

## DAILY CURRENT AFFAIRS (DCA)

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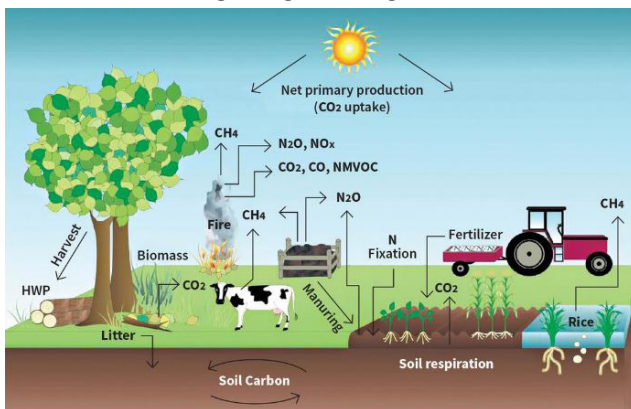
## CARBON FARMING

### Context

- **Techniques within carbon farming** can reduce **greenhouse gas emissions**.

### About

- Carbon farming, also known as **carbon sequestration farming or regenerative agriculture**, refers to a set of agricultural practices **designed to capture carbon dioxide from the atmosphere and store it in the soil or biomass**.
  - ♦ The goal is to **mitigate climate change** by reducing the concentration of greenhouse gases in the atmosphere.
- Regions with **long growing seasons, sufficient rainfall, and substantial irrigation** are best suited to practise carbon farming because they provide the best conditions in which to sequester carbon, through vegetation growth.



### Common Techniques used in Carbon Farming

- **Cover cropping:** Planting cover crops like legumes or grasses during fallow periods helps to protect and enrich the soil, promoting carbon storage.
- **No-till farming:** Avoiding or minimizing tillage helps to preserve soil structure and organic matter, preventing carbon loss from the soil.
- **Agroforestry:** Integrating trees and shrubs into agricultural landscapes not only sequesters carbon but also provides additional ecosystem services such as shade, windbreaks, and habitat for wildlife.
- **Biochar:** Biochar is a type of charcoal produced from organic materials like agricultural waste. When added to soil, biochar can enhance fertility and carbon sequestration.

- **Perennial crops:** Planting perennial crops instead of annuals helps to minimize soil disturbance and increase carbon storage over time.
- **Integrated nutrient management practices** promote soil fertility and reduce emissions by using organic fertilizers and compost.
- **Livestock management strategies** including rotational grazing, optimising feed quality, and managing animal waste can reduce methane emissions and increase the amount of carbon stored away in pasture lands.

### Significance

- **Climate Change Mitigation:** By increasing carbon storage in agricultural lands, carbon farming helps mitigate climate change by reducing the concentration of greenhouse gases in the atmosphere.
- **Soil Health Improvement:** Many carbon farming practices, such as cover cropping, crop rotation, and no-till farming, enhance soil health and fertility.
- **Biodiversity Conservation:** Carbon farming methods often prioritize the preservation and restoration of natural habitats within agricultural landscapes.
  - ♦ These practices provide crucial habitat for native species, support pollinators, and enhance overall biodiversity, contributing to ecosystem resilience.
- **Resilience to Climate Change:** Climate-resilient agriculture practices, such as agroforestry and diversified cropping systems promoted within carbon farming, help farmers adapt to the impacts of climate change.

### What are the Opportunities in India?

- **Agro-Ecological Practices:** Grassroots initiatives and pioneering agrarian research in India are demonstrating the viability of organic farming to sequester carbon.
  - ♦ In this regard, **agro-ecological practices in India** could yield significant economic benefits, with the potential to generate \$63 billion in value from approximately 170 million hectares of arable land.
  - ♦ This estimate includes an annual payment of around ₹5,000-6,000 per acre for farmers to provide climate services by adopting sustainable agricultural practices.

- **Topography of India:** Regions with extensive agricultural land, such as the Indo-Gangetic plains and the Deccan Plateau, are well suited to adopt carbon farming whereas the mountainous terrain of the Himalayan region is less so.
  - ◆ Coastal areas are prone to salinisation and have limited access to resources, thus limited the adoption of traditional farming practices.
- **Carbon credit systems** can incentivise farmers by providing additional income through environmental services.
  - ◆ Studies have shown agricultural soils can absorb 3-8 billion tonnes of CO<sub>2</sub>-equivalent every year over 20-30 years.
  - ◆ This capacity can bridge the gap between feasible emissions reductions and the indispensable stabilisation of the climate.
  - ◆ So carbon farming could also be a sustainable strategy to **mitigate climate change and enhance food security in India.**

### Challenges to Carbon Farming

- **Dependent on Other Factors:** Carbon farming effectiveness varies depending on multiple factors — geographical location, soil type, crop selection, water availability, biodiversity, and farm size and scale.
  - ◆ It can be challenging in hot and dry areas where the availability of water is limited, and prioritised for drinking and washing needs.
  - ◆ Limited water availability can hinder the growth of plants, thus restricting the potential for sequestration through photosynthesis
- **Selecting which plants to grow** also becomes crucial because not all species trap and store carbon in the same amounts or in an equally effective manner.
  - ◆ Fast-growing trees and deep-rooted perennial grasses tend to be better at this task — but on the flip side, these types of plants may not be well-suited to arid environments.
- **Financial Assistance:** Adoption of carbon farming practices require financial assistance for farmers to overcome the costs of implementing them.
  - ◆ In the context of developing countries like India, small-scale farmers lack the resources to invest in sustainable land management practices and environmental services.

### Conclusion

- Scaling up Carbon Farming requires concerted efforts to address several challenges, including limited awareness, inadequate policy support, technological barriers, and an enabling adoption environment.
  - ◆ Yet promoting carbon farming is in India's interests — to mitigate climate change while improving soil health, enhancing biodiversity, and creating economic opportunities for its adopters.
- In sum, while carbon farming holds promise as a mitigation strategy, addressing these challenges is essential to realise its full potential in combating climate change.

Source: TH

## MARKET-BASED APPROACHES TO FOREST CONSERVATION

### In News

- According to a major scientific review, Market-based approaches to forest conservation have largely failed to protect trees or alleviate poverty.

### Key Finding of study

- The report compiled by the **International Union of Forest Research Organizations (IUFRO)**, a group of 15,000 scientists in 120 countries, will be presented at a high-level UN forum.
- According to it ,Trade and finance-driven initiatives had made “limited” progress halting deforestation and in some cases worsened economic inequality.
- There is a rise in **complex and overlapping market-based schemes** “with financial actors and shareholders more often interested in short-term profits than long-term just and sustainable forest governance”.
- **Poverty and forest** loss both are persistent across different regions of the world.
- Green trade policies imposed by wealthy countries—like the EU’s ban on imports linked to deforestation—might look good from Brussels but did not consider the knock-on effects

### Market-based conservation instruments

- Market-based approaches to forest conservation comprises carbon **offsets and deforestation-free certification schemes.**



- It includes a range of policy tools, from pollution taxes and tradable permits to direct payments for private conservation efforts.
- They can be either regulatory (e.g., environmental taxes or tradable permits schemes) or voluntary (e.g., payments for ecosystem services).

### Importance

- Market-based solutions generally provide flexibility to undertake actions that have the lowest cost and result in more cost-effective achievement of natural resource conservation and environmental goals compared to traditional command and control approaches.
- Market-based conservation quantifies economic values for natural resource conservation strategies and develops or enhances public and private markets in which these values can be sold and/or traded to achieve natural resource and environmental goals

### Steps in India

- The Ministry of Environment, Forests and Climate Change has launched the Indian Forest & Wood Certification Scheme.
  - ♦ This national forest certification scheme offers voluntary third-party certification designed to promote sustainable forest management and agroforestry in the country. The scheme includes forest management certification, tree outside forest management certification, and chain of custody certification.

### What more needs to be done ?

- Forest destruction throughout the world poses significant risks. Not only are forests a source of valuable timber and non-timber products, but they also provide important environmental services that help sustain life on Earth.
- Therefore, There is a need for increasingly popular market-based approaches which are often promoted as effective at saving forests, curbing global warming and raising living standards in developing nations.

Source:TH

## HAMAS ACCEPTS PROPOSAL FOR GAZA CEASEFIRE

### Context

- Hamas announced its acceptance of a ceasefire proposal put forth by Egypt and Qatar, signaling a potential breakthrough in the ongoing Israel-Gaza conflict.

### About

- The proposal includes a **three-stage truce**, each phase lasting **42 days**.
- It includes a **withdrawal of Israeli forces from Gaza** and a return of displaced Palestinians to their homes as well as an exchange of Israeli captives and Palestinian prisoners.

### What is Hamas?

- Hamas is the **largest Palestinian militant Islamist group** and one of the two major political parties in the region.
  - ♦ Currently, it governs more than two million Palestinians in the Gaza Strip.
- **Foundation:** The group was founded in the late 1980s, after the beginning of the first Palestinian intifada, or uprising, against Israel's occupation of the West Bank and Gaza Strip.
- Hamas as a whole, or in some cases its military wing, is **designated a terrorist group** by Israel, the United States, the European Union, the United Kingdom, and other countries.

### Israel Palestine Conflict

- It is a decades long dispute between Israel and Palestine that began in the middle of the twentieth century when the Jews from various parts of the world were granted the homeland in present-day Israel by Britain.
- It is one of the world's longest conflicts where **Israel has occupied the West Bank and the Gaza Strip** which the Palestine state claims.
- Numerous **attempts have been made to resolve the conflict** as part of the peace process by various groups of countries and the United Nation.
- With time, the countries around have normalized the ties with Israel through the **Abraham Accord, Oslo Accord, etc.**
- But **the deadlock still persists** and the world community is persistent in its effort to attain the **two-state solution**.

### Present Conflict

- **Backdrop of the recent attack:** Hamas's attack follows months of rising violence in the Israeli-occupied West Bank, with stepped-up Israeli raids, Palestinian street attacks and assaults by Jewish settlers on Palestinian villages.

- **Issue over Jerusalem:** Israel considers the whole of Jerusalem as its capital and not just a part of it. But Palestinians don't agree with that and rather want it to be their capital of future independent Palestine.



### Way Ahead

- Peace based on a “two-state solution” is much needed with the help of international organizations and can only be achieved from Israel-Palestine talks.
- Israel said the deal did not meet its “core demands” and its War Cabinet has decided to continue the Rafah operation. However it would send negotiators to Egypt to work on a deal.

Source: TH

## NEPAL'S NEW CURRENCY NOTE HAS REIGNITED DISCOURSE OVER BORDER DISPUTES

### Context

- Nepal has announced the printing of a new Rs 100 currency note that features Indian territories of Lipulekh, Limpiyadhura, and Kalapani, a move that has been contested by India.

### Background

- Nepal shares a border of over **1,850 km** with five Indian States — Sikkim, West Bengal, Bihar, Uttar Pradesh and Uttarakhand.
- In **2019**, Lipulekh, Kalapani, and Limpiyadhura had been included in India's map.
- Tensions between both the nations emerged after Nepal issued a political map in **2020**, which included the same territories.

### Where is Kalapani located?

- Kalapani is a region located in the easternmost corner of Uttarakhand's **Pithoragarh district**.

- It shares a border on the north with the **Tibet Autonomous Region of China** and **Nepal** in the east and south.
- The area is in India's control but Nepal claims the region as part of **Dharchula** district, because of historical and cartographic reasons.
- The area is the largest territorial dispute between Nepal and India consisting of at least **37,000 hectares** of land in the High Himalayas.

### Controversy over Nepal-India border

- Nepal has asserted its claim based on the **Sugauli Treaty of 1816**, signed between the **East India Company** and **Guru Gajraj Mishra**.
- Under the Treaty, the **Kali River was marked as Nepal's western boundary** with India.
- According to Nepal the east of the Kali river should begin at the source of the river which is in the mountains near Limpiyadhura.
  - ♦ While India claims the border begins at Kalapani, where the river begins.
- The Kali River has changed direction over the years, causing confusion in defining the border.



### Susta Border dispute

- Susta is a disputed territory between Nepal and India. It is administered by India as part of **West Champaran district of Bihar**.
- Nepal claims the area a part of West Nawalparasi District under Susta rural municipality, alleging that over 14,860 hectares of Nepali land in Susta has been encroached upon by India.

### Way Ahead

- India-Nepal has a long history of cultural connections. It is important for India's economic and strategic interests. Having a friendly and supportive Nepal will serve as a buffer between India and an assertive China.

- India should engage constructively with Nepal and work towards resolving the ongoing border disputes.

Source: BS

## MAGNETIC RESONANCE IMAGING

### Context

- **Magnetic resonance imaging** is an indispensable tool for trying to look inside the **human body without surgery**.

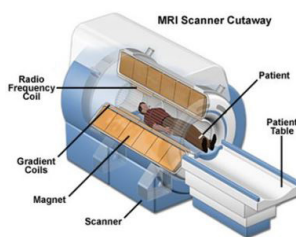
### About

- The technique was developed in the early 1970s; later the same decade, **Paul Lauterbur and Peter Mansfield** refined them for their commercial use.
- They were awarded the medicine **Nobel Prize in 2003**, speaking to the significance of the technique and its place in modern medical diagnostics.

### Magnetic Resonance Imaging

- Magnetic resonance imaging (MRI) is used to obtain **images of soft tissues within the body**.
  - ♦ It is a **non-invasive diagnostic procedure** widely used to image the brain, the cardiovascular system, the spinal cord and joints, various muscles, the liver, arteries, etc.
- **The MRI scan process consists of 4 stages:**
  - ♦ Place the patient in a strong magnetic field; Nuclear stimulation; Signal recording; Build an image from the received signal.
  - ♦ MRI uses **magnets and radio waves** to produce images on a computer. MRI does not use ionizing radiation.

### MRI Scan



The MRI scan works on the principle of Nuclear Magnetic Resonance or NMR. It uses the fact that the nucleus of atoms spin and have an electric charge produces a magnetic field (just like current in a magnet).

- **Application:** Its use is particularly important in the observation and treatment of certain cancers, including prostate and rectal cancer, and to track neurological conditions including Alzheimer's, dementia, epilepsy, and stroke.

- ♦ Researchers have also used MRI scans of changes in blood flow to infer the way the activity of neurons is changing in the brain; in this form, the technique is called functional MRI.

### Significance

- **Accurate Diagnosis:** MRI provides detailed images of soft tissues, organs, and structures within the body with high resolution and clarity.
  - ♦ This allows healthcare professionals to detect and diagnose a wide range of medical conditions, including brain tumors, spinal cord injuries, joint abnormalities, cardiovascular diseases, and musculoskeletal disorders, often at earlier stages when treatment options may be more effective.
- **Non-Invasive:** Unlike some other imaging techniques like X-rays or CT scans, MRI does not use ionizing radiation.
  - ♦ Instead, it relies on magnetic fields and radio waves, making it a safer option, especially for pregnant women, children, and individuals who require repeated imaging studies.
- **Functional Imaging:** Functional MRI (fMRI) is a specialized MRI technique that measures changes in blood flow and oxygenation in the brain in response to neural activity.
  - ♦ It is used to map brain function, identify regions associated with specific tasks or behaviors, and diagnose neurological conditions such as epilepsy, Alzheimer's disease, and stroke.
- **Early Detection:** MRI can detect subtle changes in tissues and organs, often before symptoms appear, enabling early intervention and treatment.
- **Research and Development:** MRI plays a crucial role in biomedical research, enabling scientists to study anatomy, physiology, and disease mechanisms in living organisms.

Source: TH

## NEWS IN SHORT

### RABINDRANATH TAGORE

#### In News

- Rabindranath Tagore Jayanti was celebrated recently.

#### About Rabindranath Tagore

- Rabindranath Tagore was a great Bengali poet, writer, philosopher, novelist

- He was born on May 7, 1861 and was the youngest son of Debendranath Tagore, a leader of the Brahmo Samaj,
  - ♦ Brahmo Samaj was a religious sect in nineteenth-century Bengal and it attempted a revival of the ultimate monistic basis of **Hinduism as laid down in the Upanishads**.
- He honoured Mahatma Gandhi by referring to him as Mahatma, Gandhiji also referred to him as Gurudev.
- **Contributions** : Tagore's contribution to the field of art and literature is unparalleled.
  - ♦ He achieved a significant milestone by becoming the first non-European to receive the **Nobel Prize for his poetry collection, "Geetanjali"**.
  - ♦ Apart from being a poet and writer, he was an influential artist and musician.
  - ♦ He penned national anthems of India and Bangladesh.
  - ♦ He founded Viswa Bharti University which is known as Shantiniketan.
- Rabindranath Tagore also opposed the Jallianwala Bagh incident and wrote a letter to the then Governor-General of India and returned the knighthood.
- He passed away on August 7, 1941.

Source: TH

## ARECA NUT

### Context:

- Recently, the **Areca Research Centre at Shivamogga** found that the areca nut grown in the **Tirthahalli region** as the best quality areca among the varieties grown in **Karnataka**.

### Areca Nut (aka Betel Nut or Supari)

#### About:

- It is the seed of the **Areca palm (*Areca catechu L.*)**, and an important cash crop of India.
- It is the fourth most commonly used **psychoactive substance** in the world after caffeine, nicotine, and alcohol.
  - ♦ It is used as a key ingredient in several kinds of **Smokeless Tobacco (SLT)** preparations.
- An estimated 600 million people chew it, with southern Asia, especially India, Myanmar, Bangladesh, and Pakistan, being high prevalence areas.

### Cultivation:

- Arecanut requires **abundant and well-distributed rainfall**.
- It grows well within the **temperature range of 14-36°C**.
- **Laterite, red loam, and alluvial soils** are most suited.
- Major states cultivating the areca nut are **Karnataka, Kerala, Assam, Tamil Nadu, Meghalaya and West Bengal**.

Source: TH

## FUSOBACTERIUM NUCLEATUM

### Context:

- Researchers have observed a notably higher abundance of **Fusobacterium nucleatum** bacteria in oral tumors compared to the oral cavity of healthy individuals.

### Fusobacterium Nucleatum (*F. nucleatum*)

- It is a **Gram-negative, anaerobic bacterium** that is commonly found in the **human oral cavity**.
- In the oral cavity, **F. nucleatum** is considered a **'bridging' organism** that can flourish and, along with other microbes, **trigger inflammation** leading to gum, or periodontal, disease.
- *F. nucleatum* is rarely seen in the guts of healthy people. However, in cases of **colorectal cancer**, the bacteria are found in tumours in the gut, where they help cancer cells escape from the immune system and spread to other parts of the body.

Source: TH

## ORANGUTAN

### In News

- Orangutan named Rakus in Indonesia used a medicinal plant to treat a wound, the plant, Akar Kuning, helped in wound healing.

### About Orangutan

- The name orangutan means **"man of the forest"** in the **Malay language**.
- They have a characteristic ape-like shape, shaggy reddish fur and grasping hands and feet.
- They are the **largest arboreal mammal**, spending most of their time in trees.



- They are the closest living relatives of humans and they share 96.4% of Human genes and are highly intelligent creatures.
- There are three species of **Orangutan** - the Bornean, Sumatran and Tapanuli - which differ a little in appearance and behaviour.
- **Habitat and Distribution** : They can occur up to 1,500m above sea level, most are found in lowland areas and prefer forests in river valleys or floodplains.
  - ♦ These great apes are only found in the wild on the islands of Borneo and Sumatra.



- **Eating habits** : Orangutans mainly eat fruits, such as mangoes, lychees and figs, but they also feed on young leaves, flowers, insects, and even small mammals.
- **IUCN Red List status** :All three orangutan species are critically endangered
- **Importance** : They are known as gardeners of the forest. They play a vital role in seed dispersal and in maintaining the health of the forest ecosystem, which is important for people and a host of other animals, including tigers, Asian elephants and Sumatran rhinos.
- **Threats** : Deforestation and hunting are the biggest threats to orangutans

Source:LM

## 4TH SESSION OF INDIA-GHANA JOINT TRADE COMMITTEE

### Context

- The 4th Session of the India-Ghana Joint Trade Committee (JTC) concluded in Accra.

### Key Highlights

- India and Ghana agreed to work towards the operationalization of India's **Unified Payment Interface (UPI)** on Ghana's **Ghana Interbank Payment and Settlement Systems (GHIPSS)** within a period of 6 months.

- Both sides explored the possibility of signing Memorandums of Understanding (MoUs) on Digital Transformation Solutions and the local currency settlement system.
- Also, discussions were held on leveraging opportunities under the **African Continental Free Trade Agreement (AfCFTA)**.

### Significance

- Ghana holds significance as a trading partner for India in the African region, with bilateral trade amounting to **USD 2.87 billion in 2022-23**.
- India stands as one of the leading investors in Ghana, spanning sectors like pharmaceuticals, construction, manufacturing, trade services, agriculture, and tourism.

Source: PIB

## PM SURYA GHAR BIJLI YOJANA

### Context

- PM Surya Ghar Bijli Yojana has created confusion due to being promoted as a 'free electricity scheme'.

### About

- **PM Surya Ghar Muft Bijlee Yojana** aims to provide free electricity to one crore households in India, who opt to install roof top solar electricity units.
  - The households will be able to get **300 units** of electricity free every month.
  - The scheme provides for a subsidy of **60 percent** of the solar unit cost for systems up to **2 kW** capacity and **40 percent** of additional system cost for systems between **2 to 3 kW** capacity.
    - ♦ The subsidy has been capped at 3 kW capacity.

### Other Features of the Scheme

- A **Model Solar Village** will be developed in each district of the country to act as a role model for adoption of rooftop solar in rural areas,
- Urban Local Bodies and Panchayati Raj Institutions shall also benefit from incentives for promoting **Rooftop Solar (RTS) installations** in their areas.
- The scheme provides a component for payment security for **renewable energy service company (RESCO)** based models as well as a fund for innovative projects in RTS.

Source: DTE



## PARTICIPATORY NOTES

### Context

- **Investments through participatory notes** in the Indian capital markets reached Rs 1.5 lakh crore at the end of February, making it **the highest-level in nearly six years**.

### About

- **Participatory notes (P-notes)** are issued by **registered foreign portfolio investors (FPIs)** to **overseas investors** who wish to be part of the **Indian stock market** without registering themselves directly.
- Participatory notes were introduced in India in **2000 by the Securities and Exchange Board of India (SEBI)** to allow foreign investors (financial institutions and high-net-worth individuals) access to the Indian financial markets.
- **Advantages of participatory notes:**
  - ♦ **Anonymity:** Any entity investing in participatory notes is not required to register with SEBI, whereas all FPIs have to compulsorily get registered. It enables large hedge funds to carry out their operations without disclosing their identity.
  - ♦ **Ease of trading:** Trading through participatory notes is easy because they are like contract notes transferable by endorsement and delivery.
  - ♦ **Tax saving:** Some of the entities route their investment through participatory notes to take advantage of the tax laws of certain preferred countries.
- **Disadvantages of P-notes:** However, because of the anonymity, Indian regulators face difficulty determining a participatory note's original owner and end owner.
  - ♦ Therefore, substantial amounts of unaccounted-for money enter the country through participatory notes. This flow of untracked funds has raised some red flags.

Source: BS

## GST APPELLATE TRIBUNAL

### Context

- The Union Minister for Finance and Corporate Affairs administered the **oath of integrity and secrecy to Justice (Retd.) Sanjaya Kumar Mishra** as the **President of the GST Appellate Tribunal (GSTAT)**.
  - ♦ The appointment marks the beginning of the operationalisation of the GSTAT.

### About

- The GSTAT is the Appellate Authority established under the **Central Goods and Services Tax Act, 2017**, to hear various appeals under the said Act.
- It represents a specialised authority formed **to resolve GST-related disputes** at the appellate level.
  - ♦ It will be the forum of **second appeal under GST laws** and is the **first common forum of dispute resolution between the Centre and the states**.
- It consists of a **Principal Bench and various State Benches**.
  - ♦ As per the approval of the GST Council, the Government has notified the Principal Bench, to be located at New Delhi, and 31 State Benches at various locations across the country.
- **Significance:** The Tribunal will ensure **swift, fair, judicious and effective resolution to GST disputes**, besides significantly reducing the burden on higher courts.
  - ♦ The establishment of the GSTAT would further enhance the effectiveness of the GST system in India and foster a more transparent and efficient tax environment in the country.

Source: PIB

