theIAShub

the IAS hub
Be Your Dream.

APRIL
27

CRUX 10

10 News. 10 Sources. One Place

THE HINDU
ET
BS
TOI
The Indian EXPRESS
livemint
pib
DownToEarth
FORTNIGHTLY ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH
Science Reporter
विज्ञान एवं प्रौद्योगिकी मन्त्रालय
MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

Table of Contents

1. GETEX 2024
2. ISRO’s Study on Glacial Lake
3. Solar Radiation
4. Forex Reserves
5. First ASEAN Future Forum
6. Mission ISHAN
7. Nilgiri Tahr
8. IRDAI & Bima Trinity
9. Auto-Brewery Syndrome
10. Symbol Loading Unit (SLU)

ALL INDIA RADIO

Apr 26

GETEX 2024

(Syllabus: GS Paper 2 – IR)

India Showcases Diverse Education Offerings At GETEX 2024

Context: India has made a strong impression at the **Global Education and Training Exhibition (GETEX) 2024**, currently underway at the Dubai World Trade Centre.

Global Education and Training Exhibition (GETEX) 2024

- **About**: GETEX is the foremost student recruitment event in the MENA region, facilitating connections between education providers and potential students.
- **Participants**: The event is expected to draw over 35,000 local and expatriate students, showcasing its significant regional influence.
- **Educational Offerings**: GETEX offers a platform to explore programs from various institutions, spanning diplomas, undergraduate and postgraduate degrees, and professional development courses.
- **Experience**: Attendees can benefit from seminars and career advice sessions hosted by experts, enhancing their understanding of educational and career pathways.
- **Career Opportunity**: GETEX provides a valuable opportunity for visitors to delve into different educational options and chart their future career trajectories.

Middle East and North Africa Region (MENA)

- **About:** MENA stands for the Middle East and North Africa region, encompassing approximately 19 to 27 countries as there is no standardized definition.
- Also referred as: West Asia and North Africa (WANA) or South West Asia and North Africa (SWANA).
- **Resource Reserves**: OPEC data reveals that the MENA region holds over 50% of the world's oil reserves and 40% of its natural gas reserves.
- **Countries**: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, Palestine, and Yemen.



ISRO'S STUDY ON GLACIAL LAKE
(Syllabus GS Paper 3 – Env & Eco)

How ISRO used satellite remote-sensing to analyse glacial lakes in Himalayas

Context: The Indian Space Research Organisation (ISRO) recently published satellite-data-based analysis on the expansion of glacial lakes in the catchments of Indian Himalayan river basins.

ISRO's Glacial Analysis

- **Long-term Satellite Imagery**: It covering Indian Himalayan river basins, including India, Nepal, Tibet, and Bhutan, is available from 1984 to 2023.
- **Expansion of Glacial Lakes:** Out of 2,431 lakes larger than 10 hectares identified during 2016-17, 676 glacial lakes had expanded significantly since 1984.
- **Magnitude of Expansion**: Among the expanded lakes, 601 lakes had more than doubled in size, 10 lakes had grown between 1.5 to 2 times, and 65 lakes had grown 1.5 times.
- **Distribution in India**: ISRO identified that 130 out of the 676 expanded lakes are situated in India, particularly in the Indus (65), Ganga (7), and Brahmaputra (58) river basins.
- **Impact of Global Warming**: The expansion of these lakes is attributed to the accelerated retreat of glaciers, which is linked to global warming.
- **Category:** ISRO categorised glacial lakes into **four broad categories based on how they were formed**: Moraine-dammed, Ice-dammed, Erosion-based, and 'others'.

Glacial Lakes

- **About**: It is defined as a body of water that is present in adequate quantities, extends with a free surface in, beneath, beside, and/or in front of a glacier, and is the result of glacier activities and/or glacier retreating processes.

Glacial lake outburst floods (GLOFs)

- **About:** They occur when glacial lakes release large volumes of meltwater due to the failure of natural dams… resulting in sudden and severe flooding downstream.
- **Method of mitigation:**
  - **According to a study** published in Journal of Geophysical Research which examined the risks posed by Ghepan Gath lake (Himachal Pradesh) ➔ lowers the lake/water levels by 10 to 30 m significantly reduces the impacts.
  - One way to syphon off lake water is by using **long High Density Polyethylene (HDPE) pipes**. In 2016, members of the Sikkim State Disaster Management Authority and Sikkim's Department of Science and Technology and Climate Change, among others, used this method to reduce water levels in Sikkim's South Lhonak Lake.

SOLAR RADIATION

(Syllabus: GS Paper 3 – Env & Eco)

Study says solar radiation available for producing power falling in India

Jacob Koshy
NEW DELHI

The quantity of solar radiation available that can be economically converted by solar panels to electricity is showing an "alarming decreasing trend" in several locations in India, says an analysis by scientists at the India Meteorological Department (IMD) and published this month in the organisation's in-house scientific journal *Mausam*.

While increased aerosol load – fine particles from carbon emissions, fossil fuel burning and dust – and clouding are said to be causative factors, installing more efficient solar panels could help counter this, the scientists say in their paper.

Aerosols absorb the sunlight and deflect it away from the ground and they can also precipitate the formation of dense clouds that again block sunlight. The efficiency of solar panels are significantly influenced by the amount of sunlight falling on them.

For the study, the scientists looked at radiation trends at 45 in-house stations, which have instruments to measure solar radiation but used data from only 13 to compute the changes in solar photovoltaic (SPV) potential as they were the only ones with a continuous record from 1985 to 2019. SPV is the amount of radiation that may be practically available to be converted to electricity by panels.

SPV potential showed a general decline in all stations which included Ahmedabad, Chennai, Goa, Jodhpur, Kolkata, Mumbai, Nagpur, New Delhi, Pune, Shillong, Thiruvananthapuram, and Vishakhapatnam.

India's largest solar parks are located in the north-west of the country, particularly Gujarat and Rajasthan, and cities in both these States are also showing a decrease in SPV potential. As of today, India's installed solar power capacity is about 81 GW (1 GW is 1,000 megawatt), or roughly 17% of the total installed electricity.

India has ambitious plans of sourcing about 500 GW, nearly half its requirement of electricity, from non-fossil fuel sources by 2030. This would mean at least 280 GW from solar power by that year or at least 40 GW of solar capacity being annually added until 2030. In the last five years, this has barely crossed 13 GW though the government has claimed that COVID-19 affected this trajectory and the country was on track to add between 25-40 GW annually in the coming years.

Prime Minister Narendra Modi had earlier this year also announced a major initiative to fund rooftop solar installation in at least one crore houses across the country.

While the role of aerosols in blocking sunlight available on earth has been apparent since the 1980s, several studies have shown that there are variations both over time and location.

Global solar radiation showed a generally decreasing trend from 1981-2006. 1971-2000 showed greater dimming compared to 1981-2006. However, on the whole, there was a reversal in trends after 2001 with the exact causes unclear.



Straight from the sun: A worker installs solar panels at a site in Greater Noida, around 45 km from New Delhi. AFP

Analysis of Study

- **Study Scope**: The scientists analyzed radiation trends at 45 in-house stations equipped with instruments for measuring solar radiation.
- **Focus on SPV Potential**: The study primarily focused on changes in Solar Photovoltaic (SPV) potential.
  - SPV potential refers to the amount of radiation practically available for conversion to electricity by solar panels.
- **Geographical Coverage**: The stations included in the analysis spanned various regions such as Ahmedabad, Chennai, Goa, Jodhpur, Kolkata, Mumbai, Nagpur, New Delhi, Pune, Shillong, Thiruvananthapuram, and Vishakhapatnam.

Context: Scientists at the India Meteorological Department (IMD) recently analyzed that several locations in India are experiencing an **"alarming decreasing trend" in the quantity of solar radiation economically convertible to electricity by solar panels.**

Solar Radiation

- **Definition**: Also known as the solar resource or sunlight, encompasses the electromagnetic radiation emanating from the sun.
- **Energy Conversion**: Various technologies can capture solar radiation and convert it into practical energy forms, including heat and electricity.
- **India's Largest Solar Parks:** The largest solar parks in India are situated in the north-west region, particularly in Gujarat and Rajasthan.
- **Decrease in Solar Photovoltaic (SPV) Potential**: Cities in Gujarat and Rajasthan are experiencing a decrease in solar photovoltaic potential despite being home to large solar parks.
- **Current Solar Power Capacity:** India's installed solar power capacity stands at approximately 81 GW, equivalent to 17% of the total installed electricity capacity.
- **Renewable Energy Plans:** India aims to source about 500 GW, nearly half of its electricity requirement, from non-fossil fuel sources by 2030.
- **Solar Power Targets**: India's goal includes achieving at least 280 GW of solar power capacity by 2030, requiring an annual addition of at least 40 GW of solar capacity until that year.

INDIAN EXPRESS

Apr 15

FOREX RESERVES

(Syllabus: GS Paper 3 – Economy)



India's forex reserves drop to $640.33 bn

PRESS TRUST OF INDIA
NEW DELHI, APRIL 26

INDIA'S FOREX reserves decreased $2.282 billion to $640.334 billion for the seven days ended April 19 in the second consecutive week of drop in the kitty, the Reserve Bank of India (RBI) said on Friday.

The reserves had dropped $5.401 billion to $643.162 billion in the previous reporting week, ending a multi-week trend of an increase, which also saw the overall reserves touching a new all-time high of $648.562 billion for the week ended April 5.

In September 2021, the country's forex kitty had reached a high of $642.453 billion, which was breached in March this year.

The reserves took a hit as the central bank deployed the kitty to defend the rupee amid pressures caused majorly by global events, but there had been a steady accretion over the past few months.

For the week ended April 19, the foreign currency assets, a major component of the reserves, decreased $3.793 billion to $560.86 billion, according to the data released on Friday.

Expressed in dollar terms, the foreign currency assets include the effect of appreciation or depreciation of non-US units like the euro, pound, and yen held in the foreign exchange reserves.

Gold reserves continued to rise and increased $1.01 billion to $56.808 billion during the week, the RBI said.

The Special Drawing Rights (SDRs) were down $43 million to $18.034 billion, the apex bank said.

Context: India's forex reserves recently dropped by USD 2.282 billion to USD 640.334 billion, marking the second consecutive week of decline, according to the Reserve Bank of India (RBI).

Forex Reserves

- **Definition:** These reserves are assets like foreign currencies, gold reserves, and treasury bills, among other things, maintained by a country's central bank or other monetary authority.
- **Nodal body in India:** Reserve Bank of India.
- **Legal status:** RBI Act and the Foreign Exchange Management Act, 1999 govern the foreign exchange reserves.
- **Objective:**
  - Forex reserves act as a buffer against adverse currency fluctuations.
  - Assures creditors of the ability to meet external debt obligations.
  - Acts as a financial safety net during economic crises or external shocks.
  - Provides liquidity to address balance of payments deficits and currency crises.
  - Supports seamless cross-border transactions and maintains the efficiency of the global payments system.
- **Monetary Policy Implementation:** Influences domestic liquidity, interest rates, and inflation levels for macroeconomic stability.
- **The four components of forex reserves**: Foreign currency assets, gold, special drawing rights and the reserve position in the International Monetary Fund.

ALL INDIA RADIO

Apr 26

FIRST ASEAN FUTURE FORUM

(Syllabus: GS Paper 2 – IR)

EAM S Jaishankar Speaks At First 'ASEAN Future Forum' Virtually

Context: Recently, India's External Affairs Minister participated in the First 'ASEAN Future Forum'.

First ASEAN Future Forum

- **About:** It serves as a vital platform for sharing innovative ideas and policy recommendations among ASEAN member states and their partners.
- **Objective**: To establish a unified platform where ASEAN member states, partner countries, and ASEAN citizens can collectively contribute to shaping the development trajectory of the ASEAN bloc.
- **Proposed by**: Vietnam during the 43rd ASEAN Summit in 2023, the ASEAN Future Forum was envisioned to foster collaboration and dialogue within the ASEAN region.
- **Theme of the Inaugural Forum:** "Toward fast and sustainable growth of a people-centered ASEAN Community."
- **Location**: Hanoi, Vietnam.

Association of Southeast Asian Nations (ASEAN)

- **Established**: In 1967, by the Bangkok Declaration.
- **Type**: A political and economic union of 10 member statesin Southeast Asia.
- **Members**: Indonesia, Singapore, Philippines, Malaysia, Brunei, Thailand, Cambodia, Lao PDR, Myanmar, and Vietnam.
- **Objective:** It promotes inter-governmental cooperation and facilitates economic, political, security, military, educational, and socio-cultural integration between its members and countries in the Asia-Pacific.
- **Secretariat**: Jakarta, Indonesia.

THE PRINT Apr 26

MISSION ISHAN
(Syllabus: GS Paper 3 – Economy/Infrastructure)

Mission ISHAN, India's push for 'one nation, one airspace', will benefit airlines & passengers alike

Context: Recently, the Airports Authority of India (AAI), responsible for air traffic management services, issued invitations for expressions of interest (EoI) to prepare a detailed project report for the Indian Single Sky Harmonized Air Traffic Management at Nagpur (ISHAN).

Mission ISHAN

- **About**: ISHAN stands for Indian Single Sky Harmonized Air Traffic Management at Nagpur.
- **Aim**: To centralize coordination for domestic flights flying in upper airspace (above 25,000 ft) to be handled by air traffic controllers (ATCOs) in Nagpur.
- **Indian Airspace Structure**: Currently, Indian airspace is divided into 4 Flight Information Regions (FIRs) - Delhi, Mumbai, Kolkata, and Chennai, along with a sub-FIR at Guwahati, each managed separately.
    - The move comes amidst a significant surge in aviation industry growth, with domestic passenger traffic expected to double by 2030.
- **Benefits**:
    - ISHAN is expected to make air traffic operations more efficient, safer, and seamless, thereby enabling it to handle more capacity.
    - The move is also expected to benefit passengers by reducing congestion and flying times.
    - FIRs are controlled by a single authority responsible for providing air traffic services as well as alerting services.
    - Air traffic controllers (ATCOs) in each region would only guide flights approaching or taking off from an airport until they enter the upper airspace.
    - Flexibility in flight routes, reduced travel time, lower fuel consumption, and reduced carbon footprint are among the key benefits of ISHAN.

THE HINDU Page 7

NILGIRI TAHR

(Syllabus: GS Paper 3 – Env and Eco)

Context: The Tamil Nadu government recently announced plans to conduct a synchronized survey of the state animal, the Nilgiri Tahr (Nilgiritragus hylocrius), aiming to remove it from the endangered status.

Nilgiri Tahr

- **About**: It stands as the sole mountain ungulate species in southern India, contrasting with the twelve other species found throughout the country.
- **State Animal**: Tamil Nadu
- **Habitat**: Open montane grassland habitats at elevations from 1200 to 2600 m of the South Western Ghats.
    - Currently, the Nilgiri tahr distribution is along a narrow stretch of 400 km in the Western Ghats between Nilgiris in the north and Kanyakumari hills in the south of the region.
- **Threatened Population**: Facing mounting pressures from habitat degradation and human activities like hunting, the remaining populations of Nilgiri tahr endure significant stress, jeopardizing their survival.
- **Highest Population**: The Eravikulam National Park in Anamalai hills, Kerala
- **Lowest Population:** Palani hills, Srivilliputtur, and the Meghamalai and Agasthiyar ranges
- **Protection Status**:
    - **IUCN Status**: Endangered
    - **Wildlife (Protection) Act of India, 1972**: Schedule I
- **Conservation Estimates**: As reported by WWF India in 2015, place the wild population of Nilgiri tahr at approximately 3,122 individuals, underscoring the urgency of conservation efforts.

IUCN representative to be an observer in Nilgiri Tahr survey

Geetha Srimathi
CHENNAI



There are around 3,000 Tahrs in the Western Ghats, according to a report released by the World Wildlife Fund India in 2015.

With a resolve to remove the Nilgiri Tahr (*Nilgiritragus hylocrius*) from the endangered status, the Tamil Nadu government will conduct a synchronised survey of the State animal from April 29.

The three-day exercise is being done to estimate the population of the Tahrs, which once roamed the length and breadth of the Anamalai and Nilgiris landscape. The animal is listed as an endangered species by the International Union for Conservation of Nature (IUCN) and protected under Schedule-I of the Wild Life (Protection) Act, 1972.

There are around 3,000 Tahrs in the Western Ghats, according to a report released by the World Wildlife Fund India in 2015, and a sizeable number of them is concentrated in the Anamalai Tiger Reserve (ATR).

In 2020, the Nature Conservation Foundation found around 510 individuals in the ATR, which houses the second-largest population of the species after the Eravikulam National Park in Kerala. "We have roped in WWF and the Wildlife Institute of India for the population estimation. The third is IUCN, whose country director will be an observer in the exercise," said Supriya Sahu, Additional Chief Secretary to the Department of Environment, Climate Change and Forest.

For the purpose of the survey, being done in coordination with Kerala's Forest Department, the habitats in Tamil Nadu have been divided into 13 forest divisions, 100 forest beats, and 140 feasible blocks. Emphasis has been given to areas along the Kerala border, Ms. Sahu said.

International Union for Conservation of Nature (IUCN)

- **About:** IUCN was founded in 1948 as the International Union for the Protection of Nature (IUPN).
- **Headquarters**: Gland, Switzerland.
- **Classification**: Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Near Threatened, Least Concern, Data Deficient and Not Evaluated.

IRDAI & BIMA TRINITY
(Syllabus: GS Paper 3 – Economy)

All-in-one product: Irdai prices Bima Vistaar at ₹1,500/policy

GEORGE MATHEW
Mumbai, April 26

THE INSURANCE REGULATORY and Development Authority of India (Irdai) has proposed to price Bima Vistaar, its ambitious all-in-one affordable mass product aimed at the rural areas of the country, at ₹1,500 per policy.

The regulator made an announcement regarding the launch of Bima Vistaar and its prices at a summit of insurance CEOs, addressed by IRDAI chairman Debasish Panda on Thursday.

The product is designed to provide a basic social safety net cover with combined features of life, health, personal accident and property insurances. The product includes life cover with a premium of ₹820, health cover at ₹500, personal accident cover at ₹100 and property cover at ₹80. If taken for the entire family on a floater basis, the policy will cost ₹2,420, with an additional ₹900 charged for the rest of the family members.

The sum assured for life, personal accident and property covers is ₹2 lakh each, while the health cover, known as hospi cash, offers a sum assured of ₹500 for 10 days, with a maximum amount of ₹5,000 available without producing bills or documents.

Agents selling Bima Vistaar policies stand to earn a commission of 10%, incentivising wider distribution and adoption of the product.

Narendra Bharindwal, vice president at Insurance Brokers Association of India (IBAI), said the comprehensive coverage offered by the Bima Vistaar policy underscores its importance in safeguarding individuals and families against various risks and uncertainties. "This initiative not only encourages more people to invest in insurance for their protection but also promotes financial inclusion," he said.

In 2022-23, India's overall insurance penetration was down at 4% from the level of 4.2% in 2021-22, according to a Swiss Re Sigma report. This is much below the global insurance penetration of 6.8%. In 2022-23, the insurance density in India increased from $91 in 2021-22 to $92.

"The competitive pricing of Bima Vistaar is expected to benefit many individuals and families by providing them with a reliable insurance solution at a reasonable cost. We appreciate Irdai's efforts in enhancing the insurance landscape and look forward to more such initiatives that promote insurance penetration and financial security among the masses," Bharindwal said.

Insurers said the claim settlement for the property part of the combo solution will be on parametric basis, which means any payout is based on the magnitude of the event, rather than the magnitude of the losses. With 25% of damage, 50% of the sum assured will automatically be paid to the policy holder and with more than 40% damages 100% or ₹2 lakh will be settled as claims. Irdai, along with the General Insurance Council (GIC) and Life Insurance Council (LIC), was working towards creating a UPI-like moment for insurance.

Panda called the UPI-like moment in the insurance as 'Bima Trinity', which will include Bima Sugam, the digital platform, Bima Vistaar and Bima Vahak, a women-centric distribution channel to focus on reaching untapped/rural areas.

"Bima Sugam will be the protocol or the platform. Bima Vistaar is a product where we are trying to design it in a manner which will be accessible to the common man. It will be a bundled product of life, health, causality and property," Panda had said. In October 2022, IRDAI had set up a committee to explore and recommend on how to bring about synergies in the working and operations of Bima Vahak, Bima Vistaar and the digital platform — Bima Sugam.

These products will be distributed by Bima Vahak. Initially, every gram sabha will have at least one Bima Vahak, who will visit every house in their area and convince them about the product.

AIMED AT RURAL AREAS



- The all-in-one product is designed to provide a basic social safety net cover with combined features of life, health, personal accident and property insurances
- It includes life cover with a premium of ₹820, health cover at ₹500, personal accident cover at ₹100 and property cover at ₹80
- If taken for the entire family, the policy will cost ₹2,420, with an additional ₹900 charged for the rest of the family members

Context: The **Insurance Regulatory and Development Authority of India (IRDAI)** has proposed to price **Bima Vistaar**, its ambitious all-in-one affordable mass product aimed at the rural areas of the country, at Rs 1,500 per policy.

Bima Trinity

- **About:** It is the result of the initiative by IRDAI in late 2022 in setting up a committee to explore and recommend on how to bring about synergies in the working and operations of insurance companies.
- **Three Component**:
  - **Bima Sugam:** A centralized platform integrating insurers and distributors to offer a one-stop shop for customers.
  - **Bima Vistar:** A comprehensive bundled insurance product covering life, health, property, and casualty or accident risks.
  - **Bima Vaahaks**: A women-centric workforce deployed at the grassroots level to promote insurance awareness and facilitate the adoption of composite insurance products like Bima Vistar.

Insurance Regulatory and Development Authority of India (IRDAI)

- **About:** IRDAI is an autonomous and statutory body responsible for managing and regulating the insurance and reinsurance industry in India.
- **Establishment**: Under an **Act of Parliament in 1999,** IRDAI operates independently to oversee the functioning of insurers and protect the interests of policyholders.
- **Organizational Structure:** Comprises a 10-member body, including a chairman, five full-time members, and four part-time members.
- **Headquarter:** In Hyderabad.
- **Functions**: Ensuring policyholders' interests are safeguarded,
  - Fostering the rapid and orderly growth of the insurance industry,
  - Facilitating the prompt settlement of genuine claims, establishing an effective mechanism for grievance redressal, and
  - Promoting fairness, transparency, and orderly conduct in financial markets related to insurance.

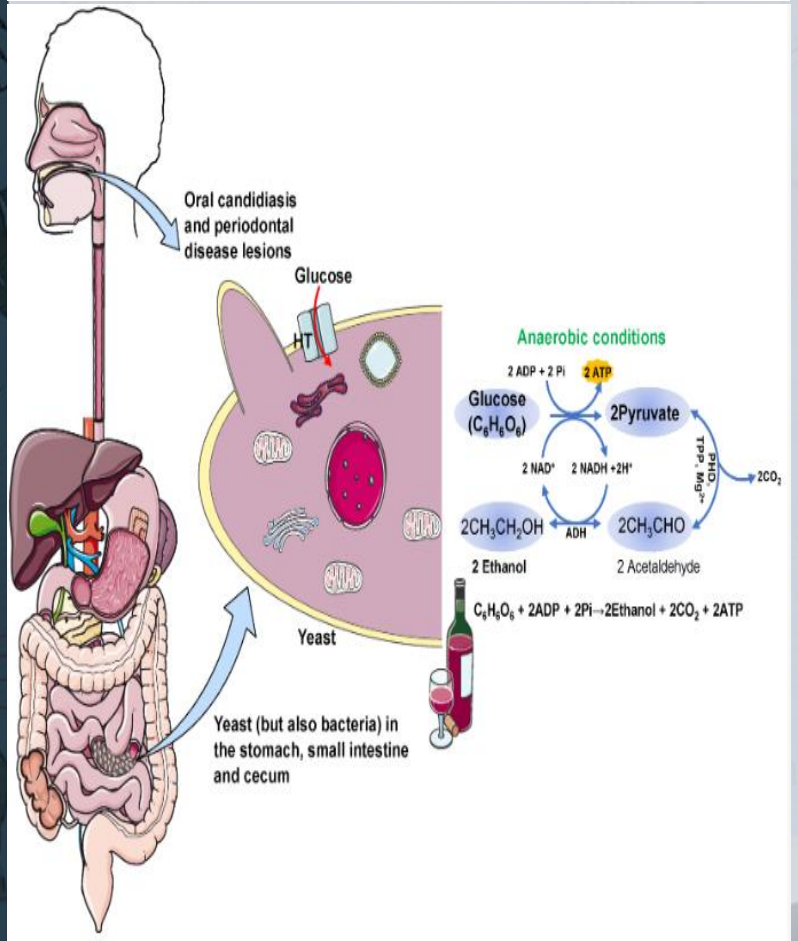
HINDUSTAN TIMES

Apr 26

AUTO-BREWERY SYNDROME

(Syllabus: GS Paper 3 – Sci and Tech)

What is auto-brewery syndrome? Man acquitted of drunk driving charge as his body creates its own alcohol



Context: Recently, a Belgian man was acquitted of drunk driving due to auto-brewery syndrome (ABS), a rare condition where the body produces alcohol, as stated by his lawyer.

Auto-Brewery Syndrome

- **About:** It is also referred to as gut fermentation syndrome.
- **Found:** It occurs when certain fungi or bacteria in the gut produce excessive amounts of ethanol, converting carbohydrates from food into alcohol.
- **Caused by**: fermentation of ingested carbohydrate by gut fungi resulting in endogenous production of ethanol.
- **Biochemical Process**: It involves the body's conversion of sugary and starchy foods into alcohol, leading to symptoms akin to intoxication.
- **Metabolic Waste:** While yeasts and fungi metabolize sugars and starches for energy, they also produce ethanol and carbon dioxide as byproducts.
- **Symptoms:** Individuals may experience drunkenness without consuming alcohol or become significantly intoxicated with minimal alcohol intake.
  - **Common Symptoms**: Dizziness, headache, and dehydration are typical symptoms, alongside others.
- **Risk Factors**: People with diabetes, obesity, or Crohn's disease are at higher risk, although ABS can affect healthy individuals too.
- **Treatment:** Medical advice often recommends avoiding high-carbohydrate and sugary foods to manage ABS symptoms effectively.

INDIAN EXPRESS

Page 14

SYMBOL LOADING UNIT (SLU)

(Syllabus: GS Paper 2 – Polity)

SLU, 'matchbox' that feeds EVM candidate info

Symbol Loading Units ensure EVMs can be used for voting. Underlining the sanctity of the election process, the SC has tightened norms for their use

DAMINI NATH & RITIKA CHOPRA
NEW DELHI, APRIL 26

WHILE REJECTING the plea for 100% verification of Voter Verifiable Paper Audit Trail (VVPAT) slips against the Electronic Voting Machine (EVM) count, the Supreme Court on Friday directed the Election Commission of India (ECI) to "seal and secure" the Symbol Loading Unit (SLU) for 45 days after the declaration of election results.

Currently, only the three components of the EVM — the ballot unit, control unit, and VVPAT — are stored for 45 days after the results. This is the first time that SLUs, used to load candidate symbols onto the VVPATs, will also be available for examination along with the EVMs if a candidate challenges the results by filing an election petition in court.

What is a Symbol Loading Unit (SLU) and how does it work?

Symbol Loading Units (SLUs) were introduced around the same time as VVPATs — a little over a decade ago. VVPATs help voters verify their votes — they see a slip with a printed image of the party symbol they voted for.

But for the VVPAT to print a symbol correctly, information pertaining to the list of candidates and their symbols must be loaded on to the VVPAT machine in the correct order. This is where the Symbol Loading Unit, or SLU, comes in. In fact, the introduction of VVPATs necessitated the use of SLUs.

The SLU is used to load the symbols of the candidates onto the VVPAT. It is a matchbox-sized device that is first connected to a laptop or personal computer, from where a symbol loading application is used to load a bitmap file containing the candidates' names, serial numbers, and symbols.

The SLU is then connected to the VVPAT to transfer that file on to the paper audit machine. This is done under the supervision of a district election officer.

At which point in the election process are SLUs used?

The SLUs come into the picture only a few days before polling in a particular seat, when the EVMs are being commissioned and the list/order of contesting candidates is decided and set on the ballot unit (the machine where you press the button to vote) and the VVPAT (which produces the paper audit trail of your vote).

Candidate-setting can happen at any time from five to two days before voting at a seat. Once the SLU is used to load symbols onto the VVPAT, the EVM is ready for use. After this, the SLU is of no relevance to the actual voting process.

What happens to an SLU after symbols are loaded?

Typically, a small number of SLUs are enough to load symbols onto all VVPATs for a seat. According to EC officials, it takes an SLU two to three minutes to load each VVPAT.

Once the symbol-loading is complete, the SLUs are handed over to the concerned district election officer for safekeeping. They remain in the officer's custody until the day after voting. Afterward, the SLUs are released to the engineers of the two EVM manufacturers, Bharat Electronics Ltd (BEL) or Electronics Corporation of India Ltd (ECIL), so they can be used to load symbols onto VVPATs for other seats in subsequent phases.

Thus, in a multi-phase election like the ongoing one for the 18th Lok Sabha, an SLU is typically reused after one phase of polling to load symbols onto VVPATs meant for other seats in subsequent phases.

What has the SC said about the SLUs?

The court has said that the SLUs should be sealed and stored immediately after the symbol-loading process for a seat is complete. It must be stored for a period of 45 days after the declaration of results, so that it can be opened and examined like EVMs in case of an election petition.

This effectively means that an SLU used for loading symbols onto VVPATs for one seat can no longer be reused for other seats. Consequently, the EC will need more SLUs. Sources said the Commission currently has about 5,000 SLUs, and will need an additional 2,000 to implement the SC's direction.

And what has the top court said about microcontrollers?

In an unprecedented move, the court has allowed candidates to seek verification of EVM software. This effectively means that a candidate can ask ECI officials to check the one-time programmable software in the BU (Ballot Unit), CU (Control Unit), and VVPAT for tampering, in case of any doubts regarding the result.

This verification involves inspecting the burnt memory/ microcontrollers of these three components. The court has proposed a formula for doing this: engineers from the EVM manufacturers will conduct checks on 5% of the EVMs per Assembly constituency or Assembly segment of a parliamentary constituency. Candidates must submit a written request within seven days of the announcement of results, and will have to bear the expense of the process. This right to seek verification, however, is limited to those candidates who come in second or third. Engineers from the manufacturing companies will certify the authenticity and intactness of the memory/ microcontroller.

What happens if the microcontrollers, upon verification, are found tampered?

The court has only said that if any tampering is found, the candidate will be refunded the cost of verification. It has not said how the election result will be impacted.

What changes on the ground?

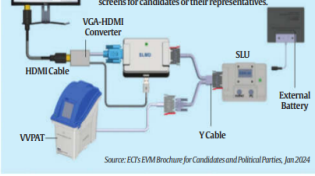
Nothing changes for the voter. However, a lot changes in the way the ECI organises polling.

The ECI will now have to store SLUs for 45 days after voting. To reserve one SLU exclusively for one seat, it will need to order more SLUs. It will also have to ensure the verification of EVMs upon request from candidates who finish second or third, which may require additional manpower.

Also, the ECI will have to examine whether the Representation of the People Act of 1951 has to be amended. The election law currently states that an election petition challenging a result can be filed in court by a candidate within 45 days of the declaration of results. During this period, the EC machinery does not touch the EVMs. If these machines now need to be unsealed for verification purposes, the poll panel will have to determine how this can be accomplished.

LOADING CANDIDATES' INFORMATION ONTO EVMS

A few days before voting, candidates' symbols are loaded onto the VVPAT using SLUs. A computer with a symbol loading application is used to create a bitmap file that has the serial number, name, and symbol of candidates. The file is loaded on to the flash memory of the VVPAT using the SLU. The process is shown on screens for candidates or their representatives.



Source: ECI's EVM Brochure for Candidates and Political Parties, Jan 2024

Context: Recently, the Supreme Court dismissed the plea for 100% verification of Voter **Verifiable Paper Audit Trail (VVPAT)** slips alongside Electronic Voting Machine (EVM) counts but instructed the Election Commission of India (ECI) to safeguard the **Symbol Loading Unit (SLU)** for 45 days post-election result declaration.

Voter Verified Paper Audit Trail (VVPAT)

- **About:** It is an independent system [consists of two parts, namely, VVPAT Printer and VVPAT Status Display Unit (VSDU)] attached with the Electronic Voting Machines that allows the voters to verify that their votes are cast as intended.

Electronic Voting Machines (EVM)

- **About:** EVMs facilitate candidate selection through button presses.

Symbol Loading Unit (SLU)

- **About**: SLUs are essential components in the functioning of Voter Verifiable Paper Audit Trail (VVPAT) systems, introduced concurrently with VVPATs approximately a decade ago.
- **Purpose of VVPATs**: It allow voters to verify their votes by displaying a printed slip containing the symbol of the chosen party.
- **Role of Symbol Loading Units (SLUs)**: These are crucial for ensuring the accurate printing of symbols on VVPAT slips.
- **Integration with VVPAT Systems**: The introduction of VVPATs necessitated the utilization of SLUs for loading candidate symbol information onto the VVPAT machine.
- **Loading Procedure**: The SLU is connected to a laptop or personal computer, where a symbol loading application is used to load a bitmap file containing candidates' names, serial numbers, and symbols.
- **Data Transfer**: Once the symbol information is loaded onto the SLU, it is connected to the VVPAT machine to transfer the file onto the paper audit machine.
- **Storage Duration**: Currently, only the three components of the EVM the ballot unit, control unit, and VVPAT are stored for 45 days after the results.
    - This is the first time that SLUs, used to load candidate symbols onto the VVPATs, will also be available for examination along with the EVMs if a candidate challenges the results by filing an election petition in court.

FREE Download PDF

Login to theiashub.com

- Aaj Ka Quality Enrichment (Toppers' Favourite PDF)
- News-CRUX-10 (10 News. 10 Sources. One Place)
- Monthly Editorials (The Hindu & Indian Express)
- Daily Quiz (Prelims)
- Government Schemes & Ministry Wise Year End Review
- Free Enrichment PDFs (Tailor Made Crisp Study Material)



Log On To Our Unique
Free Answer Writing Sessions with Toppers (FAST) Portal
& Start Practicing!

SCAN HERE

9560082909

t.me/theiashub

/mkyadav

www.theiashub.com

www.theiashub.com