

07 February 2023

Why Have Mangroves Got A Budget Push?

❖ Context

- **The Union Budget for 2023-24** announced an initiative for mangrove plantation along the coastline and on salt pan lands, under MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes).

❖ How Do Mangroves Help?

- Mangroves are **salt-tolerant plant communities** found in tropical and subtropical intertidal regions.
- They are **important refuges of coastal biodiversity** & also act as bio-shields against extreme climatic events.
- With the threat of **climate change and frequent tropical storms looming large**, planting more mangroves is necessary for India which has a coastline of about 7,500 km.

❖ Where Do Mangroves Grow In India?

- The '**State of World Mangroves 2022**' report by the Global Mangrove Alliance puts the total mangrove cover of the world at 1,47,000 sq km (14.7 million hectares).
- **India has about 4,992 sq km** (0.49 million hectares) of mangroves, according to the Indian State of Forest Report (ISFR) 2021.
- **Mangroves in India** are distributed across nine States and three Union Territories with West Bengal having the highest mangrove cover of 2,114 sq km.
- **The ISFR report also points** out that there has been an increase in the mangrove cover from 4,046 sq km in 1987 to 4,992 sq km in 2021.
- **True mangroves** are the ones which display morphological adaptations for a high saline mangrove ecosystem such as **pneumatophores, vivipary or crypto vivipary germination and salt-secreting cells**.

❖ What Is The Ecosystem Of These Forests?

- Mangrove forests are formed **when there is intertidal flow** and where adequate sediments are available for the trees to set down roots.

- **Aquaculture or fisheries** along the coast obstructing tidal flow are one of the biggest threats to the mangrove ecosystem.

- **In the Sundarbans**, the largest mangrove forest in the country, several instances of clearing mangroves for fisheries have come to light.

❖ Why is it crucial for fighting climate change?

- The '**State of World Mangroves 2022**' points out that mangroves are estimated to hold up to **four times the amount of carbon as some other ecosystems**.
- "**The loss of even 1% of remaining mangroves** could lead to the loss of 0.23 gigatons of CO₂ equivalent, equating to over 520 million barrels of oil," the report states.
- An initiative like **MISHTI is in line with India's Nationally Determined Contributions** announced by the Ministry of Environment, Forest and Climate Change to create an additional carbon sink of 2.5-3 billion tonnes of carbon dioxide (CO₂) equivalent, through additional forest and tree cover by 2030.
- **India joined the Mangrove Alliance for Climate**, at the 27th session of the Conference of the Parties in Egypt.

❖ Which agency will be responsible for it?

- The Budget states that MISHTI will be implemented through convergence between **the MGNREGS** (Mahatma Gandhi National Rural Employment Guarantee Scheme), **CAMPA** (Compensatory Afforestation Fund Management and Planning Authority) Fund and other sources.
- **The survival rate of mangrove seed** plantation is 50% and of saplings is about 60% and it takes three years for a new plant to stabilise.

Earthquake

❖ Context

- Recently, a magnitude 7.8 earthquake shook Turkey and Syria, killing thousands of people.

❖ Earthquakes

• About

- An earthquake is the **shaking of the surface of the Earth**.
- It results from the sudden release of energy in the Earth's lithosphere that creates seismic waves.
- Earthquake is the **form of energy** of wave motion transmitted through the surface layer of the earth.

• Cause:

- According to the **theory of plate tectonics**, the Earth's crust and upper mantle are made of large rigid plates that can move relative to one another.
- **Slips on faults** near the plate boundaries can result in earthquakes.

- **Focus and Epicenter** : The point inside the Earth where the **earthquake rupture starts** is called the focus or hypocentre.

- The point **directly above it** on the surface of the Earth is the epicenter.

- **Seismic Waves**: Seismic waves are the waves of energy **caused by the sudden breaking of rock within the earth**.

- They are the energy that **travels through the earth** and is recorded on seismographs.
- The **two main types** of waves are body waves and surface waves.

• Body Waves :

- These waves **travel into the body of the earth**.

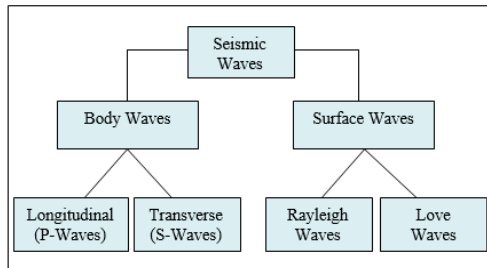
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- These waves are somewhat like **sound waves**.
- These are **faster than surface waves**.
- P-waves :**
 - Move faster** and are first to arrive at the surface.
 - Travel through **gaseous, liquid, and solid materials**.
 - High frequency and are the **least destructive**.
- S-waves :**
 - Arrive at the surface with some lag.
 - Travel only through **solid materials**.



- Surface Waves :**
 - When the body waves interact with surface rocks, **a new set of waves is generated called surface waves**.
 - These waves **move along the earth's surface**.
 - Surface waves are also **transverse waves** in which particle movement is perpendicular to the wave propagation.
 - They are similar to waves on the **water surface**.
 - They are **last to report on seismographs**.
- These waves are **more destructive**.

CITES and Red Sanders

❖ Context

- Recently, **The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** recorded 28 incidents of confiscation and seizure of more than **19,049 tonnes of Red Sanders logs**.

❖ CITES

- About :**
 - CITES was drafted as a result of a **resolution adopted in 1963** at a meeting of members of **IUCN** (The World Conservation Union).
 - It was approved on 3 March 1973, and entered into force on **1 July 1975**.
 - Switzerland** is the depository government for the CITES.
 - The CITES Secretariat is administered by **UNEP** (The United Nations Environment Programme)
- Aim :** To ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.
- Members :** States that join CITES, known as **Parties**, are **legally bound to implement it**.
 - Currently there are 184 Parties**
 - Not all members of the United Nations are Parties to the Convention.
 - India joined it in 1976.**
- India** had designed the **iconic CITES logo** in the form of an elephant in 1981.

• Provisions :

- No trade is allowed in species listed in CITES **Appendix I** while trade is strictly regulated in those under **Appendix II**.
- Appendix III** is a list of species included at the request of a Party that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation.
- It does not take the place of national laws.
- It only provides a framework to be **adopted by the nation in its own domestic legislation**.

❖ Red Sanders

- Scientific Name-** Pterocarpus santalinus.
- Characteristics :** It is a **small tree** that grows to **5-8 meters in height** and has a dark grayish bark.
 - Red Sanders is a **very slow-growing tree** species that attains maturity in natural forests after 25-40 years.
- Distribution :** It is an Indian endemic tree species, with a restricted geographical range in the Southern Eastern Ghats - Palakonda and Seshachalam hills.
- Application :** Due to its rich red color and therapeutic properties, it is highly demanded across Asia, particularly in China and Japan, for use in cosmetics and medicinal products as well as for making furniture & woodcraft.
- Conservation Status :** The Wildlife Protection Act- Schedule IV.
- IUCN Red List- Endangered.

News in Between the Lines

Voice Deepfakes



❖ Context

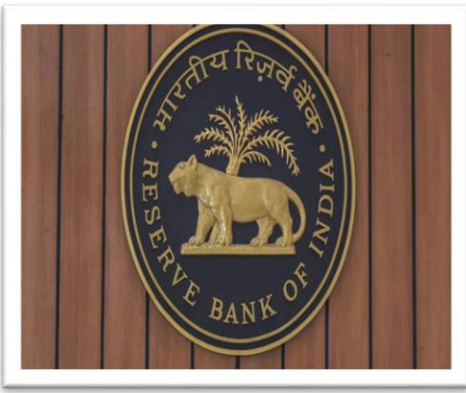
- Recently, several users of the social media platform 4chan, used **“speech synthesis”** and **“voice cloning”** service provider, ElevenLabs, to make voice deepfakes of celebrities.

❖ Key Highlights

- A voice deepfake is one that **closely mimics a real person's voice**.
- The voice can **accurately replicate tonality, accents, cadence, and other unique characteristics** of the target person.
- People use AI and robust computing power to generate such voice clones or synthetic voices.

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	• Sometimes it can take weeks to produce such voices. • Making deepfake voices to impersonate others without their consent is a serious concern that could have devastating consequences. • Threats : Attackers are using such technology to defraud users, steal their identity, and to engage in various other illegal activities like phone scams and posting fake videos on social media platforms.
Monetary Policy Committee (MPC) 	❖ Context ➤ Recently, The three-day deliberations of the Reserve Bank of India's (RBI's) rate-setting panel - Monetary Policy Committee (MPC) meeting has started. ❖ Monetary Policy Committee (MPC) • About : Under Section 45ZB of the amended RBI Act, 1934, the central government is empowered to constitute a six-member MPC. ▪ The first such MPC was constituted on September 29, 2016. • Functions : It determines the policy interest rate required to achieve the inflation target. ▪ Decisions are taken by majority with the Governor having the casting vote in case of a tie. ▪ The decision of the Monetary Policy Committee shall be binding on the Bank. • Composition : Six members (including the Chairman) - ▪ RBI Governor as its ex officio chairperson ▪ The Deputy Governor in charge of monetary policy ▪ An officer of the Bank to be nominated by the Central Board ▪ Three persons to be appointed by the central government.
Green Deal Industrial Plan 	❖ Context ➤ In a bid to support and expand its green industry, the European Union recently revealed the “Green Deal Industrial Plan”. ❖ Key Highlights • Green Deal Industrial Plan aims to cut red tape & provide massive subsidies. • The move has come just a few months after the United States announced its Inflation Reduction Act (IRA). ▪ IRA contains billions of dollars of tax cuts for clean energy and climate change programs with incentives for US-based manufacturing. ❖ Green Deal Industrial Plan • The proposal involves building : A simpler regulatory framework. ▪ The plan seeks to formulate a “Net-Zero Industry Act”. ▪ It will simplify rules & speed up the issuance of permits for green projects. ▪ It includes a “Critical Raw Materials Act”, which will provide access to materials like rare earths that are crucial for developing net-zero technology. ▪ Providing faster access to funds : State aid rules will be loosened in order to help EU's 27 governments with investing in the clean energy projects. ▪ Enhancing skills : The plan aims to establish “Net-Zero Industry Academies” that will provide up-skilling and re-skilling programmes in strategic industries. ▪ Improving the EU's trade network : It seeks to further “develop the EU's network of Free Trade Agreements and other forms of cooperation with partners to support the green transition.
Motion of Thanks	❖ Context ➤ Discussion on Motion of Thanks to the President's Address is scheduled to be taken up in both houses. ❖ What is the Motion of Thanks? • The first session after each general election and the first session of every fiscal year are addressed by the president. • In this address the president outlines the policies and programmes of the government in the preceding year and ensuing year.



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- This address of the president, which corresponds to the 'speech from the Throne in Britain' is discussed in both the Houses of Parliament on a **motion called the 'Motion of Thanks'**.
- At the end of the discussion, **the motion is put to vote**. This motion must be passed in the House. Otherwise, it amounts to the **defeat of the government**, the Motion of Thanks with **an amendment was adopted** for the first time on 30 January 1980.

A New Kind Of Ice



❖ Context

- Scientists have created a new type of ice **that matches the density and structure of water**, perhaps opening a door to studying water's mysterious properties.

❖ Key Highlights

- The ice is called medium-density amorphous ice.
- The team that created it, shook regular ice in a small container with centimeter-wide stainless-steel balls at temperatures of (–) 200 °C to produce the **variant, which has never been seen before**.
- The ice appeared as a white granular powder that **stuck to the metal balls**.
- Normally, when water freezes, it crystallizes and its molecules are **arranged into the familiar hexagonal**, solid structure that we call ice.
- Ice is less dense than its liquid form, an unusual property for a crystal. Depending on conditions such as pressure and the speed of freezing, water can also solidify in any of two dozen other regular arrangements.
- Amorphous ice is different: **it has no such order**.

NISAR



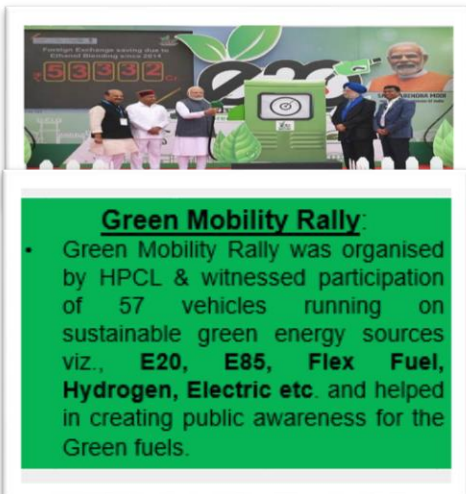
❖ Context

- Jointly developed by NASA and ISRO, an **Earth-observation satellite, called NISAR (NASA-ISRO Synthetic Aperture Radar)**, got a send-off ceremony at the American space agency's Jet Propulsion Laboratory.

❖ What is NISAR?

- The 2,800 kilograms satellite consists of both L-band and S-band **synthetic aperture radar (SAR)** instruments, which makes it a dual-frequency imaging radar satellite.
- **While NASA has provided the L-band radar**, GPS, a high-capacity solid-state recorder to store data, and a payload data subsystem, **ISRO has provided the S-band radar**, the GSLV launch system and
- It will **spot warning signs of natural disasters**, such as volcanic eruptions, earthquakes and landslides.
- The satellite **will also measure groundwater levels**, track flow rates of glaciers and ice sheets, and monitor the planet's forest and agricultural regions, which can improve our Understanding of Carbon Exchange.
- SAR (Synthetic Aperture Radar) capable of penetrating clouds and **can collect data day and night regardless of the weather conditions**.

India Energy Week 2023



Green Mobility Rally

- Green Mobility Rally was organised by HPCL & witnessed participation of 57 vehicles running on sustainable green energy sources viz., **E20, E85, Flex Fuel, Hydrogen, Electric etc** and helped in creating public awareness for the Green fuels.

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❖ Context

- Prime Minister launches **E20 Fuel & flags off Green Mobility Rally**.

❖ Key Highlights

- Prime Minister inaugurated **India Energy Week (IEW) 2023** in Bengaluru, Karnataka.
- **IEW is aimed to showcase** India's rising prowess as an energy transition powerhouse.
- As part of the event, **he also Launched E20 Fuel and Flagged off Green Mobility Rally** organised by Hindustan Petroleum Corporation Limited on behalf of Oil & Gas PSUs and PLL.

❖ E20 Fuel:

- **In line with the Ethanol Blending roadmap**, Prime Minister launched E20 fuel at 84 Retail Outlets of Oil Marketing Companies in 11 States/UTs. E20 is a blend of 20% ethanol with petrol.
- The Government aims to achieve a **complete 20% blending of ethanol by 2025**.
- Ethanol Blending Program & Biofuels Program has not only augmented India's energy security but has also resulted in reduction of **318 Lakh Metric Tonnes of CO2 emissions**.

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