

DAILY CURRENT AFFAIRS (DCA)

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Table of Content

Earth's Inner Core is Undergoing Structural Changes

Contesting of Elections by the Convicted Persons

India- France Cooperation on IMEC Project

Freebies Culture in India

Paris AI Action Summit

NEWS IN SHORT

Maharishi Dayanand Saraswati

Deepwater 'Space Station' in South China Sea

Public Accounts Committee

Avian Influenza

India's Palm Oil Imports Plunge

Einstein Ring

BrahMos NG

Hyderabad Bird Atlas

EARTH'S INNER CORE IS UNDERGOING STRUCTURAL CHANGES

In News

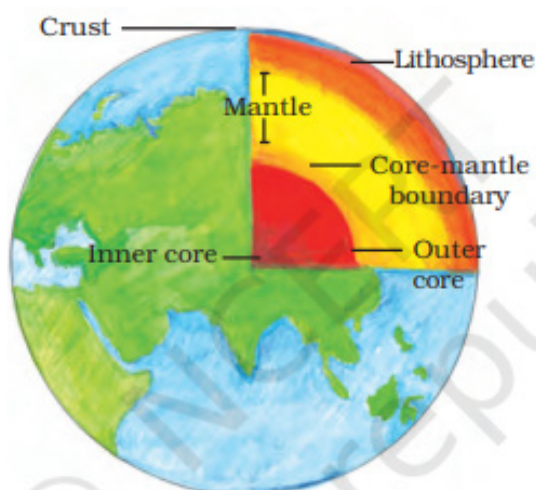
- A recent study published in Nature Geoscience suggests that the **Earth's inner core is undergoing structural changes.**

About the Study

- Methodology:** Researchers used seismic waves (shockwaves from earthquakes) to examine Earth's internal layers.
 - These waves help visualize the Earth's internal structure, similar to how CT scans work for the human body.
- Observations Made:**
 - Scientists previously assumed **Earth's inner core was solid and rigid**. New findings suggest it is softer near the surface.
 - The solid inner core is being influenced by the **turbulent molten outer core**. This interaction might be altering its rotation and affecting Earth's day-length.
 - Earlier, it was believed that the inner **core rotates independently due to interactions with the mantle**. The study suggests that this rotation is now slowing down.

About Earth's Layers

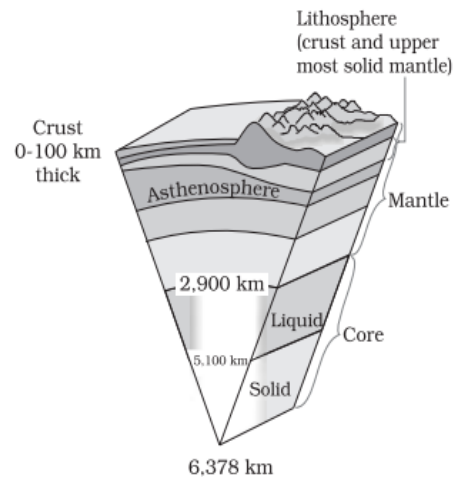
- Earth is a dynamic planet that undergoes continuous changes inside and outside.



- The Earth is made up of several concentric layers:
 - Crust:** The outermost layer; thinnest (35 km on continents, 5 km on ocean floors). It consists of silica and alumina (sial) on continents and silica and magnesium (sima) on the ocean floors.

- The Mantle:** Located beneath the crust, extends from the Moho's discontinuity to a depth of 2,900 km.
 - The upper portion is called the **asthenosphere** (extends up to 400 km) and is the main source of magma.

INTERIOR OF THE EARTH



- The crust and the upper mantle form the lithosphere with a thickness ranging from 10-200 km.
- The lower mantle is solid and extends beyond the asthenosphere.
- The Core:** Located beneath the mantle at a depth of 2,900 km.
 - The core has very high temperature and pressure and It consists of two parts:
 - Outer core: Liquid state.
 - Inner core: Solid state.
 - Made mostly of nickel and iron, sometimes called the **nife layer**.
 - The outer core has been known to be turbulent, it was previously believed that this turbulence did not affect the inner core on human timescales.

Source :DTE

CONTESTING OF ELECTIONS BY THE CONVICTED PERSONS

Context

- The Supreme Court is hearing petitions seeking **a lifetime ban on convicted persons from contesting elections.**

About

- The petition argues** that if a convicted person is **not eligible** for even a junior-grade government job, how could they become law makers?

- The Supreme Court has again **sought the response of the Central government and the EC on the current petition.**
- **Criminalisation of Politics:** A report by The Association for Democratic Reforms (ADR) states that 251 (46%) of the 543 elected MPs in 2024, have criminal cases against them, and 171 (31%) face serious criminal charges including rape, murder, attempt to murder and kidnapping.
 - ♦ Chances of winning for a candidate with a criminal background was 15.4% as against just 4.4% for a candidate with a clean background.

Disqualification of Convicted Person

- **Section 8(3) of the Representation of the People Act, 1951 (RP Act, 1951),** provides for the **disqualification of a person convicted** of a criminal offence and sentenced to imprisonment for **not less than two years.**
 - ♦ Such a person is disqualified from contesting elections for a **further period of six years from the date of release.**
- **Heinous Crimes:** Under Section 8(1), individuals convicted of heinous crimes like rape, untouchability under the PCR Act, unlawful activities under UAPA, or corruption will be disqualified from holding office, regardless of their sentence length, and for six years after release.
- **Section 11 of the RP Act, 1951** provides that the Election Commission (EC) may remove any disqualification or reduce the period of disqualification of a convicted person.

Arguments in Favour of Banning the Convicted Person from Contesting Elections

- **Preserving Integrity:** Convicted individuals, especially for serious crimes, make their candidacy detrimental to the integrity of the political system.
- **Public Trust:** Allowing convicted persons to run for office will undermine public trust in the electoral process and in elected representatives.
- **Role Model Standards:** It could send the wrong message about the acceptability of illegal or unethical behavior.
- **Security and Safety:** Individuals convicted of violent crimes or corruption may pose a threat to the safety of citizens.
- **Social Justice:** Preventing convicted persons from holding office could be seen as a safeguard for social justice, ensuring that those with a history of criminal behavior are not in positions of

power where they could influence laws or policies to their benefit.

Arguments Against

- **Right to Participation:** Convicted individuals still retain their fundamental democratic rights, including the right to run for office and participate in the political process.
- **Rehabilitation:** People who have served their sentences may have reformed and should be allowed to contribute to society through public office.
- **Presumption of Innocence:** Banning individuals based on a conviction could be unfair if their legal status changes.
- **Overreach of Power:** Banning convicted persons could be seen as an overreach by the state, limiting citizens' freedom to choose their leaders.

Past Judgements of SC

- **Association for Democratic Reforms (ADR) case (2002):** It mandated the disclosure of criminal records of all candidates contesting elections.
- **The CEC vs Jan Chaukidar case (2013):** It upheld that persons who are under trial prisoners cease to be 'electors' and hence not qualified to contest elections.
 - ♦ However, the Parliament amended the act in 2013 to overturn this judgment allowing under trial prisoners to contest elections.
- **Lily Thomas (2013) Case:** The court struck down section 8(4) of the RP Act, 1951, that allowed a sitting legislator to continue as a member even after being convicted if they filed an appeal, as unconstitutional and against political justice.
 - ♦ After this judgment, a sitting legislator is disqualified immediately after the sentencing for a conviction.

Conclusion

- The Law Commission in 1999 and 2014, and the EC on various occasions have highlighted the **need to curb the criminalisation of politics.**
- They have recommended that even persons against whom charges are framed by a competent court for an offence that entails punishment of more than five years should not be allowed to contest elections.
- However, there has been no consensus on this recommendation amongst political parties considering the risk of its misuse.

Source: TH

INDIA- FRANCE COOPERATION ON IMEC PROJECT

Context

- India and France announced that they would continue to work closely to implement the India-Middle East-Europe Corridor (IMEC) project.

India-Middle East-Europe Economic Corridor (IMEC)

- Participants:** During the Delhi G20 Summit, India, USA, UAE, Saudi Arabia, France, Germany, Italy and the European Union signed a Memorandum of Understanding (MoU) to establish the India-Middle East-Europe Economic Corridor.
- Objective:** The corridor will encourage and provide impetus to economic development through enhanced connectivity and economic integration between Asia, West Asia, the Middle East and Europe.

Components

- The India-Middle East-Europe Economic Corridor will consist of two separate corridors,
 - The East corridor** connecting India to West Asia/Middle East and
 - The Northern corridor** connecting West Asia/Middle East to Europe.
- The project would involve the building of a **railway line** across the Arabian Peninsula through the United Arab Emirates and Saudi Arabia and develop **shipping connectivity** to India and Europe on either end of this corridor.
- The corridor could be further developed to transport energy through pipelines and data through an optical fiber link.

Ports Which are Part of IMEC

- India:** Ports in Mundra (Gujarat), Kandla (Gujarat), and Jawaharlal Nehru Port Trust (Navi Mumbai).
- Europe:** Piraeus in Greece, Messina in Southern Italy, and Marseille in France.
- Middle East:** Ports include Fujairah, Jebel Ali, and Abu Dhabi in the UAE, as well as Dammam and Ras Al Khair ports in Saudi Arabia.
- Israel:** Haifa port.
- Railway Line:** The railway line will link Fujairah port in the UAE to Haifa port in Israel, passing through Saudi Arabia (Ghuwaifat and Haradh) and Jordan.

India-France Partnership in IMEC

- Access to European Markets:** France's strategic location provides India with a crucial gateway to European markets, facilitating trade and investment flows.

- Technological Collaboration:** France's expertise in infrastructure development, logistics, and digital technologies is invaluable for the successful implementation of the IMEC.
- Countering China's Belt and Road Initiative (BRI):** India and France, both wary of the BRI's implications, can leverage the IMEC to offer an alternative model of regional connectivity.

Hurdle before IMEC

- Vulnerability of the Strait of Hormuz:** Almost the entire trade of the IMEC architecture flows through the Strait of Hormuz and with Iran's proximity and control over the strait, the risk of disruptions remain very high.
- Financial Viability:** Securing adequate funding for such a large-scale project is essential. A clear and robust financial model is needed to attract investors.
- Geopolitical Sensitivities:** The project involves multiple stakeholders with diverse interests. Navigating these complexities and ensuring consensus will be crucial.

Way Ahead

- India and France** share converging interests in promoting stability and connectivity in the **Indo-Pacific region**, making them natural partners in this endeavor.
- The geopolitical concerns need to be managed by **striking a delicate balance** in accommodating the geopolitical interests of the participating nations and addressing potential political sensitivities.

Source: TH

FREEBIES CULTURE IN INDIA

Context

- The Supreme Court Judge said that the freebies ease the poor into a parasitic life, draining them of the will to find work.

About

- This comes amid **announcement of freebies by governments and political parties before elections**.
- SC held that the **steps to make the poor and the disadvantaged part of the mainstream** were better than offering them freebies.

What are Freebies?

- The **"freebies" or "revdi culture"** refers to the practice of political parties offering free goods,

services, or subsidies to the public, particularly during election campaigns, in an attempt to garner votes.

- ♦ The word “revdi” is used metaphorically to describe the free handouts, as it evokes the image of distributing free gifts.
- **Section 123 of the RP Act:** It says that it is deemed a corrupt practice if any gift, offer or promise of gratification is made to voters directly or indirectly by a candidate or his agent or any other person acting on their consent.

Arguments in Favour of Freebies

- **Social Welfare:** Freebies can provide immediate relief to economically disadvantaged sections, helping reduce poverty and inequality.
- **Empowerment:** They can empower marginalized groups, especially women, students, and low-income families, by providing opportunities they might otherwise not afford, like free education or cash transfers.
- **Boost to Consumption:** Offering free goods or services, like free electricity or gas, can increase disposable income, allowing people to spend more on other necessities, thereby stimulating the economy.
- **Incentive for Governance:** Freebies can also act as a measure of how well a government is meeting the basic needs of its citizens, acting as a direct reflection of governance efficiency.

Arguments Against Freebies

- **Financial Burden:** The cost of providing freebies can strain government finances, diverting resources from long-term development projects like infrastructure, healthcare, and education.
- **Dependency:** Freebies may create a dependency on the state, discouraging self-reliance and a culture of entitlement, instead of encouraging people to seek sustainable opportunities.
- **Inefficiency:** Freebies often do not address the root causes of poverty or economic inequality, focusing on short-term solutions rather than creating lasting opportunities for growth and employment.
- **Populist Politics:** The distribution of freebies can be seen as a way for political parties to manipulate voter sentiment and secure votes, undermining the integrity of elections and democratic processes.
- **Unsustainable:** The long-term sustainability of freebies is questionable, as governments may struggle to maintain such schemes without affecting fiscal health or leading to increased taxes for the general population.

Important SC Judgements Related to Freebies:

- **S. Subramaniam Balaji vs. State of Tamil Nadu (2013):** The Supreme Court upheld the right of political parties to offer freebies but emphasized that the distribution of freebies should be done responsibly.
 - ♦ It stated that only an individual candidate, not his party, can commit a ‘corrupt practice’ under the RP Act by promising free gifts.
- **Public Interest Litigation (PIL) on Freebies (2022):** In this case, the Supreme Court refrained from passing any immediate judgment but asked the Election Commission of India to look into the matter and come up with recommendations.
 - ♦ The court also raised concerns about the long-term sustainability of such promises and their impact on governance.

Way Ahead

- **Regulation:** The government could introduce clear guidelines to regulate the distribution of freebies, ensuring they are targeted and aligned with long-term welfare goals rather than just electoral promises.
- **Electoral Reform:** The Election Commission could enforce stricter rules on the distribution of freebies during election periods, limiting excessive promises and ensuring they do not affect the fairness of elections.
- **Fiscal Responsibility:** States and the central government need to adopt more fiscally responsible policies to ensure that any welfare schemes are financially sustainable and do not lead to a debt burden.
- **Public Awareness:** Educating the public about the implications of freebies and encouraging a demand for policies that provide long-term solutions, such as infrastructure development and job creation, could shift the focus toward growth-oriented governance.

Source: TH

PARIS AI ACTION SUMMIT

Context

- PM Modi co-chaired the third edition of the AI Action Summit in Paris.

Paris AI Action Summit

- The summit emphasized sustainable AI growth and energy efficiency, aligning with global climate imperatives.
- **Its objectives include:**
 - ♦ Providing access to independent, safe, and reliable AI for a wide range of users.

- ♦ Developing environmentally friendly AI with lower energy demands.
- ♦ Ensuring effective and inclusive global AI governance.
- **The event focused on five key themes:** Public service AI, Future of work, Innovation and culture, Trust in AI, and Global AI governance.

India's Perspective and Initiatives

- **AI for Global Good:** India emphasized AI's transformative potential across sectors like healthcare, education, and agriculture, highlighting its role in achieving the UN Sustainable Development Goals (SDGs).
- **Five Pillars for Responsible AI Development:** PM Modi proposed a five-point agenda for ethical and transparent AI growth:
 - ♦ Pooling global resources and talent for AI innovation.
 - ♦ Developing open-source AI systems.
 - ♦ Creating high-quality, unbiased datasets.
 - ♦ Democratizing AI for people-centric applications.
 - ♦ Addressing cybersecurity concerns, disinformation, and deepfakes.
- **Addressing Job Loss Concerns:** India acknowledged concerns about AI-induced job displacement but emphasized the historical trend of technological advancements transforming work rather than eliminating it.
 - ♦ India stressed the importance of skilling and reskilling initiatives.

Significance for India

- **Global AI Landscape:** The summit takes place amidst intense competition in the AI field, particularly between the West and China.
 - ♦ It provides an opportunity for India and France to demonstrate their soft power in this crucial area.
- **Strategic Partnerships:** The summit strengthens the strategic partnership between India and France in a critical technology domain.

Way Ahead

- India is developing its own **Large Language Model (LLM)** tailored to its linguistic and cultural diversity.
- The public-private partnership model ensures affordable computing power for startups and researchers.
- **The IndiaAI Mission** supports AI research and development through initiatives such as;

- ♦ Subsidized access to **Graphics Processing Unit (GPU) clusters** for AI training.
- ♦ Funding for **AI-driven projects** in critical sectors.

Concluding remarks

- The Paris AI Action Summit reinforces India's commitment to ethical, sustainable, and inclusive AI development.
- As AI reshapes industries, India's proactive investments in AI education, governance, and innovation will determine its future role in the global AI landscape.

India-France Joint Statement

- **Indo-Pacific Cooperation:** They reaffirmed commitment to a free, open, inclusive, and secure Indo-Pacific region.
- **Space Cooperation:** They agreed to hold the third India-France Strategic Space Dialogue in 2025 and commended **CNES-ISRO collaborations** and stressed stronger space industry ties.
- **Counterterrorism & Security:** Urged the designation of terrorists under UNSC **1267 Sanctions Committee** and alignment with **Financial Action Task Force (FATF)** standards.
 - ♦ Strengthened counterterrorism cooperation between **India's NSG** and **France's GIGN**.
 - ♦ Acknowledged the **2024 counter-terrorism dialogue** and preparations for **Milipol 2025** in New Delhi.
- **Civil Nuclear Cooperation:** Recognized nuclear energy as a key pillar of energy security and low-carbon transition. Reaffirmed cooperation on Jaitapur Nuclear Power Plant.
 - ♦ Signed a letter of intent on **Small Modular Reactors (SMRs) & Advanced Modular Reactors (AMRs)**.
 - ♦ Strengthened nuclear training through agreements between **GCNEP (India) & INSTN (France)**.
- **Health Cooperation:** Signed agreements between **PariSante Campus (France) & C-CAMP (India)** to establish the Indo-French Life Sciences Sister Innovation Hub.

Source: BS

NEWS IN SHORT

MAHARISHI DAYANAND SARASWATI

In News

- PM paid tributes to Maharishi Dayanand Saraswati on his birth anniversary.

Maharishi Dayanand Saraswati

- Dayanand Saraswati was born on February 12, 1824, in Gujarat.
- He founded the **Arya Samaj in 1875** to promote social reforms and education, counteracting social inequities and orthodox Hindu practices.
- Sarvepalli Radhakrishnan, India's second President, called Dayanand Saraswati 'a maker of modern India.'
- He published **Satyarth Prakash (1875)** to promote Vedic teachings and criticized other religions.
- Core Beliefs:** Rejected idolatry and ritualistic traditions in Hinduism.
 - Advocated for women's education and opposed child marriage and untouchability.
 - Emphasized a return to Vedic principles, promoting monotheism and simple rituals.
- Social Impact:** He advocated for cow protection, leading to the creation of the Gaurakshini Sabha in 1882.
 - His followers established Dayanand Anglo Vedic (DAV) schools after his death to promote modern education alongside cultural and religious values.
 - Credited with popularizing the term "swaraj" (self-rule) in 1875, later adopted by leaders like Lokmanya Tilak and Mahatma Gandhi.
 - Supported the idea of "shuddhi" to bring back converts to Hinduism.
- Philosophy of Arya Samaj:** He advocated for the welfare of all humankind, rejecting idol worship.
 - He believed caste should not be hereditary but based on individual talent and disposition.
 - His vision of social reform is seen in India's New Education Policy of 2020.

Source: IE

DEEPWATER 'SPACE STATION' IN SOUTH CHINA SEA

In News

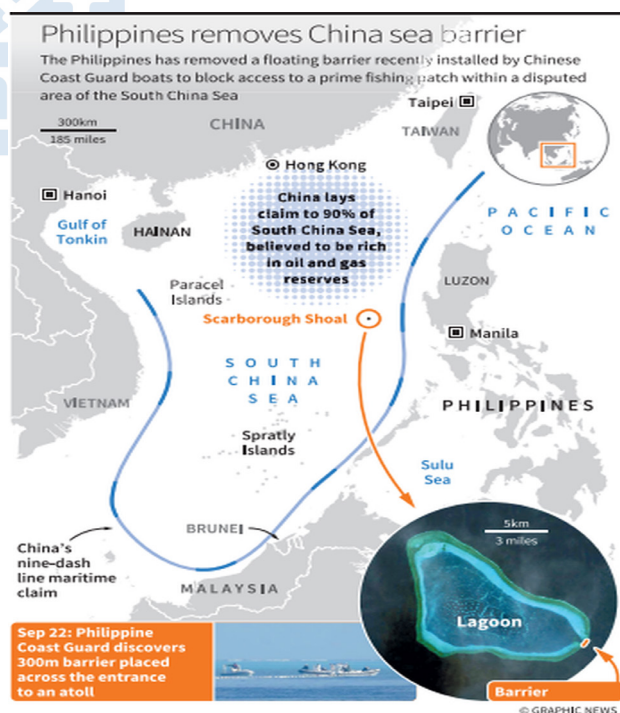
- China has approved the construction of the first **South China Sea deepwater 'space station'.**

About

- The facility will be a cold seep ecosystem research facility, located 2,000 meters below the surface.
- It will be one of the deepest and most technologically complex underwater installations.
- It is expected to be operational by around 2030.

About the South China Sea

- It is one of the most strategically and economically important waterways in the world, extending from the **Strait of Malacca in the southwest**, to the **Strait of Taiwan in the northeast**.
- It is a crucial maritime gateway and junction for shipping between the Pacific and Indian Oceans.
- It is **surrounded** by several nations, including China, Taiwan, the Philippines, Malaysia, Brunei, Indonesia, Singapore, Cambodia, Thailand, and Vietnam.
- Importance:** The region is rich in natural resources, including oil, gas, and fisheries, and serves as a crucial trade route for various economies.
- Dispute:** The South China Sea dispute involves China's broad claims over the region, contested by ASEAN nations like the Philippines, Vietnam, Malaysia, Taiwan, and Brunei over islands, reefs, and resources.



- These disputes affect freedom of navigation and air traffic.
- India's Position:** India's position on the South China Sea has evolved in recent years, shifting from neutrality to more active support for claimant states like the Philippines and Vietnam.

- ♦ India also seeks to secure its energy resources and enhance economic ties through its Look East Policy

Source: AIR

PUBLIC ACCOUNTS COMMITTEE

In News

- Public Accounts Committee led by K.C. Venugopal directed the government to review existing rules regarding toll tax on National Highways (NH).

Public Accounts Committee (PAC)

- **Genesis:** It is one of the oldest parliamentary committees, established in 1921 following the **Montagu Chelmsford Reforms**.
- **Composition:** It is formed every year under **Rule 308 of the Rules of Procedure and Conduct of Business in Lok Sabha**.
 - ♦ It consists of up to 22 members (15 from Lok Sabha, and 7 from Rajya Sabha).
 - ♦ A Minister is not elected as a member of a Committee.
- **Function:** It is responsible for auditing the revenue and the expenditure of the government, examines various government accounts, & reviews income and expenditure statements of autonomous bodies audited by the CAG.

Source :TH

AVIAN INFLUENZA

Context

- The Andhra Pradesh Government has declared four areas as Biosecurity Zones, in view of the identification of the **avian influenza (bird flu) cases in the State**.

Avian Influenza

- Depending on the **origin host**, influenza A viruses can be classified as **avian influenza (bird flu, subtypes A H5N1 and A H9N2)**, **swine influenza (swine flu, subtypes A H1N1 and AH3N2)**.
- Avian influenza, commonly known as bird flu, is a viral infection that primarily affects birds.
 - ♦ It is a zoonotic disease, meaning it can **spread from animals to humans**.
 - ♦ The **H5N1 subtype** has been responsible for **numerous human infections and fatalities in the past**.
- **Symptoms:** Fever, cough, sore throat, muscle aches, and severe respiratory distress in advanced cases
- **Prevention:** Avoiding contact with sick or dead birds; ensuring poultry products are thoroughly

cooked; and implementing robust surveillance systems to detect and respond to new cases promptly.

- There is **no vaccination available for the Avian Influenza**.

Source: TH

INDIA'S PALM OIL IMPORTS PLUNGE

In News

- India's palm oil imports dropped 65% year-on-year in January 2025, reaching a 13-year low.

About Palm Oil

- **Definition:** Palm oil is extracted from the fruit of the African oil palm tree (*Elaeis guineensis*) and is one of the most widely used vegetable oils in the world.
- **Types of Palm Oil**
 - ♦ **Crude Palm Oil (CPO):** Extracted from the fruit pulp, used mainly for cooking and food processing.
 - ♦ **Palm Kernel Oil:** Extracted from the seed, primarily used in cosmetics, pharmaceuticals, and industrial applications.
- **Global Palm Oil Production:**
 - ♦ Indonesia & Malaysia together produce over 85% of the global supply.
 - ♦ Other significant producers: Thailand, Colombia, Nigeria, Papua New Guinea.
- **Palm Oil Production in India**
 - ♦ Major Producing States: Andhra Pradesh, Telangana, Kerala (accounting for 98% of total production).
 - ♦ India still relies heavily on imports to meet domestic demand.

National Mission on Edible Oils – Oil Palm (NMEO-OP) (launched in 2021)

- **Goal:** Promote domestic oil palm cultivation and reduce dependence on imports.
- **Targets:** Increase oil palm cultivation to 10 lakh hectares by 2025-26.
 - ♦ Support farmers with financial incentives & subsidies.

Source: TH

EINSTEIN RING

Context

- The European Space Agency's (ESA) Euclid space telescope has discovered an Einstein ring, around a galaxy nearly 590 million light-years away from Earth.

What is an Einstein Ring?

- **An Einstein ring** is a circular formation of light caused by gravitational lensing, where a massive celestial object bends and magnifies light from a more distant object behind it.
 - ♦ **Gravitational lensing** is an example of Einstein's theory of general relativity.
- **Lensing Effect:** If the alignment between the observer, the foreground lens, and the background source is nearly perfect, the light from the background galaxy can be smeared into a ring.
 - ♦ In the recently observed Einstein ring, the galaxy **NGC 6505** acted as the gravitational lens.

Significance of Einstein Rings

- **Probing Dark Matter:** Dark matter, which makes up 85% of the universe's total matter, does not emit or absorb light, making it difficult to observe directly.
 - ♦ Einstein rings provide indirect evidence of dark matter's gravitational influence.
- **Understanding Distant Galaxies:** These rings help scientists study galaxies that would otherwise be too faint or distant to observe.
- **Insights into Cosmic Expansion:** The bending of light provides crucial data about the expansion of the universe, as the space between celestial bodies is continuously stretching.

Source: IE

BRAHMOS NG

In News

- The development in the **BrahMos NG (Next Generation) missile system** represents a significant leap in India's defense capabilities and international outreach.

About BrahMos NG

- BrahMos NG is an advanced supersonic cruise missile developed under the **India-Russia joint venture**.

- The BrahMos NG will retain the **same 290 km range and Mach 3.5 speed** as its predecessor.
- It is **lighter (1.6 tonnes vs. 3 tonnes) and smaller (6m vs. 9m)**, making it more adaptable for various platforms, including the Sukhoi-30MKI and Tejas fighter aircraft.
- It will feature a homemade **AESA radar**.
- The first test flight is expected by **next year (2025-26)**.

Strategic Importance & Export Potential

- India delivered the first batch of BrahMos supersonic cruise missiles to the Philippines in 2024, under a \$375 million deal signed in 2022.
- Advanced negotiations with Indonesia for a \$450 million deal.
- Several nations in Africa and West Asia have shown interest in acquiring BrahMos NG.

Source IE

HYDERABAD BIRD ATLAS

Context

- Hyderabad is developing a Bird Atlas.

About

- It is a **three-year project** and will be conducted in February (Winter) and July (Summer) to know about the migratory birds.
- **Aim:** To understand bird distribution in the city, monitor changes in their population, identify important bird areas and inform authorities about land use planning.
- **Pune, Mysore and Coimbatore** are some of the cities in India that have developed bird atlases.
- As of now, 51 out of 180 regions were surveyed and 170 bird species were recorded.

Source: TH

