



**SAARC**

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# SAARC

South Asian Association for Regional Cooperation



- **Members:** 8
- **Estd. by signing SAARC Charter in Dhaka** (Dec 1985)
- **HQ:** Kathmandu, Nepal
- **9 Permanent Observers to SAARC:** Australia, China, EU, Iran, Japan, S. Korea, Mauritius, Myanmar and US
- Comprises **3% of the world's area, 21% of the world's population** and **3.8% of the global economy**
- Agreements under SAARC: **SAPTA, SAFTA, SATIS, SAARC University**

## AFGHANISTAN

- ▣ It is India's gateway to the oil and mineral-rich Central Asian republics.
- ▣ Salma Dam in Afghanistan is aka Afghanistan-India Friendship Dam.
- ▣ From 2002 to 2021, India spent USD 4 bn in development assistance in Afghanistan, building high-visibility projects (highways, hospitals, Parliament building, rural schools, and electricity transmission lines).
- ▣ Afghanistan becoming a safe haven for terrorism is direct threat to India's national security.

## NEPAL

- ▣ Shares border with 5 Indian states (Uttarakhand, Uttar Pradesh, West Bengal, Sikkim and Bihar)
- ▣ Bharat Gaurav Tourist Train connecting India's Ayodhya and Nepal's Janakpur
- ▣ Major Issues: Territorial Disputes (Kalapani, Limpiyadhura and Lipulekh)
- ▣ Military Exercise: Surya Kiran (Army)

## BHUTAN

- ▣ India is Bhutan's largest trade partner.
- ▣ Mutually Beneficial Hydropower Cooperation: Mangdechhu, Kholongchhu, Chukha hydropower Projects.
- ▣ India's grant assistance to Gyalsung Project.
- ▣ Integration of Bhutan's DrukRen with India's National Knowledge Network

## PAKISTAN

- ▣ Indo-Pak diplomatic relations are quite limited with periodic attempts to improve relations often failing.
- ▣ India revoked Pakistan's Most Favoured Nation (MFN) status following the Pulwama terrorist attack (2019).
- ▣ Indus Water Treaty 1960 is often cited as one of the most successful intl. treaties in South Asia.
- ▣ Major issues: Cross-border terrorism, Kashmir issue, CPEC affecting India's Sovereignty

## BANGLADESH

- ▣ Shares the longest border of over 4,096 km with India.
- ▣ Largest trading partner in South Asia.
- ▣ Water Sharing Agreements: Koshiyara river (2022), Ganga Water Treaty (1996).
- ▣ Major Issues: Teesta River Water Dispute.
- ▣ Military Exercises: SAMPRITI-X (Military Training), Bongosagar (Naval).

## MALDIVES

- ▣ India is Maldives 2<sup>nd</sup> largest trading partner.
- ▣ Exercises with India - Ekuverin, Dosti, Ekatha and Operation Shield.
- ▣ Greater Male Connectivity Project by an Indian company is the largest-ever infra project in Maldives.
- ▣ Major Issues:
  - ▣ Maldives an important 'pearl' in China's String of Pearls.
  - ▣ Increasingly Maldivian drawn towards Pak-based terrorist groups.
  - ▣ India being projected as the bully and a big brother – 'India Out' Campaign

## SRI LANKA

- ▣ India is Sri Lanka's third largest export destination.
- ▣ India is the first country to officially back Sri Lanka's debt restructuring programme at IMF.
- ▣ Major Issue: Fishermen crossing maritime boundary.
- ▣ Important Exercises: Mitra Shakti (Army), SLINEX (Naval)

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# Biotransformation Technology

**For Prelims:** Biotransformation Technology, Biodegradable, Plastic Waste Management, Elimination of Single Use Plastic and Plastic Waste Management.

**For Mains:** Plastic Waste Management, Biotransformation Technology.

## Why in News?

A UK-based startup has claimed to have developed a **Biotransformation Technology** that could alter the state of **plastics** and make them **biodegradable**.

## What is Biotransformation Technology?

### ▪ About:

- Biotransformation technology is a **novel approach to ensure plastics that escape refuse streams** are processed efficiently and broken down.
- Plastics made using this technology are given a pre-programmed time during which the manufactured material looks and feels like conventional plastics without compromising on quality.
- Once the product expires and is exposed to the external environment, **it self-destructs, and bio transforms into bioavailable** wax.
- This wax is then consumed by **microorganisms, converting waste into water**, CO<sub>2</sub>, and biomass.
- This biotransformation technology is the **world's first that ensures polyolefins** fully biodegrade in an open environment causing no microplastics.

### ▪ Need for such a Technology:

- India is generating 3.5 billion kgs of plastic waste annually and that the per capita plastic waste generation has **also doubled in the past five years**. Of this, a third comes from packaging waste.
- In 2019, plastic packaging waste from **e-commerce firms was estimated at over a billion kilograms** worldwide, according to Statista.
- Seeing such a burden of plastic waste, which could potentially harm biodiversity, it is needed to devise technology in order to tackle the Plastic Menace.

### ▪ Utility:

- Food packaging and health care industries are the **two prime sectors that could use** this technology to reduce waste.
- The increase in cost is relatively small **compared to conventional plastic** that does not contain.

## What are the Alternatives to Reducing Plastic Waste?

- A switch to **jute or paper-based packaging could potentially cut down plastic waste**. This could also build **sustainability within the paper industry and** save on the import bill on ethylene solutions.
- The **Wooden Packaging** is yet another alternative, but that will make the packaging bulkier and increase cost.
- The Government of Tamil Nadu, in Chennai, organised **National Expo and Conference of Startups** to raise awareness on alternatives to single-use plastics.
- The alternatives showcased were made using **coir, bagasse, rice and wheat bran, plant and agricultural residue**, banana and areca leaves, jute and cloth.

## What are the Initiatives Related to Plastic Waste?

- The Indian government has launched multiple initiatives to move the country towards

sustainability. They introduced a plastic waste management gazette to help tackle the ever-growing plastic pollution caused by single-use plastics.

- In 2022, the government imposed a ban on single-use plastics to bring a stop to its use in the country.
- The National Dashboard on [Elimination of Single Use Plastic and Plastic Waste Management](#) brings all stakeholders together to track the progress made in eliminating single-use plastic and effectively managing such waste.
- [An Extended Producer Responsibility \(EPR\)](#) portal helps in improving accountability, traceability, and facilitating ease of compliance reporting in relation to EPR obligations of the producers, importers and brand-owners.
- India has also developed a [mobile app to report single use plastics grievances](#) to check sale, usage or manufacturing of single use plastics in their area.

## UPSC Civil Services Exam, Previous Year Questions (PYQ)

### Prelims

**Q. Why is there a great concern about the 'microbeads' that are released into environment? (2019)**

- (a) They are considered harmful to marine ecosystems.
- (b) They are considered to cause skin cancer in children.
- (c) They are small enough to be absorbed by crop plants in irrigated fields.
- (d) They are often found to be used as food adulterants.

**Ans: (a)**

**Exp:**

- Microbeads are **small, solid, manufactured plastic particles** that are less than 5mm and do not degrade or dissolve in water.
  - Mainly made of polyethylene, microbeads can also be prepared from petrochemical plastics such as polystyrene and polypropylene. They may be added to a range of products, including rinse-off cosmetics, personal care and cleaning products.
- Microbeads, because of their small size pass unfiltered through the sewage treatment system and reach the water bodies. The untreated microbeads in the water bodies are taken up by the marine animals, thus producing toxicity and causing harm to the marine ecosystem.
  - In 2014, Netherland became the first country to ban cosmetics microbeads.
- Therefore, option (a) is the correct answer.

### Mains

**Q. What are the impediments in disposing the huge quantities of discarded solid waste which are continuously being generated? How do we remove safely the toxic wastes that have been accumulating in our habitable environment? (2018)**

**Source: TH**

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# Aravali Green Wall Project

**For Prelims:** International Day of Forests, Aravalli Green Wall Project, Africa's Great Green Wall, Desertification and Land Degradation Atlas.

**For Mains:** Causes of Land Degradation and initiatives to curb it.

## Why in News?

Union Minister for Environment, Forest and Climate Change inaugurated the [Aravali Green Wall Project](#) on the occasion of [International day of Forests](#) and unveiled the **National Action Plan to Combat Desertification and Land Degradation Through Forestry Interventions**.

## What is Aravali Green Wall Project?

### ▪ About:

- It is an ambitious plan to create a **1,400km long** and **5km wide green belt buffer around the Aravali Mountain range covering states of Haryana, Rajasthan, Gujarat and Delhi**.
- In the initial phase, **75 water bodies will be rejuvenated**, starting with five waterbodies each in every district of Aravalli landscape.
  - It will cover degraded land in Gurgaon, Faridabad, Bhiwani, Mahendergarh and in Rewari districts of Haryana.
- The plan is inspired by **Africa's 'Great Green Wall' project**, running from Senegal (West) to Djibouti (East), which came into effect in 2007.



- Forest belt likely to run roughly from **Porbandar to Panipat**, covering entire Aravali range and beyond
- 'Green wall' will act as barrier for dust from west and check eastward march of Thar desert
- It will check desertification by **restoring degraded land through massive afforestation**

### ▪ Objectives:

- The overarching objective of India's Green Wall will be **to address the rising rates of land degradation** and the eastward expansion of the Thar desert.
- The green belt being planned from **Porbandar to Panipat** will help in restoring degraded land through **afforestation along the Aravali hill range**. It will also act as a barrier for dust coming from the deserts in western India and Pakistan.
- It aims to **enhance the biodiversity and ecosystem services** of the Aravalli range by **planting native trees**, which will help in **carbon sequestration**, provide **habitat for wildlife**, and **improve water quality** and quantity.
- The involvement of local communities in afforestation, agro-forestry, and water conservation activities can **promote sustainable development**.
  - Further, it will help generate **income and employment opportunities**, improve **food security**, and provide **social benefits**.

#### ▪ **Background:**

- According to [Desertification and Land Degradation Atlas](#) by [Indian Space Research Organisation \(ISRO\)](#), some **97.85 million hectares (29.7%)** of India's total geographical area (TGA) of 328.72 mha **underwent land degradation during 2018-19.**
- The Aravali has been identified as **one of the key degraded zones** to be taken up for greening under [India's target to restore 26 million hectares \(mha\) of its land.](#)
- A 2016 report from the ISRO had also indicated that Delhi, Gujarat and Rajasthan had already degraded over 50% of their land.

### **What is Aravali Mountain Range?**

#### ▪ **About:**

- The Aravallis, is the **oldest fold mountains on Earth.**
- It spans over **800km from Gujarat to Delhi (through Rajasthan and Haryana).**
- The **highest peak** in the Aravalli Range is **Guru Peak on Mount Abu.**

#### ▪ **Impact on Climate:**

- The Aravallis have an impact upon the climate of northwest India and beyond.
- During monsoons, the mountain range gently guides the monsoon clouds eastwards towards Shimla and Nainital, thus **helping nurture the sub-Himalayan rivers and feeding the north Indian plains.**
- In the winter months, it **protects** the fertile alluvial river valleys (the para-Indus and Gangetic) **from the assault of cold westerly winds from Central Asia.**

### **What is Great Green Wall of Africa (GGW)?**

#### ▪ **About:**

- GGW is a project launched **by African union** to restore the continent's degraded landscapes and transform millions of lives in the **Sahel.**
- The project plans **8km wide band** of trees **stretching 8,000km** across Africa.

#### ▪ **Objectives:**

- It aims to **restore 100 million hectares** of currently degraded land.
- Also, the project envisages to **sequester 250 million tons of carbon** and create **10 million green jobs by 2030.**

#### ▪ **Participating countries:**

- Eleven countries in the Sahel-Sahara region—**Djibouti, Eritrea, Ethiopia, Sudan, Chad, Niger, Nigeria, Mali, Burkina Faso, Mauritania, and Senegal** have joined to combat land degradation and restore native plant life to the landscape.



[Source: PIB](#)

## Export of Biofuels from SEZs and EOU

**For Prelims:** Special Economic Zones, Ethanol, Pradhan Mantri JI-VAN Yojana 2019, GOBAR (Galvanizing Organic Bio-Agro Resources) DHAN Scheme 2018, National Policy on Biofuels 2018

**For Mains:** Significance of Biofuels, Challenges Related to Biofuels.

### Why in News?

The **Indian government** stated that the **export of biofuels from special economic zones (SEZs) and export oriented units (EOUs)** will be permitted without any restrictions, if the biofuel is produced by using imported feed stock.

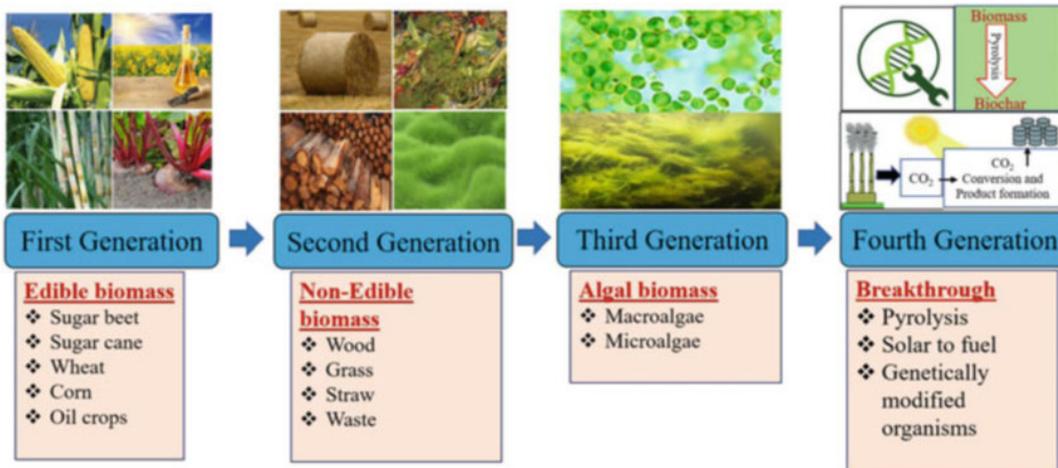
- In 2018, the Indian government had **imposed restrictions on the export of biofuels** soon after **imposing similar conditions on its imports**.

### What are Biofuels?

- **About:**
  - Any hydrocarbon fuel that is produced from an **organic matter** (living or once living material) in a **short period of time** is **considered a biofuel**.
  - Biofuels may be solid, liquid or gaseous in nature.
    - **Solid:** Wood, dried plant material, and manure
    - **Liquid:** Bioethanol and Biodiesel
    - **Gaseous:** Biogas
- **Categories of Biofuels:**
  - **First Generation Biofuels:**
    - These are made from food sources such as **sugar, starch, vegetable oil**, or

animal fats using conventional technology.

- Examples include **Bioalcohols, Vegetable oil, Bioethers, Biogas.**
- **Second Generation Biofuels:**
  - These are **produced from non-food crops or portions of food crops** that are not edible and considered as wastes, e.g., **stems, husks, wood chips, and fruit skins and peeling.**
  - Examples include **cellulose ethanol, biodiesel.**
- **Third Generation Biofuels:**
  - These are produced from **micro-organisms like algae.**
  - Example- **Butanol**
- **Fourth Generation Biofuels:**
  - Fourth-generation biofuels are advanced biofuels that are **produced using genetically modified (GM) algae biomass**, and advanced conversion technologies (use of **pyrolysis, gasification** etc).



#### ▪ Significance:

- **Energy Security:** Biofuels can **reduce dependence on fossil fuels**, which are often imported from other countries.
  - By producing **biofuels locally**, countries can increase their energy security and **reduce their vulnerability to supply disruptions.**
- **Environmental Benefits:** Biofuels are **considered to be more environmentally friendly** than fossil fuels because they produce fewer greenhouse gas emissions when burned.
  - Also, the production of biofuels can **contribute to reducing waste and pollution.**
- **Agricultural Development:** Biofuel production requires a significant amount of feedstock, which can **provide a new source of income for farmers.**
  - This can also help to **promote rural development and increase agricultural productivity.**

#### ▪ Challenges:

- **Efficiency:** **Fossil Fuels produce more energy** than some of the biofuels. E.g., **1 gallon of ethanol produces less energy** as compared to 1 gallon of gasoline (a fossil fuel).
- **Food Shortages:** There is concern that using valuable cropland to grow fuel crops could have an **impact on the cost of food** and could possibly lead to **food shortages.**
- **Water Use:** Massive quantities of water are required for **proper irrigation of biofuel crops** as well as to manufacture the fuel, which could strain local and regional water resources.

### What are the Recent Initiatives Regarding Biofuels?

- [Pradhan Mantri JI-VAN Yojana, 2019](#)
- [GOBAR \(Galvanizing Organic Bio-Agro Resources\) DHAN scheme, 2018](#)
- [National Policy on Biofuels, 2018](#)

## UPSC, Civil Services Examination Previous Year's Question (PYQs)

### Prelims

**Q. According to India's National Policy on Biofuels, which of the following can be used as raw materials for the production of biofuels? (2020)**

1. Cassava
2. Damaged wheat grains
3. Groundnut seeds
4. Horse gram
5. Rotten potatoes
6. Sugar beet

**Select the correct answer using the code given below:**

- (a) 1, 2, 5 and 6 only  
(b) 1, 3, 4 and 6 only  
(c) 2, 3, 4 and 5 only  
(d) 1, 2, 3, 4, 5 and 6

**Ans: (a)**

**Source: ET**

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## Nano Fertilisers

**For Prelims:** Nano urea, Macronutrients, Lodging effect.

**For Mains:** Significance of Nano Fertilisers, Indian Farmers Fertiliser Cooperative Limited.

### Why in News?

The **Department of Fertilisers** conducted an audit which **revealed a variation of 25-50% in the reduction of nitrogen use** after the application of [nano urea](#).

- The use of nano urea can help the government save approximately **USD 3 billion (around Rs 24,687 crore) in subsidy bills** annually and **reduce [India's dependence on urea imports](#)**.

### What are Nano Fertilisers?

- **About:**
  - Nano fertilisers are highly efficient types of fertilisers that provide nutrients like **nitrogen to crops through fine granules**.
    - **Nitrogen is an essential macronutrient for plant functions**, and urea is one of the most concentrated nitrogenous fertilisers.
- **Nano Urea Liquid:**

- **Nano urea liquid** was developed in 2022 by [Indian Farmers and Fertiliser Cooperative \(IFFCO\)](#) to replace conventional urea and **reduce its requirement by 50%**.
  - The government has heavily promoted the use of nano fertilisers since its development.
- **Significance:**
  - **Reduce Losses:**
    - Nano fertilisers exploit the **nanoscale porous domains on plant surfaces to deliver nutrients**, improve the **effectiveness of nitrogen delivery**, and **reduce losses to the environment**.
  - **Increase Farmers' Income:**
    - It is easy on the **pocket of farmers and will be effective in increasing farmers' income**. It will also significantly **bring down the cost of logistics and warehousing**.
      - A small bottle of 500 millilitres nano urea spray is said to be a substitute for a full bag of 45 kilogrammes urea.
  - **Making Crops Stronger:**
    - It will also reduce the excess use of Urea application in the soil and will make the **crops stronger, healthier and protect them from lodging effect**.
      - **Lodging** is the bending over of the stems near ground level of grain crops, which makes them very difficult to harvest, and can dramatically reduce yield.
- **Challenges:**
  - **Cost:** The **cost of producing nano-fertilizers is higher than conventional fertilizers** due to the advanced technology and production methods used.
    - This has made them **unaffordable for small farmers** and resulted in limited access to this technology.
  - **Quality Control:** The production of nano-fertilizers requires strict quality control measures to ensure their effectiveness and safety.
    - However, the **lack of standardized regulations for their production** and distribution has resulted in poor quality control and inconsistent results.
  - **Environmental Concerns:** There are concerns about the potential environmental impact of nano-fertilizers, such as their **long-term effects on soil health, water quality, and ecosystem balance**.
    - These concerns must be addressed through proper testing and regulation to ensure their sustainable use.

## What is Indian Farmers Fertiliser Cooperative Limited?

- **About:**
  - It is one of India's biggest **cooperative societies** which is wholly owned by [Indian Cooperatives](#).
  - Founded in 1967 with just **57 cooperatives**, today it is an amalgamation of over **36,000 Indian Cooperatives** with diversified business interests ranging from **General Insurance to Rural Telecom** apart from its core business of manufacturing and selling fertilisers.
- **Objective:**
  - To **enable Indian farmers to prosper through timely supply of reliable, high quality agricultural inputs** and services in an environmentally sustainable manner and to undertake other activities to improve their welfare.

## Conclusion

Nano fertilisers have the potential to improve crop yields, reduce input costs for farmers, and save the government on subsidy bills and urea imports. However, long-term effects on the nutritional quality, bio-safety, efficacy, and reliability requires **further research and thorough audit of field trials** to

establish the **effectiveness and safety of using nano fertilisers on crops.**

## UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. With reference to chemical fertilizers in India, consider the following statements: (2020)**

1. At present, the retail price of chemical fertilizers is market-driven and not administered by the Government.
2. Ammonia, which is an input of urea, is produced from natural gas.
3. Sulphur, which is a raw material for phosphoric acid fertilizer, is a by-product of oil refineries.

**Which of the statements given above is/are correct?**

- (a) 1 only  
(b) 2 and 3 only  
(c) 2 only  
(d) 1, 2 and 3

**Ans: (b)**

**Exp:**

- The Government of India subsidizes fertilizers to ensure that fertilizers are easily available to farmers and the country remains self-sufficient in agriculture production. The same has been achieved largely by controlling the price of fertilizer and the amount of production. **Hence, statement 1 is not correct.**
- Ammonia (NH<sub>3</sub>) has been synthesized from natural gas. In this process, natural gas molecules are reduced to carbon and hydrogen. The hydrogen is then purified and reacted with nitrogen to produce ammonia. This synthetic ammonia is used as fertilizer, either directly as ammonia or indirectly after synthesis as urea, ammonium nitrate, and monoammonium or diammonium phosphates. **Hence, statement 2 is correct.**
- Sulfur is a major by-product of oil refining and gas processing. Most crude oil grades contain some sulfur, most of which must be removed during the refining process to meet strict sulfur content limits in refined products. This is done through hydrotreating and results in production of H<sub>2</sub>S gas, which is converted into elemental sulfur. Sulfur can also be mined from underground, naturally-occurring deposits, but this is more costly than sourcing from oil and gas and has largely been discontinued. Sulfuric acid is used in the production of both Monoammonium Phosphate (MAP) and Diammonium Phosphate (DAP). **Hence, statement 3 is correct.**
- **Therefore, option B is the correct answer.**

[Source: DTE](#)

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## Atmospheric Rivers

### Why in News?

California has experienced an exceptionally wet winter with **11 atmospheric rivers battering the state** since late December 2022.

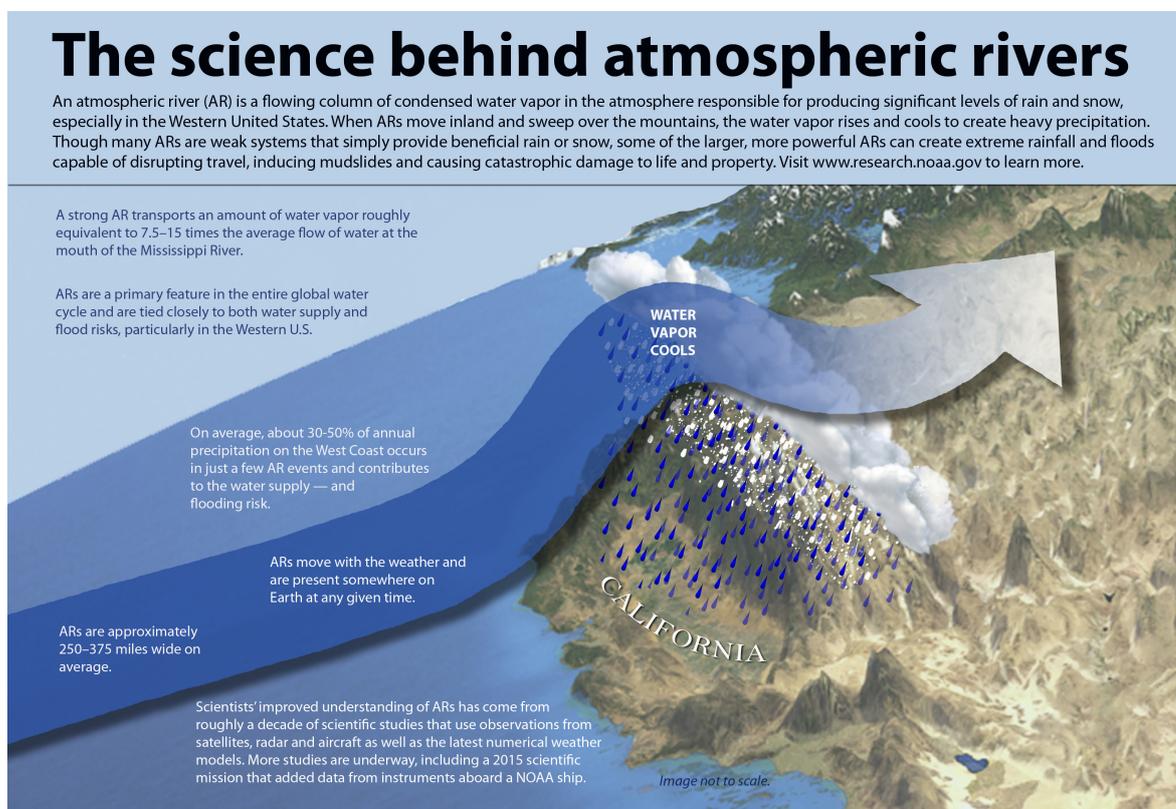
### What are Atmospheric Rivers?

## ▪ About:

- **Atmospheric rivers** are relatively long, narrow regions in the atmosphere – like rivers in the sky – that transport most of the water vapor outside of the tropics.
  - One well-known atmospheric river called the “Pineapple Express” picks up warm, moist air near Hawaii.
  - When the **Pineapple Express hits land in the Western United States and Canada**, it can cause heavy rain and snow. In California, it can cause up to 5 inches of rain in a day.
- Atmospheric rivers typically occur **in the extratropical North Pacific/Atlantic, southeastern Pacific, and South Atlantic** oceans often making landfall on the west coasts of North and South America. Other regions that experience atmospheric river landfalls include **Greenland, Antarctica, and the south-central United States**.

## ▪ Formation:

- Atmospheric rivers usually begin over tropical regions. Warm temperatures cause **ocean water to evaporate and rise into the atmosphere**. Strong winds help to carry the water vapor through the atmosphere.
- As atmospheric rivers move over land, the **water vapor rises up farther into the atmosphere**. It then **cools into water droplets, which fall as precipitation**.



## ▪ Impacts:

- Heavy rainfall associated with ARs can cause **flooding, landslides, and mudslides**.
  - They can also lead to water supply disruption, and develop **drought-like conditions**.

## ▪ Significance:

- Not all atmospheric rivers cause damage; most are weak systems that often **provide beneficial rain or snow that is crucial to the water supply**.

## ▪ Climate Change:

- **Climate change is expected to increase the frequency and intensity of ARs** in some regions of the world, particularly in the mid-latitudes.
  - This could have significant implications for water resources management, flood control, and other areas of public policy.

**Source: IE**

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# Geomagnetic Storm

## Why in News?

Recently, Earth has been hit by a powerful **Geomagnetic Storm**, having a severity grade of G4 according to the US National Ocean and Atmospheric Administration (NOAA).

- Severity grade of G4, which is the second-highest grade possible, can potentially cause **widespread voltage control problems for power grids**. It can also cause protection systems to mistakenly trip key electric assets of the grid.

**Notes:** NOAA ranks geomagnetic **storms on a scale running from G1**, which could cause an increase in auroral activity around the poles and minor fluctuations in power supplies, up to G5, which includes extreme cases like the **Carrington Event — a colossal solar storm that occurred September 1859**, which disrupted telegraph services all over the world and triggered auroras so bright and powerful that they were visible as far south as the Bahamas.

## What is a Geomagnetic Storm?

- A geomagnetic storm **refers to the disruptions to the Earth's magnetic field** caused by solar emissions.
- When a [Coronal Mass Ejection \(CME\)](#) or a high-speed solar stream reaches our planet, it **slams into the magnetosphere**.
  - The Earth's magnetosphere is created by its magnetic fields and it usually **protects us from the particles emitted** by the Sun.
- When a CME or a high-speed stream arrives at Earth, it peels open the planet's magnetosphere, kind of like an onion. This allows energetic **solar wind particles to stream down and hit our atmosphere over** the poles.
- Solar weather events like this can also supercharge [auroras](#), sometimes making them **visible in places where they wouldn't have been otherwise**.

## What are the Implications of Such a Storm?

- **Space Weather:**
  - Not all solar flares reach Earth, but solar flares/storms, Solar Energetic Particles (SEPs), high-speed solar winds, and CMEs that come close can impact space weather in near-Earth space and the upper atmosphere.
- **Problems for Spacecraft Operations:**
  - Solar storms can hit operations of space-dependent services like [Global Positioning Systems \(GPS\)](#), radio, and satellite communications. Aircraft flights and space exploration programmes are vulnerable.
- **Disturbances in the Magnetosphere:**
  - It can potentially create disturbances in the magnetosphere, the protective shield surrounding the Earth.
  - Astronauts on spacewalks face health risks from possible exposure to solar radiation outside the Earth's protective atmosphere.

## How are Solar Storms Predicted?

- Solar physicists and other scientists use computer models to predict solar storms and solar

activities in general.

- Current models are capable of predicting a storm's time of arrival and its speed.
- But the storm's structure or orientation still cannot be predicted.
- Certain orientations of the magnetic field can produce a more intense response from the magnetosphere, and trigger more intense magnetic storms.
  - With the increasing global dependence on satellites for almost every activity, there is a need for better space weather forecasts and more effective ways to protect satellites.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. If a major solar storm (solar flare) reaches the Earth, which of the following are the possible effects on the Earth?**

1. GPS and navigation systems could fail.
2. Tsunamis could occur at equatorial regions.
3. Power grids could be damaged.
4. Intense auroras could occur over much of the Earth.
5. Forest fires could take place over much of the planet.
6. Orbits of the satellites could be disturbed.
7. Shortwave radio communication of the aircraft flying over polar regions could be interrupted.

**Select the correct answer using the code given below:**

- (a) 1, 2, 4 and 5 only
- (b) 2, 3, 5, 6 and 7 only
- (c) 1, 3, 4, 6 and 7 only
- (d) 1, 2, 3, 4, 5, 6 and 7

**Ans: (c)**

[Source: IE](#)

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## Earth Hour

### Why in News?

**Earth Hour** is a worldwide movement organized to encourage individuals, communities and businesses to **turn off non-essential electric lights for one hour.**

- It is organized **on the last Saturday of March** as a symbol of commitment to the planet.

### What is an Earth Hour?

- **About:**
  - Earth Hour is the [World Wildlife Fund for Nature \(WWF\)'s](#) annual initiative that began in 2007.
  - It encourages people from more than 180 countries to switch off the lights from **8.30 pm to 9.30 pm** as per their local time.
  - The idea is to **refrain from the use of non-essential lighting** to save energy in a

symbolic call for environmental protection.

- **Theme:** Invest in Our Planet.
- **Significance:**
  - Earth Hour aims to **increase awareness and spark global conversations on protecting nature, tackling the [climate crisis](#)**, and working together to shape a brighter future for humans.
  - The symbolic lights-out Earth Hour has become **the world's largest grassroots movement to raise awareness about climate change and [energy conservation](#)** and to assure a sustainable, brighter future.

## What is the World Wildlife Fund?

- **About:**
  - It is the **world's leading conservation organisation** and works in more than 100 countries.
  - It was **established in 1961** and is headquartered at Gland, Switzerland
- **Mission:**
  - **To conserve nature and reduce the most pressing threats** to the diversity of life on Earth.
- **Other Initiatives of WWF:**
  - **[TX2 Goal](#)** (a global commitment to double the world's wild tigers by 2022)
  - **[TRAFFIC](#)** (a joint program of WWF and the International Union for Conservation of Nature (IUCN)).
  - **[Living Planet Report](#)** .

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Q. Consider the following statements regarding 'Earth Hour': (2014)

1. It is an initiative of UNEP and UNESCO.
2. It is a movement in which the participants switch off the lights for one hour on a certain day every year.
3. It is a movement to raise the awareness about the climate change and the need to save the planet.

### Which of the statements given above is/are correct?

- (a) 1 and 3 only
- (b) 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Ans: (c)**

**[Source: IE](#)**

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## Parole and Furlough

### Why in News?

Recently, [Supreme Court of India](#) ruled that the period of parole granted to convicts during the [Covid-19 pandemic](#) to prevent overcrowding in prisons and avoid the risk of spread of infection, cannot be counted as part of their actual sentence period.

## What is Parole and Furlough?

### ▪ Parole:

- It is a system of **releasing a prisoner with suspension of the sentence.**
  - The release is conditional, usually subject to behavior, and requires periodic reporting to the authorities for a set period of time
- Parole is **not a right**, and is given to a prisoner for a specific reason, such as a death in the family or a wedding of a blood relative
- It may be denied to a prisoner even when he makes out a sufficient case, if the competent authority is satisfied that releasing the convict would not be in the interest of society.

### ▪ Furlough:

- It is similar to parole, but with some significant differences. It is given in cases of **long-term imprisonment.**
- The period of furlough granted to a prisoner is treated as **remission of his sentence.**
- Unlike parole, **furlough is seen as a matter of right for a prisoner**, to be granted periodically irrespective of any reason, and merely to enable the prisoner to retain family and social ties, and to counter the ill-effects of prolonged time spent in prison.

## Note

- Both parole and furlough are considered as **reformatory processes.** These provisions were introduced with a view to **humanizing the prison system.**
- Parole and furlough are covered under the **Prisons Act of 1894.**

## UPSC Civil Services Examination, Previous Year Question (PYQ)

### Q. With reference to India, consider the following statements: (2021)

1. When a prisoner makes out a sufficient case, parole cannot be denied to such prisoner because it becomes a matter of his/her right.
2. State Governments have their own Prisoners Release on Parole Rules.

### Which of the statements given above is/are correct?

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

Ans: (b)

[Source: IE](#)

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# CAMPA Policy at Odds with IPCC Report

## Why in News?

Recently, The **Intergovernmental Panel on Climate Change (IPCC)** has released its [Synthesis Report](#), where it has raised concerns about the ongoing policy of **Afforestation** in India that allows forests to be cut down and replaced elsewhere.

## What is the Background?

- Afforestation is part of India's climate pledges. The government has committed to adding "an additional carbon sink of **2.5-3 GtCO<sub>2</sub>e** through **additional forest and tree cover by 2030**".
  - GtCO<sub>2</sub>e stands for **gigatonnes of carbon-dioxide-equivalent**.
- Afforestation is also codified in the [Compensatory Afforestation Fund Management and Planning Authority \(CAMPA\)](#), a body created on the [Supreme Court's](#) orders in 2002.
  - CAMPA works as a **national advisory council under the chairmanship of the Union Minister of Environment, Forest and Climate Change** for monitoring, technical assistance and evaluation of compensatory afforestation activities.
- CAMPA is meant to **promote afforestation and regeneration activities** as a way of compensating for forest land diverted to non-forest uses.
- When forest land is diverted to non-forest use, such as a dam or a mine, that land can **longer provide its historical ecosystem services** nor host biodiversity.
- According to the [Forest \(Conservation\) Act 1980](#), the project proponent that wishes to divert the land must identify land elsewhere to afforest, and pay the land value and for the afforestation exercise. That land will thereafter be stewarded by the forest department.

## What is the Controversy Pertaining to CAMPA?

- In 2006-2012, the fund grew from Rs 1,200 crore to Rs 23,600 crore, but the [Comptroller and Auditor General \(CAG\)](#) found in 2013 that most of the **money had been unspent**.
- CAMPA has also come under **fire for facilitating the destruction of natural ecosystems** in exchange for forests to be set up in other places.
  - In October 2022, the Haryana government said it **would develop the "world's largest curated safari"** using CAMPA funds received from deforestation in Great Nicobar for development projects, **2,400 km** away and of very different topography.
- CAMPA-funded projects endangered **landscape connectivity and biodiversity corridors** and exposed forest patches to "edge effects".
- Planting non-native species or artificial plantations **wouldn't compensate for the ecosystem loss** as well as be **hazardous to the existing ecosystem**.

## What are the IPCC's Recommendations?

- Since the natural ecosystems provide biodiversity, local livelihoods, hydrological services and sequester carbon.
- The IPCC recommended that Renewable energy projects like wind and solar plants must be promoted to mitigate the adverse impacts of natural ecosystem diversion.
- Reducing conversion of natural ecosystems could be more expensive than wind power, **yet still less expensive than "ecosystem restoration, afforestation, restoration"**, for every GtCO<sub>2</sub>e.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

### Q. Consider the following statements: (2019)

1. As per law, the Compensatory Afforestation Fund Management and Planning Authority exists at both National and State levels.
2. People's participation is mandatory in the compensatory afforestation programmes carried out under the Compensatory Afforestation Fund Act, 2016.

**Which of the statements given above is/are correct?**

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

**Ans: (a)**

[Source: TH](#)

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## Rapid Fire Current Affairs

### Affinity Test can Never be Conclusive: SC

According to the Supreme Court's judgment, **an affinity test cannot be an effective and definite way to decide a caste or tribe claim.**

An affinity test mandates the **study and preparation of a report by authorities on caste/tribe claims based on the peculiar anthropological and ethnological traits**, deities, rituals, customs, mode of marriage, death ceremonies, methods of burial of dead bodies, etc, of the particular caste or tribe and the applicant's knowledge of them.

**Read More:** [Supreme Court](#)

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### Finance Bill, 2023

The government of India recently completed its Budgetary exercise for 2023-24, **with both Houses of Parliament approving the Finance Bill, 2023**, along with a fresh amendment introduced by the Finance Minister **to rectify an error in Securities Transaction Tax (STT)** rates on options contracts in the earlier version of the Bill.

While the **Finance Bill contains provisions on financing the expenditure of the government**, an Appropriation Bill specifies the quantum and purpose for withdrawing money. Both appropriation and finance bills are **classified as money bills which do not require the explicit consent of the Rajya Sabha**. The Rajya Sabha only discusses them and returns the bills.

Once the **Lok Sabha passes the budget of the government or any other money-related law, the Rajya Sabha cannot reject it**. The Rajya Sabha **can only delay it by 14 days or suggest changes in it**, however, the former may or may not accept these changes.

**Read More:** [Rajya Sabha & Lok Sabha](#)

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### New NCERT Textbooks & Panchaadi Way

After nearly two decades, **school students at all levels will learn from updated National Council of Educational Research and Training (NCERT) textbooks to be introduced in the 2024-25 academic year**. This is in keeping with the **National Education Policy 2020** and [National Curriculum Framework \(NCF\)](#) which was released in August 2022. **The textbooks will be developed in 22 languages.**

Currently, the government has released NCF for pre-school to Class 2, for children aged between three and eight years. **The framework for other classes is yet to be rolled out.**

NCF, in its guidelines, has emphasised that students' learning **should be planned to keep in mind Indian roots and has proposed a five-step learning process** or panchaadi for children at the preschool or foundational level. **Panchaadi includes aditi** (introduction of a topic), **bodh** (conceptual understanding), **abhyas** (practice), prayog (application), **and prasara** (expansion).

**Read More:** [National Council of Educational Research and Training \(NCERT\)](#), [National Education Policy 2020](#)

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