases the ocean's ability to absorb CO<sub>2</sub>.
- Converts CO<sub>2</sub> into stable bicarbonate ions, reducing ocean acidification.

**Ocean Fertilization:**

- Involves adding nutrients like iron, nitrogen, or phosphorus to stimulate phytoplankton growth.
- Phytoplankton absorb CO<sub>2</sub> during photosynthesis, and some of the carbon sinks to the ocean floor as organic matter after their death.

**Artificial Upwelling and Downwelling:**

- **Upwelling:** Pumps nutrient-rich deep waters to the surface to promote phytoplankton growth.
- **Downwelling:** Enhances the transport of CO<sub>2</sub>-rich surface waters to deeper layers, where CO<sub>2</sub> is stored for centuries.

**Macroalgae Cultivation:**

- Growing large-scale seaweed farms to capture CO<sub>2</sub>.
- Harvested biomass can be used for bioenergy or sequestered by sinking it into the deep ocean.

**Electrochemical Methods:**

- Using electricity to induce chemical reactions that remove CO<sub>2</sub> from seawater.
- Produces byproducts like hydrogen or alkalinity-enhancing compounds that can further aid carbon capture.

**Direct Ocean Capture:**

- Extracting CO<sub>2</sub> directly from seawater using engineered systems.
- Concentrated CO<sub>2</sub> can be stored geologically or repurposed industrially.

**Advantages of mCDR:****Massive Potential for Carbon Removal:**

- The ocean's vast surface area and volume offer unparalleled capacity for CO<sub>2</sub> absorption.
- Co-benefits for Marine Ecosystems:
  - Some methods, such as macroalgae cultivation, enhance biodiversity and provide sustainable aquaculture opportunities.
- Climate Change Mitigation:
  - Reduces greenhouse gas concentrations, contributing to global temperature stabilization.

## Windfall Gains Tax:

**Why in News?** The government has recently withdrew the windfall gains tax on domestic production of crude oil and export of diesel, petrol, and **aviation turbine fuel (ATF)**, scrapping the levy that was **introduced 30 months ago amid a surge** in the prices of crude oil and key fuels in the international market in the wake of Russia's invasion of Ukraine.

### About Windfall Gains Tax:

- A windfall gains tax is a one-time or recurring tax levied on unexpected or extraordinary profits earned by individuals or businesses.
- These "windfall" profits typically result from favorable external conditions rather than a company's intrinsic performance, such as sudden market changes, geopolitical events, or regulatory decisions.

### Key Features of Windfall Gains Tax:

- To capture unearned or excessive profits for public benefit.
- Often used to address income inequality, fund welfare programs, or finance public projects during crises.
- Sharp increase in commodity prices (**e.g., oil, gas, minerals**).
- Economic events causing disproportionate gains for certain sectors (e.g., energy companies during global crises).
- Typically imposed on industries benefiting from price surges, such as:
  - Oil and gas
  - Mining
  - Utilities
  - Technology or financial firms in rare cases.



**Aviation Turbine Fuel (ATF):**

- Aviation Turbine Fuel (ATF) is a specialized type of fuel used to power aircraft equipped with jet engines and turboprops. It is a high-performance fuel designed to ensure safety, efficiency, and reliability in demanding aviation conditions.

**Key Features of ATF****Composition:**

Primarily a kerosene-based fuel, refined to meet stringent quality standards.

Additives are included to prevent icing, corrosion, and improve thermal stability.

**Types of ATF:**

**Jet A:** Commonly used in the United States.

**Jet A-1:** Used globally, including in India, and has a lower freezing point ( $-47^{\circ}\text{C}$  vs.  $-40^{\circ}\text{C}$  for Jet A).

**Jet B:** Rarely used, suitable for extremely cold climates due to its lower freezing point but higher volatility.

**Performance Requirements:**

- High energy density for maximum efficiency.
- Low freezing point to withstand cold temperatures at high altitudes.
- Thermal and oxidative stability to prevent engine deposits.

## Coastal Erosion in India: A Growing Crisis

**Why in News ?** A recent Lok Sabha session highlighted that **33.6% of India's coastline** is under threat from erosion, emphasizing the need for robust coastal management.

**India's Coastline:**

- Spanning over **7,500 km**, India's coast includes **9 states**, **2 UTs**, and **66 coastal districts**.
- Coastal morphology: **43% sandy beaches**, **11% rocky coasts**, **36% muddy flats**, **10% marshy areas**, **97 estuaries**, and **34 lagoons**.

*Extent of Erosion:*

- **33.6% of the coastline** faces erosion, while **26.9% shows accretion**, and **39.6% remains stable** (NCCR data).

**State-wise highlights:**

**Karnataka:** 48.4% of Dakshina Kannada's coastline eroded.

**West Bengal:** 60.5% erosion, especially in the Sundarbans.

**Kerala:** 46.4% of the coastline eroded.

**Tamil Nadu:** 42.7% of the coastline affected.

*Causes of Coastal Erosion:***Natural Factors:**

- Wave action, sea-level rise, storm surges, and cyclones.

**Anthropogenic Factors:**

- Coastal development, illegal sand mining, and deforestation of mangroves.

*Impacts:*

- Loss of land affecting agriculture and housing.
- Displacement of communities, causing socio-economic challenges.
- Infrastructure damage to roads, bridges, and buildings.
- Biodiversity loss in mangroves, coral reefs, and wetlands.

**Mitigation Measures:****Policy Initiatives:**

- Integrated Coastal Zone Management Project (ICZMP) in Gujarat, Odisha, and West Bengal.
- Coastal Regulation Zone (CRZ) Notification (2019) with no-development zones (NDZ).
- Coastal Vulnerability Index (CVI) and multi-hazard vulnerability maps by INCOIS.

**Innovative Engineering:**

- Artificial reefs, eco-friendly breakwaters, and geo-tube installations (e.g., Odisha's Pentha village).

**Ecosystem-Based Solutions:**

- Mangrove plantations and shelterbelt vegetation to stabilize coastlines.
- Community and Awareness:
- Community-driven conservation and education campaigns on coastal ecosystem importance.

**Conclusion:**

- Addressing coastal erosion requires a multi-faceted approach combining scientific research, community involvement, and sustainable development to safeguard India's coastal ecosystems and livelihoods.

## Sugamya Bharat Abhiyan: Achievements

**Why in News?** The completions of 9 years of Sugamya Bharat Abhiyan was recently highlighted in major news papers.

The article highlights **Sugamya Bharat Abhiyan (Accessible India Campaign)** as a transformative initiative launched to create an inclusive environment for persons with disabilities (PwDs) in India. It reflects on its achievements over the past nine years and its transition into the broader **Scheme for Implementation of the Rights of Persons with Disabilities Act (SIPDA)**, emphasizing accessibility as an ongoing national priority.

**Key Points:**

**Background:**

- India's prior efforts to ensure accessibility for PwDs were unstructured.
- The **Sugamya Bharat Abhiyan**, launched in 2015, aimed to address gaps in the Persons with Disabilities Act, 1995, by setting enforceable standards.



**Achievements:**

**Infrastructure:** Retrofitting over 1,700 government buildings and auditing accessibility in 1,671 others.

**Transportation:** Improvements in airports, railway stations, buses, and bus stations with accessibility features.

**Digital Accessibility:** Making 95 Central Government and 676 State Government websites accessible.

**Education & Media:** Establishing the Indian Sign Language Research and Training Centre (ISLRTC) and promoting accessible TV content.

**Awareness:** Launching the Sugamya Bharat App for reporting accessibility issues and initiating curriculum development in technical education.

**Ongoing Efforts:**

- Sector-specific accessibility guidelines for various sectors.
- Training programs for access auditors and web developers.
- Accessibility initiatives for pilgrimage sites and universal accessibility workshops.

**Financial Commitment:**

- Significant budget increases for PwD empowerment, with ₹1,143.89 crore spent in 2023-24, reflecting sustained government focus.

**Way Forward:**

- The campaign's integration into SIPDA ensures continued progress toward a fully accessible society.
- Emphasis on innovation, stakeholder collaboration, and sustained funding to empower PwDs.

**Conclusion:**

The **Sugamya Bharat Abhiyan** has laid a robust foundation for accessibility and inclusivity, ensuring dignity and independence for PwDs. Its achievements and integration into broader schemes demonstrate the government's commitment to creating an equitable society.

## World Wildlife Conservation Day

**Why in News?** World Wildlife Conservation Day (December 4) serves as an occasion to not only celebrate the country's rich biodiversity but also evaluate if enough is being done to protect the critically endangered species that find a home here.

**India's Rich Biodiversity and Global Significance**

**Biodiversity Statistics:**

- India covers only 2.4% of the world's land area but accounts for 7-8% of recorded species.

- Hosts **45,000 plant species** and **91,000 animal species**, contributing to its classification as a **megadiverse country**.

#### **Biogeographic Zones and Hotspots:**

- India has **10 biogeographic zones** and is home to four of the 34 globally recognized biodiversity hotspots:
  - The Himalayas
  - Indo-Burma
  - Western Ghats-Sri Lanka
  - Sundaland

#### **The Challenge of Coexistence**

##### **Conflict with Development:**

- India's growing population and economic trajectory demand natural resources like land, timber, coal, and forest produce, leading to habitat destruction.

##### **Cultural Reverence for Wildlife:**

- Indian mythology and traditions often hold wildlife in high regard.
- Unlike Africa's fenced reserves, Indian wildlife reserves are open, and hunting is banned as a recreational activity.

##### **Critically Endangered Species:**

- As of 2022, India has **73 critically endangered species** (an increase from 47 in 2011).
- The rise reflects both species decline and better data monitoring by the **Ministry of Environment, Forests, and Climate Change**.

##### **Endemic Mammals:**

- Of nine critically endangered mammal species, eight are endemic, restricted to specific areas:
- **Examples:** Kashmir stag (Hangul), **Malabar large-spotted civet**, **Andaman shrew**, Nicobar shrew, Namdapha flying squirrel.

##### **Limited Attention to Other Species:**

##### **Tourism Focus on Big Cats:**

- Lions, tigers, and cheetahs attract significant attention due to their tourism appeal but represent only a fraction of critically endangered species.

##### **Neglected Birds:**

- Species like the **Great Indian Bustard** face threats (e.g., powerlines in Rajasthan) but receive insufficient conservation focus.

**Conclusion:**

While India's cultural and natural heritage fosters wildlife conservation, economic growth and habitat conflicts pose significant challenges. The rising number of critically endangered species underlines the urgency of enhancing conservation efforts and public awareness.

**Lake-Effect Snow:**

**Why in News ?** The season's first major snowfall hit parts of **New York, Pennsylvania, and Michigan** during the busy holiday travel and shopping weekend. Cold temperatures and heavy snow are expected to continue into the week, creating hazards in the **Great Lakes, Plains, and Midwest regions**.

**The Nature of Lake-Effect Snow: Fluffy and Light**

- Lake-effect snow is characterized by its low water content, making it light, fluffy, and capable of piling up quickly.
- The snow-to-water ratio in lake-effect snow can reach 40:1, compared to the typical 10:1 ratio in standard snowfalls.

**Formation of Lake-Effect Snow:**

- Forms when cold, dry arctic air passes over the warmer, unfrozen waters of large lakes like the **Great Lakes**.
- **Warmth and moisture** from the lake rise, creating narrow bands of snow-producing clouds.
- Wind direction plays a crucial role in determining which areas experience snowfall.
- **Snow Belts:** Where the Snow Hits Hardest
- **Regions 20+ miles inland**, often with hilly terrain, experience the heaviest snowfall due to additional lift.
- Snowfall is highly localized, with heavy snow in one area and clear skies just a few miles away.

**Seasonal Timing of Lake-Effect Snow:**

- Occurs mainly in fall and early winter before lakes freeze.
- Can continue into spring if the lakes remain unfrozen.

**Record-Breaking Snowfalls:**

- Western New York cities like **Buffalo, Syracuse, and Rochester** receive over 8 feet of snow annually.
- **Montague, NY, holds** an unofficial record for 6.5 feet of snow in 24 hours (January 1997).
- Extreme events like 5 inches of snow in 20 minutes and thundersnow are notable phenomena.

**Beyond the Great Lakes: Other Locations:**

- Lake-effect snow is not exclusive to the **Great Lakes**; it occurs near other large bodies of water, such as **Utah's Great Salt Lake**.
- Local Attitudes **Towards Lake-Effect Snow:**
- Residents in snow-prone areas like **Syracuse embrace** the heavy snowfalls, considering them preferable to other natural disasters like **hurricanes or floods**.
- This structure provides a clear and concise summary of the **article's main points**.

## Friendshoring and Reshoring

**Why in News?** Recently these terms were used in an article .

**What is Friendshoring?**

• Friendshoring refers to the practice of relocating supply chains and manufacturing operations to countries that are politically and economically aligned with the home country, often to reduce risks associated with geopolitical tensions and ensure stable trade relationships.

**Key Features:**

- Focuses on trusted trade partners or allies.
- Aims to mitigate risks like sanctions, **trade restrictions, or political instability**.
- Prioritizes secure and resilient supply chains over pure cost advantages.
- Examples include the U.S. encouraging supply chain shifts to allied nations like **India, Vietnam, or Mexico**, particularly for critical goods like semiconductors and pharmaceuticals.

**Advantages:**

- Enhances economic security by relying on stable allies.

- Reduces over-dependence on single or adversarial nations, e.g., China.
- Aligns trade with strategic geopolitical goals.

**Reshoring:**

Reshoring involves bringing back manufacturing and supply chains to the home country from overseas. It focuses on reducing reliance on foreign production and boosting domestic capabilities.

**Key Features:**

- Emphasizes domestic production to strengthen local economies.
- Responds to challenges like supply chain disruptions, high transport costs, and trade tariffs.
- Encouraged by government incentives, such as tax breaks or subsidies for domestic manufacturing.

**Advantages:**

- Creates jobs and boosts domestic industries.
- Reduces vulnerability to international trade disruptions.
- Shortens supply chains, improving response times and reducing carbon footprints.

## Foreign Currency Non-Resident (Banking) FCNR(B)

**Why in News ?** The Reserve Bank of India (RBI) has **raised the interest rate ceilings on Foreign Currency Non-Resident (Banking) FCNR(B)** deposits to attract more foreign currency inflows. FCNR(B) deposits are foreign currency term deposits that **Non-Resident Indians (NRIs)** can open with Indian banks.

**Key Details:****Revised Interest Rate Ceilings:**

- For deposits of **1 year to less than 3 years maturity:**
  - Interest rates can now go up to **Overnight Alternative Reference Rate (ARR) + 400** basis points (bps).
  - Earlier, the ceiling was **ARR + 250 bps**.
- For deposits of **3 to 5 years maturity:**
  - Interest rates can now go up to **ARR + 500 bps, compared to ARR + 350 bps** earlier.



**What are Foreign Currency Non-Resident (Banking) [FCNR(B)] deposits?**

- They are special bank accounts offered by Indian banks to Non-Resident Indians (NRIs) and Persons of Indian Origin (PIOs).
- These accounts are maintained in foreign currencies, allowing NRIs to park their overseas earnings in India without the risk of currency fluctuation on the principal or interest.

**Key Features of FCNR(B) Deposits:****Currency Options:**

- Accounts are maintained in major foreign currencies like USD, GBP, EUR, JPY, AUD, CAD, etc.

**Tenure:**

- Minimum tenure: **1 year.**
- Maximum tenure: **5 years.**

**Interest Rates:**

- Banks offer interest rates based on global benchmarks like **LIBOR** or the **new Alternative Reference Rates (ARRs)**.

**Repatriation:**

- Both the **principal and interest are fully repatriable** (can be transferred back to the NRI's country of residence).

**Tax Benefits:**

- Interest earned is exempt from Indian income tax.
- **No wealth tax or gift tax** on these deposits.
- Risk-Free Returns:
- Since the deposits are maintained in foreign currency, they protect **NRIs from currency exchange risks.**

## World Drought Atlas 2024

**Why in News?** The World Drought Atlas, jointly developed by the UNCCD and European Commission JRC, provides an in-depth view of the systemic nature of drought risks. It uses maps, infographics, and case studies to depict the cascading effects of droughts across sectors like energy, agriculture, transport, and public health.

### Key Points:

#### Urgency of Global Action on Drought Resilience:

- Droughts have risen by 29% since 2000 due to climate change and mismanagement of natural resources.
- By 2050, three in four people globally could be affected by droughts, emphasizing the need for immediate action to mitigate risks.

#### Sectoral Impacts and Interconnectivity:

**Energy:** Hydropower reductions during droughts lead to higher energy prices and power outages.

**Agriculture:** Accounting for 70% of freshwater usage, agriculture is severely affected, further exacerbating food insecurity.

**Waterways and Trade:** Drought-induced low water levels disrupt transport, as seen in cases like the Panama Canal.

**Ecosystems:** Biodiversity loss amplifies drought risks, while greater biodiversity can enhance resilience.

#### Human-Made Droughts and Virtual Water Transfers:

- Human activities, such as overuse of water resources, exacerbate droughts.
- The concept of virtual water transfers illustrates how agricultural exports from water-stressed regions intensify local drought impacts.

#### Case Studies from Global Regions:

- The Atlas highlights lessons from drought-prone areas, including:
- **Great Plains, USA:** Insights into large-scale drought impacts on agriculture and energy.
- **Barcelona, Spain:** Challenges in urban drought management.
- **Yangtze River Basin, China:** Impacts on water security and biodiversity.

- **Indian Subcontinent and Horn of Africa:** Socio-economic consequences and the plight of marginalized communities.

#### **Measures to Build Drought Resilience:**

- The Atlas proposes actionable steps for managing and adapting to drought risks:
- **Governance:** Early warning systems, microinsurance, and water-pricing reforms.
- **Land Management:** Agroforestry, reforestation, and land restoration initiatives.
- **Water Management:** Wastewater reuse, groundwater recharge, and conservation technologies.

#### **Role of International Collaboration:**

- The **Resilience International Drought Alliance (IDRA)** and other global networks are pivotal in sharing knowledge and implementing best practices.
- **Collaboration among 197 UNCCD member states at Riyadh** underscores the collective effort required to tackle droughts at all levels.

#### **Call to Action for Proactive Drought Management:**

- The Atlas serves as a rallying point for governments, businesses, and policymakers:
- Encourages nations to integrate drought resilience into policy and governance.
- Highlights the **co-benefits of proactive measures for ecosystems, economies, and public health.**

#### **Pathway to UNCCD COP16:**

The publication aims to build momentum for decisive action at the upcoming UNCCD COP16 in Riyadh. It emphasizes turning scientific knowledge into policy and actionable strategies to ensure a drought-resilient future.

## Facts for Prelims:

### LignoSat

The first wood-panelled satellite, named LignoSat, was recently launched into space. This spacecraft aims to explore the viability of timber as a renewable building material for future space missions.

- It has been developed by Kyoto University in collaboration with Sumitomo Forestry, LignoSat

#### What is LignoSat?

- LignoSat is a compact satellite measuring just 10 centimetres on each side and weighing 900 grams. It is constructed from panels made of magnolia wood.
- The design employs traditional Japanese craftsmanship without screws or glue. The name “LignoSat” derives from the Latin word for wood, denoting its unique composition.

#### Purpose of the Mission:

- The mission aims to test wood’s durability in the harsh conditions of space. Temperatures in space can swing dramatically, ranging from -100 to 100 degrees Celsius every 45 minutes. LignoSat will also assess wood’s effectiveness in shielding semiconductors from space radiation.

### Flue Gas Desulphurisation (FGD)

#### What is Flue Gas Desulphurisation (FGD)?

It refers to the process of removing sulfur dioxide (SO<sub>2</sub>) from the exhaust gases produced by burning fossil fuels in power plants, industrial facilities, and other combustion processes. It is a key technology used to control air pollution, particularly to comply with stringent emissions regulations.

**Significance of FGD:****Air Pollution Control:**

- Reduces SO<sub>2</sub> emissions, a primary contributor to acid rain and respiratory illnesses.

**Environmental Compliance:**

- Helps industries meet regulatory standards, such as India's SO<sub>2</sub> emission norms for thermal power plants.

**Improved Public Health:**

- Mitigates the health risks associated with SO<sub>2</sub> exposure, such as asthma and lung diseases.
- Circular Economy:
- By-products like gypsum can be used in industries like construction and agriculture.

## Narsapur Lace Craft

The famous Narsapur lace craft has recently bagged the prestigious Geographical Indication (GI) tag.

- Narsapur Lace Craft is a traditional handicraft originating from the Narsapur region in the West Godavari district of Andhra Pradesh, India.

**About the Narsapur Lace Craft:**

- The craft dates back to the colonial period, introduced by Irish missionaries in the **19th century**.
- Local women adapted the techniques, creating a unique style using crochet.
- It involves **crochet lace-making, a form of needlework** using fine threads and a hooked needle.
- **Patterns are intricate**, and the process is entirely handmade.
- The primary materials are cotton and silk threads.
- These are **dyed in vibrant colors** to create delicate lace patterns.
- Items include **tablecloths, curtains, doilies, garments, bedspreads**, and accessories like bags and caps.
- The designs are inspired by nature, including flowers, leaves, and geometric patterns.

## Nagri Dubraj Rice

The Geographical Indication Registry has granted Chhattisgarh's aromatic rice, Nagri Dubraj, a geographical indication (GI) tag facilitating the brand to get a unique identity and a wide market.

### About Nagri Dubraj Rice:

- Nagri Dubraj Rice is a premium variety of aromatic rice cultivated in India, particularly in the **Nagri region of Chhattisgarh**. Known for its distinct fragrance and quality, it is often referred to as the "**Basmati of Chhattisgarh**."

### Origin and Cultivation:

- Cultivated predominantly in Chhattisgarh, often in traditional, **small-scale, organic farming practices**.
- The variety thrives in the region's climate and soil, contributing to its unique qualities.

## Lithuanian film toxic wins Golden peacock at IFFI -2024

**Lithuanian drama film 'Toxic'**, written and directed by Saulė Bliuvaitė, won the Golden Peacock at the **55th International Film Festival of India** in Goa

### About the Golden Peacock Award:

- The Golden Peacock Award is the top honor presented at the International Film Festival of India (IFFI), one of Asia's most prestigious film festivals.
- It is awarded to the Best Film in the International Competition category, celebrating excellence in cinema and artistic achievement.

### Prize:

- The winner receives a **Golden Peacock** trophy, a certificate, and a cash prize of **Rs 40 lakh** (approximately \$50,000), shared equally between the director and producer of the film.

**History:**

- Introduced in **1965**, the award reflects IFFI's commitment to fostering global cinematic culture and recognizing groundbreaking filmmaking.

**Criteria for Selection:**

- Films are judged based on their artistic merit, innovation, and impact on global cinema.
- A prestigious jury panel consisting of acclaimed filmmakers, actors, and film critics selects the winner.

## Ratapani Forest

The Madhya Pradesh government has notified **Ratapani forest in Raisen district** as a tiger reserve in the state.

**About the Ratapani Forest Reserve :**

- It is located in the Indian state of **Madhya Pradesh**, is a significant ecological and biodiversity hotspot. Known for its rich flora and fauna, the forest is a vital part of India's central ecosystem and contributes to the preservation of endangered species and forest-based livelihoods.

**Location and Area:**

- Situated in the Raisen and **Sehore districts of Madhya Pradesh**.
- Spans an area of approximately 823 square kilometers.
- Falls under the **Vindhya Hills range** and is part of the central Indian landscape.

**Ecological Significance:**

- Recognized for its dense teak and mixed forests.
- Supports numerous water bodies, streams, and hills, making it an ecologically diverse region.
- Vital for regulating regional climate and maintaining biodiversity

## Extrachromosomal DNA (ecDNA)

Recent studies show that ecDNA is present in nearly **40% of cancer cell lines and up to 90% of brain tumour samples.**

It contributes significantly to cancer progression and drug resistance by amplifying oncogenes (cancer-causing genes).

### What is ecDNA?

- Extrachromosomal DNA (ecDNA) is a small fragment of genetic material found outside the main chromosomes.
- Once dismissed as insignificant, ecDNA is now recognized as crucial to understanding cancer biology.

## The Secured Overnight Rupee Rate (SORR)

### What is SORR?

- The Secured Overnight Rupee Rate (SORR) is a new benchmark rate proposed by the Reserve Bank of India (RBI) for the interest rate derivatives market. It is based on transactions in the secured money market, which includes:

**Overnight Repo Market:** Transactions where financial institutions borrow funds against securities as collateral for one day.

**TREPS (Tri-party Repo):** A repo mechanism involving three parties—borrower, lender, and a tri-party agent—to facilitate secured transactions in government securities or other approved securities.

### Key Features of SORR:

**Secured Transactions Basis:** Unlike unsecured benchmarks, SORR reflects rates derived from collateralized money market transactions, enhancing reliability and reducing risk of manipulation.

**Development of Interest Rate Derivatives Market:** By using SORR as a benchmark, the RBI aims to support more transparent and efficient pricing in derivatives markets.



Credibility of Benchmarks: The **introduction of SORR** is part of the RBI's efforts to strengthen benchmark governance and reduce reliance on unsecured rate benchmarks.

## Overnight Alternative Reference Rate (ARR)

**What is the Overnight Alternative Reference Rate (ARR)?**

- It is a modern benchmark interest rate used in financial markets to determine the cost of borrowing or lending in overnight transactions.
- It replaces older benchmarks like **LIBOR (London Interbank Offered Rate)** and is part of global reforms aimed at improving transparency and reliability in financial benchmarks.

**Key Features of Overnight ARR:**

**Transaction-Based:**

ARR is calculated based on actual market transactions, making it more reliable than older benchmarks like **LIBOR, which relied on estimates.**

**Overnight Basis:**

- It reflects the cost of borrowing or lending funds for one day in secured or unsecured money markets.

**Examples of ARRs:**

**SOFR (Secured Overnight Financing Rate):** Used in USD markets, based on secured repo transactions in the U.S. Treasury market.

**SONIA (Sterling Overnight Index Average):** Used in GBP markets, based on unsecured overnight lending.

**ESTR (Euro Short-Term Rate):** Used in EUR markets, based on unsecured wholesale **euro borrowing.**

**TONAR (Tokyo Overnight Average Rate):** Used in JPY markets, based on unsecured overnight call **money market transactions.**

## International Drought Resilience Alliance (IDRA)

### About the International Drought Resilience Alliance (IDRA) :

- It is a global coalition launched in **November 2022** during the **27th UN Climate Change Conference (COP27)** to address the growing challenges of droughts worldwide.
- It aims to **accelerate actions and build resilience against the increasing frequency and intensity of droughts**, exacerbated by climate change and unsustainable land and water management.

### Founding and Leadership:

- IDRA was co-chaired by **Spain and Senegal** during its inception.
- It aligns closely with the goals of the UN Convention to Combat Desertification (UNCCD).

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