

New study suggests earth's inner core undergoing structural changes

Study scrutinized data from 121 repeating earthquakes recorded between 1991 and 2024 near Antarctica's South Sandwich Islands to come to this conclusion.

Key findings of Study

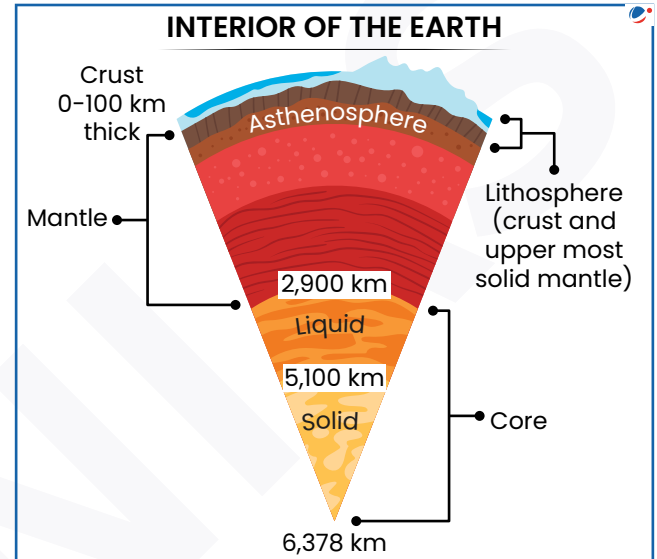
- Near surface of **earth's inner core is not as rigid** as previously assumed.
- **Changes** in solid inner core are being **caused by interactions with turbulent-molten outer core.**
 - ⊖ Possibly **affecting its rotation & altering day-length.**
- **Earth's inner core's independent spin appears to be slowing.**
 - ⊖ **Previously it was believed that it rotated independently** due to interactions with mantle.
- **Significance of finding: Challenges** previous assumptions that structural changes in inner core occur only over **geological timescales.**

About Earth's inner core

- **About:** Innermost solid layer of earth due to pressure caused by Earth's other top layers.
- **Composition:** Composed primarily of iron & nickel.
- **Radius:** Approx. 1,220 kilometers.
- **Temperature:** ~ 5,200° C.
- **Properties:** High thermal and electrical conductivity; Help generate Earth's magnetic field etc.

Layers of earth

- **Based on Chemical Composition:**
 - ⊖ **Crust:** Outermost layer of earth **made of solid rock, mostly basalt & granite.**
 - ⊖ **Mantle:** Lies between crust & core, consisting of **hot, dense, iron and magnesium-rich solid rock.**
 - ⊖ **Core:** Inner most layer, comprising of **liquid outer core & solid inner core.**
- **Based on Physical/Mechanical Properties:**
 - ⊖ **Lithosphere:** Outermost physical layer of the Earth
 - ⊖ **Asthenosphere:** Portion of the Earth's mantle that flows like molten plastic despite being solid.



Transparency International releases Corruption Perceptions Index (CPI) 2024

CPI ranks 180 countries and territories by their perceived levels of public sector corruption on a scale of zero (highly corrupt) to 100 (very clean).

- CPI 2024 highlights that **corruption is making fight against climate change much harder** and urged international community to **address the link between corruption and the climate crisis.**

How corruption is affecting climate action?

- **Hinders the adoption of ambitious policies** by favouring interests of narrow groups over common good.
- **Weakens governance structures**, undermines law enforcement, and **compromises transparency in environmental decision-making.**
- **Diversion and misuse of Climate Funds** as most countries that are highly vulnerable to climate change score below 50 on CPI.
- **Deepen the marginalisation of vulnerable populations** who suffer disproportionately from climate change.
- **Undermines effectiveness of multilateralism** by increasing opacity of climate conferences and allowing voice of fossil fuel lobbyists.

Other Key highlights of Report

- **85% of world population** live in countries with CPI scores under 50.
- **India:** India scored 38 out of 100 (drop of one point from 2023) and **ranked 96th.**
- **Least corrupt:** Denmark followed by Finland and Singapore.
- **Most Corrupt:** South Sudan, Somalia, and Venezuela.

Recommendations of report

- **Put integrity at the centre of climate efforts:** With the **United Nations (UN) Convention against Corruption** offering a critical framework to support this work.
- **Enhance investigations and protections:** Strengthening anti-corruption bodies and protect environmental defenders.
- **Shield climate policymaking processes from undue influence:** Creating mechanisms to detect and manage conflicts of interest.
- **Strengthen citizen engagement:** Information on climate finance and projects needs to be open and accessible.

NCAER publishes a paper on Unlocking women's workforce potential in India

Paper delves into **key barriers to women's labour force participation rate (LFPR)** and provides actionable insights for policymakers to unlock India's untapped female workforce potential.

Key Findings

- **Status:** India's **female labour force participation rate (FLFPR) stands at 37%**, well below global average of 47% and Organisation for Economic Co-operation and Development (OECD) average of 67%.
- **Key Barriers in FLFPR:**
 - ⊕ **Unpaid care responsibilities:** According to Time Use in India Report 2019, **Indian women devote more than twice as much time to unpaid care work** as compared to men.
 - ⊕ **Absence of formal part-time work options in India:** Women end up in informal, precarious jobs, with no job security or social benefits.
- By **addressing these two barriers** faced by women, female LFPR can be increased by 6%.

Policy Recommendations

- **Formalizing part-time work:** By setting hourly minimum wages, ensuring job security, and providing access to social security benefits.
- **Investing in care infrastructure:** Public and private investment in affordable childcare and eldercare facilities yields many benefits to private companies and macroeconomy.
- **Promoting gender equality in caregiving:** Policies such as paid parental leave for both parents, tax incentives etc.
- **Adopting Flexible work policies.** E.g. remote work and adjustable schedules.

Initiatives taken by India for Increasing FLFPR:

➤ Legislative:

- ⊕ **Maternity Benefit (Amendment) Act, 2017:** For paid maternity leave.
- ⊕ **Factories Act, 1948:** Permitting women workers in the night shifts.
- ⊕ **Equal Remuneration Act, 1976:** Provides for equal remuneration to men and women.

- **Schemes:** Skill India Mission, Stand Up India Initiative, Deendayal Antyodaya Yojana – National Rural Livelihood Mission (DAY-NRLM) etc.

Parliamentary Panel presents a report on Swachh Bharat Mission (Grameen) (SBM-G)

Standing Committee lauded achievements made under SBM(G)-II wherein 5,57,468 villages out of 5,87,529 villages have been declared **ODF Plus**.

- An **ODF Plus village** sustains its **Open Defecation Free (ODF) Status**, ensures **solid and liquid waste management** and is visually clean.

About SBM-G

- **Launched:** 2nd October 2014 by Ministry of Jal Shakti as **one of 2 Sub-missions of SBM**.
- **Status:** Centrally Sponsored Scheme.
- **Objective:** Eliminating open defecation in rural areas
- **SBM(G) Phase II (2020-21 to 2024-25)**
 - ⊕ **Aim:** Sustaining ODF status and managing solid and liquid waste by 2024-25 and transforming all villages from ODF to ODF Plus Model.
 - ⊕ **Major components:** Construction of Individual household latrines (IHHLs) & Community Sanitary Complexes (CSCs), Solid and Liquid Waste Management (SLWM) etc.

Issues highlighted by committee:

- **Achievements below targets:** Only 35% and 57% targets were achieved in **SWM (Solid Waste Management) and LWM(Liquid Waste Management)** respectively during last five years.
- **Swachh Survekshan Grameen (SSG)-2023:** Did not accurately capture key ODF Plus parameters.
- **Assistance for IHHLs:** An incentive of Rs. 12,000 for constructing one IHHL for BPL households is not adjusted for inflation.
- **Other Issues :** Underutilization of funds, Reduction in number of IHHLs & CSCs construction During FY 2021-22 to FY 2023-24 etc.

Recommendations of committee:

- **Coordination with all States/UTs:** To fast track implementation of Mission Goals and objectives within targeted time-line.
- **Avoid Extra Budgetary Resources (EBR) funding:** As it leads to payment of substantial interest and instead seek more budgetary Grants for the Mission.
- **Increased assistance for IHHLs:** Based on the present rate of inflation.
- **Other Recommendations:** Devise a more comprehensive and dynamic monitoring mechanism, sufficient sanitation vehicles for collection of solid and plastic waste.

India and France co-chaired Artificial Intelligence (AI) Action Summit held in France

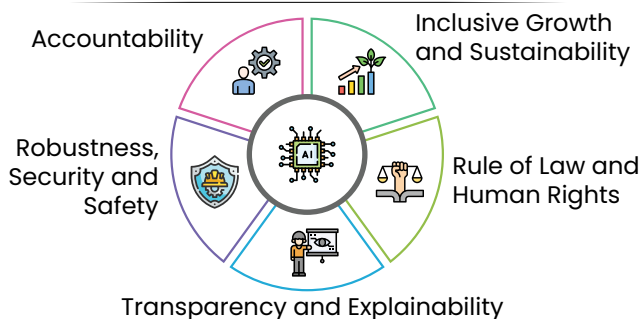
The summit ended with the **Statement on Inclusive and Sustainable Artificial Intelligence for People and the Planet**, which is in line with the **Paris Pact for People and the Planet**.

- It calls for **promoting AI accessibility** to reduce digital divides, **ensuring open, inclusive, transparent and trustworthy AI**, enabling conditions for **AI innovation**, and encouraging **AI deployment**.

Key outcomes of AI Action Summit

- Coalition for Environmentally Sustainable AI:** It aims to ramp up global momentum to place AI on a more environmentally sustainable path.
 - Initiated by France in collaboration with UN Environment Programme (UNEP) & International Telecommunication Union (ITU).
 - India is a founding member.
- Current AI:** It is a **global public interest partnership to promote AI for public good**, focussing on 'data, openness & accountability'.
 - It aims at raising \$2.5 billion over the next five years.
 - India is a partner country.
- Paris Charter for AI of general interest:** Agreed on principles of openness of AI to encourage scientific progress, innovation etc.; accountability at every stage of AI design; participation & transparency in AI for public interest.
 - India adopted the charter.
- Paris Declaration on Maintaining Human Control in AI enabled Weapon Systems:** India didn't endorse the declaration.

Framework for Trustworthy AI



India becomes the second largest country in fish production

In 2013-14, the fish production in India was 95.7 lakh tons, which approximately doubled to more than **184 lakh tons annually in 2023-24**.

India's role in Global Fisheries Sector

- India is the **2nd largest fish producing country** with around **8% share in global fish production**.
 - Major fish producing states: Andhra Pradesh, West Bengal, Karnataka.
 - Inland fisheries contribute more than **75%** of total fisheries output.
- Globally, India ranks **second in aquaculture production**, **leads in shrimp production** and **third in capture fisheries production**.

Challenges in Fisheries Sector

- Environmental:** Plastic pollution, carbon emissions from traditional fishing and water pollution.
- Economic:** Unorganized nature, small scale and artisanal fishers, and infrastructural gaps, high transportation and marketing cost etc.
- Others:** Illegal, Unreported and Unregulated (IUU) Fishing, and climate change affecting fish stocks.

Initiatives taken

- Pradhan Mantri Matsya Sampada Yojana (PMMSY):** Enhancing aquaculture productivity, improving fisheries management, establishing integrated aquaparks etc.
 - Its sub-scheme, **Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY)**, aims at addressing weaknesses through financial and technological interventions.
- Blue Revolution Scheme:** Integrated approach for development and management of fisheries covering both the marine and inland fisheries.
- Fisheries and Aquaculture Infrastructure Development Fund (FIDF):** Provides funding for creation of infrastructure in both marine and inland fisheries.
- National Marine Fisheries Policy 2017:** Guides conservation and management of India's marine fishery resources.

Also In News

PM-DAKSH Scheme

Union minister recently highlighted the importance of **Pradhan Mantri Dakshata Aur Kushalata Sampanna Hitgrahi (PM-DAKSH) Yojana**.

About PM-DAKSH Scheme:

- Type:** Central Sector Scheme.
- Time:** Approved for a period of five years from 2021-22 to 2025-26 by **Ministry of Social Justice and Empowerment**.
- Objective:** Short Term Training, Upskilling / Re-skilling and Entrepreneurship Development Programme conducted by the empanelled training institutes.
- Target Group:** To provide skill training to **SCs, OBCs, EWSs, De-notified Tribes (DNTs), Safai Karamcharis including waste pickers** etc.
- Age Criterion:** 18-45 years
- Income Criteria:**
 - No Income limit:** For SCs, Safai Karamcharis Including waste picker and DNT.
 - For OBCs and EWSs:** Annual income of family below Rs 3 lakhs.

Doctrine of Pith and Substance

Recently, SC dismissed **centre's plea to levy service tax** on promotion, marketing, or sale of lottery tickets.

- It ruled that **taxation power on lotteries lies solely with states**.
- It upheld **2012 Sikkim High Court** ruling, which was based on doctrine of Pith and Substance.
 - HC had observed that power to levy tax on lotteries {Considered **games of chance** and fall under "**betting and gambling**" in **List II of Seventh Schedule (Article 246)**} lies exclusively with state Legislature.

About Doctrine of Pith and Substance:

- It determines **which level of government (union or state) is empowered to make a law**, in case of ambiguity in legislative powers.
- It says that when there is a question of determining whether a particular law relates to a particular subject **court looks to the substance of the matter**.

Right to Reservation

Supreme Court stated that there is **no fundamental right to claim reservation**, as **Articles 16(4) and 16(4-A) of the Constitution** are in the nature of enabling provisions only.

- While **Article 16(4)** empowers the State to make any provision for reservation of appointments in favour of any backward class, **Article 16 (4-A)** provides for provision for reservation in promotion.
 - ⊕ These articles **do not mandate** the State or its instrumentalities to provide **reservation in every selection process**.
 - ⊕ However, the State's decision to not provide reservation has to be **based on some quantifiable data and valid reasoning**.

Gross Domestic Knowledge Product (GDKP)

Ministry of Statistics and Programme Implementation (MoSPI) had a session on **GDKP Measurement**.

About GDKP:

- GDKP was **propounded** by Prof. Umberto Sulpasso of the University of Southern California with Prof. Jeff Cole.
- It is a proposed metric that **quantifies the knowledge generated and utilized within an economy**.
- GDKP measures a nation's growth and future through **four basic pillars**:
 - ⊕ **Knowledge items (Ki)** - Identification of both modern and local distinct culture knowledge items.
 - ⊕ **Country's Knowledge Producing Matrix (CKPM)** - Comparison of knowledge produced by government, private institutions, and households.
 - ⊕ **Country's Knowledge User Matrix (CKUM)** - Value of knowledge bought by individuals and private companies.
 - ⊕ **Cost of Learning** - similar to cost of living to be used as a political reference for government budgeting decisions.

IRIS Chip

IIT-Madras and ISRO jointly developed and successfully booted aerospace quality **SHAKTI-based Semiconductor Chip - IRIS** (Indigenous RISC-V Controller for Space Applications).

- **SHAKTI class of systems** are based on **RISC-V** (Reduced Instruction Set Computer Five), an **open-source Instruction Set Architecture (ISA)**, for designing custom processors.
- 'SHAKTI' is backed by the Ministry of Electronics and Information Technology under its **Digital India RISC-V initiative (DIRV)**.
 - ⊕ It aims to promote **indigenous development of microprocessor-based products** that offer best-in-class security and visibility for users adopting RISC-V technology.

NB-8 Countries

Prime Minister of India met President of the Republic of Estonia.

- They welcomed the initiation of ministerial exchanges in the **India-Nordic-Baltic format**.
 - ⊕ India-Nordic-Baltic is a collaboration between India and the Nordic-Baltic Eight (NB8) countries.

About Nordic-Baltic Eight (NB-8) countries:

- **About:** It is an **informal (non-institutionalized) regional co-operation group**.
- **Members: Nordic Countries** (Denmark, Finland, Iceland, Norway, and Sweden) and **Baltic Countries** (Estonia, Latvia, and Lithuania).
- India's trade with **NB8 countries** expanded to US\$9.04 billion in 2022-23 with **Sweden** being India's **top trading partner** from the region.

Globally Important Agricultural Heritage Systems (GIAHS)

Increasing salinity levels is posing a serious threat to 'puncha' paddy cultivation in Kuttanad, Kerala.

About Kuttanad Wetland Agriculture System:

- It is a **Globally Important Agricultural Heritage System (GIAHS)**.
- Paddy is cultivated **below sea-level** in land created by draining delta swamps in brackish waters.
- It is **divided in three structures**:
 - ⊕ **Wetlands** used for **paddy activities** and fish catching,
 - ⊕ **Garden lands** used for food crops plantation
 - ⊕ **Water areas** used as inland fishing and shells.

About GIAHS:

- These are **living heritage systems inhabited by communities** that maintain an intricate relationship with their territory.
- **Designated by:** Food and Agriculture Organization
- **In India:** There are 3 GIAHS i.e. **Saffron Heritage of Kashmir, Koraput Traditional Agriculture (Odisha), Kuttanad Wetland Agriculture System**.

Hybrid Quantum Supercomputer

Engineers in Japan have switched on the **world's first hybrid quantum supercomputer**, called **Reimei**.

- 20-qubit quantum computer Reimei has been integrated into **Fugaku, the world's sixth-fastest supercomputer**.
- Unlike most quantum computers that use **superconducting qubits**, Reimei uses **trapped-ion qubits**.
 - ⊕ It involves **isolating charged atoms, or ions**, in an electromagnetic field known as an **ion trap** and using lasers to precisely control their quantum state.
 - ⊕ This enables scientists to **manipulate the ions and use them as qubits** that store and process quantum information.

Personality in News | **Sant Guru Ravidas**

Recently, **birth anniversary** of Sant Guru Ravidas was celebrated.

About Sant Guru Ravidas

- Born in **14th Century** in **Varanasi**, he was **Bhakti Saint** of the **Nirguna bhakti movement**.
- His teachings **rejected temple-based rituals** and advocated **devotion to nirankar (the formless God)** while continuing one's livelihood.
- **Key contributions:**
 - ⊕ He opposed system of **untouchability and caste discrimination**.
 - ⊕ In his works, he presented a **vision of Begumpura** - a society free from fear, rulers, taxes, caste-based hierarchies, and spatial restrictions.
 - ⊕ His devotional **songs & poems** are included in the **Guru Granth Sahib**.

