

MARCH

22

CRUX 10

10 News. 10 Sources. One Place



The Indian **EXPRESS** live **mint** पॉइंट

DownToEarth
FORTNIGHTLY ON POLITICS OF DEVELOPMENT,
ENVIRONMENT AND HEALTH

**Science
Reporter**



विज्ञान एवं
प्रौद्योगिकी मंत्रालय
MINISTRY OF
SCIENCE AND
TECHNOLOGY



MK Yadav Sir

Table of Contents

- 1 Biodegradable Plastic
- 2 Twin Stars
- 3 Europa
- 4 Report of Income Inequality
- 5 World Forest Day
- 6 Great Indian Bustard
- 7 Enforcement Directorate (ED)
- 8 Subduction Zone
- 9 Global E-waste Monitor 2024
- 10 National Internet Exchange of India

Ministry of Environment tightens rules on bioplastics

Jacob Koshy
NEW DELHI



Microplastics are reported as a major source of pollution.

added to regular single-use plastics, make them biodegradable.

"... The current standards [in India] only recommend tests that can be done to determine the levels of microplastics but don't prescribe a definitive test... Should a standard for microplastics be eventually determined, it should, for fairness sake, include both compostable and biodegradable plastics," he told *The Hindu*.

Microplastics have been reported as a major source of pollution affecting rivers and oceans.

Several firms were left in the lurch as the Central Pollution Control Board (CPCB) refused to provide them with a 'provisional certificate' to license their products as biodegradable. This is because the CPCB only considers biodegradable a plastic sample that has 90% degraded, and such a process takes at least two years.

The Environment Ministry has introduced rules that make it harder for makers of disposable plastic ware to label such products as 'biodegradable', introducing a stipulation that they must not leave any microplastics behind. Biodegradable plastic and compostable plastic are projected as the two broad kinds of technological fixes to India's burgeoning problem of plastic waste pollution.

Biodegradable plastic involves plastic goods being treated before they are sold. Compostable plastics, on the other hand, do degrade but require industrial or large municipal waste management facilities to do so.

A new set of amendments to India's Plastic Waste Management (Amendment) Rules, 2024, made public last week, defines biodegradable plas-

tics as not only capable of "... degradation by biological processes in specific environment such as soil, landfill..." but also as materials that do not leave "any microplastics..."

The caveat about microplastics in the updated rules does not specify which chemical tests can be used to establish the absence of microplastics, or to what extent microplastics must be reduced in a sample in order to consider them eliminated, says Sunil Panwar, CEO, Symphony Environmental India. The company offers technologies that, when

BIODEGRADABLE PLASTIC

(Syllabus: GS Paper 3 – Sci and Tech)

Context: The Environment Ministry has introduced rules that make it harder for makers of disposable plastic ware to label such products as 'biodegradable', introducing a stipulation that they must not leave any microplastics behind.

India's Plastic Waste Management (Amendment) Rules, 2024

- **About:** The new amendments to India's Plastic Waste Management (Amendment) Rules, 2024, broaden the definition of biodegradable plastics.
 - Biodegradable plastics are now characterized not only by degradation in specific environments like soil or landfills but also by the absence of microplastics.
 - **Focus on Single-Use Plastic Ban:** These amendments reflect a growing concern over single-use plastics, aiming to curb their proliferation and environmental impact.
 - By redefining biodegradable plastics, the regulations incentivize the use of materials that break down without leaving harmful residues.

Microplastics

- **About:** It is defined as solid plastic particles insoluble in water and sized between 1 μm and 1,000 μm , pose significant environmental challenges.
 - They have emerged as a notable pollutant, particularly in water bodies such as rivers and oceans, threatening marine ecosystems and human health.

Biodegradable Plastic

- **About:** Biodegradable plastics break down into harmless components like water, carbon dioxide, and biomass through the action of living organisms, primarily microbes.
- **Diverse Production Sources:** These plastics can be derived from renewable raw materials, microorganisms, petrochemicals, or a combination of these sources, offering versatility in production methods.
- **Versatile Product Range:** Biodegradable plastics find applications across various industries, showcasing their potential to replace traditional plastics in a wide array of products.

MEET TWIN STARS OF THE UNIVERSE, WHICH GOBBLE UP PLANETS

THE PLANETARY system that includes Earth and its sibling planets orbiting the sun has been remarkably stable during its roughly 4.5 billion years of existence. But not all planetary systems are so lucky, as per a new study involving "twin" stars.

An examination of 91 pairs of stars with matching sizes and chemical compositions showed that a surprising number exhibited signs of having ingested a planet, scientists said on Wednesday, likely after the planet was sent hurtling out of a stable orbit for any number of reasons.

What are twin stars?

The study, published in the journal *Nature*, looked at pairs of stars that formed within the same interstellar cloud of gas and dust — called co-natal stars — giving them the same chemical makeup, and roughly equal mass and age. These are the "twins." While the pairs are moving together in the same direction within our Milky Way galaxy, they are not binary systems of two stars gravitationally bound to each other.

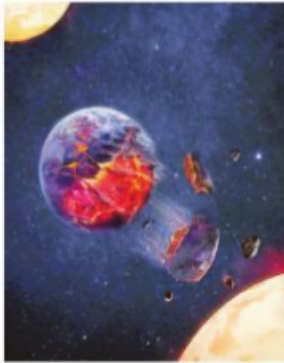
A star's chemical composition changes when it engulfs a planet because it incorporates the elements that made up the doomed world. The researchers looked for stars that differed from their twin because they had higher amounts of tell-tale elements like iron, nickel or titanium indicating remnants of a rocky planet, relative to certain other elements.

In seven of the pairs, one of the two stars bore evidence of planetary ingestion.

How do twin stars eat planets?

Possible reasons for a planet making a death plunge into its host star include an orbital disturbance caused by a larger planet, or another star passing uncomfortably close.

"The stability of a planetary system like the solar system is not a given," said



Artist's impression of a planet being devoured by a twin star. Reuters

astrophysicist and study co-author Yuan-Sen Ting of the Australian National University and Ohio State University.

The researchers said while it is most likely that their observations signalled whole planets being ingested, it was possible it was planetary building blocks consumed during the system's period of planet formation.

Instability in planetary systems may be more common than previously known, considering that about 8% of the stellar pairs studied had one star that apparently devoured a planet.

Most planetary systems should be stable because, as in our solar system, the planets are under the influence mainly of their host star, not their sibling planets, Ting said.

"But for other planetary systems with different initial conditions and configurations, this might break down, leading to very chaotic dynamics," Ting added.

REUTERS

TWIN STARS (Syllabus GS Paper 1 – Geography)

Context: The Planetary system that includes Earth and its sibling planets orbiting the sun has been remarkably stable during its roughly 4.5 billion years of existence. But not all planetary systems are so lucky, as per a new study involving "twin" stars.

Twin Stars

- **About:** It refers to pairs of stars that form within the same interstellar cloud of gas and dust, known as co-natal stars. These stars share similar chemical composition, mass, and age, resembling "twins" in the cosmic sense.
- **Characteristics:** These twin stars, while moving together in the same direction within the Milky Way galaxy, are not binary systems gravitationally bound to each other.
- **Effect of Planetary Ingestion:** The chemical composition of a star can change if it engulfs a planet, incorporating elements from the consumed world. Higher amounts of certain elements like iron, nickel, or titanium in one of the twin stars indicate remnants of a rocky planet.
- **Observations and Findings:** In seven out of the studied pairs of twin stars, one of the stars showed evidence of planetary ingestion, suggesting the prevalence of this phenomenon among co-natal stars.

How do twin stars eat planets?

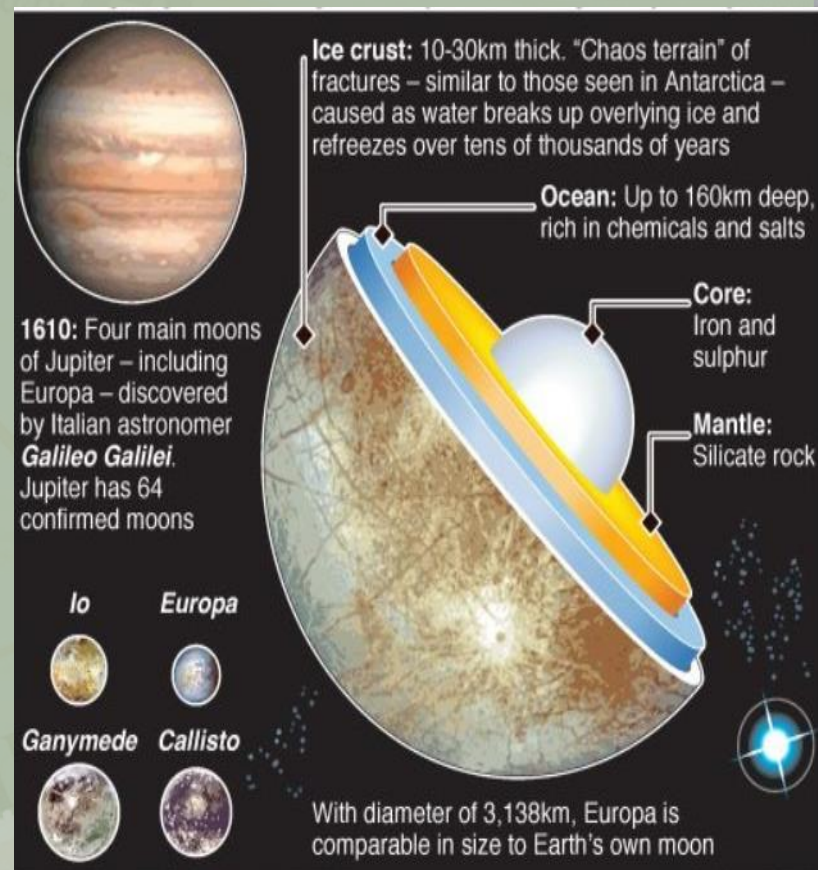
- **Possible Causes of Death Plunge:** A planet's death plunge into its host star may be triggered by orbital disturbances, such as interactions with larger planets or close encounters with other stars.
- **Planetary System Stability:** Contrary to popular belief, the stability of planetary systems like our solar system is not guaranteed, as stated by astrophysicist Yuan-Sen Ting.
- **Common Instability in Systems:** Instability in planetary systems might be more prevalent than previously thought, with approximately 8% of stellar pairs showing evidence of one star consuming a planet.

Can Europa support life? Scientists estimate thickness of Jupiter moon's ice shell to help figure it out

Europa

- **About:** It is one of Jupiter's largest moons, among over 90 moons orbiting the planet.
 - It ranks as the sixth-closest moon to Jupiter.
- **Galilean Moons Discovery:** Europa, along with Io, Ganymede, and Callisto, constitutes the Galilean moons.
 - These were the first moons discovered beyond Earth by Galileo Galilei in January 1610.
- **Composition and Atmosphere:** Europa is primarily composed of silicate rock with a water-ice crust and likely an iron-nickel core.
 - Its thin atmosphere is mainly oxygen-based.
- **Potential for Life:** Despite its thin oxygen atmosphere, Europa is considered one of the most promising places in the solar system for finding present-day environments suitable for life beyond Earth.
- **Abundant Water:** Beneath Europa's icy surface lies an estimated amount of water twice that found on Earth.
- **Ice Shell and Ocean:** Scientists believe Europa's ice shell, about 15-25 km thick, is floating on an ocean estimated to be between 60-150 km deep.
- **Water Quantity:** Despite its smaller size, Europa likely contains twice the water found in all of Earth's oceans.
- **NASA's Mission:** NASA plans to launch its Europa Clipper in 2024, which will orbit Jupiter and conduct close flybys to gather data on Europa's atmosphere, surface, and interior.

Context: Scientists are studying Europa, one of Jupiter's many moons, to see if it could support life.



Aspects of inequality in India

Key takeaways from World Inequality Lab research: scale of wealth and income gap in population

EXPRESS NEWS SERVICE

NEW DELHI, MARCH 23

A NEW working paper by World Inequality Lab (WIL), an international collaboration of researchers, has presented data that show inequality in India "declined post-independence till the early 1980s, after which it began rising and has skyrocketed since the early 2000s".

The paper, *Income and Wealth Inequality in India, 1922-2023*, The 20th of the Billore Raj, co-authored by economists Nitin Kumar Bharti, Lucas Chancel, Thomas Piketty, and Anmol Somnani, has used data from national income accounts, wealth aggregates, tax tabulations, rich lists, and surveys on income, consumption and wealth to arrive at the results.

WIL is a Paris-based global research centre focused on the study of inequality and public policies that promote social, economic, and environmental justice. Here's what the data show:

GROWTH IN AVERAGE INCOMES: Between 1960 and 2022, the average income of Indians grew at 2.6% per year in real terms (that is, after removing the effect of inflation). This period can be broadly divided into two halves: 1960-1990, when real growth rate of income was 1.6% per year; and 1990-2022, when average incomes grew by 3.6% per year. The periods 2005-2010 and 2010-2015 saw the fastest growth at 4.3% and 4.9% per year respectively.

VERY HIGH NET WORTH INDIVIDUALS: AIS: The period after 1990 saw the emergence of very high net worth individuals (with net wealth more than \$1 billion at market exchange rate). Their numbers increased from 1 in 1991 to 52 in 2011, and to 162 in 2022.

INCREASE IN INCOME TAX PAYERS: The share of the adult population that files income tax returns was under 1% until the 1990s, and rose significantly after the economic reforms of 1991 onwards. By 2011, more than 5% of the adult population was filing ITRs. From 2017-2020, around 9% of adults filed returns.

EXTREME LEVELS OF INEQUALITY: In 2022-23, the percentage of national income that went to the top 1% of the population was 22.6%, the most in the data series since 1922, and more than even during the inter-war period. The share of wealth with the top 1% was

Inequality in five charts

Figure 1: Long-run income inequality in India, 1951-2022

Distribution of pre-tax per-adult net national income

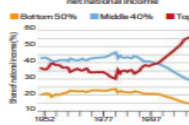


Figure 2: Top 1% national income share, 1922-2022

Distribution of pre-tax per-adult net national income

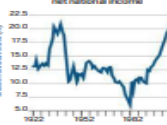


Figure 3: Top 1% national wealth share, 1961-2023

Distribution of pre-tax per-adult national wealth

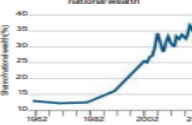


Figure 4: Top income shares, global perspective, 2022-23

India and others: top 10% and 1% income shares

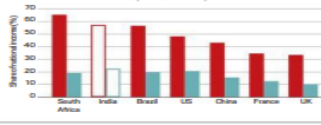
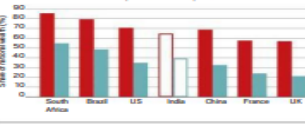


Figure 5: Top wealth shares, global perspective, 2022-23

India and others: top 10% and 1% wealth shares



40.1% in 2022-23, the highest level since 1961 when the data series on wealth began.

"The 'Billore Raj' headed by India's modern bourgeoisie is now more unequal than the British Raj headed by the colonialist

EXTREME WEALTH AT VERY TOP: Between 1961 and 2023, the share of the top 1% in national wealth increased threefold from 13% to 39%. Most of this gain came after 1991. (Figure 3) Within the top 1% wealth share of 39% in 2022-23, "29 percentage points went just to the top 0.1%, 22 percentage points to just the top 0.01% and 16 percentage points to just the top 0.001%", the paper says.

WEALTH INEQUALITY GLOBALLY: The picture on wealth inequality is slightly less extreme. "In terms of top wealth shares, we see that both with top 10% and top 1%, India comes out in the middle of the pack, with Brazil and South Africa standing out with

their extreme wealth concentration levels..." the paper says (Figure 5).

INDEED UNDERESTIMATION OF INEQUALITY: The authors have emphasised that "the quality of economic data in India is notably poor and has seen a decline recently". Therefore, it is likely that the results represent "a lower bound to actual inequality levels", the paper says.

POLICY SOLUTION: a super tax: "Implementing a super tax on Indian billionaires and multimillionaires, along with restructuring the tax schedule to include both income and wealth, so as to finance major investments in education, health and other public infrastructure, could be effective" to address rising inequalities, the paper says.

Context: India's richest people now have a larger share of national income than in more than a century. The top 1 per cent of Indians earns 22.6 per cent of the national income compared to 15 per cent earned by the bottom 50 per cent of the population, according to a study by the World Inequality Lab.

Highlights of the Report

- **Growth in average incomes:** Between 1960 and 2022, India's average income grew at an annual rate of 2.6% in real terms, with significant disparity between the periods before and after 1990.
- The years 2005-2010 and 2010-2015 experienced the fastest growth in average incomes, reaching rates of 4.3% and 4.9% per year respectively.
- **Emergence of Very High Net Worth Individuals:** From 1990 to 2022, there was a notable increase in national wealth alongside the emergence of individuals with net wealth exceeding \$1 billion.
- **Rise in the Percentage of Income Tax Payers:** Economic reforms in 1991 led to a significant rise in the share of adult population filing income tax returns, surpassing 5% by 2011 and reaching approximately 9% during 2017-2020.
- **Extreme Levels of Inequality in India:** In 2022-23, 22.6% of India's national income was accrued by the top 1%, marking the highest level of income inequality since 1922.
- The wealth share of the top 1% reached 40.1% in 2022-23, surpassing even the levels observed during the colonial period, highlighting the severity of contemporary inequality.
- **Extreme Wealth Concentration at the Very Top:** Wealth accumulation in India is characterized by extreme concentration at the highest echelons, with the top 1% wealth share tripling between 1961 and 2023.

Income Inequality

- **About:** Income inequality encompasses the non-uniform distribution of income within a population, indicating a variance in earnings among individuals or groups.
- **Relation to Wealth Inequality:** Income inequality frequently coexists with wealth inequality, representing the uneven dispersion of assets and resources among individuals or segments of society.
- **ANALYTICAL Frameworks:** Various methodologies, including the Gini Index, are employed to assess and quantify the extent of income inequality within a given populace.
- **Diverse Dimensions:** Income inequality can be dissected along multiple axes such as gender or race, shedding light on distinct facets of economic disparity within societies.

World Forestry Day 2024: Date, history, significance and all that we need to know

Context: As we mark World Forestry Day, it's vital to remember the significance of forests and the urgent need to protect them, especially considering the recently heightened awareness of environmental preservation.

World Forest Day

- **About:** It is an annual reminder of the crucial role forests and trees play in our lives.
- **Date:** It is celebrated annually on March 21, falling on a Thursday this year.
- **Organizers:** The Food and Agriculture Organization of the United Nations (FAO) and the United Nations Forum on Forests coordinate the International Day of Forests.
- **Theme:** Forests and Innovation: New Solutions for a Better World.
- **Historical Background:** Proposed in 1971 by the General Assembly of the European Confederation of Agriculture.
 - March 21st chosen by the United Nations due to its alignment with Vernal Equinox and Autumn Equinox in the northern and southern hemispheres.
- **Significance**
- **Action-Oriented Celebration:** Celebrating World Forestry Day entails engaging in activities such as tree planting, raising awareness about the significance of forests, and supporting afforestation initiatives.
- **Vital Reminder:** World Forestry Day serves as a poignant reminder of the indispensable contribution of forests in sustaining life on Earth and the urgent need to safeguard them for future generations.

India Initiatives to Conservation of Forest

- **Implementation of Forest Protection Laws:** For preservation and protection of forest and wildlife, various laws including the Forest (Conservation) Act 1980, Indian Forest Act, 1927, Wildlife Protection Act 1972, and other central/state laws as applicable to a State/UT, are implemented by the respective State Government /UT Administration.
- **National Afforestation Programme (NAP) and Green India Mission (GIM):** NAP, merged with GIM, focuses on afforestation in degraded forests with people's participation, including a specific sub-mission for enhancing tree cover in urban and peri-urban areas.
- **Cross-Sectoral Collaboration for Tree Plantation:** Tree plantation initiatives are carried out cross-sectorally, involving various ministries/organizations and State Plan budgets, recognizing it as a multi-departmental, multi-agency activity.

Panel to study scope of altering power lines in bustard habitat

The Hindu Bureau
NEW DELHI

The Supreme Court on Thursday constituted an expert committee to balance the conservation and protection of the endangered Great Indian Bustard bird population with the country's international commitments to promote renewable sources of energy.

The large-winged birds are on the brink of extinction, and one of the causes is the frequent collision with high-powered power cables running adjacent to its core habitats in Gujarat and Rajasthan.

A three-judge Bench headed by Chief Justice of India D.Y. Chandrachud said a blanket direction given by the top court in April 2019 for moving high voltage and low voltage power cables underground required "re-calibration".

The court appointed the Director, Wildlife Institute of India; wildlife and forest conservation experts, including Hari Shankar Singh, Niranjana Kumar Vasu, B. Majumdar, and Devsh Ghadvi; and Joint Secretary with the Renewable Energy Ministry Lalit Bohra and his counterpart in the Envi-



Great Indian Bustard

ronment Ministry.

The committee would also include Ashok Kumar Rajput, Member, Power Systems, Central Electrical Authority, and P.C. Garg, Chief Operating Officer, Central Transmission Utility of India Limited as special invitees.

The remit of the panel would be to determine the scope, extent and feasibility of underground and overhead electric lines in areas identified as priority spots for the birds in Rajasthan and Gujarat.

The committee would explore alternatives to balance sustainable development goals and conservation of the birds. It could recommend additional measures to identify additional priority areas. The panel has to file its report in the top court on or before July 31.

GREAT INDIAN BUSTARD (Syllabus: GS Paper 3 – Env and Eco)

Context: Recently, the Supreme Court constituted an expert committee to address the delicate balance between conserving and protecting the endangered Great Indian Bustard bird population while honoring the nation's international obligations to promote renewable energy sources.

Great Indian Bustard

- **About:** It is the State bird of Rajasthan and is considered India's most critically endangered bird.
- **Flagship species:** It is considered the flagship grassland species, **representing the health of the grassland ecology.**
- **Habitat:** Its population is **confined mostly to Rajasthan and Gujarat.**
 - Small populations occur in Maharashtra, Karnataka and Andhra Pradesh.
- **Protection Status:**
 - **IUCN:** Critically Endangered
 - **CITES:** Appendix 1
 - **Convention on Migratory Species (CMS):** Appendix 1
 - **Wildlife (Protection) Act, 1972:** Schedule 1

Initiatives taken to protect GIB

- **Integrated Development of Wildlife Habitats:** GIB is kept under the species recovery programme under the Integrated Development of Wildlife Habitats of the Ministry of Environment, Forests and Climate Change (MoEFCC).
- **Conservation Breeding Facility:** MoEF&CC, Rajasthan government and Wildlife Institute of India (WII) have established a conservation breeding facility in Desert National Park at Jaisalmer in June 2019.
- **Project Great Indian Bustard:** It has been launched by the Rajasthan government with an aim of constructing breeding enclosures for the species and developing infrastructure to reduce human pressure on its habitats.
- **Conservation Reserves:** Great Indian Bustard habitats to be declared as conservation reserves.
- **Directions of the National Green Tribunal (NGT):** NGT ordered a time-bound action plan for the implementation of mitigation measures such as installation of bird diverters and their regular maintenance and monitoring by power agencies.

Delhi CM Arvind Kejriwal arrested in liquor policy case

Kejriwal will continue to be Delhi chief minister from jail, say AAP leaders

HT Correspondent
letters@hindustantimes.com
NEW DELHI

The Enforcement Directorate (ED) on Thursday night arrested Delhi chief minister Arvind Kejriwal for his alleged role in the state's controversial 2021-22 excise policy after questioning him in his residence. This move comes hours after the city's high court turned down his plea for interim protection from arrest—a stunning turn of events that leaves the Capital's politics in turmoil and pushes to new heights the conflict between the Union government and the Aam Aadmi Party (AAP) weeks before the general elections. The arrest on corruption charges marks a dramatic moment for a leader who surged to power after platforming himself as an anti-corruption crusader and shook up the Capital's entrenched political structures.

"...We have always said that Arvind Kejriwal will run the govt from jail," Delhi minister and senior AAP leader Atishi said.

In a press note on Sunday, the Enforcement Directorate had called the AAP chief a conspirator in the alleged liquor policy scam.

ED has not referred to Kejriwal as a suspect in any of its charge sheets in the liquor policy case. However, one of the charge sheets mentions that the policy was Kejriwal's "brainchild".

"The arrest of Arvind Kejriwal is the defeat of corruption. Kejriwal should resign immediately," Delhi BJP president Virendra Sachdeva told reporters.

The arrest is a blow for the AAP, which has built

its politics on a fine balance of delivering welfare programmes, providing concessions for various demographic groups, and shoring up the Capital's basic infrastructure. AAP has claimed that a survey it conducted of Delhi's citizens said Kejriwal should continue as chief minister. The AAP has been preparing for his arrest for months, and warned of its imminence several times.

Kejriwal is the third major AAP leader to be arrested in the probe after his former deputy and senior AAP leader Manish Sisodia as well as the party's Rajya Sabha MP Sanjay Singh. This apart, ED arrested Bharat Rashtra Samithi leader and Telangana lawmaker K. Kavitha in the case last week. (PTI contributed to this story)

ED has not referred to Kejriwal as a suspect in any of its charge sheets in the liquor policy case. But, one says that the policy was his "brainchild".

ENFORCEMENT DIRECTORATE (ED)

(Syllabus: GS Paper 2 – Polity)

Context: The Enforcement Directorate (ED) recently arrested the Delhi chief minister on Thursday night for his alleged involvement in the state's controversial 2021-22 excise policy after questioning him at his residence.

Enforcement Directorate (ED)

- **About:** The Directorate of Enforcement is a multi-disciplinary organization mandated with investigation of offence of money laundering and violations of foreign exchange laws
- **Origin:** The origins of this Directorate can be traced back to May 1, 1956, when the Department of Economic Affairs established an 'Enforcement Unit' to handle Exchange Control Laws violations under the Foreign Exchange Regulation Act (FERA), 1947.
 - This unit was renamed the 'Enforcement Directorate' in 1957.
- **Nodal ministry:** Department of Revenue of the Ministry of Finance.
- **Organisational structure:** The Directorate of Enforcement, with its headquarters at New Delhi, is headed by the director of enforcement.
 - There are five regional offices at Mumbai, Chennai, Chandigarh, Kolkata, and Delhi headed by special directors of enforcement.
- **Appointment of ED director:** The ED Director is appointed by the central government on the recommendation of a committee: chaired by the Central Vigilance Commissioner and members comprising of Vigilance Commissioners, Home Secretary, Secretary DOPT and Revenue Secretary.
- **Current Status:** Presently, the ED operates under the Foreign Exchange Management Act, 1999 (FEMA), the Prevention of Money Laundering Act, 2002 (PMLA), and the Fugitive Economic Offenders Act, 2018 (FEOA).
- **Tenure and Extensions:** The Director holds a fixed tenure of 2 years, with the possibility of a maximum of 3 annual extensions.

Function

- **Mandated Investigation:** ED investigates offenses related to money laundering and violations of foreign exchange laws.
 - It enforces the provisions of the Prevention of Money Laundering Act (PMLA).
- **Asset Tracing and Attachment:** ED conducts investigations to trace assets derived from proceeds of crime.
 - It provisionally attaches the property during investigations.
- **Prosecution Assurance:** ED ensures the prosecution of offenders identified during its investigations.
- **Confiscation by Special Court:** The Special court, with ED's assistance, confiscates properties related to crimes.
- **Enforcement of FEMA:** ED enforces provisions of the Foreign Exchange Management Act (FEMA). It investigates suspected violations of foreign exchange laws.

Subduction zone discovered beneath Gibraltar Strait: Concerns raised over future of Atlantic ocean

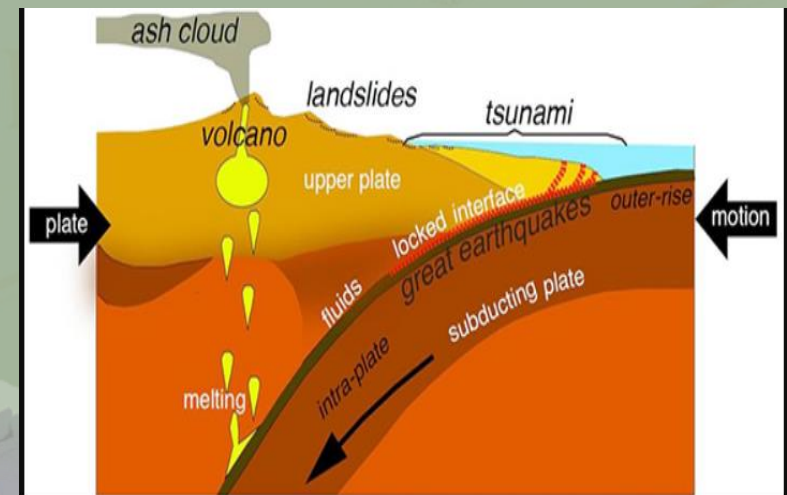
Context: A recent study by scientists in Portugal predicts the 'Ring of Fire' subduction zone beneath the Gibraltar Strait may lead to the Atlantic Ocean's closure in 20 million years.

Subduction Zone

- **About:** A subduction zone forms where two tectonic plates converge, leading one to descend beneath the other.
- **Nature of Tectonic Plates:** Tectonic plates are segments of the Earth's outer shell that gradually shift across its surface over long periods.
- **Plate Tectonics Theory:** Plate tectonics theory asserts that the Earth's shell comprises moving plates that carry continents atop the lower mantle.
- **Composition of the Lithosphere:** The lithosphere, encompassing the crust and upper mantle, constitutes the Earth's outer layer.
- **Subduction Mechanism:** When plates meet at a subduction zone, the denser lithosphere descends into the hot mantle, inducing curving.
- **Geological Hazards:** Subduction processes yield potent earthquakes, tsunamis, and volcanic activities, marking critical geological events.
- **Lithospheric Types and Subduction:** Subduction commonly arises from the interaction of contrasting lithospheric types—continental and oceanic.
- **Oceanic Plate Dynamics:** Older, denser oceanic lithosphere submerges beneath younger, buoyant lithosphere, a process perpetuating subduction.
- **Formation of Oceanic Lithosphere:** New oceanic lithosphere forms at plate boundaries, cooling and densifying over time, predisposing it to subduction.
- **Geographical Distribution:** Subduction zones encircle the Pacific Ocean in a horseshoe shape, known as the "Ring of Fire," showcasing intense seismic and volcanic activity.

Strait of Gibraltar

- **About:** It serves as a crucial waterway, linking the Atlantic Ocean with the Mediterranean Sea and acting as the boundary between Europe and Africa.
- **Varied Depth:** The depth of the Strait of Gibraltar varies considerably, ranging from 300 to 900 meters (980 to 2,950 feet; 160 to 490 fathoms), making it a complex and dynamic maritime environment.
- **Territorial Jurisdiction:** The strait falls within the territorial waters of Morocco, Spain, and the British overseas territory of Gibraltar, highlighting its geopolitical significance.



Humanity produced 62 billion kg of e-waste in 2022. In 2030, that number will be 82 billion kg: UN

Context: According to the Global E-waste Monitor (GEM), the world's generation of electronic waste is rising five times faster than documented e-waste recycling.

The Global E-waste Monitor 2024

- **About:** It offers the latest statistics and data on electronic waste worldwide, providing insights into the magnitude and trends of this environmental issue since 2014.
- **Collaborative effort led by:** Global E-waste Statistics Partnership (GESP) in conjunction with Fondation Carmignac, a corporate foundation, highlighting a joint commitment to addressing e-waste challenges.

Findings of Global E-waste Monitor 2024

- **E-waste Production Surge:** A record 62 million tonnes of e-waste was produced in 2022, marking an 82% increase from 2010.
 - Projections indicate a further 32% rise to 82 million tonnes by 2030.
- **Rare Earth Element Recycling:** Only 1% of rare earth element demand is met by e-waste recycling, highlighting a significant gap in resource utilization.
- **Recycling Efforts:** Less than one quarter (22.3%) of the year's e-waste mass was documented as properly collected and recycled in 2022.
- **Per-capita E-waste Generation:** Europe (17.6 kg), Oceania (16.1 kg), India (2.9 kg/capita) and the Americas (14.1 kg) recorded the highest per capita e-waste generation in 2022.

E-Waste

- **Definition:** E-waste encompasses electronic devices that have reached the end of their useful life or are no longer wanted by the owner.
 - These devices may contain hazardous substances and valuable resources.
- **E-Waste (Management) Rules, 2022**
 - **Extended Producer Responsibility (EPR):** It emphasize Extended Producer Responsibility, holding manufacturers, importers, and brand owners accountable for managing e-waste.
 - **Focus:** The rules focus on establishing efficient collection mechanisms to ensure proper disposal of e-waste, reducing illegal dumping.

MeitY/NIXI successfully unveils BhashaNet portal at Universal Acceptance Day event

Context: The National Internet Exchange of India (NIXI) is set to unveil the BhashaNet portal at the upcoming Universal Acceptance (UA) Day.

National Internet Exchange of India (NIXI)

- **Establishment:** NIXI was established in 2003 as a not-for-profit organization under the Companies Act 2013.
- **Purpose:** Its primary aim is to utilize Internet Service Protocols (ISPs) to route domestic traffic within India, reducing latency and bandwidth charges by avoiding international routing.
- **Mission:** NIXI is dedicated to increasing Internet penetration and adoption in India.
- **Facilitation:** It focuses on infrastructure development to manage and enable widespread Internet usage across the country.
- **National Internet Registry (NIR) Functionality:**
- **NIR Operation:** NIXI operates the National Internet Registry (NIR), known as the Indian Registry for Internet Names and Numbers (IRINN).
- **IXP Services:** NIR provides Internet Exchange Points (IXPs), crucial for enhancing Internet infrastructure and connectivity within India.

Universal Acceptance (UA) Day

- **About:** UA Day is an annual event organized by the Universal Acceptance Steering Group (UASG) and ICANN.
- **Aim:** To raise awareness and promote UA adoption through various informational and training sessions, both virtual and in-person.
- **Technical Requirement:** UA ensures that all valid domain names and email addresses, regardless of script or language, can be used equally across Internet applications and systems.

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)

FREE

India's Best Answer Writing Sessions with



Ritika Jindal



Simi Karan



Gaurav Budania



Mridul Shivhare

IAS OFFICERS

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



**SCAN
HERE**



9560082909



t.me/theiashub



www.theiashub.com



[/mkyadav](https://www.youtube.com/mkyadav)



www.theiashub.com