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MINISTRY OF SCIENCE AND TECHNOLOGY

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THE HINDU Page 14

NAVIC (NAVIGATION WITH INDIAN CONSTELLATION)

(Syllabus: GS Paper 3 - Sci & Tech)

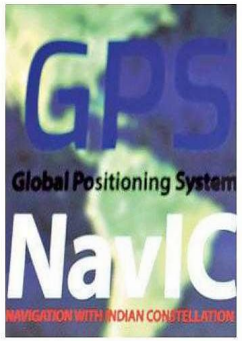
ISRO to boost NavIC, widen user base of location system

Space agency chief says plans afoot to give it a global reach; increase the number of satellites; add bandwidth most used for civilian navigational use; and strengthen the safety of signals

The Hindu Bureau
NEW DELHI

The Indian Space Research Organisation (ISRO) is working on a series of improvements to NavIC, or India's equivalent of the Global Positioning System (GPS), so that more people are motivated to install and use it. Plans are also afoot to give it a global reach, S Somanath, ISRO Chairman, said on the sidelines of the India Space Conference on Wednesday.

NavIC (Navigation with Indian Constellation), or the Indian Regional Navigation Satellite System (IRNSS), is a constellation of seven satellites akin to the U.S. GPS, the European Galileo and the Russian GLONASS, and can be used to track location.



NavIC system is not widely in use in India because mobile phones are not compatible.

Though available for use in mainland India and within 1,500 km around it, the system is not in wide regular use in India primarily because mobile phones have not been made compatible to process its signals. The Indian government has been pressing manufacturers to add compatibility and has set a deadline of January 2023, but media reports suggest this is unlikely before 2025.

Mr. Somanath told *The Hindu* that adding the L1 band into NavIC would be a major change. This bandwidth is part of the GPS and is the most used for civilian navigational use. "Currently NavIC is only compatible with the L5 and S bands and hasn't easily penetrated into the civilian sector," he said. "Currently (NavIC) only provides short code. This has to become Long Code for the use of the strategic sector. This prevents the signal from being breached. This had been part of the original scheme for NavIC, but less work has gone into it," he added.

There are five more satellites in the offing to replace defunct NavIC satellites that would be launched in the coming months. However, to make NavIC truly "global", more satellites would need to be placed in an orbit closer to earth than the current constellation, said Somanath.

Context: The Indian Space Research Organisation (ISRO) is working on a series of improvements to NavIC, or India's equivalent of the Global Positioning System (GPS), so that more people are motivated to install and use it.

NavIC (Navigation with Indian Constellation)

- **Navigation satellite system**: Navigation in Indian Constellation (NavIC) is an Indian Regional Navigation Satellite System (IRNSS).
- **Origin**: NavIC was originally approved in 2006 and became operational in 2018.
- **Developed by**: Indian Space Research Organization (ISRO).
- **Objective**: to provide reliable **position, navigation and timing services** over India and its neighbourhood.
- **IRNSS consists of eight satellites**: 3 satellites in geostationary orbit and 5 satellites in geosynchronous orbit.
    - Total 9 satellites were launched out of which the very first (IRNSS-1A) is partially failed because of some issue in its Atomic Clock.
- **Coverage**: covers the **whole of India's landmass and up to 1,500 km** (930 miles) from its boundaries.
- **Globally certified**: **certified by the 3rd Generation Partnership Project (3GPP)**, a global body for coordinating mobile telephony standards.

BUSINESS STANDARD

Page 1

GENETICALLY MODIFIED (GM) CROPS

(Syllabus: GS Paper 3 - Economy & Agriculture)

Biotech panel paves way for commercial use of GM mustard

Approves environmental release; calls for further studies

SANJEEB MUKHERJEE
New Delhi, 26 October

The Genetic Engineering Appraisal Committee (GEAC) has recommended the environmental release of the genetically modified (GM) mustard variety DMH (Dhara Mustard Hybrid)-11, paving the way for the commercialisation of the country's first GM food crop.

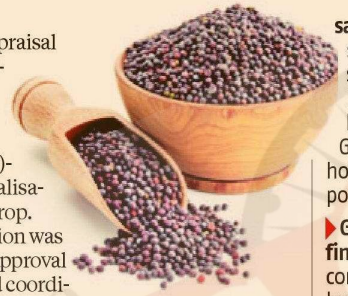
The GEAC said the recommendation was valid for four years from the date the approval letter was issued. Further studies and coordinated trials will have to be conducted jointly with the Indian Council of Agriculture Research (ICAR) within two years, according to the minutes of the GEAC meeting held on October 18, which was released on Wednesday.

The move is expected to face stiff opposition from environmental activists and groups like the Swadeshi Jagran Manch (SJM), an affiliate of the Rashtriya Swayamsevak Sangh (RSS).

According to the minutes, field demonstration studies on the impact of the mustard variety on honey bees and other pollinators should also be conducted after the environmental release by the applicant within two years under the ICAR's supervision, and a report on this should be submitted to the GEAC.

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KEEN AS MUSTARD



- **GEAC has given its nod for environmental release** of GM mustard based on the recommendations of a panel constituted by it
- **While giving the nod, the GEAC has said** that simultaneous field studies will have to be conducted with ICAR on the effect of GM mustard on honeybees and other pollinators
- **GEAC nod is not the final approval** for commercial release but a step forward
- **The approval is valid** for the next four years
- **Environmental activists and the Swadeshi Jagran Manch,** an affiliate of the RSS, have opposed the move and uged the government to not give a final nod

Context: The Genetic Engineering Appraisal Committee (GEAC) has recommended the environmental release of the genetically modified (GM) mustard variety DMH (Dhara Mustard Hybrid)11, paving the way for the commercialisation of the country´s first GM food crop.

Genetically Modified (GM) Crops

- **About:** They are that type of plants whose DNA has been modified through genetic engineering for embedding a new trait to the plant which does not occur naturally in the species.
  - **Genetic engineering aims to transcend the genus barrier by introducing an alien gene** in the seeds to get the desired effects and the alien gene could be from a plant, an animal or even a soil bacterium.
- **GM crops in India:** Bt cotton, Bt Brinjal, DMH 11 Mustard.
  - In India, the **Genetic Engineering Appraisal Committee (GEAC) is the apex body** that allows for the commercial release of GM crops.
  - In 2002, the **GEAC had allowed the commercial release of Bt cotton.**
  - **No GM food crop has ever been approved** for commercial cultivation in the country.

Genetic Engineering Appraisal Committee (GEAC)

- **Origin:** a **statutory body** constituted under the 'Rules for the Manufacture, Use /Import /Export and Storage of Hazardous Microorganisms/Genetically Engineering Organisms or Cells, 1989' notified under the Environment (Protection) Act, 1986.
- **Nodal Ministry:** functions under t**he Ministry of Environment, Forests & Climate Change.**
- **Members**: The Committee is chaired by the Special Secretary/Additional Secretary of the Ministry of Environment, Forests and Climate Change, GOI.
  - A representative of the Department of Biotechnology is a co-chair.
- **Functions**: regulates the use, manufacture, storage, import and export of hazardous microorganisms or genetically-engineered organisms and cells in India.

INDIAN EXPRESS

Page 1

DESIGN OF RUPEE NOTES

(Syllabus: GS Paper 3 - Economy)

Print Lakshmi, Ganesh images on currency notes, Kejriwal tells Centre

EXPRESS NEWS SERVICE
NEW DELHI, OCTOBER 26

DELHI CHIEF Minister Arvind Kejriwal Wednesday appealed to the Union government and the Prime Minister to print images of Goddess Lakshmi and Lord Ganesh on new currency notes for the country's "economic prosperity", inviting a barrage of criticism from rival parties, with the BJP calling it an attempt by the AAP to "hide its anti-Hindu face".

Kejriwal's remarks, which also drew criticism from the Congress and other Opposition parties such as the RJD, comes at a time the AAP is making a concerted push to emerge as a viable alternative in poll-bound Gujarat by projecting its administrative credentials and religiosity.

"Our economy is not improving. We need to make multi-pronged efforts to develop our country. We need to build schools, hospitals, strengthen our power and roads infrastructure among others. But our efforts will bear fruit only when we have the blessings of God upon us," Kejriwal told a press conference.

Claiming that the idea occurred to him while performing Lakshmi puja during Diwali, he said, "I appeal to the Centre and the Prime Minister to retain the

CONTINUED ON PAGE 4

Context: The Delhi CM has appealed to the Centre to print pictures of Hindu deities Lakshmi and Ganesh on currency notes.

Bank notes and coins design

- **Change in design:** Any change in design of a currency note has to be approved by the RBI's Central Board and the central government.
  - **Section 22 of The Reserve Bank of India Act, 1934**, gives RBI the "sole right" to issue banknotes in India.
  - **Section 25 states** that "the design, form, and material of bank notes shall be such as may be approved by the Central Government after consideration of the recommendations made by the [RBI's] Central Board".
- **Recommendation**: If the design of a currency note has to change, the Department works on the design and submits it to RBI, which r**ecommends it to the central government.**
  - **Approval**: The government gives the final approval.
    - Changes in the **design of coins are the prerogative of the central government.**
- **Currency management:** The Reserve Bank of India (RBI) prints and manages currency in India, whereas the Indian government regulates what denominations to circulate.
  - The RBI's **Department of Currency Management** has the responsibility of administering the core function of currency management.
- **Minting of coins**: The Coinage Act, 2011 gives the central government the power to design and mint coins in various denominations.
  - Coins are minted in four mints owned by the Government of India in Mumbai, Hyderabad, Kolkata and Noida.
- **Currency notes:** Under Section 22 of the Reserve Bank of India Act, **RBI has sole right to issue currency notes of various denominations except one rupee notes.**
  - The **One Rupee note is issued by Ministry of Finance** and it bears the signatures of Finance Secretary, while other notes bear the signature of Governor RBI.
- **Monuments Printed On Indian Currency**
  - **Sun Temple of Konark**: Rs. 10 bank notes.
  - **Ellora Caves (World Heritage Site by UNESCO)**: Rs. 20 banknotes.
  - **Hampi Temple:** Rs. 50 of Indian currency.
  - **Sanchi Stupa** : Rs. 200 banknote.
  - **Rani ki Vav** : Rs. 100 banknote
  - **Red Fort**: Rs. 500 banknote.
  - **Ashoka Pillar Emblem**: Rs 2000

LIVEMINT Page 1

SOVEREIGN GREEN BONDS
(Syllabus: GS Paper 3 - Economy)

Govt may tap green bonds to fund battery storage, N-E hydel projects

Utpal Bhaskar
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NEW DELHI

India's first sovereign green bond could be used to finance a string of clean energy schemes, including viability gap funding for battery storage, energy efficiency schemes for small and medium businesses and equity support for hydropower projects in the North-East.

Two government officials aware of the plans said the power ministry is looking to propose these schemes to be considered for allocation in the ₹16,000 crore green bond. Schemes will be selected on the basis of their potential to reduce carbon emissions and the economy's carbon intensity.

The government announced the plan to sell sovereign bonds to fund green infrastructure in the February Union budget. The government's borrowing for the second half, estimated to be ₹5.92 trillion, includes the ₹16,000 crore of its sovereign green bond offering.



The Centre's borrowing for Oct-Mar, estimated at ₹5.92 trillion, includes ₹16,000 crore of its sovereign green bond offering. MINT

Such initiatives are expected to strengthen India's green energy credentials in the UN Climate Change Conference to be held at Sharm El Sheikh in Egypt next month.

"In the first tranche, a total of ₹16,000 crore under green finance bond is to be made available to all ministries. The proposal to include VGF scheme for battery storage, MSMEs energy efficiency schemes, and equity support scheme for the north-eastern states' hydropower projects in the first tranche is in the works," said one of the two government officials cited above, requesting anonymity.

VGF can push India's infrastructure-creation plans through public-private partnerships, with the electricity storage business expected to be a vital part of the energy transition. Large battery storages that store electricity in the form of chemical or electrochemical energy and re-convert it to electricity can help power India's electricity grids, given the intermittent nature of electricity from clean energy sources such as solar and wind.

The idea is to store cheap green power during off-peak hours in battery storage and release it for consumption when the electricity demand increases.

Also, given the large share of small and medium businesses in the economy, the Centre is

TURN TO PAGE 6

Context: India's first sovereign green bond could be used to finance a string of clean energy schemes, including viability gap funding for battery storage, energy efficiency schemes for small and medium businesses and equity support for hydropower projects in the North-East.

Sovereign Green Bonds

- **Origin:** In 2007, **green bonds were launched by few development banks** such as the European Investment Bank and the World Bank.
  - **By the end of 2020, 24 national governments had issued Sovereign Green, Social and Sustainability bonds** totalling a cumulative USD 111 billion dollars, according to the London-based Climate Bonds Initiative.
- **Budget 2022-23**: the Finance Minister in the **Budget 2022 announced** that the government proposes to issue sovereign green bonds to mobilise resources for green infrastructure.
- **Green bonds**: **issued by companies, countries and multilateral organisations** to exclusively fund projects that have positive environmental or climate benefits and provide investors with fixed income payments.
  - A **bond is a fixed income instrument that represents a loan made by an investor** to a borrower (typically corporate or governmental).
  - **Bonds traditionally paid a fixed interest rate** (coupon) to investors.
- **Utilisation**: capital is being raised to fund 'green' projects, which typically include those relating to renewable energy, clean transportation, sustainable water management etc.
- **Regulation**: The **Securities and Exchange Board of India (SEBI)** has put in place disclosure norms for issuance and listing of green bonds.

ECONOMIC TIMES

Page 1

FINANCIAL INTELLIGENCE UNIT (FIU)

(Syllabus: GS Paper 3 - Internal Security)

Illicit Drug Deals: Digital Asset Management Cos Under Lens

3 cos under ED, I-T scanner for facilitating transactions through digital currency between 2019 and 2021

Anuradha.Shukla@timesgroup.com

New Delhi: Three digital asset management companies have come under the scanner of the investigative agencies, including the Enforcement Directorate and the income tax department, following an alert by the Financial Intelligence Unit (FIU) about their alleged role in illicit drug transactions worth ₹28,000 crore.

"Digital currency was used to buy and sell drugs and some of these companies facilitated it," a senior government official told ET. "So far the agency has been able to track transactions worth ₹28,000 crore."

Most of the transactions were carried out through three digital asset management companies and were not reported to the authorities.

Detailed findings have been sent to the Enforcement Directorate to look into the money laundering aspect and to the income tax department to probe tax evasion by the entities involved.

The FIU has zeroed in on about 200 transactions that were carried out in the Cayman Islands, the British Virgin Islands and Nigeria using digital currencies and routed via exchanges located in India, the official said.

"These transactions took place between 2019 and 2021," the person said, without divulging the names of the three companies as the probe is still on.

The FIU is keeping close tabs on transactions in digital currencies, the official said.

Opacity of Transactions ▸▸ 7

Under Scanner

Financial Intelligence Unit tracked illicit drug transactions worth **₹28,000 cr** in digital assets

Findings sent to ED to look into money laundering aspect and to I-T to probe tax evasion by AMCs

Transactions carried out in the Cayman Islands, the British Virgin Islands and Nigeria and routed via exchanges located in India

Agencies keeping tabs on 3 digital AMCs for their alleged role in transactions

To widen scope of investigation, suspect larger operation



Kerala Orders Probe as Byju's Shuts Office

Byju's has allegedly closed its Technopark office in Thiruvananthapuram and forced all its employees there to resign. Kerala general education and labour minister V Sivankutty said the government will investigate the matter. **Pranav Mukul** reports. ▸▸ 6

Context: 3 digital asset management companies have come under the scanner of the investigative agencies, following an alert by the Financial Intelligence Unit (FIU) about their alleged role in illicit drug transactions.

Financial Intelligence Unit – India (FIU-IND)

- **About:** It is an organisation **under the Department of Revenue,** Government of India which collects financial intelligence about offences under the **Prevention of Money Laundering Act, 2002.**
- **Origin:** It was set by the Government of India on 18th November 2004 **as the central national agency** responsible for receiving, processing, analyzing and disseminating information relating to suspect financial transactions.
- **Nodal authority:** an independent body **reporting directly to the Economic Intelligence Council (EIC) headed by the Finance Minister.**
  - It is headed by a Director, in the rank of Joint Secretary.
- **Organisational structure**: The agency has **a sanctioned strength of 75 staff,** drawn on deputation from Central Board of Direct Taxes (CBDT), Central Board of Indirect Taxes and Customs (CBIC), Reserve Bank of India (RBI), Securities and Exchange Board of India (SEBI), Department of Legal Affairs and Intelligence agencies.
- **Functions**: responsible for coordinating and strengthening efforts of national and international intelligence, investigation and enforcement agencies in pursuing the **global efforts against money laundering and financing of terrorism.**

TIMES OF INDIA

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PARIS AGREEMENT 2015

(Syllabus: GS Paper 3 - Env & Eco)

Climate pledges falling short, UN calls for aggressive action

'Planet On Track To Warm By 2.5°C By 2099'

Vishwa.Mohan
@timesgroup.com

New Delhi: The current pledges of over 190 countries to reduce greenhouse gas (GHG) emissions are not enough to save the world from the disastrous consequences of climate change as the current commitments could put the world on track for around 2.5°C of warming by the end of the century, says a new report of the UN climate body.

The report, analysing combined climate pledges, notes that though the countries are together "bending the curve of GHG emissions downward", these efforts remain "insufficient" to limit global temperature rise to 1.5°C by the end of the century.

The analysis, released on Wednesday, reveals that the current commitments will, in fact, increase emissions by 10.6% by 2030 compared to 2010 levels. This, even as the countries need to cut global emission by 45% from 2010 levels by 2030 to keep the Paris Agreement's goals alive.

This is, however, an improvement over last year's assessment which found countries were on a path to increase emissions by 13.7% by 2030 compared to 2010 levels.

Last year's analysis showed projected emissions would continue to increase beyond 2030.

This year's analysis, factoring in updated pledges of countries including India, notes that though the emissions will no longer increase after 2030, they are still not demonstrating a rapid downward trend as necessary this decade to limit the warming level to 1.5°C.

In order to keep the Paris Agreement goal alive, Simon Stiell, executive secretary of UN Climate Change, insisted that national governments need to strengthen their climate action plans now and implement them in the next eight years.

OFF THE MARK



'3 main GHG show big jump in 2021'

The World Meteorological Organisation on Wednesday said that the atmospheric levels of the three main greenhouse gases – carbon dioxide, methane and nitrous oxide – reached new record highs in 2021, reports **Vishwa Mohan.** It means the earth will continue to warm due to these heat-trapping gases. It reported the biggest year-on-year jump in methane concentrations in 2021 since systematic measurements began nearly 40 years ago. "The reason for this exceptional rise is not clear, but seems to be a result of both biological and human-induced processes," said the global met body.

Context: Despite some progress in the last year, governments need to do more by 2030 to ensure that the global temperature increase is below 2°C and ideally closer to 1.5°C - the goal set in the Paris Agreement reached in 2015.

Paris Agreement 2015

- **Paris Agreement**: also **known as the Conference of Parties 21 or COP 21**, a landmark environmental accord that was adopted in 2015 to address climate change and its negative impacts.
  - It replaced the Kyoto Protocol which was an earlier agreement to deal with climate change.
- **Objectives**: To **reduce global GHG emissions in an effort to limit the global temperature increase in this century to well below 2°C above** pre-industrial levels, while pursuing means to limit the increase to 1.5°C by 2100. It also includes:
- **Intended Nationally Determined Contributions (INDCs)**: Before the conference started, more than 180 countries had submitted pledges to cut their carbon emissions INDCs.
  - The INDCs were recognised under the agreement, but are **not legally binding.**
  - **India also reaffirmed its INDCs commitment**s to meeting the goals under the Agreement in order to combat climate change.
- **CMA**: The CMA **oversees the implementation of the Paris Agreement** and takes decisions to promote its effective implementation.
  - All States that are Parties to the Paris Agreement are represented at the **Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA)**, while States that are not Parties participate as observers.
- **India's Targets for 2030**
  - **Emission Intensity**: at least 45% reduction in emissions intensity of GDP (emissions per unit of GDP) from 2005 levels.
  - **Electricity Generation**: at least 50% of installed electricity generation capacity in 2030 would be based on non-fossil fuel-based sources.
  - **Carbon sink**: creation of 2.5 to 3 billion tons of additional sink through afforestation.

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SHRI VIJAY VALLABH SURISHWER JI MAHARAJ

(Syllabus: GS Paper 1 - Personality)

PM addresses on occasion of 150th Birth Anniversary of Shri Vijay Vallabh Surishwar Ji via video message

Context: The Prime Minister addressed the gathering on the occasion of the 150th birth anniversary of Shri Vijay Vallabh Surishwar Ji.

Shri Vijay Vallabh Surishwer Ji Maharaj

- He was a **Jain monk** born on October 26, 1870.
- He was a **disciple of Vijayanand Suri.**
  - **Acharya Vijayanand Suri** (1837– 1896), also known as Atmaramji of Gujranwala, was the **first Shwetambar Murtipujak Jain monk in modern times to receive the title of Acharya.**
- He was the **founder of Shri Parshwanath Jain Vidyalaya** in Pali district of Rajasthan.
- He **established the Mahavir Jain Vidyalaya** in Mumbai, Pune and Vadodara.
- He **supported non-violent independence movements** of Mahatma Gandhi.

Statue of Peace

- On November 16, 2020, Prime Minister unveiled **"Statue of Peace" which is Installed at Vijay Vallabh Sadhana Kendra**, Jetpura, in Pali, Rajasthan.
- The statue is being **unveiled to mark the 151st birth anniversary of Jain Acharya Shree Vijay Vallabh Surishwer Ji Maharaj**.
- The statue is **151 inches tall**.
- The statue is **made of Ashtadhatu i.e. 8 metals, with Copper being the major constituent.**
  - Ashtadhatu is **an octo-alloy**.
  - The alloy is **mainly used in casting metallic idols** in Hindu and Jain temples.
  - The alloy is **made of metals such as gold, copper, silver, tin, zinc, iron, tin and antimony (or mercury)**.
  - The metals are **mixed in equal proportions to create the idol.**
  - The **other famous alloy is Panchdhatu (or Panchaloha)** which is made of gold, copper, silver, iron and zinc.

Variants of Jain

- **Jainism has two main variants**: Digambar (the naked) and Shwetambar (wearers of white clothes). Digambar (the naked) and Shwetambar (wearers of white clothes).

Digambar

- **Do not wear clothes** as this sect believes in complete nudity.
- **Follow all the five constraints** (Ahimsa, Satya, Asteya, Aparigraha and Brahmacharya)
- Currently found mainly in **Gujarat, Rajasthan and coastal regions of Maharashtra.**

Shwetambar

- **Believe in only four restraints** (except Brahmacharya) to be followed to attain Kevalya.
- **Have simple white clothing**, a begging bowl, a brush to remove insects from their path, books and writing materials with them.
- Currently f**ound mainly in most parts of North India** in states like Rajasthan, Uttar Pradesh, Delhi, Bihar, Jharkhand, Madhya Pradesh, parts of south Maharashtra and Karnataka.

PIB

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BLUE FLAG CERTIFICATION

(Syllabus: GS Paper 3 - Env & Eco)

PM congratulates people of Lakshadweep as Minicoy, Thundi Beach and Kadmat Beach make it to coveted list of Blue Beaches

Lauds passion among Indians to further coastal cleanliness

Context: The Prime Minister has congratulated, particularly the people of Lakshadweep as Minicoy, Thundi Beach and Kadmat Beach make it to coveted list of Blue Beaches, an eco-label given to the cleanest beaches in the world.

Key points

- The **Thundi Beach is one of the most pristine and picturesque beaches in the Lakshadweep archipelago** where white sand is lined by turquoise blue water of the lagoon.
- The **Kadmat Beach is especially popular with cruise tourists** who visit the island for water sports.
    - It is a paradise for nature lovers with its **pearl white sand, blue lagoon waters,** its moderate climate and friendly locals.
- There are a total of 12 beaches that are certified under the Blue Flag certification in India.

Blue Flag Certification

- **About**: an **internationally recognised eco-label** that is accorded based on 33 criterias. These criterias are divided into 4 major heads namely:
    - Environmental education and information
    - Bathing water quality
    - Environmental management
    - Conservation and safety services in the beaches
- **Accorded by**: the international jury composed of eminent members - United Nations Environment Programme (**UNEP**), United Nations World Tourism Organisation (**UNWTO**), Denmark-based NGO Foundation for Environmental Education (**FEE**) and International Union for Conservation of Nature (**IUCN**).
- **Significance**: It is **an eco-tourism model** endeavouring to provide the tourists/beachgoers clean and hygienic bathing water, facilities, a safe and healthy environment and sustainable development of the area.

BEAMS

- India has launched its own **eco-label BEAMS** (Beach Environment & Aesthetics Management Services) under **ICZM** (Integrated Coastal Zone Management) project.
- This was launched by the **Society of Integrated Coastal Management (SICOM)** and **t**he Union Ministry of Environment, Forest and Climate Change (**MoEFCC**).
- **ICZM Project is a World Bank assisted project** and the National Centre for Sustainable Coastal Management (NCSCM), Chennai, will provide scientific and technical inputs.

DST

Oct 27

SEMI-CONFINED UNREINFORCED BRICK MASONRY (SC-URBM) TECHNOLOGY

(Syllabus: GS Paper 3 - Sci & Tech)

New technology for retrofitting non-earthquake-resistant buildings can prevent major damage in old settlements

Context: Researchers have found a solution for retrofitting old non-earthquake-resistant buildings with a technology that can prevent major damage to such buildings from earthquakes without compromising on their strength.

Key Points

- **Semi-confined unreinforced brick masonry (SC-URBM) technology**: The technology called semi-confined unreinforced brick masonry (SC-URBM) **can resolve the problem of spread of settlements in earthquake-prone areas** with constructions that have been built without following earthquake-preventive building codes.
- **Unreinforced masonry (URM) technology**: most buildings, technically called unreinforced masonry (URM), were not built using modern building codes.
    - Thus they are **much more likely to experience damage or collapse during an earthquake**.
    - Considering that major parts of India are under seismic zone III or above and most of the URBM buildings are old and structurally deficient, strengthening of URBM buildings located in earthquake-prone areas is extremely important.
- **Significance of SC-URBM**: SC-URBM can **significantly enhance the energy dissipation capacity and ductility** of the retrofitted building without compromising its strength..

Other Methods

- Researchers at IIT Roorkee have found that **thermocol or Expanded Polystyrene (EPS)** is used as a composite material in core of reinforced concrete sandwich, could resist earthquake forces on up to four-storey buildings.
- The force being applied on a building during an earthquake arises due to the **inertia effect** and hence depends on the mass of the building.
- **Thermocol resists earthquakes** by reducing the mass of the building.
- In this technique, the EPS core and the wire mesh reinforcement is produced in a factory.
- The building skeleton is **first erected from the factory-made core** and reinforcement panels, and then concrete is sprayed on the skeleton core.

DTE

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HEATWAVES

(Syllabus: GS Paper 1 - Geography)



Criteria for Declaring a Heatwave

- The Heatwave is considered when the **maximum temperature of a station reaches at least 40°C for Plains and at least 30°C for Hilly regions.**
- If the normal maximum temperature of a station is less than or equal to 40°C, then **an increase of 5°C to 6°C from the normal temperature is considered to be heat wave condition.**
  - An **increase of 7°C or more from the normal temperature is considered** a severe heat wave condition.
- If the normal maximum temperature of a station is more than 40°C, then **an increase of 4°C to 5°C from the normal temperature is considered to be heat wave condition**.
  - **An increase of 6°C or more is considered a severe heat wave condition.**
  - If the **actual maximum temperature remains 45°C or more irrespective of normal maximum temperature**, a heat wave is declared.

Context: Nearly all the world's children will be exposed to more frequent and severe heat waves by 2050, according to a new United Nations Children's Fund (UNICEF) report.

Key points

- **Children are affected by heat in two broad ways:**
  - Risks to health and well-being and
  - Social and educational risks
- **Heatwave risks to health include -** heat stroke, heat stress, allergy, chronic respiratory conditions, asthma, mosquito-borne disease, cardiovascular disease, under-nutrition and diarrhoea.
- **High temperatures are linked to increased mental health problems** in children and adolescents, including post-traumatic stress disorder and depression.
- **Heatwaves lead to poor health and nutrition** among children and are linked to lower academic performance and attendance.
- High temperatures and lower hydration **affect children's ability to concentrate.**

Heatwaves

- **About**: A heatwave is any period of three days or more when the maximum temperature each day is in the top 10 percent of the local 15-day average.
- **Classification**: India Meteorological Department **(IMD) classifies heat waves according to regions and their temperature ranges.**
- **Mitigation**: In 2016, the **National Disaster Management Authority (NDMA) issued comprehensive guidelines** to prepare national level key strategies for mitigating the impact of heatwaves.

THANK YOU!

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