

NEWS TODAY

Ocean- Based Carbon Capture, Utilisation, and Storage (CCUS) could offer Strategic Decarbonisation Pathway

Storing captured carbon subsea, in depleted oil and gas wells or aquifers — is ramping up as a climate solution globally.
About Ocean based CCUS

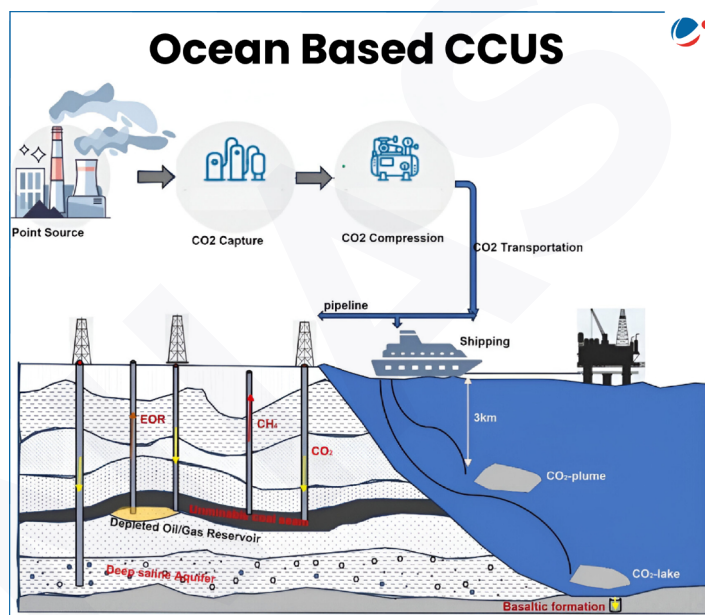
- It involves **capturing CO₂** from sources (generally from large point sources like power generation or industrial facilities using fossil fuels) and storing it in **seawater or deep-sea sediments**.

Key Techniques

- Ocean Alkalinity Enhancement (OAE):** It accelerates **CO₂ absorption** by adding **pulverized minerals** (e.g., Lime) or electrochemically boosting rock weathering.
- Ocean Fertilisation:** Promotes the **growth of phytoplankton** by adding required micronutrients, like phosphorus, nitrogen, etc., facilitating deep-ocean carbon storage.
- Other methods: Biological Carbon Capture**, which utilizes marine ecosystems and the **Enhancement of Blue Carbon Sinks** like mangroves.

Key Benefits of Ocean-Based CCUS

- Durable Storage:** Techniques like OAE could store carbon for **up to 100,000 years**.
- Vast Storage Capacity:** Ocean is the largest natural carbon sink, storing **50 times more carbon than atmosphere**.
- Safety and Scalability:** It uses **low temperatures and high pressure** to stabilize CO₂ in liquid form, thus **minimizing leakage**, preventing groundwater contamination, etc.
- Carbon Utilization:** Captured CO₂ can be repurposed for **industrial applications**, including **green hydrogen, biofuels, biopolymers, etc.**
- Climate Mitigation:** It can reduce global CO₂ emissions by **14% by 2060**.
- Benefits for India:** Achieve its **Net-zero target by 2070**; **sustainable Blue growth**; India's vast **coastline** offers huge potential. Currently, the technology is in **early stages of development** and is **cost and capital intensive**. It requires suitable funds for **research, innovation with detailed techno-economic and environmental impact analysis** before implementation.



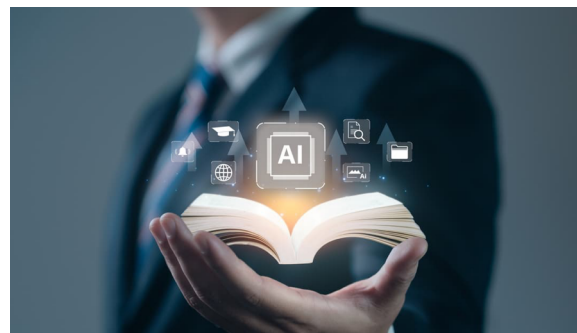
Curriculum on Artificial Intelligence and Computational Thinking (AI & CT) to be introduced from class 3 onwards in all schools

Ministry of Education is supporting institutions such as CBSE, NCERT, KVS, and NVS, along with States and UTs, in designing a meaningful and inclusive curriculum under the **National Curriculum Framework for School Education (NCF SE) 2023**.

- Central Board of Secondary Education (CBSE) has constituted an **expert committee** chaired by Prof. Karthik Raman, IIT Madras, to **develop the AI & CT curriculum**.
- Teacher training and learning-teaching materials on NISHTHA platform** will form the backbone of curriculum implementation.

Role of AI & CT in Education

- Development of Computational Thinking:** It is a problem-solving approach that involves understanding a complex problem and develop possible solutions in a way that computer can execute.
 - It has **four key techniques** – **decomposition** (breaking down complex problem), **pattern recognition**, **abstraction** (focusing on important information), and **algorithms** (developing step-by-step solution to problem).
- Foundational Skills:** Introducing AI at young age helps build critical thinking, logical reasoning, and ethical awareness.
 - Students learn to understand and question technology, **developing meta-skills** that are becoming as crucial as literacy and numeracy in the digital age.
- Future Readiness:** As automation transforms industries, AI curriculum ensures the next generation is skilled and adaptable to rapidly changing job market.



US and Chinese president met on the sidelines of Asia-Pacific Economic Cooperation (APEC) summit in Busan

Key Outcomes of Busan meet

- U.S. agreed to **reduce a tariff punishing China** for the flow of fentanyl into the U.S. by 10%.
 - ⊕ Fentanyl is an **opioid drug, like morphine or heroin**, made entirely in laboratories with no natural ingredients.
- China agreed to **extend for one year a pause on export controls of rare earth minerals**.
 - ⊕ Rare earths (group of 17 metallic elements) are used to produce magnets and other components used in missiles, aircraft, cars, refrigerators, other hi-tech devices etc.
- US president dubbed the meeting as **G-2**, a word first popularized by American economist C.F Bergsten in 2005.
 - ⊕ G-2 envisaged the US and China as **co-managers of global stability** through joint responsibility on economic governance, trade imbalances, and global problem-solving.



Implication of G2 for world

- **Relevance of Regional institutions:** Like Quad, Aukus, which were put to counter China could be questioned as US and China move towards a strategic accommodation.
- **Shift Towards Bipolarity:** G2 signals convergence between US and China as global powers and bilateral decisions on key global issues can undermine multipolarity and interests of global south.
- **Dependence on China:** The shift identifies global and American reliance on China for critical minerals and semiconductor supply chains.
- **Implications for India:** US-China rapprochement could reduce the US's reliance on India as a geopolitical counter to China while emboldening China's assertiveness towards India.

Madras High Court, becomes first to recognise Cryptocurrency as Property

In **Rhuthikumari v. Zanmai Labs Pvt. Ltd.**, the Court granted protection to an investor whose digital assets were frozen on a crypto exchange after a massive cyberattack.

- In 2020, Z too held crypto currencies, as digital assets and a form of property capable of **being held on trust**.

Key Highlights of the Ruling

- **Nature of Cryptocurrency:** The court held that it is **not a tangible property nor is it a currency**. Rather, it is a **property**, which is **capable of being enjoyed, possessed and being held in trust**.
 - ⊕ The Court reaffirmed previous SC rulings on the **principles of property and held them to apply equally to cryptocurrencies**.
- **Legal Clarification:** The court held that under Indian law, cryptocurrency is classified as a **Virtual Digital Asset (VDA)** and it is **not treated** as a speculative transaction under Income Tax Act, 1961.
- **Clarification on the RBI Ban (2018):** The Court held that RBI had not banned virtual currencies as such; it had only **prohibited banks from facilitating their trade**.

What is Cryptocurrency?

- It is a **medium of exchange**, created and stored **electronically on the blockchain**, using cryptographic techniques and algorithms. E.g., Bitcoin.
- It has **no intrinsic value or physical form** and is **not regulated** by the Central Banks.

Significance of the Ruling

- **Addresses the Regulatory Grey Zone:** The ruling marks a **landmark judicial acknowledgment** of digital assets as legally ownable property.
- **Protects Investors:** It could allow **investors** to seek traditional property remedies like **bank guarantees** rather than relying on exchange-driven loss-sharing schemes.

Cryptocurrency Related Legal Developments in India



2018

RBI Banned Banking Support to Cryptocurrency.

2020

Supreme Court overturned ban (terming it disproportionate), violating Article 19(1)(g), freedom to trade and business.

2022

Finance Act classifies crypto as **Virtual Digital Assets (30% tax + 1% TDS)**.

2023

Prevention of Money Laundering Act (PMLA) extended to crypto exchanges mandating KYC.

Five Indian megacities face Land Subsidence threat due to Excessive Groundwater Extraction

A study analysed the satellite radar data from **2015-23** and found land subsidence in **Delhi (National Capital Territory, NCT), Mumbai, Kolkata, Bengaluru and Chennai**.

Key Highlights of the Study

- **Impact:** It has impacted nearly **80 million people** with **Delhi** recording the highest sinking rate of **51 mm annually**.
- **Localised Uplift:** The study identified **localised uplift in some cities**, like areas near Dwarka in Delhi.

About Land Subsidence

- **Meaning:** Gradual or sudden **sinking of the earth's surface** caused by the **compression or weakening of soil** and rock layers beneath.
- **Primary Causative Factors:** Excessive **groundwater pumping, large-scale mining, rapid urbanisation, natural shifts** in earth's crust, etc.
- **Areas Witnessing Subsidence:** Areas around **Assam and Sikkim** (due to fault activity and hydrocarbon extraction), **Himalayan towns** like Joshimath and Mussoorie (unregulated development), etc.

Impacts of Land Subsidence

- **Impact on Infrastructure:** Study estimates more than **2000 buildings in Delhi** are currently at high damage risk due to **differential land subsidence**.
- **Impact on Coastal Regions:** These regions witness **saltwater intrusion**, leading to freshwater contamination and crop loss.
- **Disasters:** Buildings crack or collapse, roads buckle, and drainage networks misalign, often leading to floods impacting human lives.
- **Long-term ecological risk:** It **alters river flows, affects aquatic and terrestrial habitats**, and may accelerate carbon release from peatlands and marshes.

Ways to Prevent Land Subsidence

- **Innovative Solutions:** **Artificial recharge** of depleted aquifers; **deep soil mixing** involving injection of stabilising agents into the ground.
- **Advanced Monitoring Technologies:** **PSInSAR** (for cities with plenty of stable structures), **SBAS-InSAR** (for agricultural or vegetated areas), and **SqueeSAR** (for mountainous terrain), etc.

Also In News



Chief Justice of India (CJI)

In exercise of powers under Article 124 of the Constitution of India, President **appointed Justice Surya Kant** as **53rd CJI** succeeding present CJI **BR Gavai**.

Appointment of CJI

- **Union Ministry of Law and Justice** seeks the recommendation of the outgoing CJI for appointment of next CJI, who **conventionally** recommends **senior-most judge** of the Supreme Court.
 - ⊕ However, this seniority principle has **not been followed for three times in the past**.
- After receipt of recommendation of the CJI, Union Minister of Law and Justice puts up the recommendation to the **Prime Minister, who advises the President in the matter of appointment**.



Secondary Sanctions

Threat of USA's **Secondary Sanctions** could impact importing of Russian oil by Indian refiners.

About Secondary Sanctions

- While Primary sanctions include **international trade restrictions** (e.g., trade embargoes from the target), Secondary sanctions **penalizes third parties**, preventing third states and economic operators from doing business as usual with target states.
- They serve as **force multipliers** for primary sanctions and have an **extraterritorial aspect**.
- E.g., The USA imposed sanctions on Iranian oil (Primary) and Indian refiners stopped importing oil from Iran (Secondary).



Chabahar port

India gets **six-month U.S. sanctions waiver on Chabahar port in Iran**.
About Chabahar port

- **Location:** Sistan-Baluchistan province on the **Makran coast** in **South-eastern part of Iran**, on the **Gulf of Oman**.
- It is the **only deep-sea port in Iran** with direct ocean access.
- There are two terminals in Chabahar Port project i.e., **Shahid Beheshti** and **Shahid Kalantari**.
- It is **closest Iranian port to India** and it grants India **access to landlocked Afghanistan** and other Central Asian countries **bypassing Pakistan**.
- The port is part of the proposed **International North-South Transport Corridor (INSTC)**, linking Indian Ocean and Persian Gulf to Caspian Sea via Iran and onwards to northern Europe.



Digi Bandar

Digi Bandar, launched at India Maritime Week 2025, as a national digital framework for Indian ports.

- **Aim:** To make ports **data-driven, AI-enabled, and interconnected** to enhance efficiency, safety, and transparency.
- **Focus:** Predictive logistics, **digital twins**, and **automation** in port operations.



Model Youth Gram Sabha (MYGS)

Ministry of Panchayati Raj, in collaboration with the Ministry of Education and Ministry of Tribal Affairs, launched MYGS initiative.

About MYGS

- It is a pioneering initiative to **strengthen Janbhagidari** and **promote participatory local governance** by engaging students in simulated Gram Sabha sessions.
- It is aligned with **National Education Policy 2020**, and will be implemented across Jawahar Navodaya Vidyalayas (JNVs), Eklaya Model Residential Schools (EMRSs), and State Government Schools.
 - JNVs** are residential schools established under NEP 1986 to provide education to rural children irrespective of their socio economic status.
 - EMRSs** aim to provide quality education to Scheduled Tribes (ST) students in areas having more than 50% ST population and at least 20,000 tribal persons.

Key Objectives

- Educate Students about the Panchayati Raj System
- Encourage Participation in Gram Sabhas and Local Governance
- Develop Leadership Skills to Strengthen Local Institutions
- Promote Understanding of Real-Life Governance Challenges



Ecological Droughts

IIT Kharagpur study highlights that **ecologically fragile forests** in Western Ghats, Himalayas, and Northeast, along with croplands in central India are increasingly facing **ecological droughts**.

About Ecological Droughts

- Definition:** Ecological droughts are **prolonged moisture deficits** disrupting ecosystem structure, biodiversity, and carbon balance.
- Causes:** Driven by **natural phenomena**, such as lack of **rainfall** or **warming temperatures** including **warming oceans**, rising atmospheric dryness, etc.
- Impact:** Reduced Plant growth, Local species extinction, etc.
- Other Types of Drought:** Meteorological, Agriculture, Hydrological, Socio-Economic.



Consumer Price Index (CPI)

Ministry of Statistics and Programme Implementation (MoSPI) is undertaking the **base revision exercise of the Consumer Price Index (CPI)** and has proposed **changes in housing index compilation**.

- As a part of CPI, **Housing constitutes a major component** with an expenditure share of 21.67% in urban areas and 10.07% at the All-India level in the current series.
- Currently, the housing index is **not compiled in the rural sector**.
- Weightage of other sectors in CPI:** Food and Beverages (45.86%), Miscellaneous involving education, health, personal care etc. (28.31%), Fuel & Light (6.84%), Clothing & FootWear (6.53%), Pan, tobacco and intoxicants (2.38%).



Kunming Biodiversity Fund (KBF)

Recently, Seven countries secured funding under **Kunming Biodiversity Fund (KBF)**.

About KBF

- Multi-Partner Trust Fund (MTPF), supporting accelerated action to deliver the **goals of KMGBF (Kunming-Montreal Global Biodiversity Framework)**, particularly in developing countries.
 - KMGBF is a **non-binding framework** adopted at the CoP-15 to the **UN Convention on Biological Diversity (CBD)** at Montreal, Canada (2022).
 - It has **4 goals for 2050** and **23 targets for 2030**.
- Established under the leadership of **China** and **United Nations Environment Program (UNEP)**, with the **Secretariat of the CBD (SCBD)** and **United Nations Development Programme (UNDP)**.



Personality in News



Pasumpon Muthuramalinga Thevar

Indian Vice-President paid homage to **Pasumpon Muthuramalinga Thevar** on his birth anniversary.

About Pasumpon Muthuramalinga Thevar (1908- 1963)

- Born:** To a wealthy land owning family of the village Pasumpon in **Ramanathapuram District** (Tamil Nadu).
- Belonged to **Kondayankottai Marava community** of **Mukkulathor** known for their valour.

Key Contributions

- Entered into politics in **1927**, **Subash Chandra Bose** was his political friend.
- Joined **national movement** and helped Congress expand influence in Tamil Nadu interior regions.
- Played role in **Temple Entry Movement** in Tamil Nadu, **Repeal of the Criminal Tribes Act**, etc.
- Served as the **Member of Legislative Assembly (MLA)** from 1952-57 and **Member of Parliament** from 1957-63.
- Titles Earned:** An Uncrowned Monarch, Netaji of the South, The Lion of the South.
- Key Values:** Leadership, Nationalist, Courage, Compassion, etc.

