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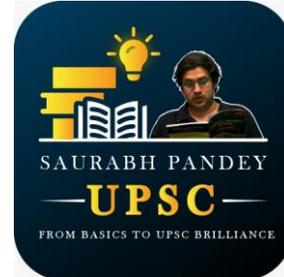
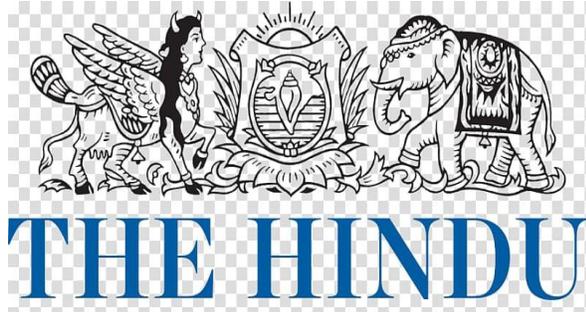
About Author



Saurabh Pandey established Saurabh Pandey CSE Channel an online learning platform. He has 8 years of experience in teaching for the UPSC/IAS exam in various renowned institutes like Vision IAS, Study IQ, and Unacademy. He qualified for many exams like NET JRF. He appeared for a UPSC interview and wrote 3 civil services mains exams. He is MA in public administration. He did B.Tech in biotechnology.

Best Sources for UPSC CSE

The Hindu



The Indian Express



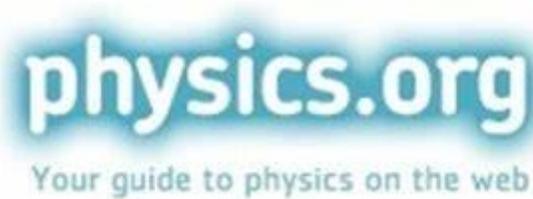
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Cargo transport in Railway

The IR's current strategy for moving general cargo is two pronged the parcels are moved either by passenger trains or special heavy parcel van (VPH) trains.

However, these approaches appear to have gone haywire as loading leased parcel vans and full parcel trains fell by 15% and 8% respectively.

One of the reasons for the decline in the parcel segment is the high tariff; truck rates, an exception being cargo moved to destinations in the northeast.

Other factors are improper terminals, inconsistent weighbridges intensified by excessive penal charges, unreliable transit times, complex booking and delivery mechanisms and self-imposed environmental restrictions

Sustaining a developed market is also difficult as predatory pricing by other CTOs can wean the market away.

The elephant in the room for carriage of general cargo by the IR is that a shipper can either only send a few tonnes under parcel tariff or thousands of tonnes under freight tariff.

General cargo has thousands of buyers and sellers and usually their

shipment sizes are a few to hundreds of tonnes.

The road ahead General cargo is segmented into three categories highly time sensitive (HTSG), medium time sensitive (MTSG) and low time sensitive (LTSG).

HTSG cargo is mostly valuable goods or perishables and they should continue to be moved by passenger trains.

Attaching two to three parcel vans in all popular trains would easily double the parcel loading capacity and these parcel vans can bring around five times the revenue of sleeper coaches and around two times that of AC coaches. MTSG and LTSG cargo are price sensitive and this cargo should be moved under the IR freight rates, which are lower than truck rates.

Even after the addition of first and last leg costs there is a cost benefit to shippers.

However, the problem lies in getting a full train load.

Shippers should be permitted to book individual wagons with provision to run a train to the schedule even if the train is not fully loaded.

Finally, the IR needs to encourage cargo aggregators by tweaking the existing freight forwarder policy.

In the long run new kinds of stocks to optimise pay load and speed would also be required which the IR and the rolling stock industry are fully capable to design and deliver

Maldives and India

Since his impressive win in the Maldivian presidential election in September 2023, President-elect Mohamed Muizzu has emphasized his desire to send Indian troops out of the country, while pledging to safeguard the Maldives's independence and sovereignty.

In an indication of his priorities after assuming office, he told one outlet that he would return Indian troops on "day one".

His stance stems from the main opposition bloc's 'India Out' campaign, mounted against outgoing President Ibrahim Mohamed Solih, for his foreign policy of 'India first'.

Is there Indian military presence?

According to the Maldives National Defences Force (MNDF), 75 Indian military personnel stay in the Maldives to maintain and operate the Dornier aircraft and two helicopters gifted to the Maldives by the Government of India.

Why is Mr. Muizzu opposed to them?

For Mr. Muizzu, his former boss President Yameen, and the political camp they represent, relations with India remain a sensitive matter.

The Yameen administration's pro-China tilt is no secret, and during his term from 2013 to 2018, Maldives India relations were particularly strained, more so after Mr. Yameen's insistence that India take back the helicopters it gifted.

While Mr. Muizzu maintains that he is "pro Maldives" first, and that he will not allow Indian, Chinese, or any other country's military presence in the Indian Ocean archipelago, he has on many occasions sought to highlight the benefits of Chinese assistance to the Maldives, without commenting on Male's debt obligations, including to China.

What are India's interests?

In the past four years, India has emerged as the Maldives's main security and economic partner, committing \$1.4 billion towards the socioeconomic development needs of Maldivians.

The Indian establishment sees its own security interests closely tied to the Indian Ocean island nation, amid its concerns of a growing Chinese presence in the region.

Maldives is a member of the 'Colombo Security Conclave', that began as a trilateral initiative with India and Sri Lanka, and later included Mauritius, for maritime cooperation in the region.

The Hindu

Deep ocean mission

The Deep Ocean Mission (DOM) is India's ambitious quest to explore and harness the depths of the ocean.

With DOM, India will, for the first time, embark on a journey to a depth of 6,000 metres in the ocean using an indigenously developed submersible with a three member crew

DOM is India's ambitious programme for underwater exploration, chiefly implemented by the MoES.

The mission has six pillars:

- (i) Development of technologies for deep-sea mining and a manned submersible to carry three people to a depth of 6,000 metres in the ocean

- (ii) Development of ocean climate change advisory services, involving an array of ocean observations and models to understand and provide future climate projections;
- (iii) Technological innovations for the exploration and conservation of deep-sea biodiversity;
- (iv) Deep ocean survey and exploration aimed at identifying potential sites of multimetal hydrothermal sulphides mineralization along the Indian Ocean mid-oceanic ridges;
- (v) Harnessing energy and freshwater from the ocean; and
- (vi) Establishing an advanced Marine Station for Ocean Biology, as a hub for nurturing talent and driving new opportunities in ocean biology and blue biotechnology

The 'New India 2030' document outlines a blue economy as the sixth core objective for India's growth.

The years 2021-2030 have been designated by the United Nations as the 'Decade of Ocean Science'

DOM is one of nine missions under the Prime Minister's Science, Technology, and Innovation Advisory Council (PMSTIAC).

It is imperative that DOM supports the blue economy priority area, blue trade, and blue manufacturing in India.

MoES institutes, especially the Centre for Marine Living Resources and Ecology, Indian National Centre for Ocean Information Services, National Centre for Coastal Research, National Centre for Polar and Ocean Research and National Institute of Ocean Technology (NIOT) will collaborate with national institutes and academia to achieve objectives outlined in DOM, albeit with well segregated responsibilities

As a part of DOM, India's flagship deep ocean mission, 'Samudrayaan', was initiated in 2021 by the Minister of Earth Sciences.

In 'Samudrayaan', India is embarking on a groundbreaking crewed expedition to reach the ocean bed at a depth of 6,000 m in the central Indian Ocean.

The Ministry is also working on an integrated system to mine polymetallic nodules of precious minerals from the central Indian Ocean bed.

The minerals we can mine from the ocean bed in the central Indian Ocean region, allocated to us by the United Nations International Seabed Authority (ISA), include copper, manganese, nickel, and cobalt

Polymetallic nodules, which contain precious metals like copper, manganese, nickel, iron, and cobalt, are found approximately 5,000 m deep, and polymetallic sulphides occur at around 3,000 m in the central Indian Ocean

The Hindu

SPACE VS OCEAN EXPLORATION

Electronics and instruments find it simpler to function in a vacuum or in space. Conversely, inside the water, poorly designed objects collapse or implode.

Landing on the ocean bed also presents challenges due to its incredibly soft and muddy surface.

Extracting materials requires them to be pumped to the surface, an undertaking that demands a large amount of power and energy.

Unlike controlling rovers on distant planets, remotely operated vehicles prove ineffective in the deep oceans

due to the absence of electromagnetic wave propagation in this medium.

Visibility also poses a significant hurdle as natural light can penetrate only a few tens of metres beneath the surface, whereas space observations are facilitated through telescopes.

All these intricate challenges are further compounded by factors like variations in temperature, corrosion, salinity, etc., all of which must also be dealt with.

The Matsya6000

The Matsya6000 is India's flagship deep ocean human submersible that aims to reach the ocean bed at a depth of 6,000 m.

Accompanied by three crew members, the submersible carries a suite of scientific tools and equipment designed to facilitate observations, sample collection, basic video and audio recording, and experimentation.

The primary mission of Matsya6000 is exploration.

The U.S.A., Russia, China, France, and Japan have already achieved successful deep ocean crewed missions.

India is poised to join the ranks of these nations. Our focus remains on developing these technologies

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indigenously, aligned with the vision of 'Atmanirbhar Bharat'

Features

Matsya6000 is designed to accommodate three humans travelling within a specialised sphere of diameter 2.1 m.

The sphere will weigh approximately 28 tonnes and have a short sleeved environment with life support, where oxygen is supplied and carbon dioxide is removed.

Constructed from a titanium alloy, the sphere is engineered to withstand pressures of up to 6,000 bar.

It is equipped with propellers enabling movement in all six directions and features three viewports that allow the crew to observe its surroundings.

There will be about 12 cameras and 16 lights powered by lithium polymer batteries with an energy budget of 1 kWh.

Communication will be through an acoustic phone and modem. The navigation and positioning systems are state-of-the-art, too.

The Hindu

Ethics vs Privilege committee

It must be clarified at this point that if an MP takes money for putting

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questions up in Parliament, they will be guilty of breach of privilege and contempt of the House.

Such complaints are invariably referred to the Committee of Privileges for investigation.

This committee, after a proper investigation, submits its findings in a report along with the recommendation for action against the MP in question.

If a case involving illegal gratification for conducting parliamentary work is proven, the MP may even be expelled from the House.

There have been such instances in the Lok Sabha where MPs were expelled from the House on this ground.

In the first case, in 1951, H.G. Mudgal, an MP of the Provisional Parliament, was found guilty of promoting the interests of a business association in return for financial benefits by putting questions up, and moving amendments to a Bill which affected the interests of that business association.

A special committee of the House found that his conduct was derogatory to the dignity of the House and inconsistent with the standards which Parliament is entitled to expect of its members

Thus, complaints of MPs accepting money for parliamentary work are referred to the privileges committee or special committees appointed by the House for that purpose.

However, Ms. Moitra's case has been referred to the Ethics committee although the allegation is about illegal gratification for doing parliamentary work.

The Ethics Committee of the Lok Sabha is a relatively new committee which was set up in 2000, with a mandate to examine every complaint that related to the unethical conduct of MPs referred to it and to recommend action.

It was also tasked with formulating a code of conduct for MPs.

What is unethical is undefined

An interesting aspect of this committee is that the term 'unethical conduct' has not been defined anywhere.

It is left entirely to the committee to examine a particular act of conduct and decide whether it is unethical or not.

A parliamentary probe is not the same as a judicial probe.

A judicial body probes a matter as in the statutes and Rules, and is conducted by judicially trained persons.

Parliamentary committees consist of Members of Parliament who are not experts.

Since Parliament has the power to scrutinise the executive, which is accountable to it, it possesses investigative power also. It also has the power to punish those including its own members in order to protect its honour and dignity.

But the methods followed by Parliament in investigating a matter are different from those of the judiciary.

Parliament does the investigative work through its committees which function under the Rules of the House.

The usual methods are examination of the written documents placed before the committee by the complainant and the witnesses, oral examination of all the relevant witnesses, deposition of experts, if deemed necessary, sifting of the whole volume of evidence placed before the committee, and arriving at findings on the basis of the evidence.

If the committee examines a complaint against a member of the House, he can appear before it through an advocate and also cross-examine the complainant and other witnesses on permission by the chair

Article 105 of the Constitution gives them the freedom to say “anything” in the House.

This right should be deemed to be extended to the tapping of any source for information for putting questions up or framing Bills or resolutions to be placed in Parliament.

The Hindu

Railway accident

There is a view that importance has not been given to upgrading the signalling and telecommunications network as well as human resources development.

There is a view that importance has not been given to upgrading the signalling and telecommunications network as well as human resources development.

Even after the empanelling of nearly 1.12 lakh candidates, between April 2022 and June 2023, for posts related to operational safety, around 53,180 posts were still vacant, as on July 1, 2023.

There have been measures such as the interlocking of nearly 11,100 level crossing gates (as on May 31, 2023), mechanization of track laying activity by track machines to reduce human errors, provision of electrical or

electronic interlocking system with centralized operation of points and signals at 6,427 stations to eliminate accidents due to human failure, and implementation of the Rashtriya Rail Sanraksha Kosh for the replacement, renewal and upgradation of critical safety assets, to improve the functioning of the railway system, especially safety. But these steps will have no value when lives continue to be lost.

At the very least, there has to be the accountability of the senior railway management, at the divisional level itself, when such an accident occurs.

In addition to installing technology on every train that captures every minute communication, the government should see to it that members of the Railway Board are drawn from a pool of professionals and technocrats outside the railway system.

The Hindu

Climate finance

Climate finance has a crucial role in retaining the trust of the developing countries in future climate change negotiations.

Under Article 9 of the Paris Agreement on Climate Change, it is also mandatory for the developed countries to provide in their Biennial Update Reports (BUR), information

relating to the financial resources which they have provided and, also, the projected levels of public financial resources to be provided to developing country parties.

At the Copenhagen Change Conference in 2009, the developed countries made the commitment to mobilize \$100 billion per year by 2020.

Further, the developed countries are required, in accordance with the decision accompanying the Paris Agreement, to collectively mobilise \$100 billion through 2025, before a new collective quantified goal (NCQG) 'from a floor of \$100 billion per year is to be set at the end of 2024'.

At the 26th United Nations Climate Change conference in Glasgow in 2021, the developed countries noted, with deep regret, of being able to mobilise only a total of \$79.6 billion.

The Paris Agreement is based on the self determined efforts of all the parties inscribed in the nationally determined contributions (NDCs), which contain the mitigation efforts to be made by a party for the next five years.

Entire NDCs put together project a picture of overshooting the 1.5° C temperature goal. Going by the needs of countries in the Global South expressed in their NDCs, the amount

quantified for the first time touches close to \$6 trillion until 2030.

For India, its third BUR says that its financial needs derived from its NDCs for adaptation and mitigation purposes for 2015-30 are \$206 billion and \$834 billion, respectively.

Most of the financial needs are required in transitioning towards low carbon, cleaner energy systems from traditional systems, which will not be funded by the designated financial mechanisms of the United Nations Framework Convention on Climate Change (UNFCCC).

Additionally, India has reiterated its demand for a just transition at COP27 as '3.6 million people in 159 districts in India are entrenched in the fossil fuel economy through direct or indirect jobs related to the coal mining and power sector

There is no agreed approach among developed countries to share the burden of this goal.

One analysis suggests that the United States provided just 5% of its fair share in 2020.

The Global Environment Facility, a UNFCCC designated funding agency providing grant and concessional loan to developing countries, is replenished every four years.

A similar approach has been borrowed into the Green Climate Fund (GCF) by the developed countries to mobilise finance.

The GCF, set up to administer a portion of the \$100 billion for developing country parties to switch over to low emissions and climate resilient development path, had its second replenishment on October 5, 2023.

The Hindu

USA and Israel



What are origins of U.S.-Israel ties?

- The U.S. had supported the idea of a Jewish homeland even before the state of Israel was declared within historical Palestine in 1948.
- On March 3, 1919, two years after the Balfour Declaration, in which the British government declared its support for the creation of a “Jewish homeland in Palestine”
- The U.S. was the first country that recognized Israel in 1948. The recognition came in 11 minutes after the proclamation
- the 1967 war, in which Israel defeated Jordan, Syria and Egypt, all in six days, and captured swathes of territories, brought in a paradigm shift in the way Washington looked at the Jewish state.
- The U.S. at that time was bogged down in Vietnam.
- Israel defeated the Arab countries without any major help from the U.S., and the war was wrapped up quickly.
- Also, two of the Arab countries Israel defeated Egypt and Syria were Soviet allies.
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- Israel defeated the Arab countries without any major help from the U.S., and the war was wrapped up quickly.
- Also, two of the Arab countries Israel defeated Egypt and Syria were Soviet allies.
- **What is the current status of the U.S.-Israel ties?**
- Today, Israel is an exceptional ally of Washington.
- The U.S. offers practically unconditional financial, military and

political support for Israel, which has been occupying Palestinian territories since 1967.

- Israel is an undeclared nuclear power but has never faced any global scrutiny or pushback, thanks to the protection offered by the U.S. Israel is also the largest recipient of America's aid it has received \$158 billion in aid from the U.S. since the end of the Second World War.
- Currently, Israel gets \$3.8 billion in military aid every year from the U.S., which accounts for about 16% of Israel's total military budget.
- The U.S. is also Israel's largest trading partner, with annual two way trade hovering around \$50 billion.
- Both Israel and the U.S. also have a deep defense partnership, which involves joint research and development and weapons production.
- From the 1973 Yom Kippur war onwards, the U.S. has also offered solid military support to Israel in its conflicts.
- After the first intifada, the U.S. supported the Oslo process and the two state solution, but without compromising its relationship with Israel.

- Now, the running theme in Washington is that it supports "Israel's right to defend".

Why does the U.S. always back Israel?

- One explanation is that Israel's strategic value in a volatile yet critical region makes it appealing for Washington.
- During the Cold War, the U.S. saw Israel as a powerful bulwark against possible Soviet expansion in the Arab world.
- After the Cold War, when the U.S. started becoming more and more involved in West Asia, it continued to see Israel as a force of stability, along with Saudi Arabia and Egypt.
- Strategic value explains a close partnership or alliance, like America's relationships with Japan, South Korea or Germany.
- A host of other factors, including America's public opinion, electoral politics and the powerful Israel lobby in the U.S., play a role in shaping the country's Israel policy.

The Hindu

Privilege committee

- Each House of Parliament and its Committees collectively and

members of each House individually enjoy certain rights, privileges and immunities without which they cannot perform their functions efficiently and effectively.

- The object of parliamentary privilege is to safeguard the freedom, the authority and the dignity of Parliament.
- They are enjoyed by individual members, because the House cannot perform its functions without unimpeded use of the services of its members and by each House collectively for the protection of its members and the vindication of its own authority and dignity.
- But they are available to individual members only insofar as they are necessary for the House to perform its functions freely without any let or hindrance.
- This Committee consists of 15 members nominated by the Speaker.
- Its function is to examine every question involving breach of privilege of the House or of the members of any Committee thereof referred to it by the House or by the Speaker.
- It determines with reference to the facts of each case whether a breach of privilege is involved and makes

suitable recommendations in its report.

- It also states the procedure to be followed by the House in giving effect to the recommendations made by it.

The Hindu

North Dakota

- It was, to put it mildly, a bad day on the earth when an asteroid smacked Mexico's Yucatan Peninsula 66 million years ago, causing a global calamity that erased three quarters of the world's species and ended the age of dinosaurs.
- The immediate effects included wildfires, quakes, a massive shockwave in the air, and huge standing waves in the seas.
- But the coup de grâce for many species may have been the climate catastrophe that unfolded in the following years as the skies were darkened by clouds of debris and temperatures plunged.
- Researchers on October 30 revealed the potent role that dust from pulverised rock ejected into the atmosphere from the impact site may have played in driving

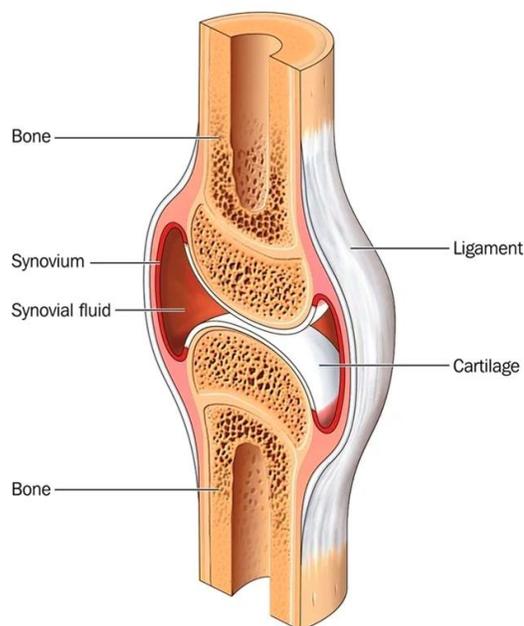
North Dakota

- Paleontology in North Dakota refers to paleontological research occurring within or conducted by people from the U.S. state of North Dakota.

• The Hindu

Hb and chondrocyte

- Haemoglobin is found in the red blood cells (RBCs), that it makes blood red, carries oxygen, and is essential for our survival.
- A new and serendipitous discovery has revealed that Haemoglobin isn't used by RBCs alone.
- In a study published in Nature, scientists from China have reported that chondrocytes cells that make cartilage, the connecting tissue between bones also make Haemoglobin and seem to depend on it for their survival.
- In a developing growth plate, where oxygen is limited due to a lack of blood supply to the region, the chondrocytes still manage to thrive.
- Based on the scientists' findings, it's the Haemoglobin molecules that manage to bring them the oxygen they need to survive.



The Hindu

SC and foetus rights

- On October 16, in X vs Union of India, the Supreme Court of India declined permission to a woman who was seeking to terminate a 26 weeklong pregnancy.
- A Bench presided over by the Chief Justice of India (CJI), D.Y. Chandrachud, held that the woman's

case fell outside the scope of the Medical Termination of Pregnancy (MTP) Act, 1971

- The Court said the statute permitted the termination of pregnancy beyond 24 weeks only in cases where the fetus exhibited substantial abnormality, or where the woman's life was under direct threat.
- Here, since doctors would have to terminate a "viable fetus", the Court rejected the plea to exercise its extraordinary powers is the judgment's implicit assertion that fetuses have constitutional rights.
- Our jurisprudence on abortion has been built on a converse premise.
- The guarantees of Articles 14 and 21 of the Constitution the rights to equal protection and life are conferred on persons, and the Constitution decidedly does not award personhood to a fetus. As it happens, even the MTP Act makes no such assertion.

AI regulation

- The Executive Order in the United States, issued by the Biden administration on October 30, on 'Safe, Secure, and Trustworthy Artificial Intelligence (AI)', illustrates the changing attitude of global leaders towards AI regulation.

- Implementation and the use of AI without the necessary safeguards can have enormous implications for the future of humanity, and the changes in regulatory approaches are a welcome development

- Ownership and enforcement One of the many areas wherein AI has raised tough questions is ownership and enforcement of intellectual property (IP) rights.

- For example, while generative AI tools such as ChatGPT and Midjourney allow people with minimal creative skills to produce reasonably beautiful outputs with the help of a couple of text prompts, their use has raised a number of copy right related questions.

- After reviewing the relevant statutory provisions, case laws, and theoretical justifications for copyright protection, the US District court concluded that human creativity was essential to copyright protection.

- Fundamentally, the term 'author,' used in both the Constitution and the Copyright Act, excludes nonhumans".

- The office also clarified that copyright applicants had a duty to disclose the inclusion of AI generated content in any application, followed by detailed

guidelines on doing so in registration forms

- While India has not effected any legislative changes in the Copyright Act 1957, the Copyright Office ignored the human authorship requirement in Indian copyright law when granting registration with an AI system as a coauthor.
- When the matter became controversial, the office sent a notice to the human coauthor in the application declaring its intent to withdraw the registration.
- But the data from the Indian Copyright Office website suggests that the work concerned continues to remain registered
- Department Related Parliamentary Standing Committee on Commerce entitled 'Review of the Intellectual Property Rights Regime in India' (July 2021).
- The report had suggested reviewing the Copyright Act 1957 and the Patent Act 1970 to "incorporate the emerging technologies of AI and AI-related inventions in thir ambit".
- A careful reading of the report suggests some of its recommendations aim to relax the standards for securing copyright and patents.

- But these recommendations do not appear to be informed by any study of IP related challenges and needs of the AI innovation ecosystem in India.
- The committee did not consider the potential adverse implications of such an approach for the startup ecosystem in India.
- The Hindu

SC on electoral bonds

- The Supreme Court that the electoral bonds scheme only offered "selective confidentiality", which does not prevent the ruling party from unearthing the identities of donors to Opposition parties and then hounding them through its investigative agencies.
- "There are ways and means for the ruling party to get information about contributions to the Opposition.

What Are Electoral Bonds?

- Interest-free financial instruments for making donations to political parties.
- Can be purchased only using cheque or digital modes of payments, no cash.
- Currently, can only be issued by the State Bank of India at specified branches for a fixed period of time.
- There have been 9 bond sales so far with 10,494 bonds issued.
- Work like a bearer bonds—the issuing bank will remain in custody of the bond till a political party redeems them into their bank accounts.
- Parties can redeem electoral bonds only within 15 days of the bond being issued.
- Identity of the donor is not disclosed.

Bloomberg | Quint

How An Electoral Bond Works

- 01** Notified banks are chosen
- 02** The notified bank issues electoral bonds
- 03** The donor buys an electoral bond using a cheque/digital payment
- 04** The donor gives the party of his/her choice the bond within the specified timeframe
- 05** The party deposits the bond in an account, the details of which are with the Electoral Commission

Benefits of Electoral Bonds



WILL BRING substantial transparency in political donations against the present system of contributions in the election funding mechanism

NON DISCLOSURE of recipients will ensure people are free to donate to any political party of their choice

WILL REINFORCE the idea of moving away from a cash system towards clean money which cheque system could not achieve

New guidelines for DGP appointment

- Only police officers with at least six months of service left before retirement will be considered for appointment as the Director General of Police (DGP) of a State, the Union Public Service Commission (UPSC) said in amended guidelines issued last month.
- In another change, the Empanelment Committee constituted by the UPSC will not assess Indian Police Service (IPS) officers on Central deputation for a State DGP's post if the Union

Ministry of Home Affairs (MHA) says that "it will not be possible to relieve the officers".

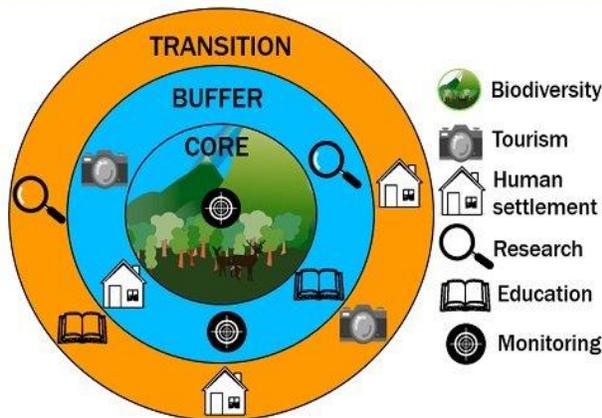
- A government source said the guidelines were revised to discourage States from appointing "favorite officers" about to retire, in a bid to extend their tenure.
- The number of shortlisted officers cannot exceed three, but may consist of less than three officers in "exceptional circumstances".
- Officers will not be included in the panel unless they themselves are willing, the guidelines added.
- The amended UPSC guidelines come in the wake of several States, including BJP ruled States, choosing to appoint acting DGPs instead of regular DGPs, bypassing the requirement to go through the UPSC selected panel of eligible officers

[The Hindu](#)

Single use plastic/ biosphere reserve



Zones of Biosphere Reserves



Our consumption of single use plastic, in particular plastic water bottles, will also significantly increase. With 80% of all tourism taking place in coastal areas.

In the Island of Principe Biosphere Reserve, Sao Tome and Principe in Africa, schoolchildren have been equipped with stainless steel bottles for drinking water, so the daily production and consumption of single use plastic bottles can be completely avoided.

Acting as pockets of hope in the face of the climate crisis, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) biosphere reserves are hidden oases, protecting biodiversity, reducing pollution, and enhancing climate resilience.

They are living jewels of land, coastal and marine ecosystems, scattered across the globe, where nature and humans come together creating a symphony of life.

The Hindu

Biosphere Reserve

World Biosphere Reserve Day is celebrated on November 3 each year to raise awareness of the importance of biosphere reserves and to promote their conservation and sustainable use.

In the heart of each biosphere reserve lies the strictly protected core zone, providing habitat for flora and fauna, and protecting water, soil, air, and biota as a whole ecosystem.

There is a buffer zone surrounding the core zone, where people live and work in harmony with nature; a zone that also functions as a laboratory for scientists to study nature, and for training and education.

The outermost edge is the transition zone where communities practice sociocultural and ecologically sustainable human activities.

Designated by UNESCO to promote the conservation of biodiversity, sustainable development, and research, biosphere reserves are also supported by other United Nations agencies

According to UNESCO, there are currently 748 biosphere reserves across 134 countries, including 22 transboundary sites, enhancing the friendly cooperation between neighboring countries.

They impact the lives of more than 250 million people in 134 countries; 12 sites can be found in India alone. Biosphere reserves are vital for the future of our planet.

They are a living testament to the resilience of nature, that even amidst human activity, finds a way to flourish.

They are home to a wide variety of ecosystems from tropical rainforests to alpine deserts, and thereby provide home to countless unique and endangered plants and animal's species.

In addition to playing a vital role in the protection of biodiversity and ensuring the sustainable use of natural resources, they also provide opportunities for sustainable economic development.

In recent years, biosphere reserves have become crucial in our fight against climate change,

as these areas are home to many of the world's carbon sinks helping to absorb carbon dioxide from the atmosphere.

At the local level

There have been significant advancements in the conservation of biosphere reserves on the local level. For example, in the Sundarbans Biosphere Reserve in India, local communities are working together to manage mangrove forests and protect the biodiversity of the region.

In the Gulf of Mannar Biosphere Reserve in India, local communities, including women, are contributing towards conservation efforts by forming self help groups, while the youth are getting engaged in ecotourism.

Recently recognized with the UNESCO Michel Batisse Award for Biosphere Reserve Management 2023, the Gulf of Mannar Biosphere Reserve Trust has also introduced the concept of 'plastic checkpoints'.

Community members check all vehicles and tourists for plastic waste, which is collected,

recycled and used for the construction of roads.

In times of global challenges such as climate change, biodiversity loss and sustainable development, the role of biosphere reserves becomes even more important.

Despite these sites being the most vital ecosystems protecting nature, these oases are not without threats such as deforestation, invasive species and land use changes such as mining.

With increasing urbanization and constant growth of the world population, exploitation by humans is ever increasing

In this context, UNESCO in partnership with the Ministry of Environment, Forests and Climate Change and the National Centre for Sustainable Coastal Management, concluded the 10th South and Central Asian Biosphere Reserve Network Meeting (SACAM) in Chennai, India (November 13).

With the theme "Ridge to Reef," the SACAM provided a platform for exchanging knowledge and fostering collaborations in the realm of sustainable

environmental practices in the South and Central Asia Region.

The UNESCO Man and the Biosphere (MAB) programme enhances the human - environment relationship through combining natural and social sciences to improve livelihoods, safeguard ecosystems, and promote sustainable economic development.

The Hindu

Scape goat



The Pakistan government's order to all undocumented migrants to leave the country by October 31 has thrown the lives of hundreds of thousands of Afghan refugees in jeopardy

According to the United Nations, about 1.3 million Afghans have

been registered as refugees, while another 8,80,000 have legal status to stay.

But Pakistan's Interior Ministry says some 1.7 million people are staying "illegally", a vast majority of them Afghans.

At least 6,00,000 Afghans are believed to have fled to Pakistan after the Taliban recaptured power in Kabul in 2021. Many others had moved during the Soviet military intervention in the 1980s. Pakistan's order states that they should either leave on their own or face detention and deportation.

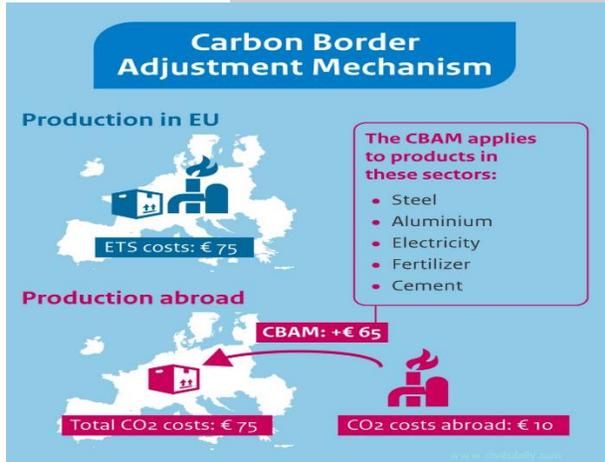
Pakistan has already set up deportation centres to round up "illegal" migrants and deport them.

Thousands are now stranded on the Afghan Pakistan border, while others are in fear of arrest and violence in Pakistan, leading to the UN's warning of a "humanitarian tragedy".

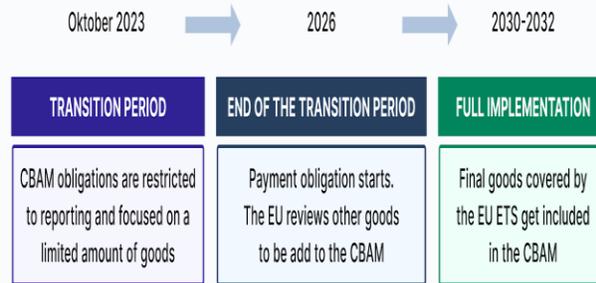
Pakistan's argument is that the presence of illegal migrants has led to rising crime and terror attacks and is straining its struggling economy.

The Hindu

CBAM



The EU Carbon Border Adjustment Mechanism (CBAM): Key steps



The Hindu

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Zika virus



ALL ABOUT ZIKA VIRUS DISEASE

Zika virus disease is an emerging viral disease transmitted through the bite of an infected Aedes mosquito

Symptoms

Most of those infected with Zika virus disease either remain asymptomatic or show mild symptoms of fever, rash, conjunctivitis, body ache, joint pain

Severe forms of disease requiring hos-

pitalization is uncommon and fatalities are rare

There is no vaccine or drug available to prevent/treat Zika virus disease at present

Zika virus infection during pregnancy can cause infants to be born with microcephaly and other congenital malformation



microcephaly and other congenital malformations as well as preterm birth and miscarriage.

- Zika virus infection is associated with Guillain-Barre syndrome, neuropathy and myelitis in adults and children.
- In February 2016, WHO declared Zika-related microcephaly a Public Health Emergency of International Concern (PHEIC), and the causal link between the Zika virus and congenital malformations was confirmed.
- Zika virus is a mosquito-borne virus first identified in Uganda in 1947 in a Rhesus macaque monkey followed by evidence of infection and disease in humans in other African countries in the 1950s.

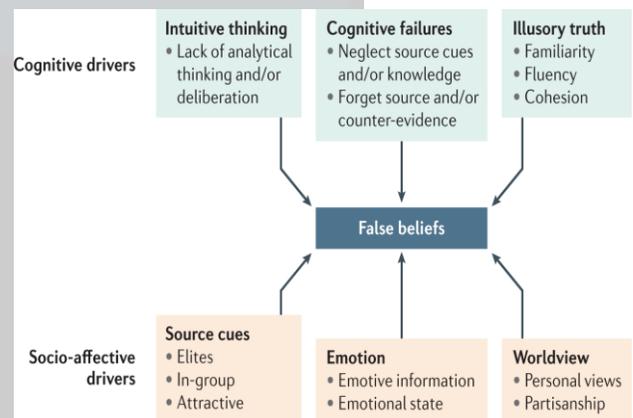
The Hindu

UPSC BRILLIANCE

State government and misinformation

- Zika virus is transmitted primarily by Aedes mosquitoes, which bite mostly during the day.
- Most people with Zika virus infection do not develop symptoms; those who do typically have symptoms including rash, fever, conjunctivitis, muscle and joint pain, malaise and headache that last for 2–7 days.
- Zika virus infection during pregnancy can cause infants to be born with

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The Tamil Nadu government's decision to constitute a fact checking unit to deal with "misinformation and disinformation pertaining to the State government" emanating from "all media platforms", sounds, on the face of it, a reactive step.

- This decision follows a similar move by the Karnataka government.
- But for the governments to deem themselves or units constituted by them as the adjudicator of what is false is a retrograde move as an interested party deciding upon what is factual or not is problematic.
- Tamil Nadu's move must be seen along with the Centre's notification of the IT Rules earlier this year, which amended the Information Technology Rules, 2021, and allowed the Ministry of Electronics and IT to appoint a similar fact checking unit.
- Several parties including the Editors Guild of India, the Association of Indian Magazines and the political satirist Kunal Kamra had challenged the IT rule enabling the unit.
- During the hearing, the Bombay High Court had raised the issue of the lack of necessary safeguards that will allow fair criticism of the government.

- It had also remarked that even if the motives for the introduction of such a rule was laudable to tackle false news it could be done away with, if its effects were unconstitutional, that is, if it infringed upon freedom of speech and expression guaranteed under Article 19(1)(a) of the Constitution.

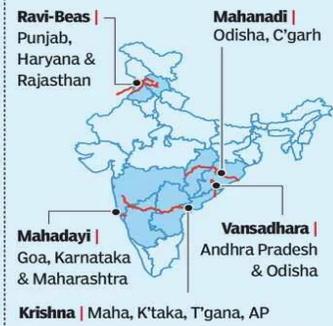
The Hindu

Water dispute /mekedatu projects

WATER LAWS AND BATTLES

- **No national (unified) law** | Many countries like Israel, South Africa and Australia have national water laws
- **Primarily, water is a 'State' subject in India** | States free to deal with issues of water supply, irrigation and canals, and drainage embankments in their own way
- Centre can only regulate, develop inter-state rivers
- Absence of concrete regulatory regime leads to mismanagement of water resources
- Centre, however, assists states in conservation, river cleaning, building infra
- Centre can also deal with issue under Environment (Protection) Act, 1986 and Water (Prevention and Control of Pollution) Act, 1974

Five tribunals are hearing river water disputes



For Cauvery, a tribunal has issued a final award and Centre has set up a panel for release of water as per orders. However, the two states still have differences on several counts

What is the project?

- Originally mooted in 1948, Mekedatu (which translates as Goat's crossing) is a drinking water cum power generation project across river Cauvery.
- The ₹9,000 crore balancing reservoir at Mekedatu on the Karnataka-Tamil Nadu border envisages impounding

of 67.15 tmc (thousand million cubic) ft. of water.

- The project, which will involve submergence of nearly 5,100 hectares of forest in Cauvery wildlife sanctuary hosting rich flora and fauna, will help the state in utilizing the additional 4.75 tmc ft. of water allocated by Supreme Court in 2018 for consumptive use for drinking purpose for Bengaluru and neighboring areas

How will it benefit Karnataka?

- The water from Mekedatu is to be pumped to quench the thirst of the burgeoning population of Bengaluru which is estimated to be around 1.3 crore.
- Besides, there are also plans to generate 400 MW of power.
- The revenue earned from power generation is expected to compensate the Government its investment on the project within a few years

Why is Tamil Nadu opposed to it?

- Tamil Nadu feels that Karnataka, through the project, will impound and divert flows from “uncontrolled catchments” to it, a component which was taken into account by the

Tribunal in the 2007 order while arriving at the water allocation plan for the State.

- As per an estimate, around 80 tmc ft of water flows annually to Tamil Nadu, thanks to the catchments including the area between Kabini dam in Karnataka and Billigundulu gauging site on the inter-State border, and the area between Krishna raja Sagar dam in Karnataka and the gauging site.

- As the upper riparian State has adequate infrastructure even now to address the water needs of Bengaluru, there is no need for the Mekedatu project, according to Tamil Nadu.

- Mekedatu also does not find mention in the Tribunal’s final order or the Supreme Court judgement

Extended fund facility

- 'NAAM 200' organised by the Government of Sri Lanka to commemorate the 200th anniversary of arrival of India-Origin Tamils (IOTs)

About Extended fund facility

The Extended Fund Facility (EFF) The Extended Fund Facility (EFF) provides financial assistance to countries facing serious medium-term balance

of payments problems because of structural weaknesses that require time to address.

- To help countries implement medium-term structural reforms, the EFF offers longer program engagement and a longer repayment period.

Purpose

- Provide assistance to countries experiencing serious payment imbalances because of structural impediments or slow growth and an inherently weak balance-of-payments position.
- Support comprehensive programs with a focus on policies needed to correct structural imbalances over an extended period.
- Countries' policy commitments expected to focus on structural reforms to address institutional or economic weaknesses, in addition to policies to maintain macroeconomic stability.
- Disbursements conditional on the observance of quantitative performance criteria.
- Progress in implementing structural measures that are critical to achieving the objectives of the

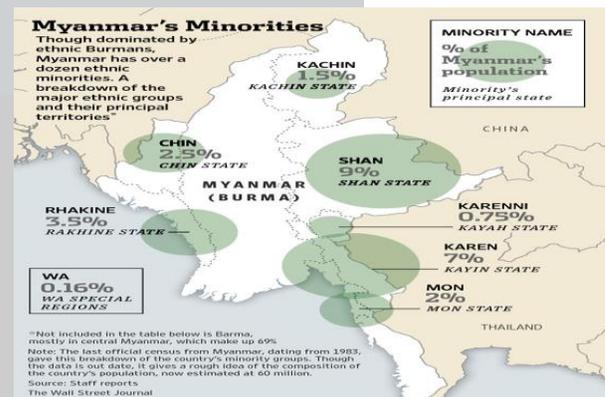
program is assessed in a holistic way, including via benchmarks. See more on conditionality.

- Typically approved for periods of 3 years, but may be approved for periods as long as 4 years to implement deep and sustained structural reforms. Over 4½–10 years in 12 equal semiannual installments.

The Hindu

Separatist in Myanmar

- The Myanmar National Democratic Alliance Army (MNDA), the Ta'ang National Liberation Army (TNLA) and the Arakan Army (AA) say they have captured dozens of outposts and four towns and blocked vital trade routes to China.
- TNLA fighters seized an outpost from the military near the town of Namhkam near the China border



The Hindu

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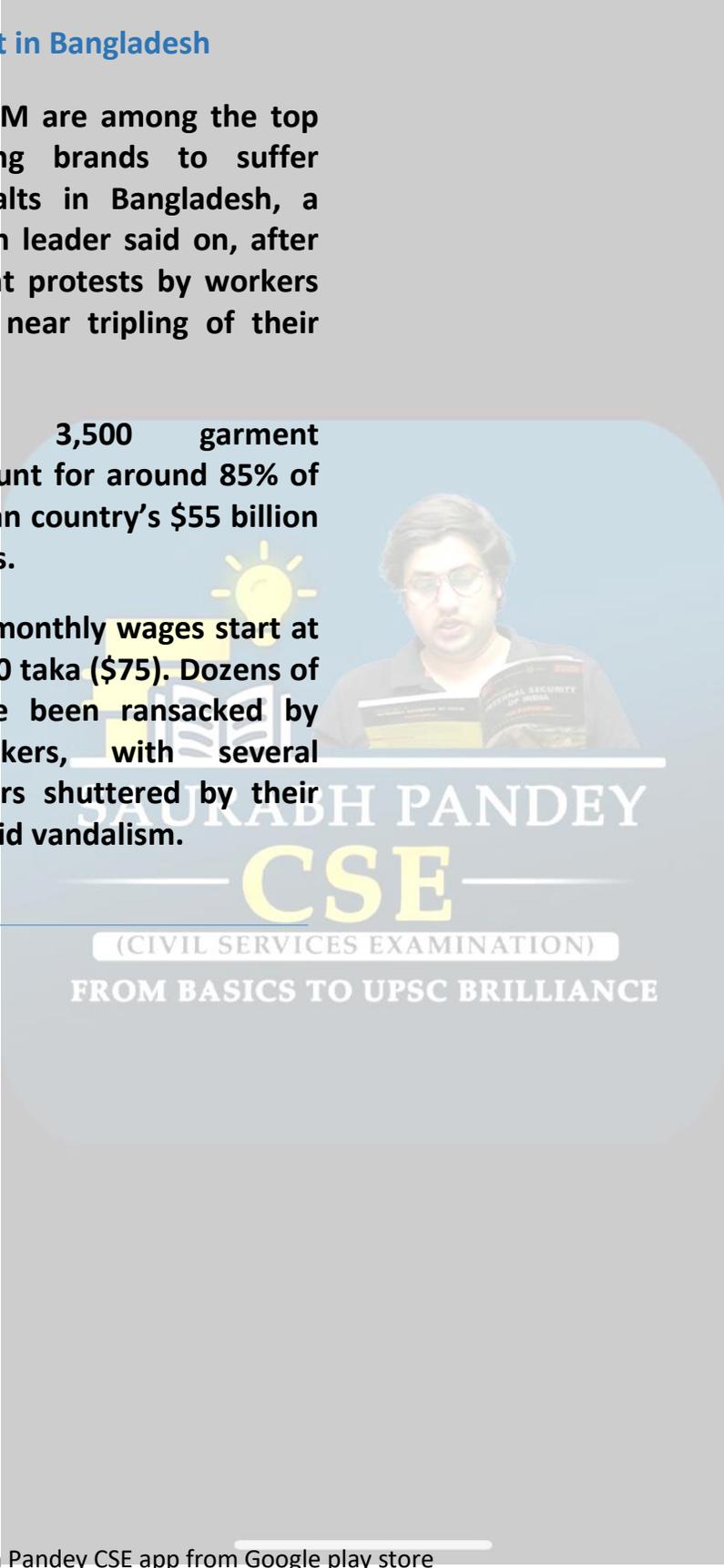
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Protest in Bangladesh

- Levi's and H&M are among the top global clothing brands to suffer production halts in Bangladesh, a garment union leader said on, after days of violent protests by workers demanding a near tripling of their wages.
- Bangladesh's 3,500 garment factories account for around 85% of the South Asian country's \$55 billion annual exports.
- But workers' monthly wages start at as low as 8,300 taka (\$75). Dozens of factories have been ransacked by striking workers, with several hundred others shuttered by their owners to avoid vandalism.

The Hindu



SAURABH PANDEY
CSE
(CIVIL SERVICES EXAMINATION)
FROM BASICS TO UPSC BRILLIANCE

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MM POX

A new analysis shows that the monkey pox, or mpox, virus is rapidly diverging into several lineages characterized by mutations resulting from continued interaction with the human immune system, suggesting that the virus has been circulating in humans since 2016.

The sustained transmission among people marks a fundamental shift in monkey pox epidemiology as a zoonosis, “highlight the need for revising public health messaging around monkey pox and outbreak management and control

Most people fully recover, but some get very sick.

Anyone can get mpox. It spreads from contact with infected:

Persons, through touch, kissing, or sex

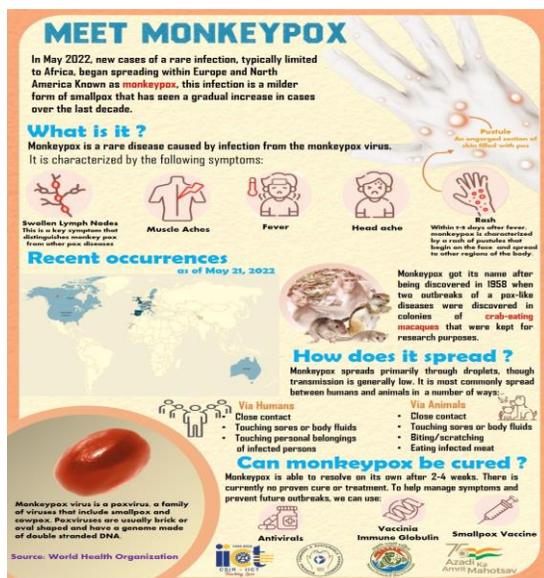
Animals, when hunting, skinning, or cooking them

Materials, such as contaminated sheets, clothes or needles

Pregnant persons, who may pass the virus on to their unborn baby.

- The Hindu

Herbivory



Excluding herbivores or reintroducing their predators may increase vegetation abundance by an average of 93 and 158% at natural regeneration and planted restoration sites, and introducing predators increased abundance by 138 and 372% at natural

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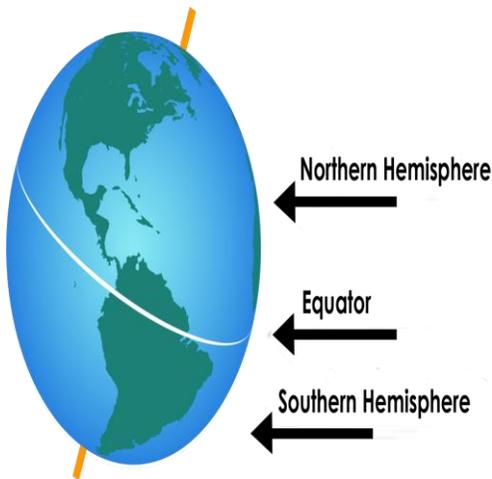
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regeneration and planted restoration sites.

The meta analysis looked at more than 600 global studies. Herbivory on restoration sites had an overall negative effect on plant abundance and diversity, particularly at sites where restoration was actively promoted.

The Hindu

Decline in water availability



- Accounts for more than 95% of the recent decline in global water

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availability, according to a new study.

- Global land water availability has varied due to climate change and increased human water use.
- The water availability across the Southern hemisphere decreased across the study period. In the Northern hemisphere, there is negligible change in land water availability.

The Hindu

Water evaporation

- Researchers have been puzzled upon finding that water in their experiments, which was held in a sponge like material known as a hydrogel, was evaporating at a higher rate than could be explained by the amount of heat, or thermal energy, that the water was receiving.
- At the interface where water meets air, light can directly bring about evaporation without the need for heat, and it actually does so even more efficiently than heat.
- In this, the water was held in a hydrogel material, but the researchers suggest that the phenomenon may occur under other conditions as well.

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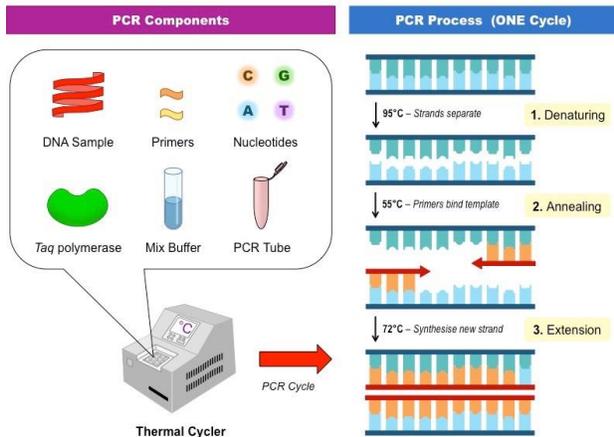
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- The phenomenon might play a role in the formation and evolution of fog and clouds, and thus would be important to incorporate into climate models to improve their accuracy, the researchers say.

The Hindu

PCR and (H. pylori) bacteria

- PCRbased assay of a small region of the Helicobacter pylori (H. pylori) bacteria can help detect H. pylori infection and also identify clarithromycin in resistant bacteria and those which are drug sensitive in six seven hours has been developed by a team of researchers from the National Institute of Cholera and Enteric Diseases (ICMRNICED), Kolkata.



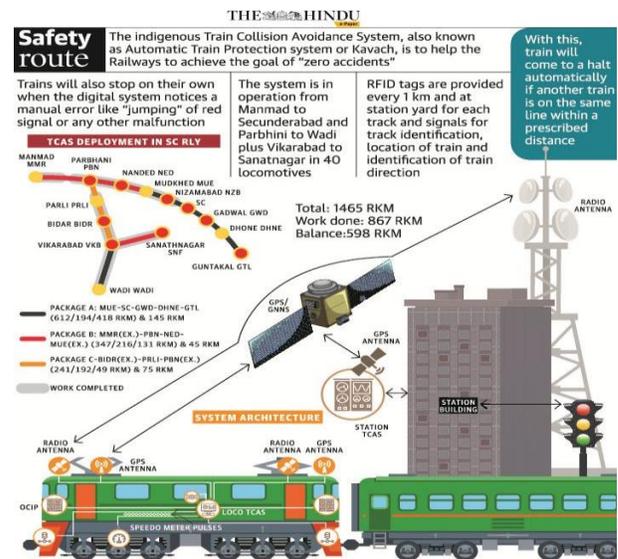
- Since H. pylori bacteria grow slowly, it takes about a week to culture the bacteria and a couple of more weeks to test for drug

sensitivity, which the new diagnostic assay bypasses.

- The molecular based assay has been found to have 100% sensitivity and specificity.
- There is an increasing trend of clarithromycin in resistant H. pylori bacteria in India leading to a decreasing success rate in treating the infection.

The Hindu

KAVACH



What is TCAS Kavach?

- Kavach is a cab signalling train control system with anti-collision features. Simply put, it plays the role of a watchdog over the existing signalling system.
- It was developed over a period of 10 years, starting in 2012, by the

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Indian Railways Research Designs and Standards Organisation (RDSO).

- Kavach is designed to give out warnings to the loco pilot in case he does not notice the 'red signal,' and instead of stopping, is going to overshoot the signal.

How is the Kavach system deployed?

- In the Kavach setup, the railway stations along the route where this tech is sanctioned to be deployed are provided with three components.
- First is Radio Frequency Identification (RFID) technology in the tracks. RFID tech uses radio waves to identify people or objects. It uses electromagnetic fields to automatically identify and read information contained in a wireless device from a distance without making physical contact or requiring a line of sight.
- Secondly, the locomotive, which is the driver's cabin, is provided with RFID readers, computer, and brake interface equipment. And finally, radio infrastructure which are towers and modems are installed at railway stations.

Mixed member proportional (MMP) system

New Zealand uses the mixed member proportional (MMP) system.

Under MMP, voters cast two votes: a 'party vote' that determines the overall composition of the 120-seat Parliament and an 'electorate vote' to elect a local MP for their geographical constituency.

The FPTP method decides the local MP election. There are 72 electorate seats, and parties fill the other 48 list seats.

Each party submits a ranked party list to the Electoral Commission of New Zealand before the polls. Parties then elect candidates from this list as list MPs.

The electorate vote does not alter the overall party representation in Parliament. Voters can split their vote.

Giving both votes to one political party is a 'double tick'. Allocating votes to two different parties is a split vote.

The MMP system allows a voter to choose a candidate from a different party if they don't like the local candidate from their preferred party.

This choice doesn't dilute the impact of their vote on their preferred political party's final tally in Parliament

Advantages

The MMP system has its own share of criticism.

For instance, it may prompt tactical voting, where voters might support a party that they don't necessarily endorse just to keep another party out of power.

The first benefit is that the split voting system allows for more localized accountability for elected

FIGURE 9. MIXED MEMBER PROPORTIONAL BALLOT

YOU HAVE TWO VOTES

PARTY VOTE
This vote decides the share of seats each of the parties listed below will have in Parliament.

Vote for only one party

POOL PARTY	<input type="radio"/>
PIZZA PARTY	<input type="radio"/>
SLUMBER PARTY	<input type="radio"/>
DANCE PARTY	<input checked="" type="radio"/>

RIDING VOTE
This vote decides the candidate who will be elected.

Vote for only one candidate

NG, Marjissa POOL PARTY	<input type="radio"/>
WILSON, Andrew PIZZA PARTY	<input type="radio"/>
LEBOWSKI, Jeffrey SLUMBER PARTY	<input checked="" type="radio"/>
TERRIEN, Jeanne DANCE PARTY	<input type="radio"/>

Riding vote

Please mark one X beside one candidate for your local MP.

Naomi Moore
Ruby Party

Nikhil Salvi
Coral Party

Connor Higgs
Teal Party

Evelyn Johnson
Maroon Party

Charlie Collier
Independent

Party vote

Please mark one X beside one candidate for a regional MP.
A vote for a candidate counts as a vote for that candidate's party. This vote helps select regional MPs for top-up seats.

RUBY PARTY	CORAL PARTY	TEAL PARTY	MAROON PARTY	INDEPENDENT
Benjamin Chan Naomi Moore Jamilia Demas Leon Kay Avery McDonald Samuel Biniam	Chantal Lachance Kayleigh Reed Nikhil Salvi Sophie Martins Sheng Ch'en Scarlett McIntyre	Cannon Higgs Samantha Sims Luis Gutierrez Ben Gardiner Chelsea Owens Shizuki Kimura	Michael Preston Evelyn Johnson Gayatri Chautala Sara Saare Thomas Gibbs Serena Rangl	Francesca Daly Edward Harris Alex Heath

representatives. They can't just ride a party wave.

The second is policy focus. As parties don't need to concentrate on individual candidate winnability, they can emphasise on policies and ideologies to garner party votes.

The third is that MMP improves representation for women, indigenous communities, differently abled people, and other deprived groups.

Against colonialism



Valiant fight: Members of the Rodebrug Soerabaia Community and Reenactor Indonesia taking part in a re-enactment of the 1945 Battle of Surabaya between Indonesian nationalists against British and British Indian forces, in Surabaya on Sunday. AFP

The Battle of Surabaya was fought between regular infantry and militia of the Indonesian nationalist movement and British and British Indian troops as a part of the Indonesian National Revolution against the re-imposition of Dutch colonial rule.

The peak of the battle was in November 1945. The battle was the largest single battle of the revolution

and became a national symbol of Indonesian resistance.

The Hindu

Zika virus/ DENV Infection

The Zika virus is a mosquito borne flavivirus. Most infections in humans are asymptomatic or with mild symptoms, including fever, rash, and joint pain.

The Zika virus became notorious during the 2015-2018 outbreak that swept through the Americas.

The outbreak was characterized by an alarming increase in the number of microcephaly cases in newborns, prompting the World Health Organisation to declare it a public health emergency of international concern in early 2016.

Researchers isolated the virus in 1947 from monkeys from the Zika forest in Uganda. The first human cases were detected in 1952 in Uganda and Tanzania.

There have since been multiple outbreaks around the world, but largely confined to the tropics.

It has more than 10,000 bases of single stranded RNA.

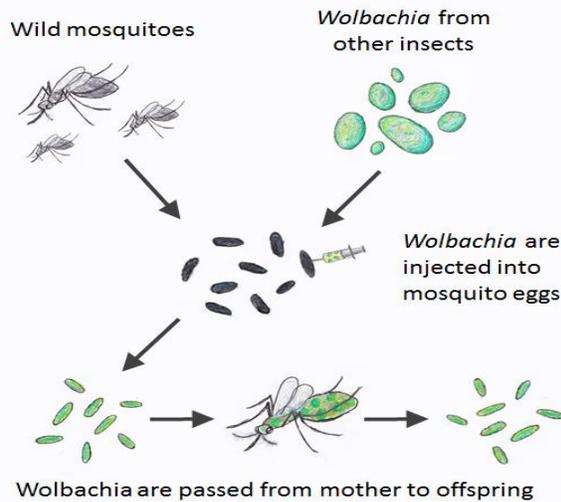
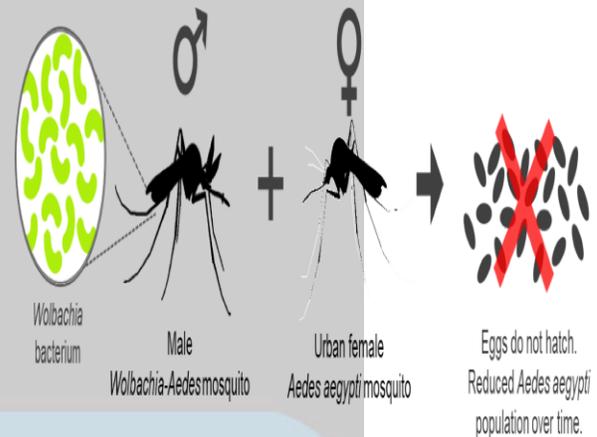
The genome is also peculiar: it encodes for a large polyprotein, which is further cleaved into capsid,

- membrane precursor (prM), envelope, and seven nonstructural proteins.
- The Zika virus has an RNA genome, and thus a very high potential to accumulate mutations.
 - Genomic studies have suggested that the Zika virus has two lineages: African and Asian
 - researchers had suggested that a mutation in one of the precursor membrane proteins, called prM, of the Zika virus was associated with microcephaly.
 - Researchers also suspected that this mutation originated during the outbreak in French Polynesia in 2013 before breaking out in South America, causing microcephaly.
 - researchers in Tsinghua University, suggested in a recent study in Cell that infections of two viruses in primates encourage specific microbes to grow on the skin by suppressing an antimicrobial peptide, RELM, on the skin.
 - These microbes produce acetophenones, which are volatile molecules that could provide a chemical cue to mosquitoes, attracting them towards the individual and supporting forward transmission of the viruses.
 - Zika virus and DENV interactions have also been an interesting area of research.
 - A significant body of evidence suggests that a Zika virus infection can significantly increase the risk for severe dengue.
 - Dengue is a viral infection caused by the dengue virus (DENV), transmitted to humans through the bite of infected mosquitoes.
 - About half of the world's population is now at risk of dengue with an estimated 100–400 million infections occurring each year.
 - Dengue is found in tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas.
 - The virus is transmitted to humans through the bites of infected female mosquitoes, primarily the *Aedes aegypti* mosquito.
 - Other species within the *Aedes* genus can also act as vectors, but their contribution is secondary to *Aedes aegypti*.
 - The Hindu

Wolbachia

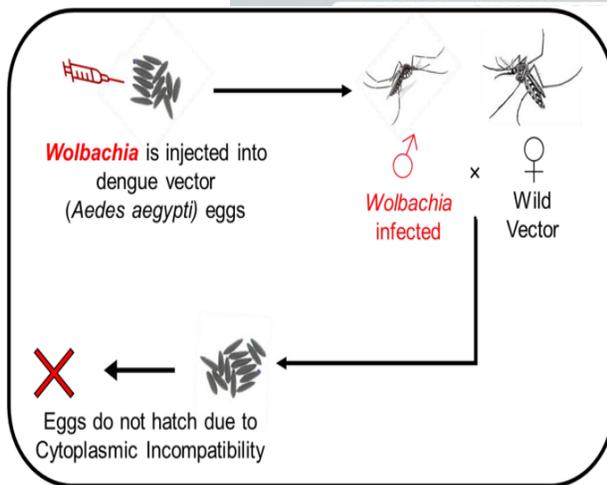
- Wolbachia is a genus of bacteria that has evolved complex relationships with the many insects that can host it.

- It is named for the American pathologist Simeon Burt Wolbach, who identified it along with Marshall Hertig in 1924.
- In 1971, researchers discovered that when male *Culex* mosquitoes infected by *Wolbachia* bacteria fertilized healthy eggs from a female, the eggs died.



- The bacteria modified the male's sperm cells in a way that only the bacteria could reverse.
- So if the female mosquito was uninfected, her egg cells would be damaged.

- But if the female was infected by *Wolbachia*, the eggs would be viable if the male was uninfected or infected by the same strain of *Wolbachia*.



- This means infected female mosquitoes gain a reproductive advantage over time as the amount of *Wolbachia* in the population increases.
- *Wolbachia* can also reduce the rate at which chikungunya and yellow fever viruses multiply in infected mosquitoes.

The Hindu

• **Evros Region**

BIG SHOT



This aerial view shows a burnt forest in the Evros region, near the village of Dadia in Greece, on October 26, 2023. The European Union has said that the Dadia fire was the largest in Europe's recorded history, ravaging more than 900 sq. km of land in three days, including a large chunk of a biodiverse ecosystem, and destroyed swathes of pasture land. AFP

Unsustainable urbanization & pollution

- **Evros is one of the regional units of Greece. It is part of the region of East Macedonia and Thrace.**
- **Its name is derived from the river Evros,**
- **Evros is the northernmost regional unit. It borders Turkey to the east, across the river Evros, and it borders Bulgaria to the north and the northwest**

- **The theme of World Cities Day (October 31) this year was “Financing Sustainable Urban Future for All.”**

- **Finances must be channeled in the right direction such that urban futures which are being cut short on account of flawed urbanization are checked, and, in turn, cities made liveable and safe**

- **A report released by The Energy Policy Institute at Chicago (EPIC) shows that out of the 50 most polluted cities in the world, 39 are in India.**

- **Pollution directly affects the health of people, and an average Indian loses 5.3 years of his life expectancy due to this; for the residents of Delhi, it is 11.9 years**

Evros – River of death

The Greek-Turkish border river (outside Greece: "Maritsa") in the eponymous Greek regional district Evros



- **The need now is to turn to sustainable and “ecological urbanization”.**

- **The trajectory of urban development, where the focus is more on real estate development, a widening of roads, allowing large fuel guzzling vehicles on them, in turn squeezing the space meant for pedestrians, and redevelopment are the major reasons for increased pollution in Indian cities.**

- Road dust, concrete batching, polluting industrial units and their extension in the cities, and vehicular emissions are key factors too. It is estimated that motorized transport alone is the cause for 60% of urban pollution.
- The green lungs of the cities, water bodies, urban forests, and green cover on urban commons, and urban agriculture have all reported shrinkage, even as “grey” infrastructure has seen rapid expansion.
- Hence, the priorities need to be set right. During winter in North India, there is a hullabaloo over the burning of paddy straw (called Parali) as being the cause for smog (smoke and particulate matter).
- This is partially true. The burning of paddy, primarily in Haryana and Punjab, only escalates the problem
- India’s automobile market has risen in value from \$100 billion and is expected to touch almost \$160 billion by 2027, registering a growth of 8.1%.
- There is a compelling need to have an alternative strategy of city building, where the focus is on more public transport, having secure pedestrian paths and bicycle lanes with the creation of a post of bicycle officers, and regulating construction activities through standard operating procedures.
- There needs to be good public transport, with investment in buses for towns and cities.
- Strong steps need to be taken to control private motorized vehicular movement in the cities.
- Likewise, an odd number even number plate formula can be another important intervention. Some cities have a no car day on certain days.



Steps needed

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- **Urban communities must protect, nurture and expand them.**
- **However, our urban development strategy has been the inverse of that.**
- **Massive land use changes and the handing over of open spaces to real estate developers do not look to be ending anytime soon**
- **So-called solutions such as smog towers or even watering roads are just cosmetic.**
- **People's empowerment through the city's governance architecture is a firm step forward.**
- **Pollution guides and standard operating procedures for various line departments and agencies must not only be made readily available to the people but should also become a part of the way of life in the city.**

The Hindu

Governor and assent to bills

Governors of using a nonexistent discretion to unreasonably delay the passing of crucial Bills into law

- The process of granting assent
- Article 200 of the Constitution covers the options before the Governor when a Bill passed by both Houses of the Legislature is presented to him.
- The first proviso to the Article says the Governor could either declare his assent to the Bill or withhold the assent if it is not a Money Bill or reserve the law for the consideration of the President if he thinks the Bill derogates from or endangers the power of judicial review of the High Court.
- In case the Governor chooses to withhold assent, he should return the Bill “as soon as possible” with a message requesting the Legislative Assembly to reconsider the proposed law or any specified provisions or suggest amendments.
- The Assembly would reconsider and pass the Bill, and this time, the

Governor should not withhold his assent.

- In short, the constitutional head of the State would bow to the considered decision of the elected representatives of the people

Do Governors have discretion?

- Governors did have a discretion to return Bills before the first proviso in the draft Article 175 (now Article 200).
- This was amended by the Constituent Assembly in 1949.
- Though it was thought that the Governor’s exercise of discretion would act as a “potential check on disruptive legislative tendencies” by States, Dr. B. R. Ambedkar, while introducing the amended proviso, said “in a responsible government there can be no room for the Governor acting on discretion”.
- T. T. Krishnamachari, a Constituent Assembly member from Madras and later Finance Minister, approved of the amendment, saying “the Governor cannot act on his own, he can only act on the advice of the

Ministry... When a Governor sends a Bill back for further consideration, he does so expressly on the advice of his Council of Ministers”.

- Mr. Krishnamachari explained that if the Bill passed by the Legislative Assembly needs modification or has garnered adverse public opinion, the government uses the Governor to return the Bill to the Lower House as quickly as possible for re-legislation.
- The first proviso to Article 200 is thus a “saving clause” and retains the discretion over the fate of the Bill solely in the hands of the State Cabinet. Article 163 makes it clear the Governor is not expected to act independently.
- The top court in the Shamsheer Singh case verdict has held that as a formal head of the State a “Governor exercises all his powers and functions conferred on him by or under the Constitution on the aid and advice of his Council of Ministers save in spheres where the Governor is required by or under the Constitution to exercise his functions in his discretion.”

- The assent or return of the Bill does not involve the discretion of individuals occupying the Governor’s post.

By when should Bills be returned?

- The first proviso of Article 200 says it should be “as soon as possible”. The Constitution is silent on what exactly this phrase means.
- The Supreme Court has interpreted “as soon as possible” in the proviso to mean “as early as practicable without avoidable delay” in its 1972 judgment in Durga Pada Ghosh versus State of West Bengal.
- Justice (now retired) Rohinton F. Nariman, in his 2020 judgment in the Keisham Megha Chandra Singh case, said a ‘reasonable time’ would mean three months.
- The States have urged the court to interpret the phrase in the proviso and fix a time limit by which Governors should assent or return a Bill.
- The 1988 Sarkaria Commission report on Centre State relations had suggested consultation with the

Governor while drafting the Bill and fixing a deadline for its disposal.

- Kerala has asked the Supreme Court to form a seven judge Bench to review a five judge Bench judgment in the 1962 Purushothaman Nambudiri versus State of Kerala case which held the view that Article 200 did not provide “for a time limit within which the Governor should come to a decision on the Bill referred to him for his assent”.

The Hindu

India and Bhutan

- Apart from a decision to go ahead with the final survey for the 58km cross border rail link between Gelephu and Kokrajhar in Assam to be built by India, the two sides agreed to explore a second rail link for about 18 km between Samtse in Bhutan and Banarhat in West Bengal tea gardens area.
- India also agreed to allow Bhutanese trade items to be carried further on from Haldibari in West Bengal to Chilahati in Bangladesh.
- The rail connectivity could in the future assist air connectivity for Indians in the northeast as well, as Bhutan plans to build an international airport at Gelephu as part of the larger Sarpang district Special Economic Zone
- India and Bhutan agreed to designate the Darranga Samdrup Jongkhar border crossing between Assam and Bhutan’s less developed South Eastern district as an immigration check post, so as to allow third country nationals to enter and exit as well “for enhancing connectivity, and promoting tourism”
- The two sides agreed to strengthen trade infrastructure with the upgrade of an existing land customs station at Dadgiri (Assam) to a modernised “Integrated Check Post” (ICP) along with “development of facilities on the Bhutanese side at Gelephu”.
- Easing travel between the two countries, and allowing further exchanges to Bangladesh is expected to help raise Bhutanese opportunities for trade and travel, and bring in much needed tourism

revenues for the neighbouring country.

• The Hindu

New chief information commissioner

• Information Commissioner Heeralal Samariya was on Monday sworn in as the Chief Information Commissioner (CIC)

• The chief and information commissioners in CIC are appointed by the President on the recommendations of a committee which has the PM as its chairperson, a Union cabinet minister nominated by the PM and the leader of opposition or the largest opposition party in Lok Sabha.

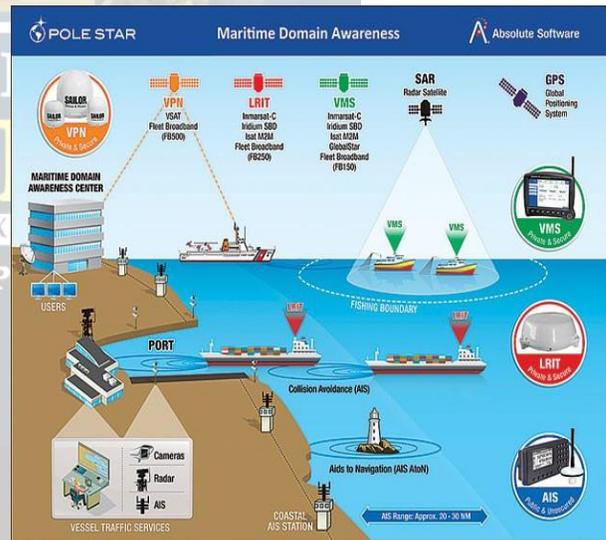
The Hindu

The Indo Pacific Maritime Domain Awareness (IPMDA)



• The Indo Pacific Maritime Domain Awareness (IPMDA) initiative, announced by the Quad grouping, is a testament to the commitment to a free, open, inclusive and rules based IndoPacific.

• “This initiative [IPMDA] seeks to establish a comprehensive system for monitoring and securing maritime activities in the IndoPacific, ensuring the safety of critical sea lines of communication, and promoting cooperation among like minded nations in the region,”



• The IPMDA was announced by the Quad grouping, comprising India, Australia, Japan and U.S., at the Tokyo summit in early 2022 to track “dark shipping” and build a “faster,

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wider, and more accurate maritime picture of nearrealtime activities in partners' waters", integrating three critical regions in the Indo Pacific the Pacific Islands, Southeast Asia, and the IOR.

Indian Navy's Information Fusion Centre for Indian Ocean Region (IFC- IOR)

Indian Navy's Information Fusion Centre for Indian Ocean Region (IFC- IOR).

The Hindu

lateral moraine (a mass of debris and rocks) on the lake's left bank.

- The lake is one of the largest and fastest growing glacial lakes in Sikkim, and has been a potential hazard for several years now.
- "While the lake level was lowered due to the flood, it did not drain completely.
- A lot of water still remains in the lake, making it a potential hazard

What caused the GLOF?

Sikkim floods

- The South Lhonak lake in the Himalayan state of Sikkim breached on the night of October 3, resulting in a glacial lake outburst flood (GLOF).
- The South Lhonak lake is located in North Sikkim, at an altitude of 5,200 m.
- According to scientists, the current interpretation of the flood which relies heavily on satellite data suggests that on October 3 night, a slope failure occurred along the lateral moraine (a mass of debris and rocks) on the lake's left bank.
- The Sikkim government has been claiming that the GLOF was triggered by a cloudburst.
- In fact, Sikkim State Disaster Management Authority's daily reports on deaths and damages continue to call the flood "cloudburst induced"
- While the reservoir's gross storage capacity was 5.08 million cubic metres, the volume of water stored in it at the time of the disaster is currently not known.
- Further downstream of the Teesta III dam, two more hydropower projects

were damaged: the 510MW TeestaV and the 500MW TeestaVI that is under construction

What is the role of climate change?

- In the South Lhonak glacier, the signs of climate change emerged decades ago and became stronger as the rate at which the glacier melted increased, resulting in a rapidly growing lake that was bound to breach – as several research studies stated.
- GLOFs are natural, but the rapid increase in the lake's size as a result of the glacier's accelerated melting tied closely to anthropogenic climate warming.

The Hindu

Theia

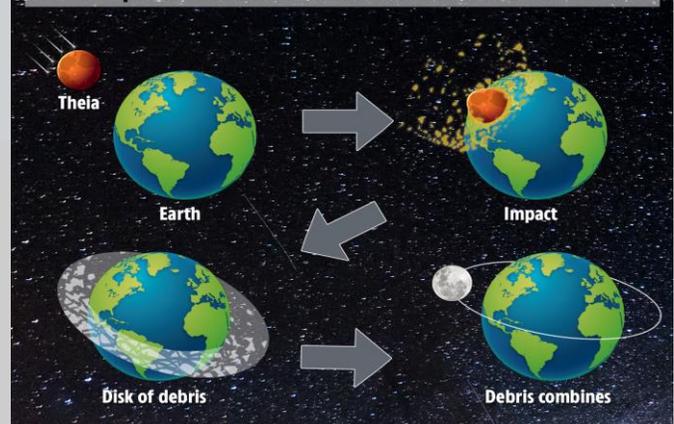
- Seismologists have recognized since the 1970s that two mysterious continent sized blobs reside in the deepest part of the earth's mantle, one under Africa and the other under the South Pacific region.
- These blobs may be relics from a cataclysm early in our planet's

history hypothesized to have spawned the moon the collision between primordial earth and a Mars-sized object called Theia, researchers have said.



THE THEIA IMPACT

One Moon creation theory is that a large planet crashed into Earth and the resulting debris became the Moon. The impacting planet, called Theia, was thought to have fused with Earth but scientists now think they've found a piece of it buried under the lunar surface



- This impact, which recent research determined occurred more than 4.46

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billion years ago, blasted molten rock into space that orbited the earth and coalesced into the moon.

- But chunks of Theia may have remained inside the earth, sinking to a location just above our planet's superhot core of iron and nickel.

The Hindu

Telecos vs OTT

Telecom companies have seen revenue from traditional streams such as voice calls and Short Message Service (SMS) come under pressure, as competing OTT services are often free.

- At the same time, they have had to invest heavily in upgrading their infrastructure to handle increased data traffic, without necessarily seeing an equivalent rise in revenue.
- It is also their lament that OTT services are not subject to the same level of taxation and licensing fees, leading to an uneven playing field
- The OTT consultation has renewed the clamour from the telecom companies that content providers

such as Netflix, Amazon Prime, and Disney+ Hot star be asked to share in the costs of bandwidth.

- They argue that streaming platforms are free riders, benefiting from the infrastructure built and maintained by the telecom companies.

- By offering services that consumers desire, OTT platforms generate demand for Internet access.

- They also pay for the content delivery networks (CDNs) to create pathways that substantially augment the capacity of the internet to deliver their content.

- Telecom companies capitalise on this demand (and the availability of OTT content) by providing connectivity to the Internet and charging subscribers for it

- OTT services compete in their own market on the basis of variety and quality of content, the quality of streaming (such as, support for HD or better resolution or 5.1 surround sound), ease in navigation and discovery of content, and its availability on multiple devices.

Current Affairs 7th November 2023 by Saurabh Pandey

- The consumers pay the price for these benefits as compared to the alternatives.
- Similarly, in the marketplace for Internet access, the consumers are free to choose the provider that offers them the highest bandwidth, data volume, and reliability at an affordable price.
- Net neutrality is the principle that Internet access providers must treat all traffic originating from and terminating to the Internet in the same way.
- Net neutrality formed the basis of TRAI's regulation on prohibition of discriminatory tariffs for data services brought out on February 8, 2016.
- The number of Indian students in Canada has sharply risen in recent years.
- Besides paying fees, international students contribute towards the host countries.
- In 2020, international students contributed over 22.3 billion CAD to the Canadian economy and supported more than 2,18,000 jobs.

The Hindu

The Hindu

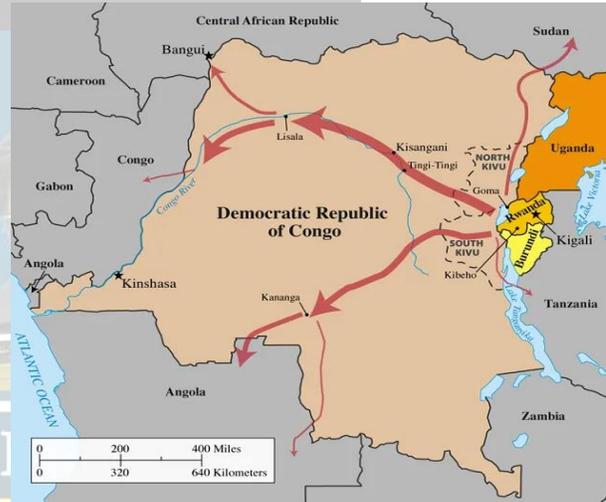
Canada

- Canada is home to about 1.3 million Indians who account for 4% of the country's population (Canadian Census, 2021).

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Displacement in DRC



On October 30, the UN International Organization of Migration (IOM) reported that the

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- number of people who have been internally displaced in the Democratic Republic of Congo (DRC) has risen to 6.9 million.
- In the eastern province of North Kivu, nearly a million people have been displaced due to the ongoing conflict with the rebel group, Mouvement du 23 Mars (M23)
- What is the conflict in the DRC?**
- The conflict erupted in the wake of the Rwandan genocide in 1994 where ethnic Hutu extremists killed nearly one million minority ethnic Tutsis and non-extremist Hutus.
- Since then, the eastern DRC, bordering Rwanda, has been facing insurgency perpetrated by several rebel militant groups.
- According to the UN, besides M23, more than 120 insurgent groups are active in the eastern provinces of North Kivu, South Kivu, Ituri and Tanganyika.
- Violence by several militant groups over territory and natural resources, extrajudicial killings by security forces and rising tensions with neighbouring countries have killed thousands.
- Tensions between the DRC and neighbouring Rwanda continue to increase as both countries accuse each other of supporting ethnic Tutsi and Hutu led rebel groups respectively.
- The resurfacing of the Tutsi led M23 rebel campaign in November 2021 worsened the security situation in the eastern provinces of DRC.
- The group carries out frequent attacks and has taken control of several towns
- Why has there been displacement?**
- First, ethnic intolerance and insurgency.
- Following the Rwandan genocide, around two million Hutu refugees crossed Rwanda into North Kivu and South Kivu provinces of DRC.
- They organised ethnic militias in DRC fearing prosecution.
- Second, is the political uncertainty and lack of inclusive governance
- Third are regional tensions.
- The armed groups have been supported by the governments of Rwanda, Uganda, and Burundi at various points, acting as proxies for

each country's interests in the region.

The Hindu

MIG 21 Replacement

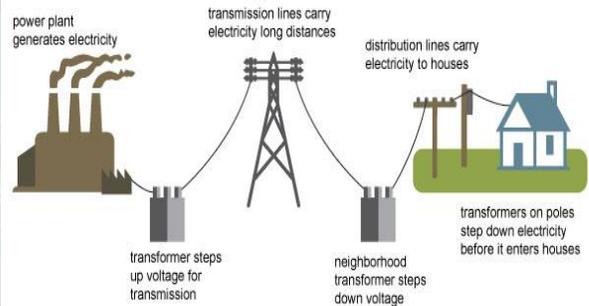
- On October 31, 2023 MiG21 fighter jets of the No. 4 squadron 'OORIALS' of the Indian Air Force (IAF) flew one last time over Uttarlai in Rajasthan.
- Last year, the No. 51 squadron 'swordarms' based in Srinagar was phased out.
- It was the same squadron of which Gp Capt (then Wg Cdr) Abhinandan Varthaman was part of and saw action in February 2019, a day after the Balakot air strike.
- The MiG21 was the first supersonic fighter in service of the IAF and was inducted in 1963 and has participated in all major conflicts since.
- will replace the MiG21 squadron with the indigenous Light Combat Aircraft (LCA)Mk1A. The induction of the LCA Mark1A will fill the gap of these MiG21s
- In the last few years, the IAF has inducted two squadrons of the

indigenous LCA Tejas and two squadrons of Rafale fighter jets procured from France which pushed the squadron strength to over 30.

The Hindu

AC & DC and Transformer

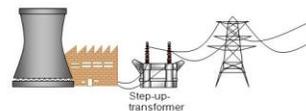
Electricity generation, transmission, and distribution



Transmission of Electricity

When energy is transferred at a high voltage, it uses a lower current, which results in less energy being lost as heat in the cables.

The National Grid has to transmit electricity over large distances.



If the National Grid was to transmit at 25,000kV from the power station, about 40% of the electrical energy would be lost as heat – the electricity would be expensive as a result.

But at 400kV, only 1% of the energy will be lost as heat.

This would also mean that the tall pylons could carry thinner, lighter wires, thus making them cheaper.

What is Transformer?



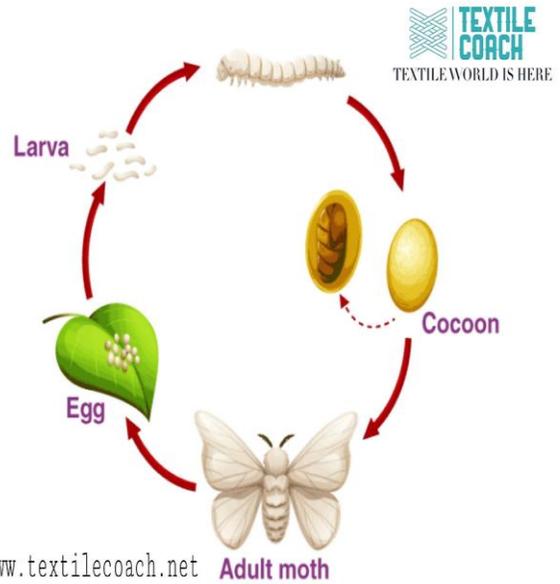
The transformer is a static device which changes the voltage level and current level without changing the frequency. The transformer is used to increase or decrease the voltage and current level.

www.electricaldesks.com

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Alternating Current	Direct Current
AC is safe to transfer longer distance even between two cities, and maintain the electric power.	DC cannot travel for a very long distance. It loses electric power.
The rotating magnets cause the change in direction of electric flow.	The steady magnetism makes DC flow in a single direction.
The frequency of AC is depended upon the country. But, generally, the frequency is 50 Hz or 60 Hz.	DC has no frequency of zero frequency.
In AC the flow of current changes its direction backwards periodically.	It flows in a single direction steadily.
Electrons in AC keep changing its directions – backward and forward	Electrons only move in one direction – that is forward.



The Hindu

Silkworm cocoon different colours



Caterpillars, also known as silkworms, of both these species feed exclusively on leaves of mulberry plants (genus *Morus*).

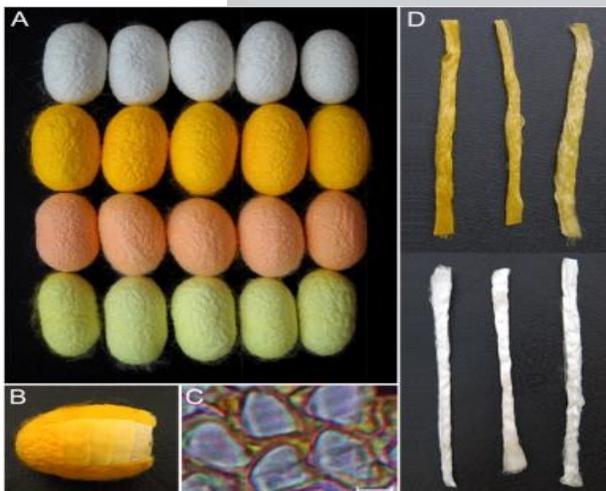
The Hindu

Carotenoids and flavonoids

‘Wild’ silks which include the muga, tasar, and eri silks are obtained from other moth species: namely, *Antheraea assama*, *Antheraea mylitta*, and *Samia cynthia ricini*.

These moths survive relatively independently of human care, and their caterpillars forage on a wider variety of trees.

Nonmulberry silks comprise about 30% of all silk produced in India



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- The ancestral mulberry moth makes (boringly uniform) brown yellow cocoons.
 - In contrast, domesticated silk moth cocoons come in an eye-catching palette of yellow red, gold, flesh, pink, pale green, deep green or white.
 - Cocoon's pigments are derived from chemical compounds called carotenoids and flavonoids, which are made by the mulberry leaves.
 - Silkworms feed voraciously on the leaves, absorb the chemicals in their midgut, transport them via the hemolymph arthropods' analogue of blood to the silk glands, where they are taken up and bound to the silk protein.
 - Mature caterpillars then spin out the silk proteins and associated pigment into a single fibre. The caterpillar wraps the fibre around itself to build the cocoon
 - Differently coloured cocoons arise from mutations in genes responsible for uptake, transport, and modification of carotenoids and flavonoids.
 - The mutant strains have become a valuable resource for scientists to
- study the molecular basis of how, in a relatively short span of 5,000 years, artificial selection generated such spectacular diversity
- A yellow red cocoon requires the Y gene, which encodes a protein that transports carotenoids from midgut to the silk glands.
 - Other genes encode proteins that selectively absorb specific carotenoids.
 - Mutations in one or more of these genes produce the yellow, flesh - coloured, rusty, and pink cocoons
 - The gene called aponticlike Domesticated and ancestral mulberry silk moths can be interbred to produce hybrid offspring.
 - Last year, researchers in the University of Tokyo and Columbia University in New York created such hybrid moths and then specifically mutated either their B. mori or B. mandarina derived copy of a gene called apontic like.

The Hindu

Colours in tube light

- **Why are fluorescent lamps marked 6500 K (tube light)?**

- **A:** The value 6,500K marked on fluorescent lamps represents a parameter called correlated colour temperature.
- It means that the spectral, or light, colour distribution from that lamp is similar to that of a black body at that temperature.
- Any black body when heated emits different colours at different temperatures: at 2,000K it emits red light; at 4,000K it is yellowish white; at 2,700K, it provides warm light; and at 6,500K, it gives the impression of cool daylight, according to illumination engineers.
- Based on colour appearance, fluorescent tubes are classified into three types: daylight white (above 5,000K), neutral white (4,000K), and warm white (below 3,300K).
- The colour of light depends on the fluorescent coating inside the tube.
- Three types of coatings are generally given: triphosphor, standard phosphor, and multi phosphor.

- Standard phosphor is used in ordinary tube lights. Triphosphor coated lamps, like incandescent lamps, emit yellow light similar to sunlight. Standard tube lights render a colour similar to daylight.
- The Hindu

The Klyuchevskoy volcanos

BIG SHOT



The Klyuchevskoy volcano, one of the highest active volcanoes in the world, erupts in Russia's northern Kamchatka Peninsula on October 28, 2023. Huge ash columns erupted from Eurasia's tallest active volcano on November 1, forcing authorities to close schools in two towns in the region. AP

- **The Klyuchevskoy volcano, one of the highest active volcanoes in the world, erupts in Russia's northern Kamchatka Peninsula on October 28, 2023.**
- **Klyuchevskaya Sopka is a stratovolcano, the highest mountain of Siberia and the highest active volcano of Eurasia. Its steep, symmetrical cone towers about 100 kilometres from the Bering Sea.**

- The volcano is part of the natural Volcanoes of Kamchatka UNESCO World Heritage Site

Domestic law vs international laws- MFN vs Income tax

- One of the foremost challenges foreign investors face in India is the uncertainty in taxation measures.
- Taxation related improbabilities arise not just due to the actions of the executive but also the judiciary.
- This makes doing business in India difficult for foreign players.
- The Supreme Court of India's recent judgment in the Assessing Officer Circle (International Taxation) New Delhi vs M/s Nestle SA case, which disposed of 11 petitions involving corporations such as Nestle (a Swiss multinational company) and Steria (a European company) deserves to be seen in this light.
- The critical question in the case was whether the most favoured nation (MFN) clause in tax treaties such as the Double Taxation Avoidance Agreements (DTAAs) that India has signed, could be given effect in India without notification for the same

under Section 90 of the Income Tax Act.

- This provision allows India to sign tax treaties with other countries to avoid an income being taxed twice
- On Most Favoured Nation status India's bilateral DTAAs with the Netherlands, France, and Switzerland all three countries are members of the Organization for Economic Cooperation and Development (OECD) require imposing a 10% withholding tax (tax on dividends paid by Indian entities of foreign companies to the residents of Netherlands, France, and Switzerland).
- These DTAAs also contain an MFN provision.
- Thus, if India extends a preferential tax treatment to any third country "which is a member of the OECD", the same treatment should be accorded to the Netherlands, France, and Switzerland under their respective DTAAs.
- The Supreme Court held that to give effect to the MFN provision in the DTAA, notification under Section 90(1) of the Income Tax Act is necessary and mandatory.

- Thus, the Court advocated the doctrine of dualism wherein international law is not enforceable domestically till it is transformed into municipal law through enabling legislation.
- While it is true that the Indian Constitution provides for such formal dualism, the Supreme Court has moved away from this principle toward the monist tradition of incorporating international law in the domestic legal regime, even if it is not explicitly incorporated, provided the international law is not inconsistent with domestic law.
- This principle has been laid down in cases such as PUCI vs India, Vishakha vs State of Rajasthan, and Puttaswamy vs Union of India.
- The premise in these cases was the ‘presumption of compatibility’ or ‘presumption of consistency’ between domestic and international law.
- This presumption can be rebutted only if a domestic law explicitly contravenes international law.
- In other words, wherever possible, domestic law should be interpreted in a manner that does not contradict

India’s obligations under international law.

- The Hindu

India and Bhutan

- The decision by India and Bhutan to focus on infrastructure and connectivity.
- A joint statement speaks of completing surveys for the Kokrajhar Gelephu rail link that connects Bhutan to Assam, and beginning discussions on another Bhutan to West Bengal rail link, while also facilitating Bhutan Bangladesh trade, with yet another rail link, and upgrading checkpoints along the India Bhutan border.
- These plans foretell a future that could well change the development story of the region, including West Bengal and the northeast, Bhutan’s south and east dzongkhags (districts), as well as Northern Bangladesh.
- Bhutan’s economy has been dependent on hydropower and tourism revenues, and has been particularly hit by the COVID19 pandemic as well as worries over global warming.

- A lack of opportunities has also led to emigration by educated youth and professionals.
- The new project proposed by the king, to build a Special Economic Zone at Bhutan's southern border with Assam, and an airport at Gelephu, are expected to drive growth and investment to the kingdom.
- In addition, Bangladesh's signing of a Preferential Trade Agreement with Bhutan in 2020 could increase Bhutanese export of local produce and build more markets for Indian and Bangladeshi producers in the subregion.
- India's "energy exchange", which is bringing more Bhutanese and Nepali hydropower suppliers online, while planning to distribute energy to Bangladesh and Sri Lanka, will drive intra regional growth and revenues.
- This would also power New Delhi's attempt at bridging the economic gap with the northeast, while drawing development partners like the World Bank and donor countries like Japan into the creation of a "sub regional hub"
- Given India's problems with Pakistan and sanctions on Myanmar for the 2021 coup blocking the path for trade and land connectivity to the East, working with other countries on India's periphery to build connectivity, markets and energy links is the most sustainable way forward.
- In the longer term, geopolitical conflicts and anti globalization trends are forcing regional groupings to be more cohesive, something South Asia has not been able to achieve as yet.
- As India worries about China's push into South Asian trade, infrastructure projects and strategic ties, including concerns over a Bhutan China boundary agreement's overhang over Doklam and India's "Chicken Neck" (Siliguri Corridor) route, these are ideas which will offer more security and prosperity for the countries involved, with particular benefits for Bhutan, India's traditionally trusted partner in the region.

[The Hindu](#)

Loss and damage fund

What is “loss and damage”?

The phrase refers to costs already being incurred from climate-fuelled weather extremes or impacts, like rising sea levels

■ Climate funding so far has focused on cutting CO2 emissions, while a third of it went towards helping communities adapt to future impacts

■ Loss and damage funding is expected to cover the cost of damage that countries cannot avoid or adapt to

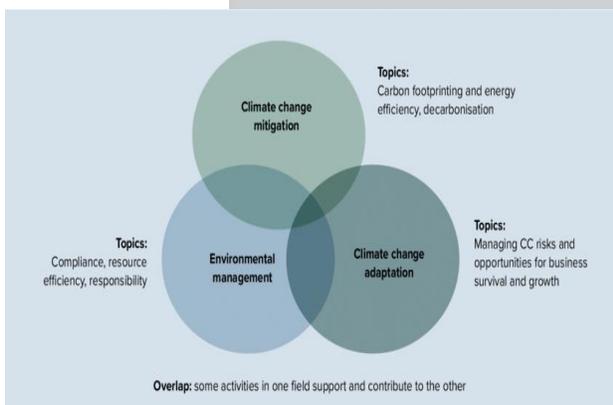
■ A report by 55 vulnerable countries estimated that their combined climate-linked losses in the last two decades totalled



\$525 billion, or 20% of their collective GDP. This could go up to \$580 billion per year by 2030

■ Vulnerable countries and campaigners argue that rich countries that caused the bulk of climate change with their historical greenhouse gas emissions should pay

Source: Reuters



Adaptation is the proactive response to climate change, the art of survival by which

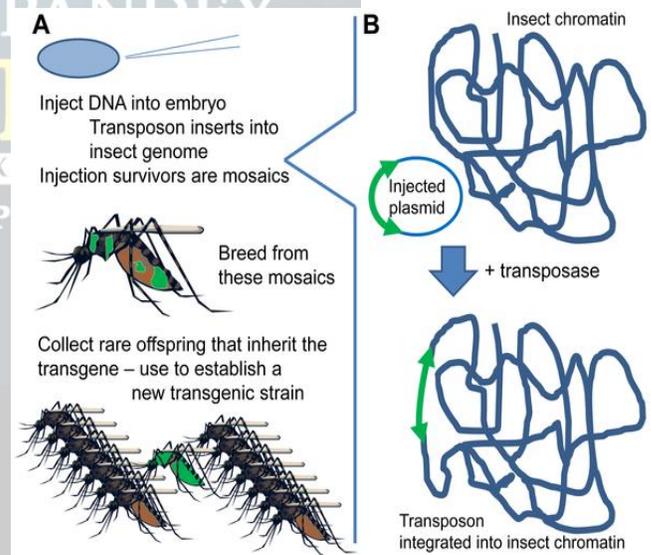
communities and countries make deliberate choices to prepare for and cope with climate related challenges.

- In contrast, L&D represents the irreversible consequences of climate change: impacts that can't be avoided or mitigated through adaptation efforts.
- They encompass the real losses that extend beyond monetary value and cut to the core of human rights and wellbeing.
- L&D includes economic losses, human casualties, and the degradation of ecosystems and cultural heritage.
- At the 19th Conference of the Parties (COP 19) to the United Nations Framework Convention on Climate Change (UNFCCC) in Warsaw, Poland, in 2013, representatives of member countries formally agreed to establish the L&D fund.
 - It was being created to provide financial and technical assistance to economically developing nations that were incurring L&D due to climate change.
- At COP 25, the Santiago Network for L&D was set up, but countries didn't commit any funds.
- Subsequently, at COP 26, the Glasgow Dialogue on finance for L&D was established to continue discussions over the next three years on the fund.
- Finally, at COP 27 in November 2022, after intense negotiations, representatives of the UNFCCC's member states agreed to set up the L&D fund and a Transitional Committee (TC) to figure out how the new funding mechanisms under the fund would operate

- The TC5 outcome highlights a profound lack of trust between affluent and emerging economies regarding their historical responsibilities, creating a substantial divide between wealthy and impoverished nations, particularly concerning climate reparations.
- The unwillingness of wealthy nations to fulfil intended commitments undermines faith in global climate negotiations and hampers the cooperative spirit necessary to address climate change.
- It represents a missed chance to take concrete steps to combat the escalating consequences of climate change on vulnerable communities and signifies a breakdown in diplomatic efforts, leading to doubts about nations' ability to collaborate effectively.
- The watering down of the L&D fund has wide reaching implications. It threatens climate justice and exacerbates the suffering of vulnerable communities in developing nations.
- These communities have contributed minimally to global emissions but today bear the brunt of climate change.
- The watering down can also increase the number of humanitarian crises, including via food shortage, people displacement, and conflict, and force communities to cope independently with a worsening climate and its consequences
- The L&D fund was conceived as a critical component of global climate action, recognizing that some of the consequences of climate change are irreversible and beyond the capacity of vulnerable nations to handle.
- So to achieve climate justice, rich countries must meet their obligations to reduce emissions and deliver finance in line with what is fair, and thus uphold the principles of equity, justice, and solidarity in the face of a changing climate.

The Hindu

GM Insects



- India's bio economy contributes 2.6% to the GDP.
- In April 2023, the Department of Biotechnology (DBT) released its 'Bio economy Report 2022' report, envisioning

Current Affairs 9th November 2023 by Saurabh Pandey

this contribution to be closer to 5% by 2030.

- This ambitious leap of \$220 billion in eight years will require aggressive investment and policy support.
- The bio economy, which the FAO defines as "knowledge-based production and the use of biological resources, processes and methods to provide goods and services in a sustainable manner in all economic sectors", becomes essential.
- According to the United Nations Food and Agriculture Organisation (FAO), the bio economy is "the production, use and conservation of biological resources, including related knowledge, science, technology, and innovation to provide information, products, processes and services to all economic sectors with the aim of moving towards a sustainable economy".
- The reduced funding is detrimental to India's national interests as well, considering the DBT is essential to any pandemic preparedness efforts.
- Further efforts are also needed to attract private funding in biotechnology research and development, a key area that industry representatives, investors, and government officials have highlighted multiple times.
- Funding aside, biotechnology policies also need to be aligned to the economic goals set out in the Bio economy report.
- In April 2023, the Department of Biotechnology (DBT) issued the 'Guidelines for Genetically Engineered (GE) Insects'. They provide procedural roadmaps for

those interested in creating GE insects. They have three issues, however

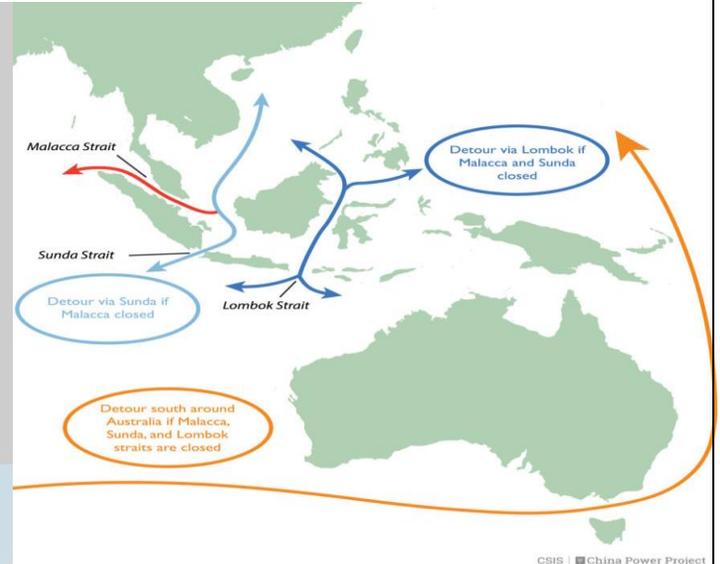
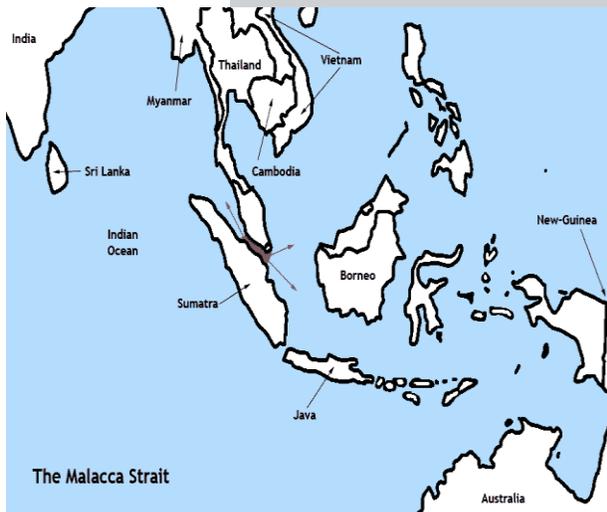
- First: Uncertainty of purpose
- The guidelines note that GE insects are becoming globally available and are intended to help Indian researchers navigate regulatory requirements.
- However, the guidelines don't specify the purposes for which GE insects may be approved in India or how the DBT, as a promoter of biotechnology, envisions their use
- Engineering honey bees to make better quality and/or quantities of honey will help reduce imports and also maybe facilitate exports.
- Similarly, GE silkworms may be used to produce finer and/or cheaper silk, affecting prices and boosting sales.
- But the guidelines and policy are both quiet on how GE insects can benefit the bio economy and for which purposes the government might approve the insects' release.
- Second: Uncertainty for researchers
- The guidelines are applicable only to research and not to confined trials or deployment.
- That is, once the insects are 'made' and tested in the laboratory, researchers can conduct trials with them on the approval of the Genetic Engineering Appraisal Committee (GEAC), of the Union Environment Ministry.

Current Affairs 9th November 2023 by Saurabh Pandey

- Government authorities will also have to closely follow the deployment of these insects.
- Once deployed, GE insects can't be recalled, and unlike genetically modified foods, they are not amenable to individual consumer choice.
- Third: Uncertainty of ambit
- The guidelines offer standard operating procedures for GE mosquitoes, crop pests, and beneficial insects – but what 'beneficial' means, in the context of GE insects, is not clear.
- The lack of clarity about the insects and the modifications to them that are deemed 'beneficial' will impede funders and scientists from investing in this research.
- In a country with low public as well as private funding, the absence of a precise stance to identify and promote research priorities hampers progress.

The Hindu

Malacca strait /dilemma



CSIS | China Power Project

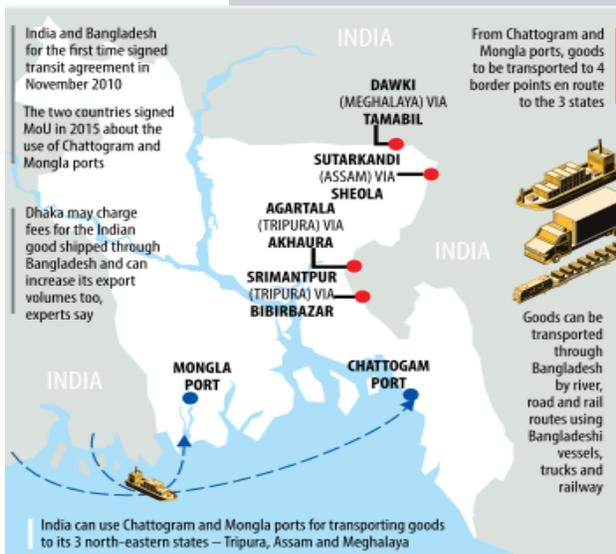
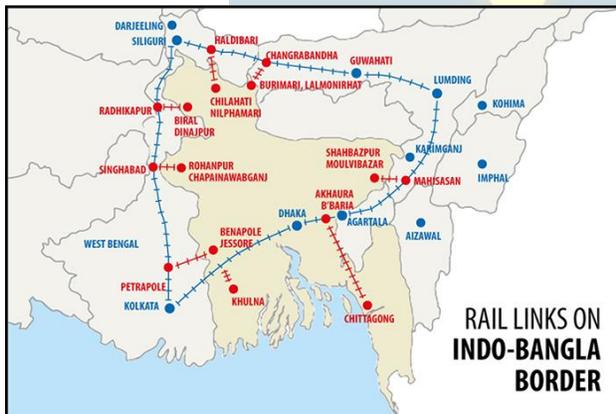
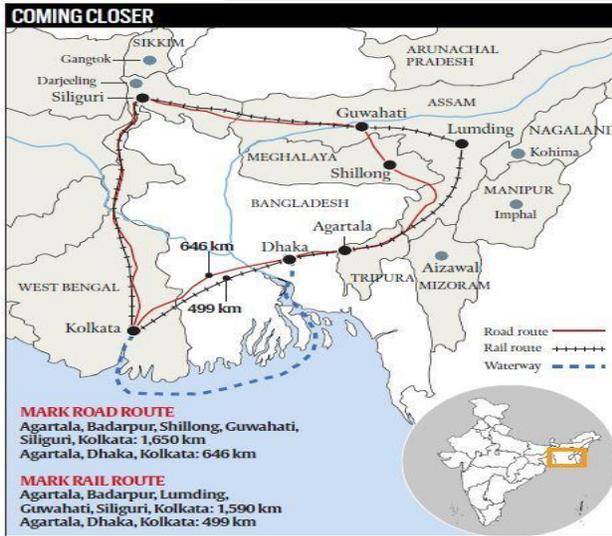
- With China frequently intimidating Taiwan over the past year through deployment of its air force and navy in the surrounding areas, there is the oftposed question whether India would take action in the Strait of Malacca or the Andaman Sea in the event of a conflict between the United States and China over Taiwan.
- Any speculative action in the Strait of Malacca or the Andaman Sea would involve either a naval blockade against commercial shipping or China's key trade and energy sea lines of communication or military action against Chinese naval vessels.
- India's options, the constraints
- There are multiple constraints in regard to India's options in the Strait of Malacca.
- First, "distant blockades" away from a belligerent nation's geography can be challenged under international law.
- Second, the trade that passes through the Strait of Malacca is not just China's economic and energy lifeline. An overwhelming volume of the trade of

Japan, South Korea and even India itself passes through the same Strait.

- Third, the channel of the Strait of Malacca is long, nearly 500 miles, and involves the sovereignty of other states such as Indonesia, Malaysia, Thailand and Singapore who would all be affected adversely by a naval blockade. The affected countries are unlikely to support a naval blockade.
- Fourth, commercial shipping is extremely complex to identify in terms of the sovereignty of the vessel, flag, registration, insurance and ownership of cargo
- Fifth, apart from the fact that it is difficult to interdict China's trade and energy supplies, the additional reality is that even if the Strait of Malacca were "choked", shipping can take a detour either through the Sunda or the Lombok Straits to reach China.
- In any case, very large crude carriers carrying crude or natural gas to China do not use the Strait of Malacca which is shallower. They use the Sunda Strait.
- Sixth, China also has a huge onshore and floating Strategic Petroleum Reserves (SPR) which can help it tide over disruptions, especially with growing overland energy supplies from Russia and Central Asia.

The Hindu

India Bangladesh Rail link



- In November, Prime Minister Narendra Modi and Bangladeshi counter part Sheikh Hasina inaugurated the Agartala Akhaura rail link, connecting India's northeast with Bangladesh.

- The rail link consists of a 12.24 km dual gauge rail line, reducing travel time between Agartala and Kolkata from 31 hours to 10 hours.

- The project aims to enhance connectivity, boost trade, and strengthen ties between the two countries.

- It supports India's 'Act East Policy' and 'Neighborhood First Policy' and promotes small scale industries and tourism in the region.

- The project cost was around ₹862.58 crore on the Indian side, with funding from various sources.

- The idea of the rail link dates back to 1974 and gained momentum in 2010 when the memorandum of understanding was signed.

- As of now, five broad gauge connectivity routes are operational entailing links with Bangladesh all of them from West Bengal.

- These include Gede railway station (West Bengal) to Darsana (Bangladesh), Benapole to Petrapole (West Bengal), Singhabad (West

Bengal) to Rohanpur, Radhikapur (West Bengal) to Birol and Haldibari (West Bengal) to Chilahati.

- Work is underway to connect Mahihasan railway station in Assam to Shahbazpur in Bangladesh.
- The Hindu

Directives for deep fakes

- The Indian government instructed “social media intermediaries” to remove morphed videos or deepfake from their platforms within 24 hours of a complaint being filed, in accordance with a requirement outlined in the IT Rules 2021.

What are deepfakes?

Deepfakes have been around since 2017 and refer to videos, audios or images created using a form of artificial intelligence called deep learning

- Deepfake tech, with the help of AI tools, allows semi and unskilled individuals to create fake content with morphed audiovisual clips and images

How does deepfake technology work?

- The technology involves modifying or creating images and videos using a machine learning technique called

generative adversarial network (GAN).

- The Aldriven software detects and learns the subjects’ movements and facial expressions from the source material and then duplicates these in another video or image.

- To ensure that the deepfake created is as close to real as possible, creators use a large database of source images.

- This is why more deepfake videos are created of public figures, celebrities and politicians.

- The dataset is then used by one software to create a fake video, while a second software is used to detect signs of forgery in it.

- Through the collaborative work of the two software, the fake video is rendered until the second software package can no longer detect the forgery.

- This is known as “unsupervised learning”, when machine language models teach themselves.

- The method makes it difficult for other software to identify deepfakes

What do laws in India say about deepfakes?

- India's IT Rules, 2021 require that all content reported to be fake or produced using deep fake be taken down by intermediary platforms within 36 hours.
- The Indian IT ministry has also issued notices to social media platforms stating that impersonating online was illegal under Section 66D of the Information Technology Act of 2000.
- The IT Rules, 2021, also prohibit hosting any content that impersonates another person and requires social media firms to take down artificially morphed images when alerted.
- The Hindu



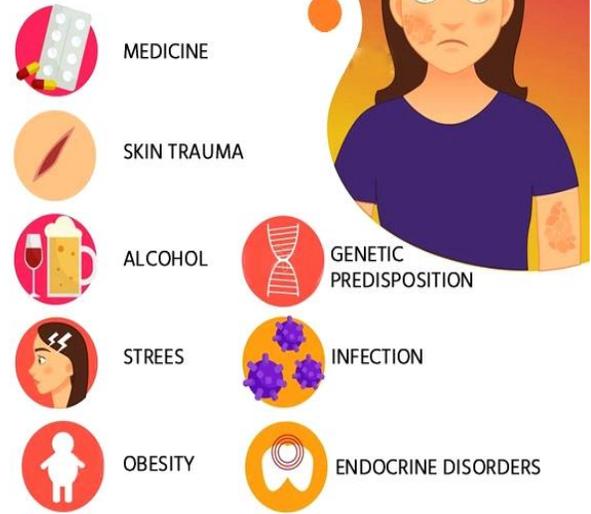
- The liver is a store house or a factory for various products and one of them is glucose. When there is excess glucose in the body, it gets deposited in the liver as glycogen.
- Moreover, the excess fat in the blood circulation (triglycerides and free fatty acids) also gets deposited in the liver and this is called 'Fatty Liver'.

Liver and diabetes

- According to a recent ICMRINDIAB Study published by us in the Lancet Diabetes Endocrinology, the number of people with diabetes in India now stands at 101 million.
- In addition, there are 136 million people with prediabetes. It is well known that uncontrolled diabetes can lead to complications affecting the eye,
- When there is excess fat in the liver, this leads to a condition called 'Hepatic Insulin Resistance'.
- What this means is that the body's insulin cannot function properly and that the action of insulin in the liver is considerably reduced
- This leads to increased release of glucose from the liver, which is referred to as 'Hepatic Glucose Production
- The relationship between fatty liver and type 2 diabetes is bidirectional.

- Thus, fatty liver can lead to type 2 diabetes and type 2 diabetes can promote fatty liver
- over 80% of such individuals will have fatty liver. While fatty liver by itself is not dangerous, very often it leads to inflammation of the liver, a condition known as
- Nonalcoholic ‘Steatohepatitis’ or NASH.
- Up to this stage it is probably reversible.
- However, at the next stage, it can progress to cirrhosis of the liver which is irreversible and can be fatal

PSORIASIS CAUSES

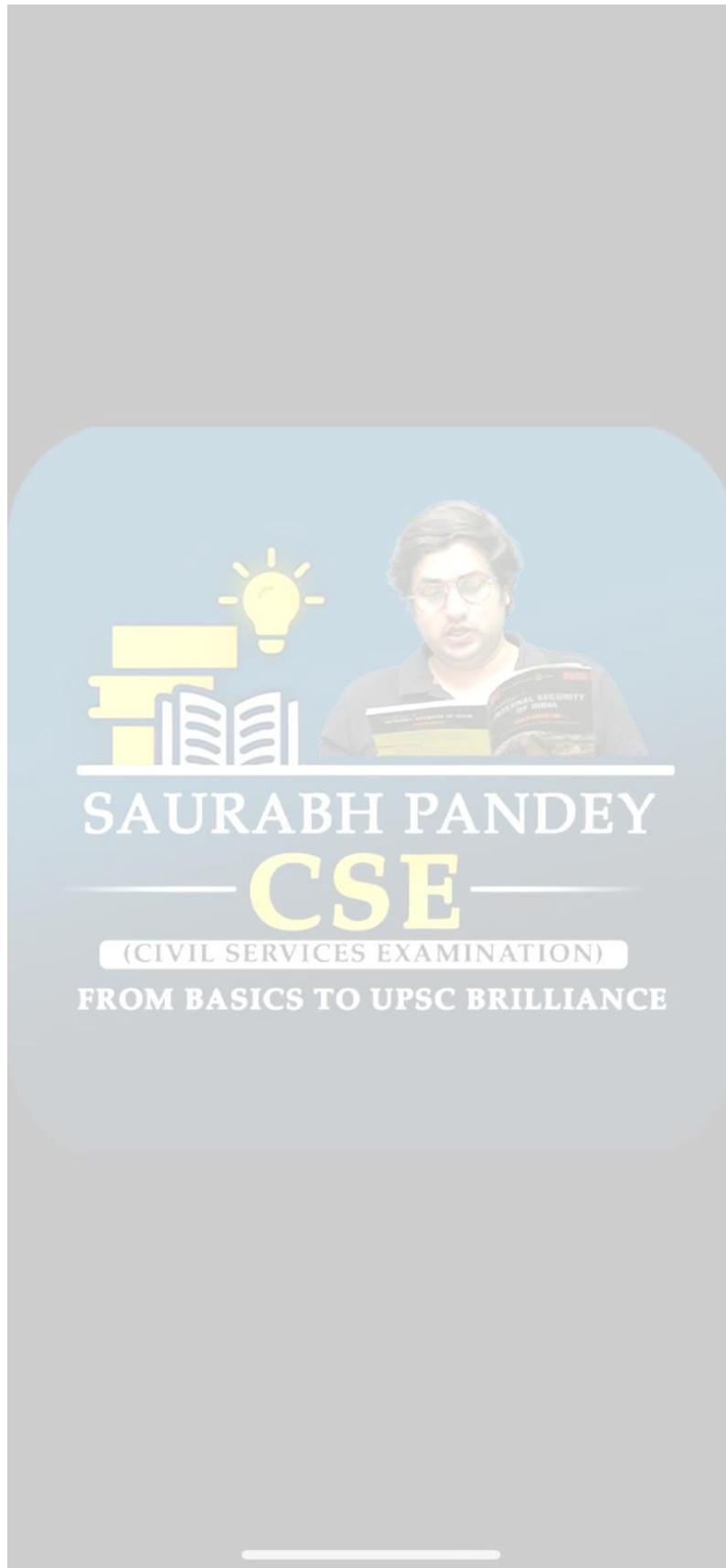


Common psoriasis triggers factors are as follows -

- Today nonalcoholic fatty liver (NAFLD) is recognized as a complication of diabetes and also as a cause of diabetes.
- Skin injury - It refers to the Koebner [KEB-ner] phenomenon, which states that cuts, scratches, vaccinations, sunburns, and bug bites can bring about psoriasis.
- The Hindu
- Streptococcal infections
- Cold weather and dry conditions
- Stress factors
- Lot of alcohol consumption
- Medications including high blood pressure medications and antimalarial drugs and lithium.
- Withdrawal systems of oral or systemic corticosteroids

Psoriasis

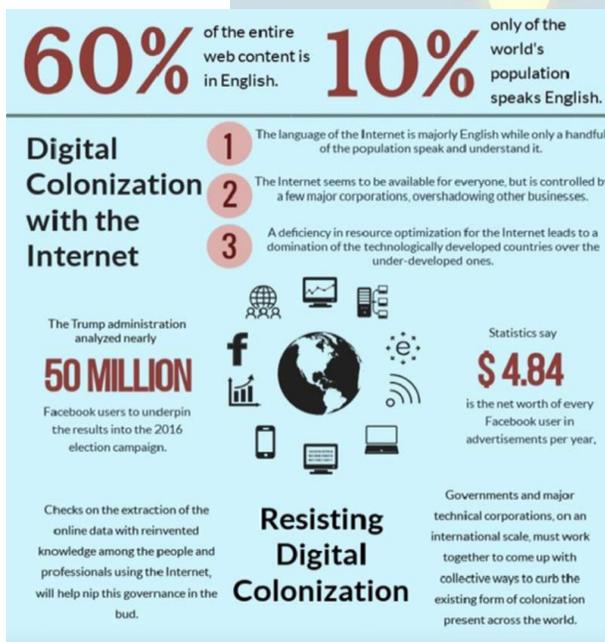
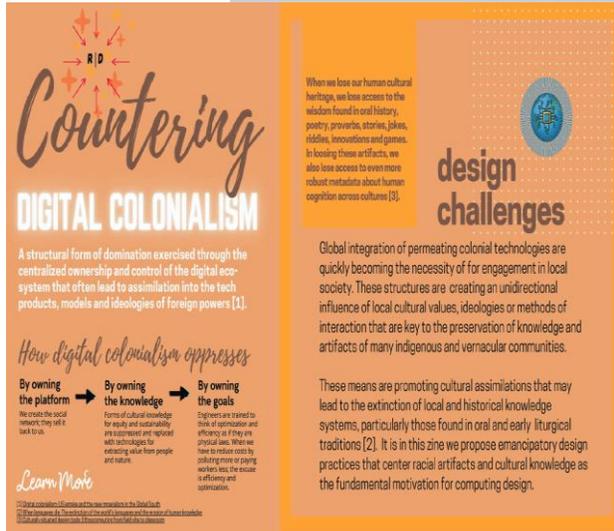
- Psoriasis is an autoimmune disease that manifests as rashes usually on the face, elbows, knees and later spreads across the skin.
- There are many kinds of psoriasis and among them the most common is psoriasis vulgaris



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Digital colonialism - US vs China



When Thomas L. Friedman triumphantly declared in 2005 that the world was flat, with the opportunities having been equalised globally, it was considerably premised on new digital developments.

This new geopolitical and geoeconomics ideology was led by the United States, home to most of the world's Big Tech.

It first sought to redefine development through the field of ICT4D (Information and Communication Technologies for Development), and then herald a new dawn for democracy globally.

Behind it all of course was a new plan to employ the global reach of digital tentacles, and later data enabled controls, for economic expansionism.

Some called it digital colonisation, due to its extractive nature

It devised a set of digital trade proposals seeking binding commitments from countries to essentially prevent any effective future regulation of Big Tech.

- For some years now, such digital trade proposals have been the hottest agenda at various plurilateral trade negotiations and at the World Trade Organization (WTO)
- U.S. needs domestic policy space to regulate Big Tech and AI, for which data and source code could be important leverage points.

Current Affairs 11th November 2023 by Saurabh Pandey

- Having employed this as a major reason for opposing global digital trade agreements, developing countries can feel vindicated.
- From flat to a split digital world But a major (perhaps the main, unstated) reason for the U.S. declaration is the China factor.
- The flat world was a happy place for the U.S. when it meant its singular digital hegemony over it.
- But with China fast on the heels of the U.S. towards digital super power hood, the situation has become more complex.
- The digital trade negotiations at the WTO are open to all countries, and China grasped the opportunity to participate in them
- A free digital trade agreement with free data flows, without the need to share the source code of digital products, and allowing remote computing facilities could similarly be employed globally by China to now outsmart the U.S. digitally.
- It could help bring China on an equal footing with the U.S. in accessing global digital markets, and in driving and controlling the world's digitalization, in all sectors.
- U.S. may still push for data flow, source code, and facilities location, related provisions in regional digital trade deals, in some form or the other.
- Such deals will be led by the U.S., and, significantly, be limited to its allies.
- The Indo Pacific Economic Framework for Prosperity (IPEF) and the Americas Partnership for Economic Prosperity (APEP) are two such initiatives by the U.S.
- It is pursuing similar interests through bilateral trade and technology councils, for example with the European Union (EU) and India.

What developing countries to do?

- Should make the most of the new global consensus on the need for strong digital regulations to rein in Big Tech and manage AI, including through policies related to data, source code, and location of computing facilities.
- The U.S.'s statement is like abnegation by the king, with the EU already employing data and source code related laws in its domestic regulation which are beginning to look quite contrary to its positions at global digital trade forums

developing countries must stoutly resist a new trap of a digital Cold War, whereby they get bound into digital dependencies either with the U.S. or China.

- A new digital regulation paradigm should combine with strong digital industrial policies to bolster domestic digital industry. Countries should aim at creating globally open standards, open protocols, and open digital public infrastructures
- Revamping new criminal justice system. The Government has introduced three Bills to replace the core laws, i.e., the Indian Penal Code (IPC), 1860, the Code of Criminal Procedure (CrPC), 1973, and the Indian Evidence Act (IEA), 1872, which form the basis of the criminal justice system.
- These Bills are being examined by the Parliamentary Standing Committee on Home Affairs. (The Bharatiya Nyaya Sanhita Bill will replace the IPC; the Bharatiya Nagarik Suraksha Sanhita Bill will be in place of the CrPC, and the Bharatiya Sakshya Bill will replace the IEA.)
- As these Bills replace the entire Acts and are not merely Amendment Bills to fix some gaps they provide an opportunity for an overhaul of the

laws underlying the criminal justice system.

The Hindu

Modernizing the law

- There are seven issues related to modernising jurisprudence.
- First, whether these Bills exclude civil law. Usually, criminal law deals with issues that are seen as an offence against the broader society or state while civil law deals with loss to a person.
- However, the CrPC includes provisions for maintenance of wife and children after divorce
- Second, whether these Bills create a reformatory system rather than a punitive system. There is a move towards this by making community service as a form of punishment.
- However, several minor offences (such as keeping an unauthorised lottery office, which carries a maximum penalty of six months imprisonment) are not compoundable, which means they will go through the process of trial and conviction.
- Third, whether maintenance of public order and the process of criminal prosecution should be in the same law.

- Fourth, whether various directions of the Supreme Court of India have been codified in these proposed laws.
- The Bill codifies the procedure for mercy petitions. However, there is no codification of various directions related to arrests and bail.
- Fifth, whether the Bills try to ensure consistency of implementation
- Sixth, whether the age provisions have been updated for modern norms.
- Seventh, whether gender related offences have been updated.

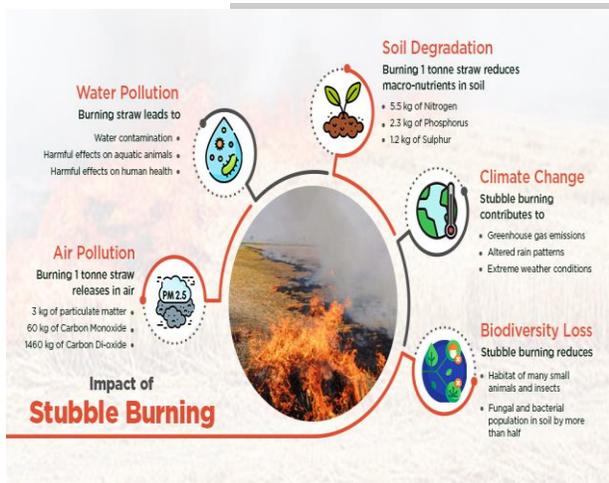
Overlap with special laws

- The IPC was enacted in 1860 as the principal law specifying offences and penalties. Since then, several laws have been enacted to deal with specific offences.
- However, the IPC and the Bill to replace it continue to specify some of these offences and the applicable penalties.
- This leads to duplication as well as inconsistency across these laws
- The Bill (like the IPC) overlaps with several other Acts such as those related to food adulteration, sale of adulterated drugs, bonded labour, and rash driving.
- Abortion continues to be an offence though it is permitted under certain conditions under the Medical Termination of Pregnancy Act, 1971.
- The Bill replacing CrPC retains the provision requiring maintenance of a parent though a special Act was passed in 2007 regarding this.
- The three laws had a number of illustrations from daily life to clarify their provisions. Some of these illustrations have become obsolete but have still been retained.
- These include people riding chariots, firing cannons and being carried on palanquins. It may be useful to update these illustrations to events from modern life.

The Hindu

Stubble burning





BURNING ISSUE



PUSA BIO-DECOMPOSER

> Developed by Indian Agricultural Research Institute (IARI) to decompose stubble into manure; field validation started in 2019; being used in Delhi since 2020



> The product, a set of four capsules, mixed in 10 or 25 liters of water to prepare solution

> 10 litres of solution takes 5 days, 25 litres takes 10-12 days to form concentrated solution

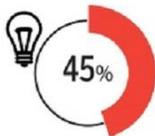
> The solution is mixed with 200 litres of water to prepare spray for one acre of stubble (approx 2.5 tonnes)

> Stubble is then mulched or mixed with soil

> Field lightly irrigated
 > Scientists claim it takes 15 to 25 days for decomposing, later field is prepared for winter crops
 > It increases soil fertility

EFFICIENT USE OF ENERGY

An IIT-Delhi team is providing technical support to a power plant in Fazilka, Punjab, which uses paddy straw to generate energy



of energy available in biomass is harnessed as thermal energy by this plant; most other processes harness only 15-20% energy

If not burnt, paddy straw in the northern Indian states can be utilised to yield **2.2 million tonnes** of oil equivalent to **25,365 gigaWatt** per year

STEP BY STEP

- > Size to paddy straw reduced by mechanical pulverization
- > 10 parts straw is then added with 90 parts water
- > The material is kept in the plant for 30 days to produce biogas
- > **Removal of hydrogen sulfide:** In order to use biogas, in electrical generator it necessary to lower hydrogen sulfide concentration to avoid damage of engine
- > Gas is supplied to the engine for power generation

The Hindu

SC on Governor

- The Supreme Court laid down that a Governor cannot sit on key Bills passed by a State Legislature after casting doubts on the validity of the Assembly session in which the proposed laws were passed with overwhelming majority by the elected representatives of the people

SURGE IN CASES

> According to Punjab Remote Sensing Centre, a total of 52,942 incidents of paddy stubble burning have been reported from September 23 to November 26 up from 50,590 in 2018
 > The state government had registered over 1,700 FIRs against farmers and imposed fines for burning stubble, impounded combine harvesters and made red entries in land records



SUGGESTIONS FROM FARM ACTIVISTS

- > Provide compensation for crop residue management (CRM) to those having up to 10 acres of land
- > Give machinery for management as proposed by the National Green Tribunal
- > Drop the practice of imposing fines
- > Prepare ground for pulling farmers out of paddy by setting up strong marketing network with assurance purchase of crops
- > Stop seeing farmers as villains and stop making red entries into land records of those burning stubble

Court's prescription

SC observed that Governor is "playing with fire" by holding back crucial Bills

- Governor cannot sit on Bills claiming the House passed them in an invalid session convened after adjourning sine die without prorogation
- Speaker is within jurisdiction in adjourning the House sine die
- Any attempt to cast doubt on the session of the Legislature is fraught with grave perils to democracy

The Governor, as an appointee of the President, is a titular head of the State
SUPREME COURT BENCH



- The court, in its short order, highlighted that Article 200 of the

Constitution mandated the Governor to act “as soon as possible” when Bills, passed by the State Legislature, were presented to him for declaration of assent.

- Chief Justice Chandrachud orally observed that the Governor could either give his assent, withhold assent in which case, if the Bills were not Money Bills, return the Bills to the House suggesting modifications/amendments or refer the proposed laws to the President
- The State said the Governor had positioned himself as a political rival to the legitimately elected government. The Governor’s inactions had caused an impasse between the constitutional head of the State and the elected government of the State. The Governor was toying away with the citizen’s mandate, the petition said.

- Union Home Minister Amit Shah on Friday said 168 villages along the China border that do not have any connectivity yet would be connected by road and other forms of communication in the next one year.
- He said the country’s security would suffer if border villages were emptied out due to migration and the vibrant village programme (VVP) would ensure that all facilities and infrastructure reached there.
- He said the country could not be safe without development of the border areas.
- Self Sustainable Energy Building (SSEB) was very special because built at an altitude of 17,000 feet in the cold desert this building would become a symbol of self reliant India.

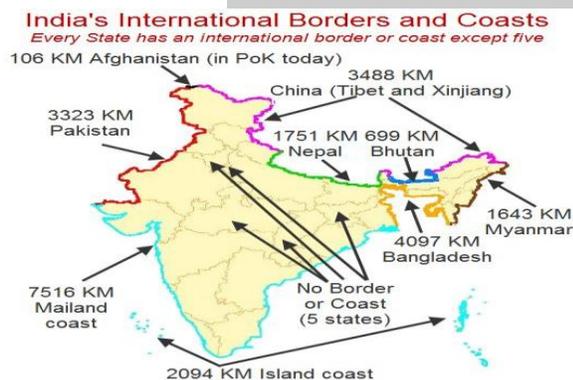
The Hindu

Early warning system for earthquake

- The Android Earthquake Early Warning system supplements the government’s efforts on earthquake alerts and aims to provide people with advance notice that can help them stay safe.
- Earthquake alerts did go out immediately in many areas around the India Nepal border, where the shaking was strongest, pointing to

The Hindu

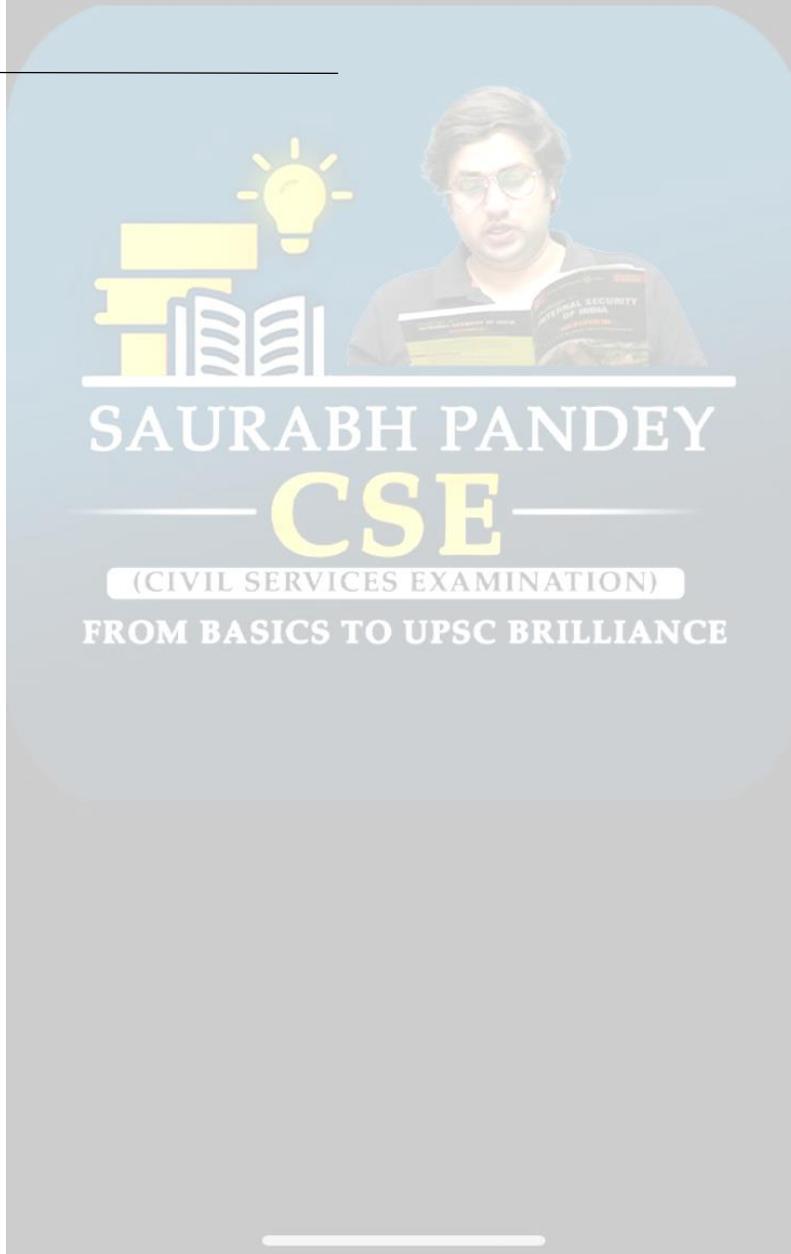
Border management



screenshots posted online by social media users in this region.

- The company says it warns users only if the shaking in their area can expect to cross a value of 3.5 on the Modified Mercalli Intensity (MMI) Scale, a measurement of shaking during earthquakes that serves as an alternative to the Richter scale.

The Hindu



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Amphotericin B (AmB)

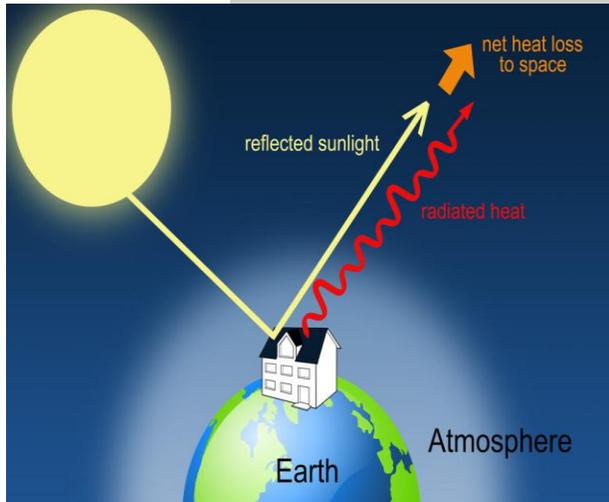
- A structurally modified antifungal agent has shown reduced toxicity in mice and in human kidney cells while retaining its antimicrobial properties, according to a paper published in Nature.
- Amphotericin B (AmB) is an antifungal agent produced by bacteria and has been used as a last line of defense against severe fungal infections for many decades.
- It achieves this by forming sponge like aggregates that bind to a molecule known as ergosterol (which is found in bacterial and fungal cells and performs a similar function to mammalian cholesterol).
- This binding results in the extraction of ergosterol from the membrane, which leads to fungal cell death. Despite being effective, AmB is highly toxic in humans particularly in renal cells.

The Hindu

Passive radiative cooling

- Two recent studies provide evidence that passive radiative cooling materials work.
- Passive radiative cooling approaches that use glass and ceramic based materials are more versatile, making them more attractive for a wide range of outdoor passive cooling applications.
- The microporous glass coating enables a temperature drop of about 3.54 degrees Celsius during daytime and night time, respectively.
- The ceramic composite can produce highly efficient light scattering and high thermal emission.
- Passive daytime radiative cooling (PDR) is a zero-energy building cooling method proposed as a solution to reduce air conditioning, lower urban heat island effect, cool human body temperatures in extreme heat, move toward carbon neutrality and control global warming by enhancing terrestrial heat flow to outer

space through the installation of thermally-emissive surfaces on Earth that require zero energy consumption or pollution

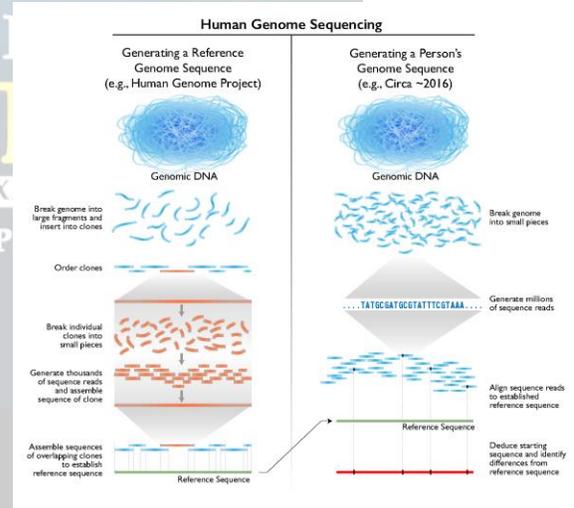
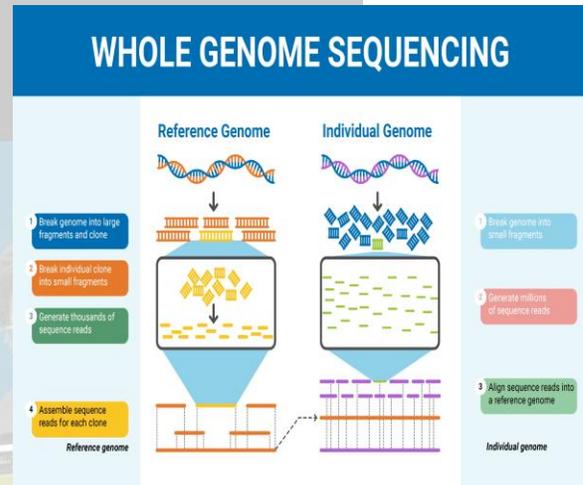


The Hindu

Genome sequencing

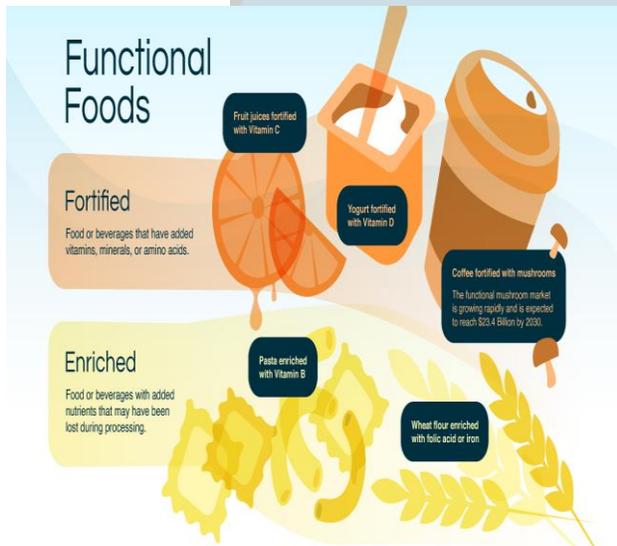
- Researchers in Nepal are carrying out environmental surveys and genomic sequencing to determine the cause of an eye infection that can cause children to lose their vision within days.
- Symptoms begin with a painless reddening and loss of pressure in one eye.
- Cases of seasonal hyper acute pan uveitis seem to spike every two years, baffling scientists.

- Now researchers are racing to examine a possible link with white moths of the genus *Gazalina*, which swarm through Nepal at the end of the monsoon season.



The Hindu

Functional food



- The growing body of clinical evidence suggests that almond, which can be bought in any dry fruits shop, consumption is associated with several health benefits.
- Other dry fruits that also offer health benefits are cashew nuts, raisins, walnuts, dates, apricots and pistachio.

- Besides dry fruits, 'wet fruits' such as bananas, grapes, guavas, oranges and mangoes offer health benefits, as Charaka pointed out.

- Such healthy foods are also called 'functional foods', since they offer health benefits beyond their nutritional value.

- Some examples are oats, and millets like bajra, ragi, jowar, and soya proteins, besides the fruits.

- Functional foods are defined broadly as foods that provide more than simple nutrition; they supply additional physiological benefit to the consumer

- Functional foods have ingredients that offer health benefits which extend beyond their nutritional value.

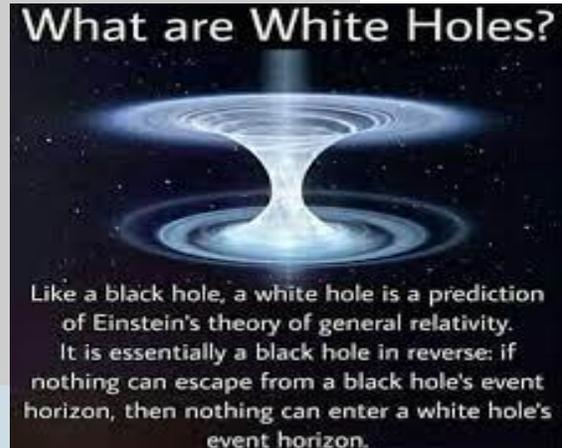
- Some types contain supplements or other additional ingredients designed to improve health.

The Hindu

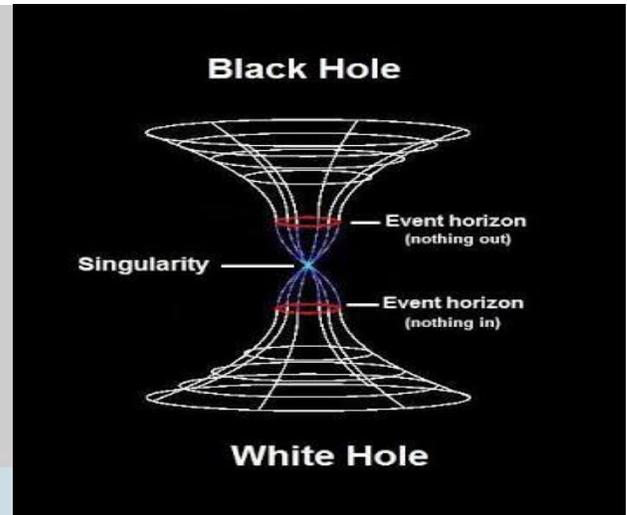
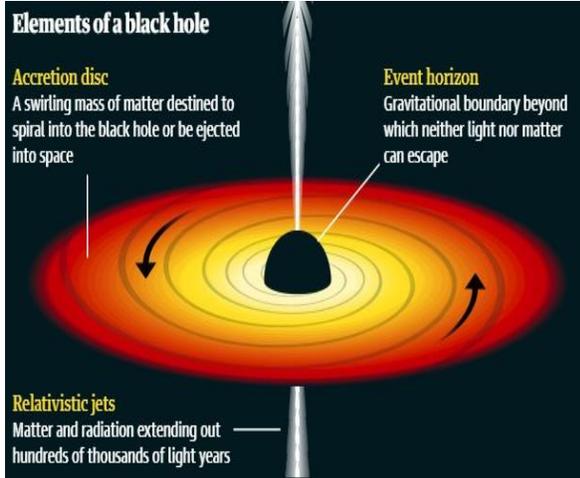
Cytoplasmic lattices

- Cytoplasmic lattices seem to be storage sites for many proteins that are essential for the development of the early embryo.
- They enrich maternally provided proteins to prevent their premature degradation and cellular activity.
- The discovery could explain why people whose eggs lack the fibres entirely are infertile
- Cytoplasmic lattices are important regulators of oocyte maturation.
- An oocyte or ovocyte is a female gametocyte or germ cell involved in reproduction. In other words, it is an immature ovum, or egg cell.
- They store components of the protein synthesis machinery including ribosomes and, among others, they are involved in the regulation of microtubule dynamics in both mouse and human

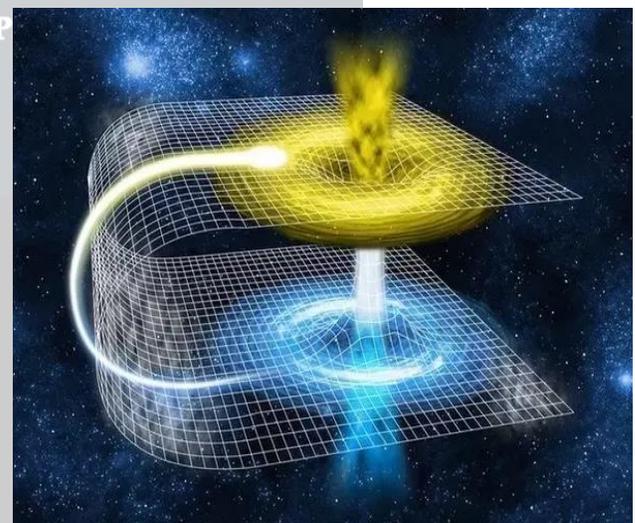
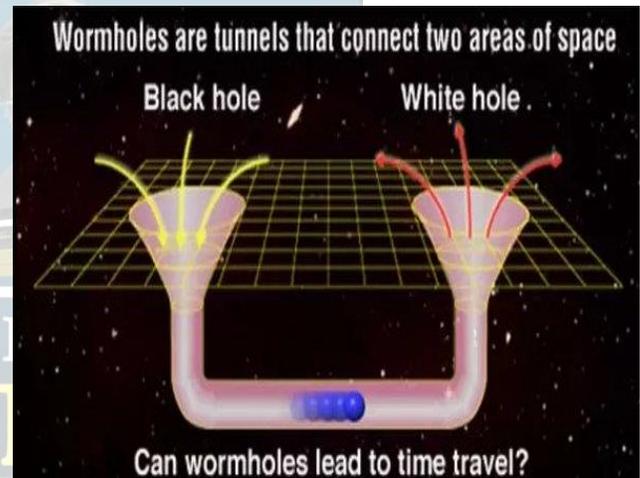
White Hole VS Black hole



- A white hole is a time-reversed black hole a region of space-time where matter spontaneously appears and explodes outwards, rather than implodes and disappears as with a black hole.
- White holes are essentially the opposite of black holes, in that they spit out light and matter, rather than trapping it.
- So far, white holes they are purely hypothetical objects, but astronomers are contemplating how they could form in reality.



- A black hole forms when a massive star at the end of its life shrinks catastrophically under its own gravity down to an infinitesimally small point, or singularity.
- All that is left behind from the stellar collapse is a grossly warped region of space.
- One possibility is that it explodes into another universe as a white hole
- For matter to pass between universes, the black hole and the white hole must be connected by a wormhole a tunnel through space-time.



Amendment in forest conservation act

- The Forest Conservation Amendment Act of 2023 has received limited attention and little discussion about its impact on forests and its inhabitants.

What is the new amendment?

- At first glance, the amendment primarily aims to tackle the critical issues of climate change and deforestation adverse effects, focusing on effective management and afforestation.
- The law further aims to determine how forests can be utilised for economic gain, and the manner in which it seeks to achieve this goal is outlined in the legislation.
- The primary method used to achieve this objective involves removing forests from the law's jurisdiction,

thereby facilitating various forms of economic exploitation.

- As per the amendment, the forest law will now apply exclusively to areas categorised under the 1927 Forest Act and those designated as such on or after October 25, 1980.
- The Act will not be applicable to forests that were converted for non-forest use on or after December 12, 1996 and land which falls under 100 kilometres from the China and Pakistan border where the central government can build linear projects.
- To establish security infrastructure and facilities for surveillance, the central government is authorized to construct security measures in areas up to ten hectares. This provision also applies to areas (up to five hectares) which are designated as vulnerable.

- Within these regions, the government, with the necessary approvals, can implement security protocols as described above.
- Initiatives like ecotourism, safari, environmental entertainment, and more may be implemented in these areas.

Hard line

The UAPA Bill, 2019, amends the Unlawful Activities (Prevention) Act, 1967. Some highlights:

TERRORISM: Under the Act, the central government may designate an organisation as a terrorist organisation if it: (i) commits or participates in acts of terrorism, (ii) prepares for terrorism, (iii) promotes terrorism, or (iv) is involved in terrorism. The Bill additionally empowers the government to designate individuals as terrorists on the same grounds

SEIZURE OF PROPERTY: Under the Act, an investigating officer must obtain prior approval of the DGP to seize properties that may be connected with terrorism. If the investigation is conducted by an officer of the National Investigation Agency (NIA), the approval of the Director General, NIA is mandatory

INVESTIGATION: Under the Act, investigation of cases may be conducted by officers of the rank of DSP or ACP or above. Officers of the NIA, of the rank of Inspector or above, can also investigate cases



SOURCE: PRS LEGISLATIVE RESEARCH

- The Hindu

The Hindu

Combined maritime forces (CMF)

- China and Pakistan are conducting the third edition of the Sea Guardian-3 bilateral naval exercise in the northern Arabian Sea with Chinese media reporting that the two sides will also hold their maiden joint maritime patrol
- The exercise comes just a day after the 2+2 Ministerial dialogue between India and the U.S. where maritime security in the Indo Pacific was in focus and New Delhi announced its decision to become a full member of

UAPA

#UPSC #CSE

What is UAPA?

The Unlawful Activities Prevention Act, 1967 is a Parliamentary law that gives powers to the central government to deal with activities directed against the integrity and sovereignty of India.

Provisions

- UAPA is applicable to both Indians and well as foreigners. It can be applied to offences committed either in India or outside.
- The law provides for death penalty and life imprisonment as the highest form of sentences.
- A maximum time of 180 days is given to the investigating agency to file report, which can also be extended.

New Amendments (2019)

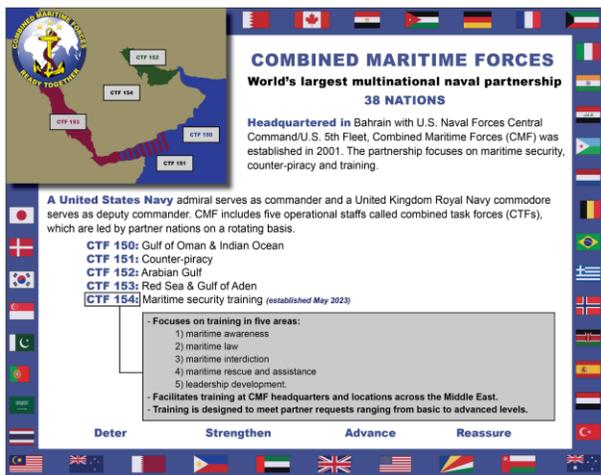
- NIA officers of the rank of Inspector or above can investigate a case in addition to DSP or ACP ranked officer in a state.
- The law empowers the government to designate individuals as terrorists.
- The approval of Director General of Police is required to attach properties connected with terrorism.

Concerns

- It gives absolute and sweeping powers to the central government to arrest individuals indulging in an activity it considers as unlawful.
- The courts are bound to give stringent punishment under the UAPA even if offence is not serious.

the Bahrain based U.S. led multilateral grouping Combined Maritime Forces (CMF), of which Pakistan is also a member.

- The exercise also comes days after Russia and Myanmar held their first naval exercise in the Andaman Sea



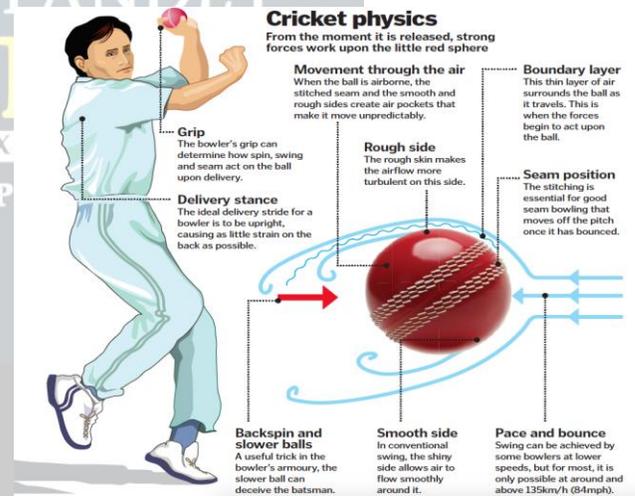
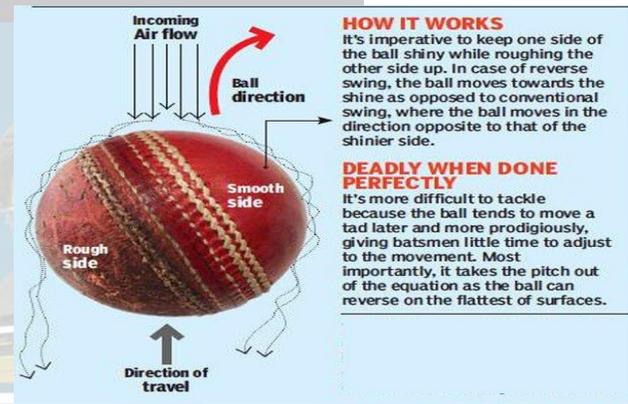
The Hindu

Science of swing

Exploring the science behind the swing bowling. Swing bowling consists of the ability to change the direction of the ball while in flight towards the batsman. In other words, swing bowlers can alter the direction of the ball mid-

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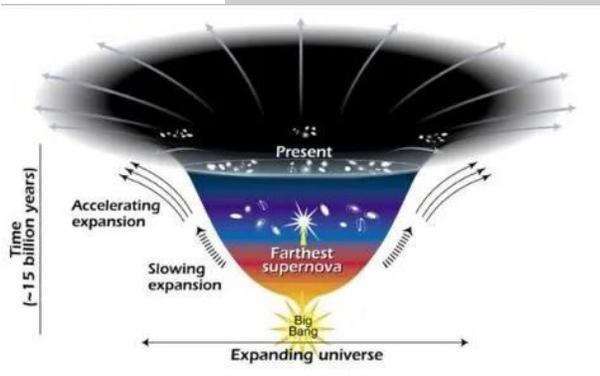
air even before the ball touches the ground. If the ball changes direction after the fall, it's called a seam, but let's leave the science of seam for another day and focus on the swing for now.



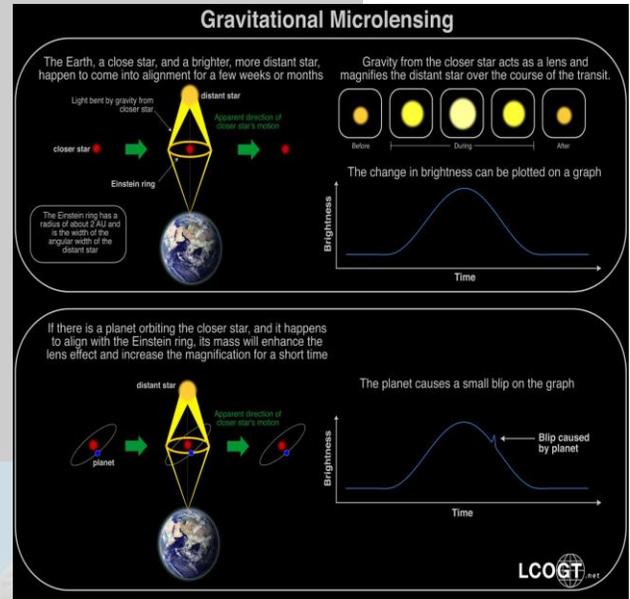
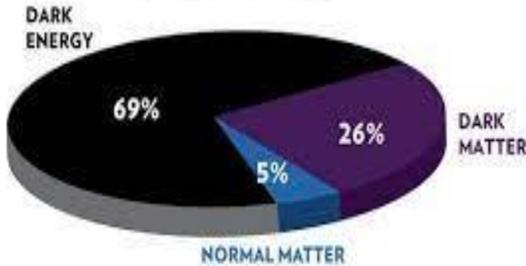
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Dark energy and microlensing

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ENERGY DISTRIBUTION OF THE UNIVERSE



The Hindu

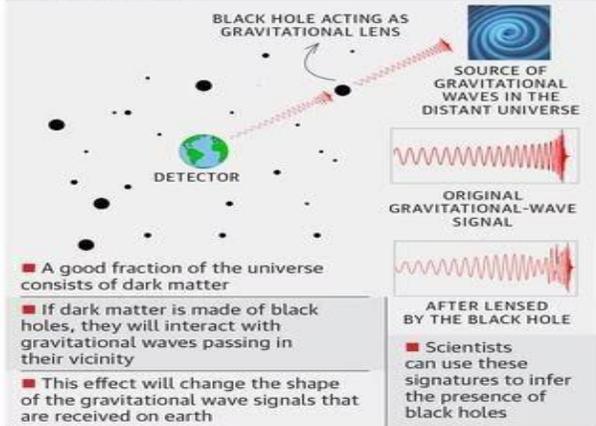
Representation in parliament

SAURABH PANDEY

- An Indian Member of Parliament (MP) is said to represent 2.5 million citizens, on average.

How gravitational microlensing works

When a gravitational wave approaching the earth is interrupted by the presence of a black hole, the signal gets modified as shown.



UPSC BRILLIANCE

- In comparison, a U.S. House of Representatives member typically represents approximately 7,00,000 citizens.
- Delimitation could be a potential solution to restore proportionality it has been utilized in the past.

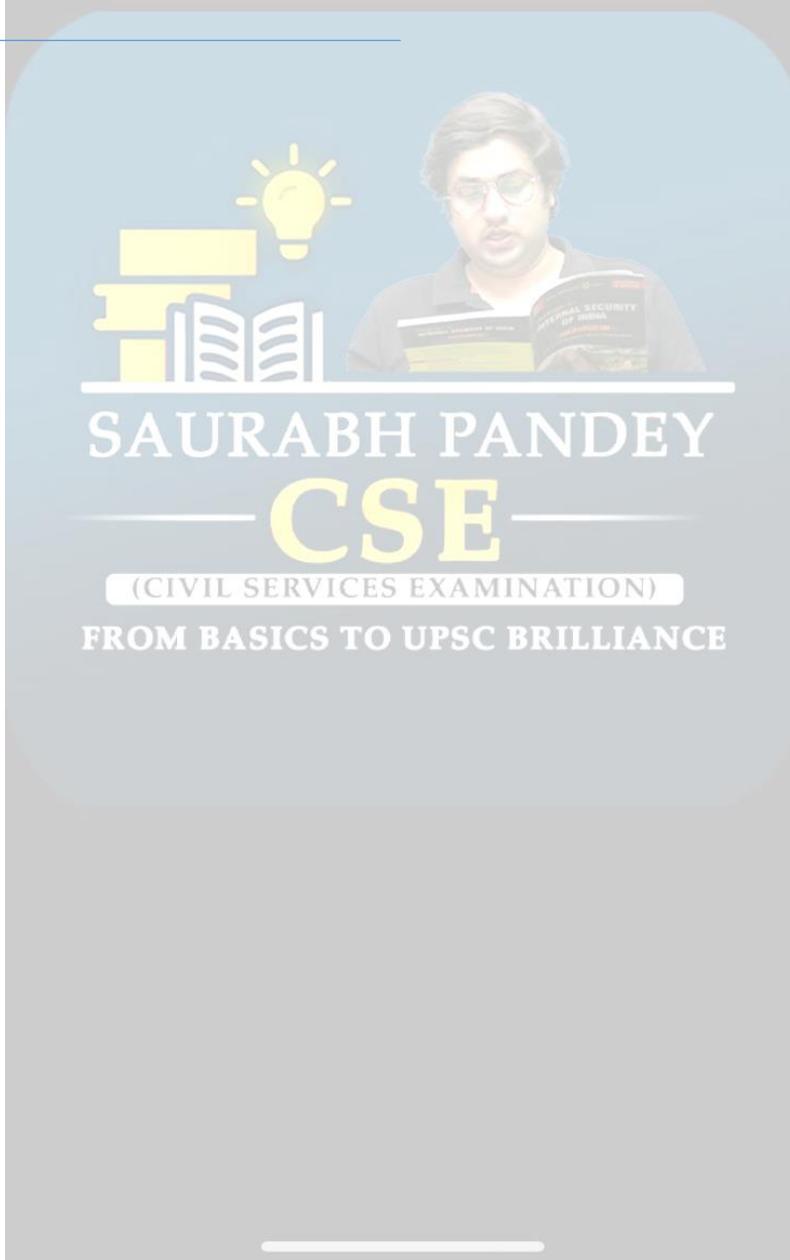
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- The Commission was set up four times in the past as an independent body, to enable redistricting
- Promoting federalism
- Beyond this, our electoral system must be reformed. Federalism needs to be promoted (past decades of centralization that have impacted Centre State relations), and we need to give States a better voice and a platform to represent their interests.
- The Rajya Sabha can play this role; however, it is currently elected by State legislatures, giving disproportionately more representation to larger/more populous States. Constitutional reform can be pursued to give each state the same number of Rajya Sabha MPs.
- Proportional representation can also be considered, especially for the Lok Sabha and State Assembly elections.
- In Australia, lower house elections have voters rank candidates on an alternative preference ballot if a candidate does not win a majority of votes in the first round, the weakest candidate is eliminated, with their votes redistributed to the next preferred candidate
- We need more States as well.
- The largest State (highest resident population) in the United States, California, has a population of just 39 million, with the average State having a population of about five to six million.
- Around 22 Indian States/Union Territories have a population higher than that.
- The States Reorganization Commission was set up in 1953, creating nearly 14 linguistic States and six Union Territories.

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- There is potential for India to have more States (moving up from 29 to say 50 or even 75 States); for example, a State such as Uttar Pradesh, is simply too big to be governed well as a single unit

The Hindu



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AI and Economy

- While AI may substitute for certain jobs, it generates new jobs in turn, for instance AI programmers.
- A future where AI has eliminated the need for all forms of work is one where AI has become self-aware where AI software can not only take on the task it was designed for, but can also design AI to undertake new tasks, and operate and maintain itself
- Keynes theorised that technological change under capitalism would eventually lead to a reduction of working hours.
- Karl Marx had a more nuanced analysis.
- For him, the essence of humanity lies in our ability to materially manipulate nature; work therefore provides meaning to human life.
- The problem arises within the economic system of capitalism, as the product of human labour is not the labourers' to enjoy, but is seen as the property of capital to dispose of in the market for profit.

Capitalism, in this reading, causes humanity to lose touch with the one activity that provides self fulfilment

- The impact of AI on the economy
- Assume a situation where AI has advanced to the point that it is capable of substituting all kinds of labour.
- Under our current system of capitalism, the only way an individual can access material resources such as food and shelter is through income derived from work.

A world without work

- Imagine an economy where a part of the surplus generated in the productive sphere where AI is the only productive factor is transferred to human individuals to meet their basic needs.
- There is nothing wrong, of course, with postulating such a world. But this is not a capitalist world.
- It is a world with very different institutional arrangements regulating production and distribution, one where a universal basic income is a

major source of income and not wage labour.

- This throws up several important questions, such as what determines the amount individuals receive, what determines the division of the net product between those who own the machines and those who don't and what determines the division between future growth versus current consumption.

The Hindu

Catalonia

The story so far:

- Spain's socialist (PSOE) government struck a contentious amnesty deal on November 9 with the hardline Catalan separatist party, together for Catalonia, to enable another four year term for caretaker Prime Minister Pedro Sanchez.



Source: Esri

MARK NOWLIN / THE SEATTLE TIMES

- The chief of Together with Catalonia, Carles Puigdemont, a fugitive from the Spanish justice system, has dangled the carrot of his seven seats in exchange for an amnesty for him and hundreds of others in connection with the secessionist agitation.

- Critics contend that the withdrawal of penalties against those involved in the unconstitutional referendum would undermine the principle of equality before the law.

- Spain has come to exemplify the wider European phenomenon of post electoral stalemate, underpinned by a steady erosion of the two party system and the mushrooming of smaller parties on the extreme right and left of the political spectrum.

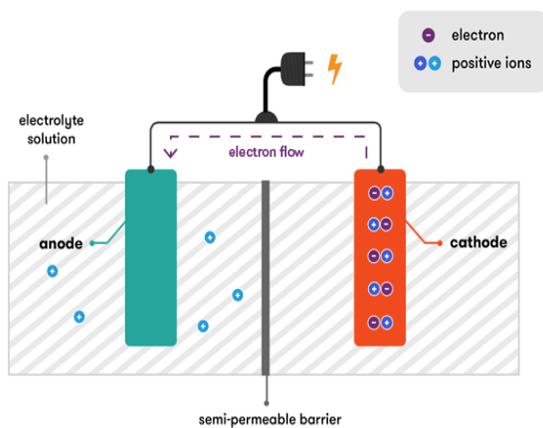
About Catalonia

- Catalonia may be a Spanish region, but it doesn't always feel like it. Catalans are fiercely proud of their language, heritage and customs, evident in the region's wealth of world-renowned art, music and architecture.

- The Catalan independence movement is a social and political movement (with roots in Catalan

nationalism) which seeks the independence of Catalonia from Spain. A Catalan independence protest in July 2010

- Electric battery and Lithium ion battery



more reactive, before the less reactive electrode starts to erode.

- For example, in a (non-rechargeable) carbon zinc battery, zinc erodes preferentially as the battery is used

What are the types of batteries?

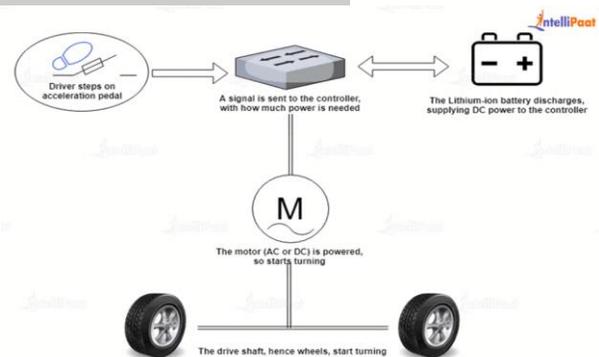
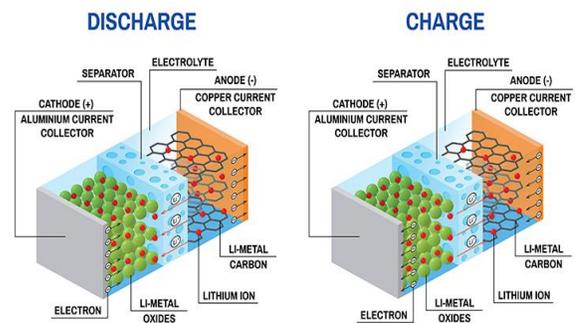
- Two batteries that are often on the news these days are the lithium ion (Liion) battery and the batteries used in Electric Vehicles (EVs).
- The Liion battery won the developers of its foundational principles the Nobel Prize for chemistry in 2019

- A well known problem that degrades the performance of electrochemical cells is corrosion.

- For example, in humid conditions, water droplets can condense on the electrodes. If atmospheric carbon dioxide levels are high, the water can combine with the gas to produce carbonic acid, which can corrode the electrode.

- Another source is galvanic corrosion, whereby one of the electrodes in a cell dissolves faster into the electrolyte over time because it is

LITHIUM-ION BATTERY



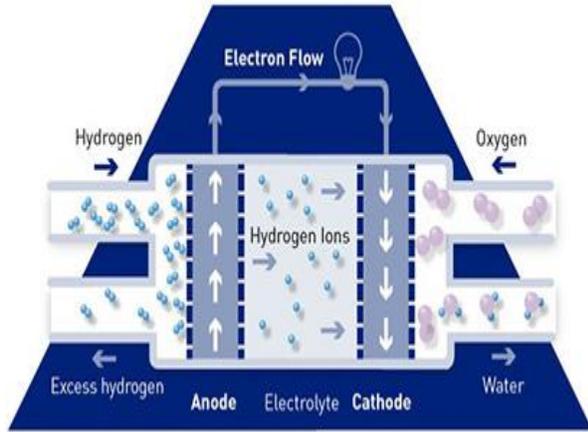
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- This battery is a voltaic as well as an electrolytic cell.
- A voltaic cell converts chemical energy to electrical energy. An electrolytic cell converts electrical energy to chemical energy.
- A battery that can do both is thus rechargeable.
- In a Li-ion polymer cell, used in smartphones, a lithium metal oxide is the cathode and graphite is the anode.
- The electrolyte is a semisolid polymer gel. Microporous polyethylene is used to separate the two half cells.
- The basics are as follows: in the voltaic phase, lithium oxidizes to Li^+ in the anode and releases an electron.
- The electron moves via the external circuit to the cathode whereas the Li^+ moves via the electrolyte to the cathode.
- There, the ion slips between the layers of carbon sheets that graphite is made of in a process called intercalation.
- In the electrolytic phase, an over-voltage is applied to the cell so that it charges and the Li^+ moves from the graphite to intercalate in the metal oxide, getting ready for the next discharge.

The Hindu

Hydrogen Fuel cells

- Hydrogen fuel cells are also of great interest today. At the anode, a catalyst separates hydrogen into protons and electrons.
- The electrons flow through an external circuit and the protons through the electrolyte both to the cathode.
- At the cathode, the particles react with oxygen from the air to create heat and water.
- A cell like this will work as long as hydrogen is supplied, and is expected to be a key component of the hydrogen economy



- The fund will be directly transferred to the bank accounts of the beneficiaries.
- There are various Exclusion Categories for the scheme.

The following categories of beneficiaries of higher economic status shall not be eligible for benefit under the scheme.

The Hindu

PM KISAN

- PM Kisan is a Central Sector scheme with 100% funding from Government of India.
- It has become operational from 1.12.2018.
- Under the scheme an income support of 6,000/- per year in three equal installments will be provided to all land holding farmer families.
- Definition of family for the scheme is husband, wife and minor children.
- State Government and UT administration will identify the farmer families which are eligible for support as per scheme guidelines.
- All Institutional Land holders.
- Farmer families which belong to one or more of the following categories:
 - Former and present holders of constitutional posts
 - Former and present Ministers/ State Ministers and former/present Members of Lok Sabha/ Rajya-Sabha/ State Legislative Assemblies/ State Legislative Councils, former and present Mayors of Municipal Corporations, former and present Chairpersons of District Panchayats.
- All serving or retired officers and employees of Central/ State Government Ministries /Offices/Departments and its field units Central or State PSEs and Attached offices /Autonomous

Institutions under Government as well as regular employees of the Local Bodies (Excluding Multi-Tasking Staff /Class IV/Group D employees)

- All superannuated/retired pensioners whose monthly pension is Rs.10,000/-or more (Excluding Multi-Tasking Staff / Class IV/Group D employees) of above category
- All Persons who paid Income Tax in last assessment year
- Professionals like Doctors, Engineers, Lawyers, Chartered Accountants, and Architects registered with Professional bodies and carrying out profession by undertaking practices.

made by the scientists, technologists, and innovators individually or in teams in various fields of science, technology and technology led innovation.

- The Rashtriya Vigyan Puraskar shall be one of the highest recognitions in the field of science, technology, and innovation in India.
- Scientists/ technologists/innovators working in government, private sector organizations or any individual working outside any organization, who have made distinguished contributions in terms of path-breaking research or innovation or discovery in any field of science, technology, or technology- led innovation shall be eligible for the awards

The Hindu

Rashtriya Vigyan purashkar

- The Government of India has come out with a new set of National Awards in the field of Science, Technology and Innovation known as “Rashtriya Vigyan Puraskar”.
- The objective of the Rashtriya Vigyan Puraskar (RVP) is to recognize the notable and inspiring contribution

RATIONALISATION OF SCIENCE AWARDS

National Science Awards will be given in four categories

Vigyan Ratna: For lifetime achievements & contributions	Vigyan Shri: For distinguished contributions	Vigyan Yuva-Shanti Swarup Bhatnagar: Recognize & encourage young scientists up to the age of 45 years who made an exceptional contribution
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Vigyan Team: Award to be given to a team comprising three or more scientists/ researchers/ innovators who have made an exceptional contribution

➤ There will be total 56 awards in these four categories put together	➤ There will be no cash component in these awards	➤ Awards will have a 'Sanad' and a medal each	➤ Awards will be given in the 13 domains of science
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56 AWARDS

➤ **Nat'l science awards, which are to be given annually on Aug 23** (National Space Day), will possibly be given by the President, in a move to give them the stature of Padma awards

➤ **A total of 56 awards will be given in four categories covering 13 domains**

➤ **Akin to the Padma awards, these awards will not have any cash component**

• The Rashtriya Vigyan Puraskar shall be given in the 13 domains, namely Physics, Chemistry, Biological Sciences, Mathematics & Computer Science, Earth Science, Medicine, Engineering Sciences, Agricultural Science, Environmental Science, Technology & Innovation, Atomic Energy, Space Science and Technology, and Others.

• The representation from each domain/field, including gender parity will be ensured.

• All nominations received for the Rashtriya Vigyan Puraskar awards shall be placed before the Rashtriya

Vigyan Puraskar Committee (RVPC) to be headed by the Principal Scientific Adviser (PSA) to Government of India and comprising Secretaries of Science Departments, members of Science and Engineering Academies and some distinguished scientists and technologists from different fields of science and technology.

• The nominations for this bouquet of awards will be invited every year on 14th January which would remain open till 28th February (National Science Day) every year.

• These awards shall be announced on 11th May (National Technology Day) every year. The Award Ceremony for all categories of awards will be held on 23rd August (National Space Day). All Awards will have a Sanad & a medal.

The Hindu

Centre and state

Continuing economic reforms since 1991 has led to the relaxation of many controls on investments, giving some room to States, but the autonomy regarding public expenditure policies is not absolute as State governments depend on the Centre for their revenue receipts

Apart from issues around resource sharing, there are other areas that have emerged as sites of conflict.

These include the homogenization of social sector policies, functioning of regulatory institutions and the powers of central agencies.

Ideally bulk of the policies in these spheres should be at the discretion of States, with an apex central body overseeing the process of resource allocation.

When the Centre has the upper hand There are three important economic consequences of these incursions.

First, the spread of the Centre's span of activities leads to a situation where the Centre starts crowding out the States in terms of investments. An interesting case is that of infrastructure development in recent years.

The Centre launched the PM Gati Shakti, a digital platform, to incorporate schemes of various Ministries and State governments to achieve integrated planning and coordinated implementation of infrastructure connectivity projects.

All States and UTs had to prepare and operationalize a State master plan in line with the national master plan for seamless implementation.

However, the flexibility of States in formulating their master plan is curtailed by the centralization of planning and implementation of the national master plan

The second outcome has been a peculiar form of fiscal competition between the Centre and States.

In a federal system, fiscal competition manifests between different regions/States.

However, in a scenario of frictions with the Centre, State governments will engage in competition with other States and with the Centre. Welfare provisioning is one such area.

The Centre with enhanced fiscal space has more spending power, while States' revenues, especially nontax revenues, remain flat as possibilities of raising non taxes are confined to a smaller sphere due to

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the direct provisioning of many utilities and services by the Centre.

The third important outcome is the inefficiencies associated with 'parallel policies'. Federal abrasions lead to either the Centre or the States duplicating the other's policies.

For securing the implementation of many of its laws and policies, the Centre depends on the States, particularly in the concurrent spheres.

The States also entrust their executive functions, with the consent of the Centre, to the government or agencies of the Centre (Article 258A).

Such interdependence is inevitable, especially in a large, diverse, developing society and needs to be preserved.

The Hindu

FATF

What is the FATF?

The Financial Action Task Force is an international watchdog for financial crimes such as money laundering and terror financing.

It was established at the G7 Summit of 1989 in Paris to address loopholes in the global financial system after member countries raised concerns

about growing money laundering activities.

In the aftermath of the 9/11 terror attack on the U.S., FATF also added terror financing as a main focus area.

This was later broadened to include restricting the funding of weapons of mass destruction.

The FATF currently has 39 members.

The decision-making body of the FATF, known as its plenary, meets thrice a year. Its meetings are attended by 206 countries of the global network, including members, and observer organizations, such as the World Bank, some offices of the United Nations, and regional development banks.

- The FATF sets standards or recommendations for countries to achieve in order to plug the holes in their financial systems and make them less vulnerable to illegal financial activities.
- It conducts regular peer-reviewed evaluations called Mutual Evaluations (ME) of countries to check their performance on standards prescribed by it.
- The reviews are carried out by FATF and FATF-Style Regional Bodies

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(FSRBs), which then release Mutual Evaluation Reports (MERs).

- For the countries that don't perform well on certain standards, time-bound action plans are drawn up.
- Recommendations for countries range from assessing risks of crimes to setting up legislative, investigative and judicial mechanisms to pursue cases of money laundering and terror funding

What are FATF's 'grey' and 'black' lists?

- While the words 'grey' and 'black' list do not exist in the official FATF lexicon, they designate countries that need to work on complying with FATF directives and those who are non-compliant, respectively.
- At the end of every plenary meeting, FATF comes out with two lists of countries.
- The grey countries are designated as "jurisdictions under increased monitoring", working with the FATF to counter criminal financial activities.
- For such countries, the watchdog does not tell other members to carry out due-diligence measures vis-a-vis the listed country but does tell them

to consider the risks such countries possess.

- Currently, 23 countries including Pakistan are on the grey list.
- As for the black list, it means countries designated as 'high-risk jurisdictions subject to call for action'.
- In this case, the countries have considerable deficiencies in their AML/CFT (anti-money laundering and counter terrorist financing) regimens and the body calls on members and non-members to apply enhanced due diligence.
- In the most serious cases, members are told to apply counter-measures such as sanctions on the listed countries.
- Currently, North Korea and Iran are on the black list. Being listed under the FATF's lists makes it hard for countries to get aid from organizations like the International Monetary Fund (IMF), Asian Development Bank (ADB), and the European Union.
- It may also affect capital inflows, foreign direct investments, and portfolio flows.

The Hindu

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Pradhan Mantri Garib Kalyan Anna Yojana

- Pradhan Mantri Garib Kalyan Anna Yojana (PM-GKAY) is a scheme as part of Atmanirbhar Bharat to supply free food grains to migrants and poor.
- Phase-I and Phase-II of this scheme was operational from April to June, 2020 and July to November, 2020 respectively. Phase III of the scheme was operational from May to June, 2021.
- Phase-IV of the scheme during July-November, 2021 and Phase V from December 2021 till March, 2022.
- Under this scheme, the center provides 5kg of free food grains per month to the poor.
- This is in addition to the subsidized (Rs 2-3 per kg) ration provided under the National Food Security Act (NFSA) to families covered under the Public Distribution System (PDS)
- The food grain and the amount may be variable.
- Phase VI
- The PMGKAY scheme for Phase VI from April-September, 2022 would entail an estimated additional food subsidy of Rs. Rs. 80,000 Crore.

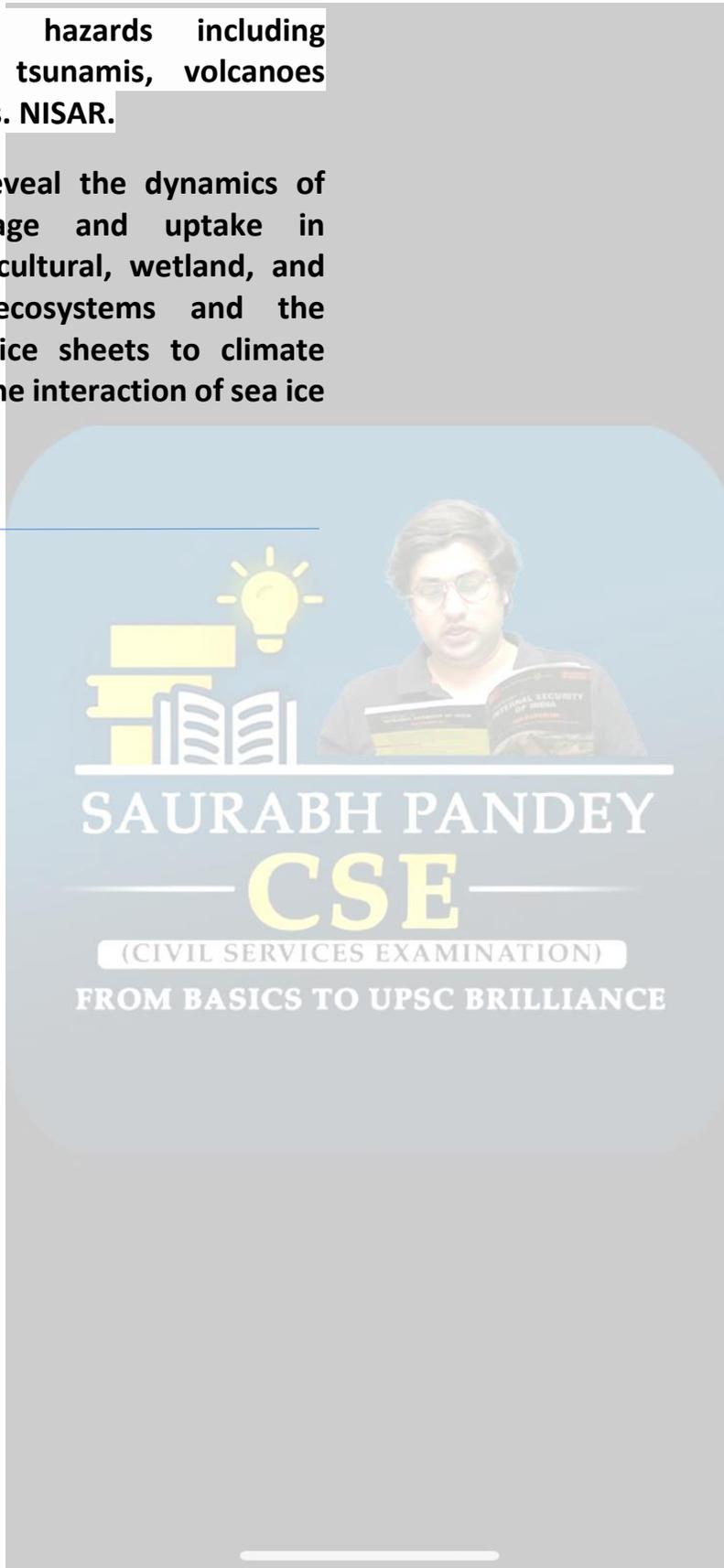
- Report on GHG
- Greenhouse gas concentrations in the atmosphere hit new record highs in 2022, with no end in sight to the rising trend, the United Nations warned on Wednesday.
- The UN's World Meteorological Organization said levels of the three main greenhouse gases the climate warming carbon dioxide, methane and nitrous oxide all broke records last year.
- 'Wrong direction' Such levels of heat trapping gases will mean further temperature increases, more extreme weather and higher sea levels, the WMO said in its 19th annual Greenhouse Gas Bulletin.
- The NASA ISRO Synthetic Aperture Radar (NISAR) is set to be launched in the first quarter of 2024.
- NASA-ISRO SAR (NISAR) is a Low Earth Orbit (LEO) observatory being jointly developed by NASA and ISRO.
- NISAR will map the entire globe in 12 days and provide spatially and temporally consistent data for understanding changes in Earth's ecosystems, ice mass, vegetation biomass, sea level rise, ground water

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and natural hazards including earthquakes, tsunamis, volcanoes and landslides. NISAR.

- NISAR will reveal the dynamics of carbon storage and uptake in wooded, agricultural, wetland, and permafrost ecosystems and the response of ice sheets to climate change, and the interaction of sea ice and climate.

The Hindu



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Vaccine chikungunya

- On November 9, the world's first vaccine for chikungunya was approved by the Food and Drug Administration (FDA) in the U.S.
- The vaccine has been developed by European vaccine manufacturer Valneva and will be available under the brand Ixchiq, and has been approved for administration in people who are 18 years or older, and are at increased risk of exposure to the virus.
- It was approved using the Accelerated Approval pathway, which allows the FDA to clear certain products for serious or life threatening conditions based on evidence of a product's effectiveness that is likely to provide clinical benefit.

What is chikungunya?

- Chikungunya, is characterized by severe joint pain and impaired mobility, and comes with fever.
- It is a viral infection (CHIKV) transmitted primarily by the *Aedes aegypti* and *Aedes albopictus* mosquitoes and has been described as "an emerging global health threat."

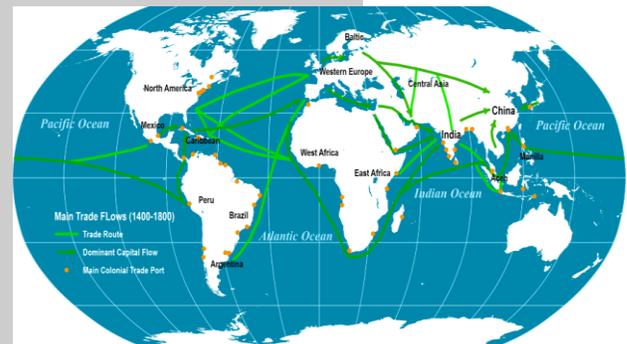
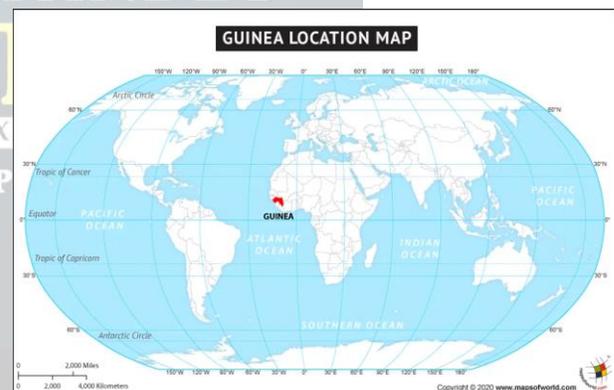
- The WHO fact sheet says Chikungunya is prevalent in Africa, Asia, and the Americas; but sporadic outbreaks have been reported in other regions.

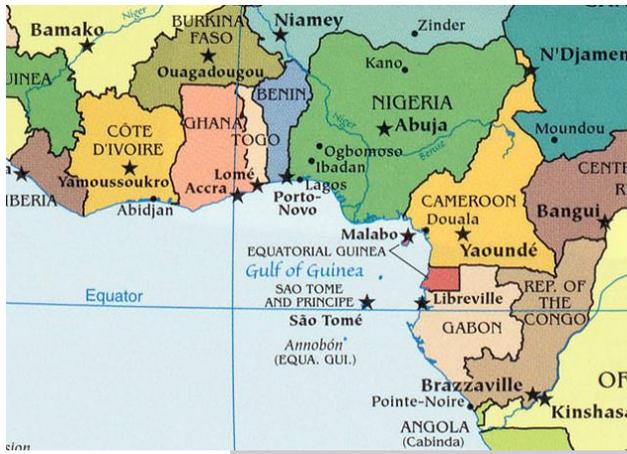
What is the vaccine composition?

- Ixchiq is administered as a single dose by injection into the muscle.
- It contains a live, weakened version of the chikungunya virus and may cause symptoms in the vaccine recipient similar to those experienced by people who have the disease.

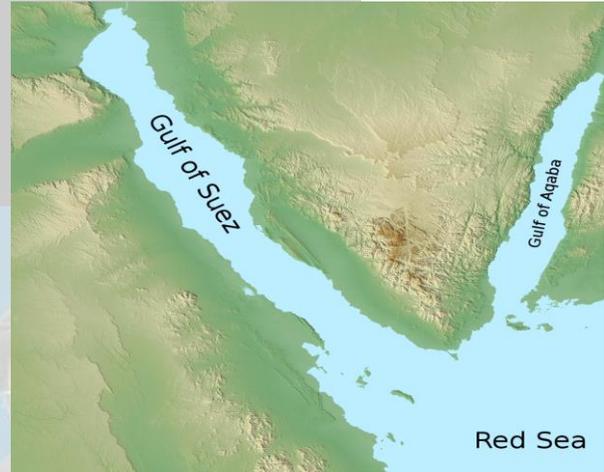
The Hindu

Gulf of Guinea





A gulf is a large inlet from the ocean into the landmass, typically with a narrower opening than a bay, but that is not observable in all geographic areas so named.



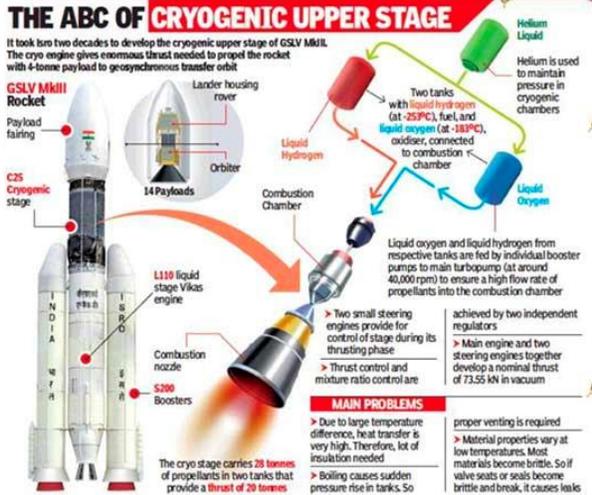
- The Indian Navy has completed its second antipiracy patrol in the Gulf of Guinea (GoG) in the Atlantic Ocean.
- The offshore patrol vessel INS Sumedha, which is on an extended range operational deployment and is currently operating in the Atlantic Ocean along the west coast of Africa, undertook a 31day antipiracy patrol,
- The maiden Gulf of Guinea antipiracy patrol was undertaken by INS Tarkash in September October 2022
- INS Sumedha's deployment also ensured enhancing Navy to Navy connect with regional Navies, including Senegal, Ghana, Togo, Nigeria, Angola and Namibia.
- Another highlight of the deployment was the ship's participation in the maiden India EU Joint Exercise

What is GULF?

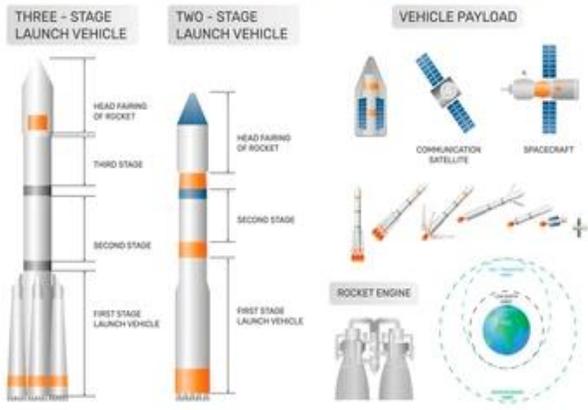
The Hindu

Cryogenic stage

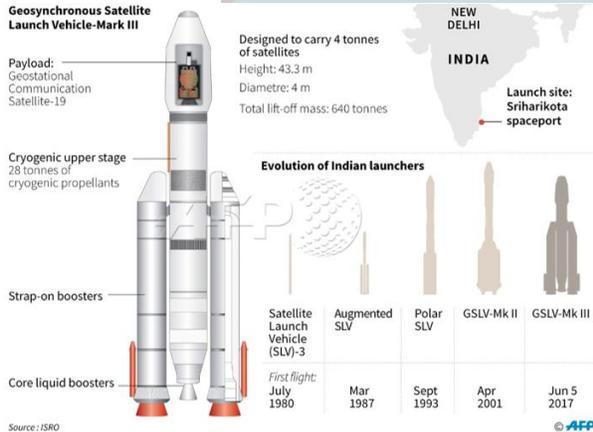
- The Indian Space Research Organisation (ISRO) has said that the cryogenic upper stage of the LVM3 M4 launch vehicle which launched India's Chandrayaan 3 moon mission has made an uncontrolled reentry into the earth's atmosphere on November 15.
- The agency added that the final ground track did not pass over India.
- "This rocket body (NORAD id 57321) was part of the vehicle that successfully injected the Chandrayaan 3 spacecraft into the intended orbit



MULTISTAGE ROCKET INFOGRAPHICS ELEMENT

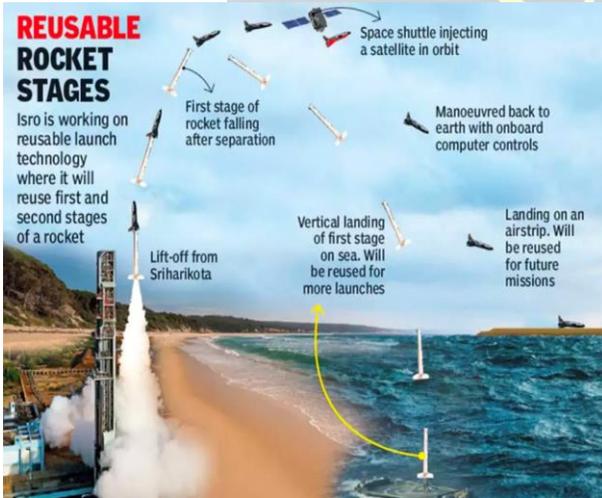


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UN Human right council

- The Council was created by the United Nations **General Assembly** on **15 March 2006** by resolution **60/251**.
- Its first session took place from 19 to 30 June 2006. One year later, the Council adopted its "**Institution-building package**" to guide its work and set up its procedures and mechanisms.



UPSC BRILLIANCE

- The Human Rights Council is an **inter-governmental body** within the **United Nations system** responsible for strengthening the promotion and protection of human rights around the globe and for addressing situations of human rights violations and make recommendations on them.
- It has the ability to discuss all **thematic human rights issues and situations that require its attention**

throughout the year. It meets at the UN Office at Geneva.

- The Council is made up of 47 United Nations Member States which are elected by the UN General Assembly.
- The Human Rights Council replaced the former United Nations Commission on Human Rights.
- The Hindu

- Reserve Bank of India (RBI) and the Election Commission had both said that the sale of electoral bonds had become an avenue for shell corporations and entities to park illicit money and even proceeds of bribes with political parties

Electoral Bond

How An Electoral Bond Works

- 01 Notified banks are chosen
- 02 The notified bank issues electoral bonds
- 03 The donor buys an electoral bond using a cheque/digital payment
- 04 The donor gives the party of his/her choice the bond within the specified timeframe
- 05 The party deposits the bond in an account, the details of which are with the Electoral Commission

THE HINDU

Flow of funds

A look at what the petition filed by the NGO says:

- The Finance Act of 2017 introduced the use of electoral bonds, which are exempt from disclosure under the Representation of the People Act, 1951, opening doors to unchecked, unknown funding to parties
- Contribution received by any eligible political party in the form of electoral bonds will be exempt from income tax

- The amendments have removed the existing cap of 7.5% of net profit in the past three years on campaign donations by companies and have legalised anonymous donations



The Election Commission vide letter dated May 26, 2017 and the RBI in letters on 31.01.2017, 14.09.2017, 27.09.2017 had objected to electoral bonds and advised against the issuance of electoral bonds as a mode for donation to political parties

Benefits of Electoral Bonds

WILL BRING substantial transparency in political donations against the present system of contributions in the election funding mechanism

HOW MUCH funding comes, what kind of funding it is, the source of funding and where it will be spent will be known clearly

NON DISCLOSURE of recipients will ensure people are free to donate to any political party of their choice

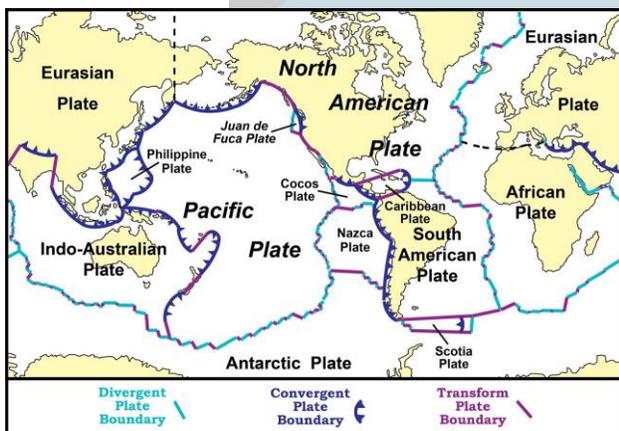
WILL REINFORCE the idea of moving away from a cash system towards clean money which cheque system could not achieve

15 DAYS between buying and selling will ensure they don't turn into a parallel economy

The Foreign Contribution (Regulation) Act (FCRA) was retrospectively amended through the Finance Act of 2016 to permit Indian subsidiaries of foreign companies to donate to political parties.

The Hindu

Earthquake in Philippines



- The first involved several concrete agreements, including to restart military to military direct dialogue and to discuss risk and safety issues involved with artificial intelligence.
- The second is what both sides have described as establishing a floor to the relationship. That was the goal when the two leaders last met in Bali in 2022.

- The Bali consensus was, however, blown away by the “spy balloon” incident
- On Taiwan, both sides reiterated their stands, with China cautioning against interference, and the U.S. saying it opposed any change in the status quo.

- A longer term concern and one that underlines the limits of this modest stabilization is a basic point of difference in how they see the future of their relations

- U.S. and China are in competition” and described the immediate challenge as how to “manage it responsibly”.

- These differences aside, one crucial point of agreement is the apparent realization that high level engagement and open channels are key in preventing competition from sliding into conflict.

The Hindu

APEC and china –usa

- The summit, on the sidelines of APEC, yielded two significant takeaways.

Current Affairs 18th November 2023 by Saurabh Pandey

- This offers clear lessons to the India China relationship, as the crisis along the Line of Actual Control enters its fourth winter

ABOUT APEC

What is Asia-Pacific Economic Cooperation?

- The Asia-Pacific Economic Cooperation (APEC) is a regional economic forum established in 1989 to leverage the growing interdependence of the Asia-Pacific.
- APEC's 21 members aim to create greater prosperity for the people of the region by promoting balanced, inclusive, sustainable, innovative and secure growth and by accelerating regional economic integration.

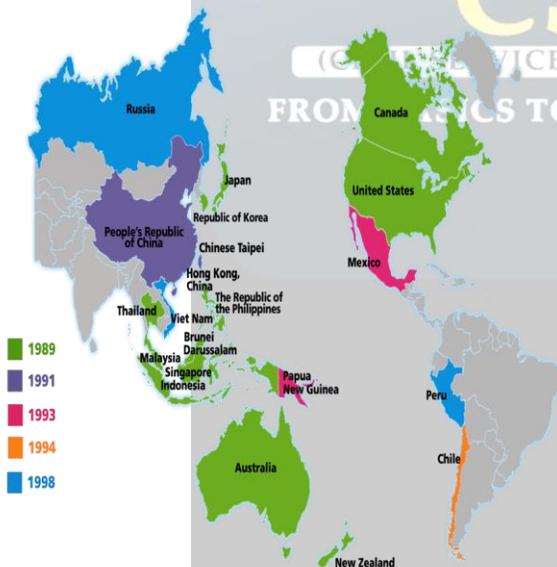
- APEC ensures that goods, services, investment and people move easily across borders. Members facilitate this trade through faster customs procedures at borders; more favorable business climates behind the border; and aligning regulations and standards across the region.

- For example, APEC's initiatives to synchronize regulatory systems are key to integrating the Asia-Pacific economy.

- In such cases, a product can be more easily exported with just one set of common standards across all economies.

The Hindu

Israel -hamas and changing geopolitics



- What Does APEC Do?

- The United States, the reigning superpower of the region since the end of the Second World War, had begun shifting its strategic focus to more conventional rivals such as Russia and China.

- But, to maintain its hold over and interests in the region, what the U.S. sought to do was to bring two of the pillars of its regional policy, Israel and the Gulf Arabs, closer.

- The Abraham Accords were a result of this policy, which was rolled out by

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the Donald Trump administration and embraced by the U.S. President, Joe Biden

- A common Jewish Arab front in a relatively peaceful West Asia would allow the U.S. to free up resources from the region which it could use elsewhere.
- On the other side, the U.S.'s deprioritisation of West Asia led Gulf Arabs to make their own tactical changes in foreign policy for a more predictable and stable relationship in the region.
- This opened an opportunity for China, which has good ties with countries across the Gulf, to play the role of a peacemaker.
- The result was the Iran-Saudi reconciliation agreement.
- The U.S.'s response to the Saudi Iran détente was to double down on the Abraham Accords.
- The Biden administration invested itself in talks between the Saudis and the Israelis.
- It was so confident about prospects of a deal that it unveiled the India Middle East Europe Economic Corridor (IMEC) proposal earlier this year, which hinged on Arab Israel peace, and sold it as an alternative to China's outreach into the region.
- Both the Arabs and Israel were ready to sidestep the Palestine question and chart a new course of partnership.
- But new regional realities emerged after October 7.
- The Palestine issue has now come back to the fore of the West Asian geopolitical cauldron.
- Second, Israel's disproportionate and indiscriminate attack on Gaza has triggered massive protests across the Arab Street
- Third, there is always the Iran factor.
- Ever since the Palestine issue got re-regionalised, Iran has stepped up its pro Palestine rhetoric and called for collective action against Israel, while its proxies, the Houthis in Yemen and Hezbollah in Lebanon, have launched limited attacks on Israel
- The Saudis convened an Islamic summit on Gaza, which saw the landmark visit by Iranian President Ebrahim Raisi to the Kingdom, and reiterated its call for the creation of a Palestine state based on the 1967 borders for peace and security in the region.
- In effect, Mohammed bin Salman, the Saudi Crown Prince, has relinked the Palestine issue with peace talks with Israel

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- The U.S. might still hope that the situation would be conducive to reboot the Abraham Accords once the dust settles.
- This is entirely possible.
- But a key challenge is that it is still not clear what Mr. Netanyahu's endgame is in Gaza.
- He has already signalled that Israeli troops would continue to play an overall security role in the enclave which means, Israel would reoccupy the territory from where it withdrew in 2005
- The UAE and Saudi Arabia refused to join American sanctions against Russia after the Ukraine war. Saudi Arabia continued its Organization of the Petroleum Exporting Countries (OPEC) Plus cooperation with Moscow, defying Washington's requests and diktats.
- China is playing an increasingly greater role in the Gulf, which includes secret plans to build a military facility in the UAE.
- The current crisis is expediting these changes in the regional dynamics.
- With the Saudi Israel peace plan derailed and the Iranian President having visited the Kingdom to discuss Israel's war on Gaza, what Washington is witnessing is the limits

of the U.S. brokered Abraham Accords and the widening scope of the China brokered Iran Saudi détente

The Hindu



SAURABH PANDEY
CSE
(CIVIL SERVICES EXAMINATION)
FROM BASICS TO UPSC BRILLIANCE

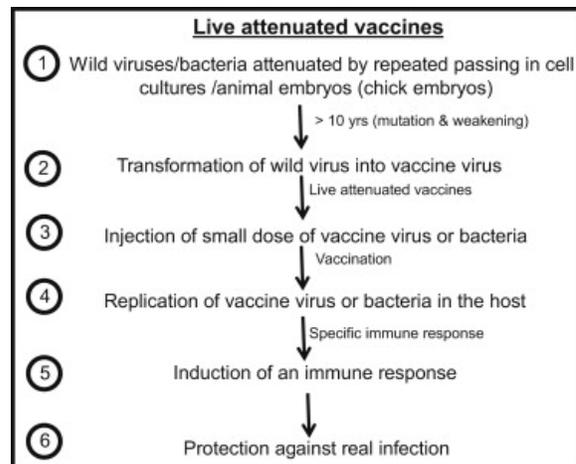
Varicella (chickenpox)

- It is an acute, highly contagious disease caused by varicella-zoster virus (VZV), a member of the herpesvirus family. Only one serotype of VZV is known, and humans are the only reservoir.
- VZV transmission occurs via droplets, aerosols, or direct contact with respiratory secretions, and almost always produces clinical disease in susceptible individuals. While mostly a mild disorder in childhood, varicella tends to be more severe in adults

Varicella Vaccines

- Current varicella vaccines are attenuated vaccines based on the Oka VZV strain that has been modified through sequential propagation in different cell cultures.
- The attenuated strain is grown in cell culture, purified and lyophilized.
- Reconstituted vaccine is injected subcutaneously. Varicella vaccine has also been included in a combination vaccine with measles mumps rubella (MMRV).

- A vaccine which contains higher level of the virus has also been developed for the prevention of shingles in the elderly
- Live attenuated vaccines contain a version of the living virus that has been weakened so that it does not cause serious disease in people with healthy immune systems.



The Hindu

Oxygen producing material

- Oxygen producing materials made from meteorites found on Mars have been produced using a robotic artificial intelligence (AI) chemist.
- The research, published in Nature Synthesis, provides a proof of concept for generating oxygen and may have implications for future manned missions to Mars.

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- Potential future manned missions to Mars will require oxygen as it is essential to human activity on the planet, being used in rocket propellants and life support systems.
- One of the ways to make these potential missions more cost-effective in the long term and less complex would be to use resources already present on the planet to create oxygen, rather than transport materials from Earth.
- Recent evidence of water on Mars and analysis of the elemental composition of meteorites found on the planet could provide an opportunity to make catalysts using Martian resources.
- China and others developed a robotic AI chemist that is able to create catalysts that can be used to produce oxygen from Martian materials without human intervention.
- A machine learning based weather forecasting model from Google DeepMind leads to better, faster, and more accessible 10 day weather predictions than existing approaches, according to a new study.
- The model, dubbed “Graph Cast,” outperformed traditional systems in 90% of tested cases.
- It also performed well in predictions related to extreme events, for which it was not directly trained.
- Machine learning based weather prediction (MLWP), which can be trained from historical data, offers an alternative.

Biosensor for studying neuropeptide

A new sensor toolkit for studying neuropeptides

- New biosensors have helped reveal the activity of neuropeptides in the brain, researchers report, providing novel tools for studying the release, function, and regulation of these crucial signalling molecules in vivo.
- According to a study, the approach has the potential to address

The Hindu

AI powered weather forecasting

AI powered weather forecasting from Google.

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questions regarding neuropeptides and their roles in health and disease.

- In the brain, neuropeptides are signalling molecules in the body that regulate many physiological functions, including digestion, metabolism, and sleep.

The Hindu

Mussels

- The same bundle of nonliving filaments that mussels use to anchor themselves within their environment can also be jettisoned on demand.
- Mussels create this quick release interface by way of a neurochemically mediated junction, where billions of motile cilia hold fast to interlinked biopolymer sheets.
- The ability to produce stable and strong connections between living tissues and nonliving surfaces is crucial for a wide range of advanced biomaterials applications.
- Mussel is the common name used for members of several families of bivalve molluscs, from saltwater and freshwater habitats.

- These groups have in common a shell whose outline is elongated and asymmetrical compared with other edible clams, which are often more or less rounded or oval



The Hindu

People fleeing Myanmar

- In a spillover of the civil war in Myanmar, more than 1,500 nationals of India's neighbouring country, took refuge in Mizoram's Champhai district early this Monday following a gunfight between the Myanmar Army, and pro democracy militias in the country's western Chin State abutting Mizoram.
- Reports indicate that the attacks on the ruling military junta (or the Tatmadaw) involving the Chin National Army (CNA) and the Chin Defense Force among others led to the capture of two bases the

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Khawmawi and Rihkhawdar military camps by the rebels.

civilian displacements to more than two million since the coup.

What is the situation in Myanmar?

The Hindu

- The attacks in Chin State coincidentally followed a major coordinated attack on regime forces by three ethnic armed groups the Myanmar National Democratic Alliance Army (MNDAA), Ta'ang National Liberation Army (TNLA) and the Arakan Army (AA) in Myanmar's north Shan State abutting China.
- The coordinated attacks, termed "Operation 1027" on October 27, by the Three Brotherhood Alliance as the three groups called their collective, led to serious setbacks for the junta's forces in Shan State and brought about a sequence of other rebel attacks including those in the Chin State.
- Scores of military outposts and bases were either abandoned by the junta forces or were captured by the rebels, with the UN stating that 60,000 people in Shan State and 2,00,000 overall in the country have been displaced following the current hostilities taking the total number of

Governor in legislation

What does the Constitution say?

- **Article 200 of the Constitution** lays down that when a Bill, passed by a State Legislature, is presented to the Governor for their assent, they have four alternatives
- may **give assent** to the Bill;
- may **withhold assent** to the Bill, that is, reject the Bill in which case the Bill fails to become law;
- **may return** the Bill (if it is not a Money Bill) for reconsideration of the State Legislature;
- or may **reserve the Bill** for the consideration of the President.
- As held by the Supreme Court in various cases including the **Shamsher Singh case (1974)**, the **Governor does not exercise their discretionary powers** while withholding assent or returning a Bill to the State Legislature.
- They are required to **act as per the advice of the Council of Ministers**.
- The situation of **'withholding assent'** may arise in case of a **Private Members' Bill** (any Member of State Legislature other than a Minister) passed by the State Legislature, which the council of ministers do not want to be enacted into a law.
- In such an instance, they would advise the Governor to 'withhold assent'.
- However, this is an unlikely scenario as the council of ministers who enjoy a majority in the Legislative Assembly would not allow the passage of such a Bill.
- Secondly, if the incumbent government whose Bill has been passed by the legislature falls or resigns before it is assented to by the Governor, the **new council may advise the Governor to 'withhold assent'**.
- The **return of any Bill** to State Legislature for reconsideration is also to be done based on ministerial advice
- The Governor must **reserve certain Bills**, like those which **reduce the powers of the High Court**, for the consideration of the President.
- They may also **reserve Bills on concurrent list** that are repugnant to a Union law based on ministerial advice.
- It is only under rare circumstances that the Governor **may exercise their discretion**,

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- where they feel that the provisions of the Bill will contravene the provisions of the Constitution and therefore, should be reserved for the consideration of the President.
- It must however be noted that the Constitution does not lay down any time limit within which the Governor is required to make a decision.

What were the recommendations?

- The Sarkaria Commission (1987) has submitted that it is only the reservation of Bills for consideration of the President, that too under rare cases of unconstitutionality, that can be implied as a discretionary power of the Governor.
- Save in such exceptional cases, the Governor must discharge his functions under Article 200 as per the advice of ministers.
- It further recommended that the President should dispose of such Bills within a maximum period of six months.
- In the event of the President 'withholding assent', the reasons should be communicated to the State Government wherever possible.
- The Punchhi Commission (2010), had recommended that the Governor should take a decision with respect to

a Bill presented for their assent within a period of six months.

- However, these recommendations have not been implemented till date.
- As per our Constitutional scheme, there is a need for a nominal head of the State executive just like the President for the Union executive.
- Further, the Governor acts as an appointee of the Centre who may be required for maintaining the unity and integrity of the nation in critical times.
- However, federalism is a basic feature of our Constitution and the Governor's office should not undermine the powers of elected governments at the States.
- As the Supreme Court observed, it is necessary for the Governors and Chief Ministers to do 'a little bit of soul searching'.
- The Constitution may be amended to provide that the Chief Ministers shall be consulted before appointment of the Governors.
- The recommendation of the Punchhi Commission that Governors may be removed through an impeachment by the State Legislature can also be considered.

The Hindu

Indira Gandhi peace prize

- The Indira Gandhi Prize for Peace, Disarmament and Development, 2022, jointly awarded to the Indian Medical Association and the Trained Nurses Association of India as representatives of the COVID19 warriors in the country.

The Hindu

Draft broadcasting bill

- The draft Bill provides for a consolidated framework to regulate the broadcasting services in the country and seeks to replace the existing Cable Television Networks (Regulation) Act, 1995 and other Policy Guidelines currently governing the broadcasting sector in the country.
- The Bill streamlines regulatory processes, extends its purview to cover the Over-the-Top(OTT) content and digital news, and introduces contemporary definitions and provisions for emerging technologies.
- It seeks to provide for Content Evaluation Committees and a Broadcast Advisory Council for self-regulation, different program and advertisement code for different Broadcasting Network Operators, Accessibility measures for persons

with disabilities, and statutory penalties, etc.

The Bill comprises of Six Chapters, 48 Sections and three Schedules.

Key Highlights:

1. Consolidation and Modernization:

It addresses a long standing need of consolidating and updating the regulatory provisions for various broadcasting services under a single legislative framework. This move streamlines the regulatory process, making it more efficient and contemporary.

It extends its regulatory purview to encompass broadcasting over-the-top (OTT) content and digital news and current affairs currently regulated through IT Act, 2000 and regulations made there under.

2. Contemporary Definitions and Future-Ready Provisions:

To keep pace with the evolving technologies and services, the bill introduces comprehensive definitions for contemporary broadcasting terms and incorporates provisions for emerging broadcasting technologies.

3. Strengthens the Self-Regulation Regime:

It enhances self-regulation with the introduction of 'Content evaluation committees' and evolves

the existing Inter-Departmental Committee into a more participative and broader 'Broadcast Advisory Council'.

- 4. **Differentiated Programme Code and Advertisement Code:** It allows for a differentiated approach to Programme and Advertisement Codes across various services and require self-classification by broadcasters and robust access control measures for restricted content.
- 5. **Accessibility for Persons with Disabilities:** The bill addresses the specific needs of persons with disabilities by providing for enabling provisions for issue of comprehensive accessibility guidelines.
- 6. **Statutory Penalties and Fines:** The draft Bill introduces statutory penalties such as: advisory, warning, censure, or monetary penalties, for operators and broadcasters. Provision for imprisonment and/or fines remains, but only for very serious offenses, ensuring a balanced approach to regulation.
- 7. **Equitable Penalties:** Monetary penalties and fines are linked to the financial capacity of the entity, taking into account their investment and turnover to ensure fairness and equity.

- 8. **Infrastructure Sharing, Platform Services and Right of Way:** The bill also includes provisions for infrastructure sharing among broadcasting network operators and carriage of platform services. Further, it streamlines the Right of Way section to address relocation and alterations more efficiently, and establishes a structured dispute resolution mechanism.
- The right of way is the total land area acquired for the construction of the roadway.
- Its width should be enough to accommodate all the elements of the roadway cross section, any future widening of the road and any public utility facilities that will be installed along the roadway.

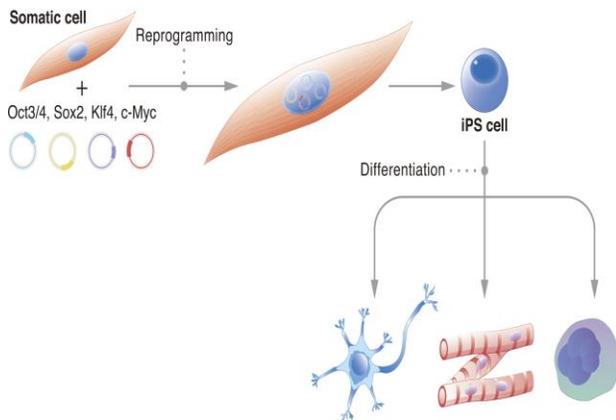
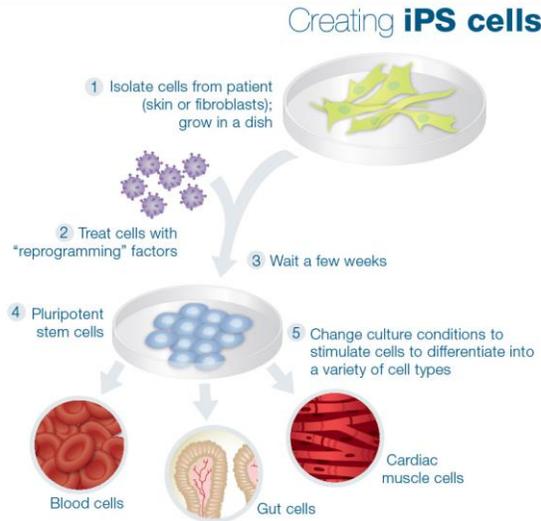
The Hindu

Chimaeras

- A genetic chimaera is a single organism composed of **cells of more than one distinct genotype** (or genetic makeup).
- The animal kingdom has several examples of varying degrees of chimerism.
- **The halvesider budgerigar**, a type of **common parakeet** widely adopted as pets, has different colours on either side of its body due to chimerism.

- The **anglerfish displays** an extreme degree of symbiotic chimerism in which the male fish fuses with and is eventually absorbed into the female fish, mixing their genetic makeups into a single animal.
- Marine sponges are known to have up to four distinct genotypes in a single organism.
- **The fusion of two fertilised zygotes** early in the embryonic stage can also lead to a condition in which two genetic makeups coexist in a single individual.
- Chimerism can also result from **twin or multiple pregnancies** evolving into a single foetus or a twin foetus being absorbed into a singleton.
- Researchers have also documented individuals living with two blood types. In fact, blood group chimerism during multiple births is relatively common
- During bone marrow transplants patients have their marrow replaced.
- The donor's marrow contains stem cells which will produce blood cells that will repopulate the recipient's blood cell repertoire.
- **The recipient will develop blood cells that resemble the donor's and will differ from the genetic makeup of the recipient's** other tissues resulting in a chimeric individual
- In a study published in Cell, scientists reported successful generation of a live chimaera in nonhuman primates species evolutionarily close to humans.
- This is the first time scientists have succeeded in producing a live infant chimeric monkey
- **What is induced pluripotent stem cells (iPSCs) technology??**
- iPSC are derived from skin or blood cells that have been reprogrammed back into an embryonic-like pluripotent state that enables the development of an unlimited source of any type of human cell needed for therapeutic purposes
- **A pluripotent cell is able to develop into several different types of cell:**
- ***Embryonic stem cells are said to be more pluripotent than adult stem cells.***

The Hindu



- Genetically, freemartins is attributed to the sharing of cells carrying the Y chromosome from the male twin with the female twin.
 - This chromosome triggers the development of male reproductive organs in the male foetus, while the female foetus, affected by the presence of male hormones, experiences incomplete development of its reproductive system.
 - The end result is that the freemartin has an underdeveloped or non-functional reproductive tract
- The Hindu
-
- Induced pluripotent stem cells (iPSCs) technology
 - **Freemartins are sterile female cattle at result from the twinning of a male and a female within the same uterus.**
 - This phenomenon occurs in approximately 90% of such twin pregnancies in cattle.
 - The key reason is the exchange of blood between the male and the female foetuses during gestation.

Protest in Bangladesh

- Since the last week of October, one of Bangladesh's largest labour forces the 4.4 million strong ready-made garment (RMG) sector workers are demanding a trebling of their legally mandated minimum wages from 8,000 Bangladeshi Taka (BDT), or about \$72, to 23,000 takas (\$208).
- Bangladesh's Election Commission had announced January 7 next year as the date for elections but this has been rejected by all opposition parties.
- **What is fast fashion's significance to Bangladesh's economy?**
- Bangladesh is the world's second largest exporter of fast fashion, or RMG, after China, accounting for 85% of the country's exports earnings of \$55 billion in 2022.
- It has a global market share of almost 8%.
- The RMG sector's main markets are the U.S., the U.K., Europe and Canada, with H&M being the top importer. Other big brands include Levi's and Zara

What role can brand importers play?

- Big brands like Nike have faced intense criticism beginning in the 1990s for being responsible for driving down procurement costs and amassing super profits at the expense of workers' rights in the Global South, as they took advantage of neoliberalism's 'race to the bottom' approach of finding the cheapest source wherever available.
- These criticisms led to marginal changes, like verifying work conditions, working hours, safety gear, wages and sanitary conditions at global procurement facilities.
- But it did not lead to a meaningful contribution of sharing big brands' profits, or investing in supplier SME's infrastructure, or wages, until recently.
- This recent shift has been fuelled more so, by the global movement to decarbonize supply chains to tackle climate change
- **What is the relationship between the RMG sector and carbon emissions?**
- According to the UN Environment Programme, the fashion industry is

responsible for anywhere between 2-8% of global greenhouse gas emissions, making it “one of the largest contributors to the climate and ecological crisis”

The Hindu

National Pharmacy Commission Bill, 2023

- Proposed National Pharmacy Commission Bill, 2023.
- The Ministry proposes to finalize the Bill for setting up the National Pharmacy Commission and repealing the Pharmacy Act, 1948.
- For this, a draft National Pharmacy Commission Bill has been prepared and uploaded on the website of the Ministry for comments.
- The Bill aims to improve access to affordable and high quality pharmacy education and ensure the availability of pharmacy professionals nationwide.
- It seeks to promote equitable healthcare by making pharmacy services accessible to all citizens.
- It also calls for a periodic and transparent assessment of pharmacy institutions and

facilitating maintenance of a pharmacy register for India.

- The Bill encourages professionals to integrate the latest research into their work, contribute to research, and uphold high ethical standards.

The Hindu

CMEC & SRILANKA

- China is “prioritising” the extension of the China Myanmar Economic Corridor (CMEC) to Sri Lanka.
- China is looking to scale up the Belt and Road Initiative (BRI) project in South Asia
- Additionally, both parties agreed to expedite the implementation of the China Sri Lanka Free Trade Agreement,”
- The CMEC is the newest of the six land corridors under the BRI, and has assumed prominence in place of the Bangladesh China India Myanmar (BCIM) corridor which has largely been stalled.
- India and Bhutan are the only countries in South Asia that have stayed out of the BRI and China’s more recent Global Development Initiative.

The Hindu

Langlands program

- In representation theory and algebraic number theory, the Langlands program is a web of far-reaching and consequential conjectures about connections between number theory and geometry.
- Proposed by Robert Langlands (1967, 1970), it seeks to relate Galois groups in algebraic number theory to automorphic forms and representation theory of algebraic groups over local fields and adeles.
- Widely seen as the single biggest project in modern mathematical research, the Langlands program has been described by Edward Frenkel as "a kind of grand unified theory of mathematics."
- The Langlands program consists of some very complicated theoretical abstractions, which can be difficult even for specialist mathematicians to grasp.
- To oversimplify, the fundamental lemma of the project posits a direct connection between the generalized

fundamental representation of a finite field with its group extension to the automorphic forms under which it is invariant.

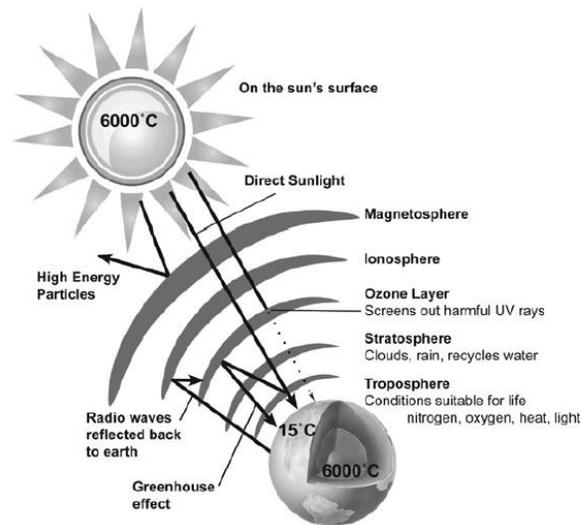
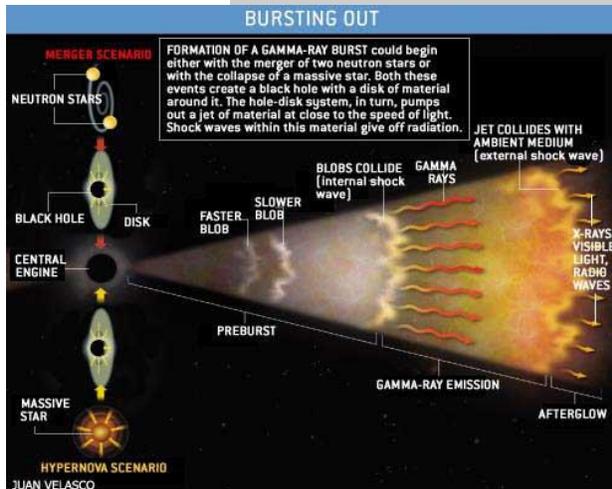
- In mathematics, a conjecture is a conclusion or a proposition that is proffered on a tentative basis without proof.
- In mathematics, in the area of abstract algebra known as Galois theory, the Galois group of a certain type of field extension is a specific group associated with the field extension
- In harmonic analysis and number theory, an automorphic form is a well-behaved function from a topological group G to the complex numbers

Gamma-ray bursts & Ionosphere

What is gamma-ray bursts?

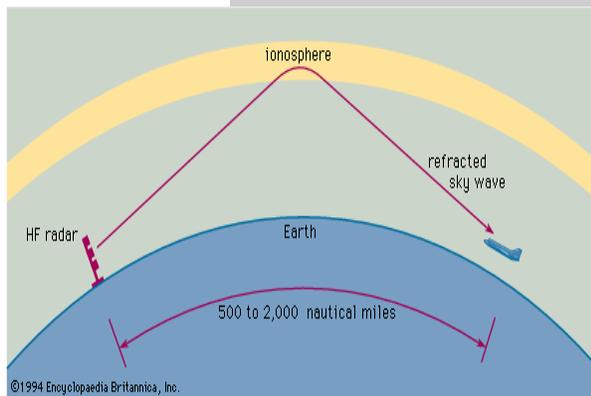
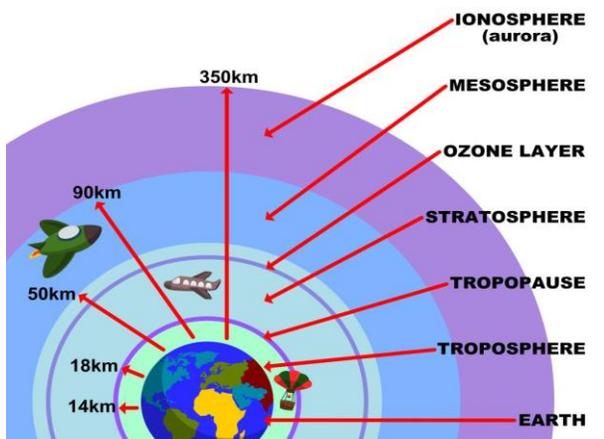
- In gamma-ray astronomy, gamma-ray bursts are immensely energetic explosions that have been observed in distant galaxies, described by NASA as "the most powerful class of explosions in the universe".

- They are the most energetic and luminous electromagnetic events since the Big Bang.



What is ionosphere?

Layers of the Atmosphere



- The ionosphere is situated about 50-950 km above the earth's surface, stretching to the very edge of space.

- It helps form the boundary between the vacuum of space and the lower atmosphere inhabited by people.

- The gamma rays from the burst impacted the atmosphere for about 13 minutes on October 9, 2022.

- They were detected by the European Space Agency's Integral (International Gamma Ray Astrophysics Laboratory) space observatory and various satellites orbiting close to the earth.

- The gamma rays caused a strong variation in the ionosphere's electric field,

- The ionosphere, which helps protect life on the earth by absorbing

harmful ultraviolet rays from the sun, is sensitive to changing magnetic and electrical conditions in space, usually connected to solar activity.

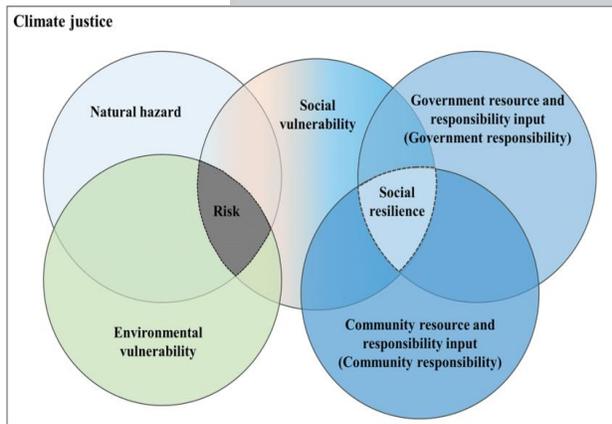
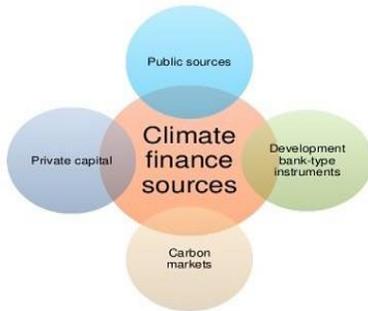
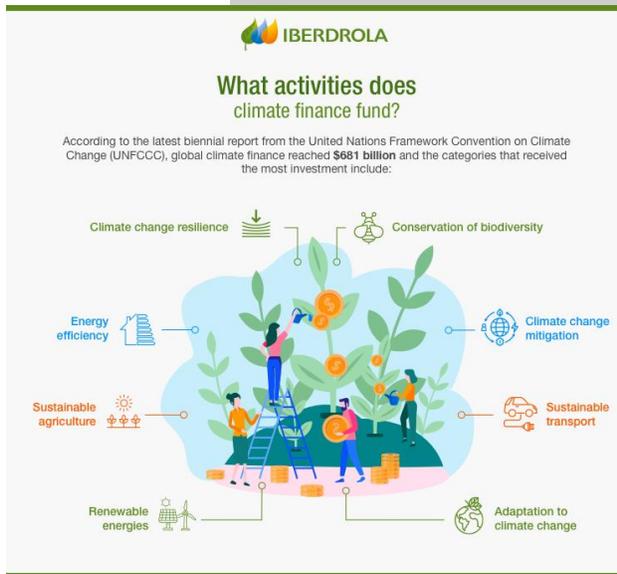
- While this gamma ray burst did not cause deleterious effects for life on the earth, it has been hypothesized that a strong one originating within the Milky Way and pointed right at us could subject the planet's surface to a flood of harmful ultraviolet radiation.

The Hindu



SAURABH PANDEY
CSE
(CIVIL SERVICES EXAMINATION)
FROM BASICS TO UPSC BRILLIANCE

OECD REPORT ON CLIMATE FINANCE



- A new report, published by the Organisation for Economic Cooperation and Development (OECD), showed that economically developed countries fell short of their promise to jointly mobilise \$100 billion a year towards climate mitigation and adaptation needs of developing countries in 2021 one year past the 2020 deadline.

- The report said that developed countries mobilised \$89.6 billion in 2021 and that finances for adaptation fell by 14% in 2021 compared to 2020.

How is climate finance accounted for?

- The OECD report showed that of the \$73.1 billion mobilised in 2021 by the public sector via bilateral and multilateral channels, \$49.6 billion was provided as loans.

- When the OECD report states that two thirds of public climate financing was provided as loans, it means the conditions attached to such financing could further exacerbate debt stress in poorer countries.

What counts as climate finance?

- At present, there is no commonly agreed definition of ‘climate finance’ because developed countries have endeavoured to keep it vague.
- The OECD report suggested de-risking with government intervention and called on MDBs to integrate private finance mobilisation strategies as part of their core objective.

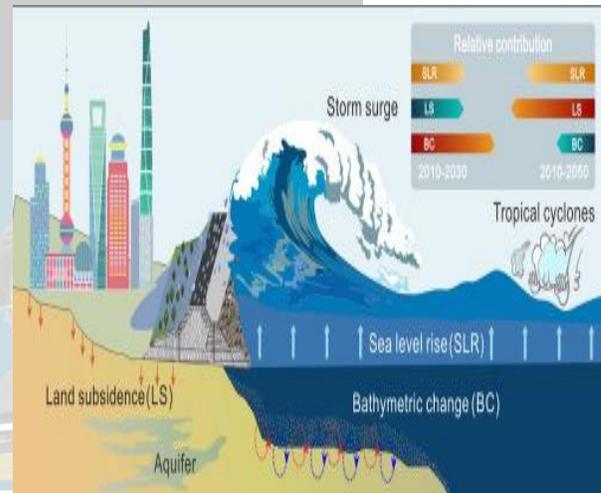
- Its reasoning is that the private sector can help enable climate action but that it “requires the proactive involvement of governments and international institutions to support, incentivize and derisk individual projects, as well as to create the necessary conditions for investment in developing countries more generally”.

SATHEE PORTAL

- SATHEE (Self-Assessment Test and Help for Entrance Exams) for exam preparation.
- The online coaching platform has been launched by the Ministry and the IIT Kanpur. SATHEE is an open learning platform available to students free.

- “A barrier for students who could not pay to access any such training programme has been bridged now.
- The Hindu

Maldives & sea level rise



- Rising sea levels threaten to swamp the Maldives and the Indian Ocean archipelago is already out of drinking water, but the new President says he has scrapped plans to relocate citizens.

- Instead, President Mohamed Muizzu promises the low lying nation will beat back the waves through ambitious land reclamation and building islands higher.

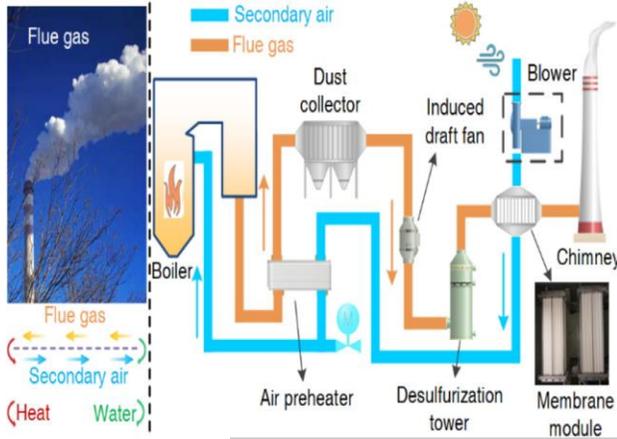
- The Hindu

Coal and climate change

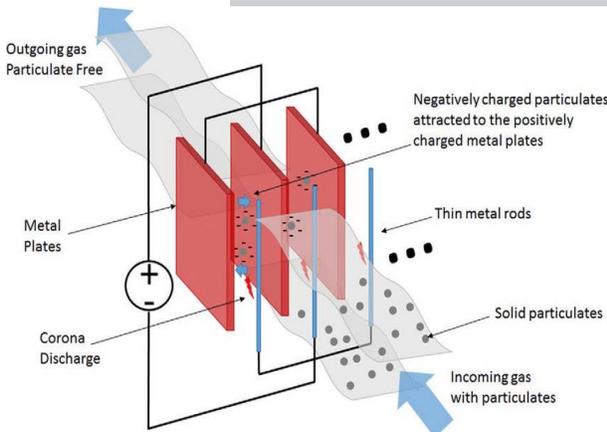
- Indian emissions from fossil fuels and industry between 1750 and 2021 are only 3.3% of the global total, behind those of Europe (31%), the U.S. (24.3%), and China (14.4%).
- Fulfilling the needs of 17% of the world's population is also a fundamental duty to which we must attend. Batteries will become cost effective only after 2030, and tariffs of pithead TPPs are only 40% of the round the clock tariffs for solar plants backed by battery storage.
- Increasing battery capacity will require import of critical minerals like lithium, cobalt, nickel, and graphite.
- These are sourced mainly from China, posing significant risks to India's energy security. Indian coal contains high levels of ash (35.5%) compared to those mined elsewhere.
- Burning coal with more ash erodes boiler tubes and other components, affecting the plant's availability, efficiency, and performance.
- Ninety six percent of the coal used by TPPs in India comes from domestic mines and is key to keeping electricity affordable in India.

Improving coal transport

- Coal deposits in India contain high levels of ash (35.5%) compared to those mined in other coal mining countries.
- Burning coal with more ash erodes boiler tubes and other components, affecting the plant's availability, efficiency, and performance.
- The transport of unwashed raw coal to TPPs located more than 500 km from the mines also means transporting millions of tonnes of ash-producing noncoal material, congesting India's roads and rail transportation systems.
- Flue gas is the gas exiting to the atmosphere via a flue, which is a pipe or channel for conveying exhaust gases, as from a fireplace, oven, furnace, boiler or steam generator.
- It often refers to the exhaust gas of combustion at power plants. Technology is available to remove pollutants from flue gas at power plants.



- Indian coals generally have less Sulphur than that mined in other coal rich countries.
- TPPs in India have tall stacks, and the flue gas' exit velocity plus favourable weather conditions means sulphur dioxide emissions are widely dispersed.
- Historical sulphur dioxide emissions have created a cooling effect by masking global temperature rise by 0.5 degrees Celsius.



- Retrofitting existing TPPs with flue gas desulphurisers (FGDs), increases their specific coal consumption by 1.51.7%, leading to lower efficiency and higher emissions.
- FGDs require large capital investments leading to tariff hikes. India can therefore reduce particulate emissions by more than 99.97% by installing low cost, high performance electrostatic precipitators and reserve FGDs for TPPs near urban areas.

• The Hindu

Climate change and Health

CHANGES IN CLIMATE	EFFECTS OF CLIMATE CHANGE	HEALTH IMPACTS	INTERVENTIONS & STRATEGIES
<ul style="list-style-type: none"> Increased global temperature Extreme weather and disasters Precipitation extremes Sea level rise Changes in land use and growing seasons 	<ul style="list-style-type: none"> Extreme heat Air and water pollution Reduced food and water quality Changes in infectious diseases and vector transmissions Increasing allergens 	<ul style="list-style-type: none"> Heat related illness Cardiovascular disease, stroke, and other chronic conditions Injuries and death Mental and neurological disorders Zoonotic, vector- and water-borne diseases Respiratory diseases and asthma 	<ul style="list-style-type: none"> Early warning and preparedness Prevention or reduction of disease, illness and injury Community engagement Education and awareness raising Adoption and integration

- One estimate suggests that if global temperature were to rise by 2°C, many parts of India would become uninhabitable. All nations during the Paris Agreement agreed to cap the rise in temperature at 1.5°C.

- The double burden of morbidity that India faces from communicable and non-communicable diseases will be worsened by climate change.
- It could facilitate the growth of vectors such as mosquitoes, sandflies, ticks, and as yet unknown ones, and change the seasonality of infection through changes in their life cycle.
- It could also facilitate the introduction of vectors and pathogens into areas where they did not exist before, such as mosquitoes in the Himalayan States.
- Heat also alters the virulence of pathogens.
- Reduced availability of food and water and the decrease in nutritional value of food increases vulnerability to diseases.
- Epidemics commonly occur after floods, but extended warm periods also promote the proliferation of water and foodborne pathogens and diseases.
- Less well recognized is the impact of climate change on non-communicable diseases and mental health, both of which are poorly managed in India.
- Heat, physical exertion, and dehydration, a constant state for labourers, could lead to kidney injuries, which are rising in India due to uncontrolled diabetes.
- Chronic Obstructive Pulmonary Diseases are exacerbated by increased and extended episodes of air pollution.
- India has to recognize climate change and its impact on health as a problem that can be and needs to be addressed.
- Researchers who work in this area need to come up with policy options for action. National, State, and local governments have to decide to act on the policy options that have been generated by research.
- Only when the three streams of problematisation, policy options, and political decision making come together is meaningful change likely to happen.
- The Hindu

Current Affairs 23rd November 2023 by Saurabh Pandey

UK RAWANDA DEAL

The government policy of the U.K., of creating a mechanism for the transfer of asylum seekers not considered by the U.K. to Rwanda, has been ruled as unlawful by the U.K. Supreme Court.

What is the Rwanda deal?

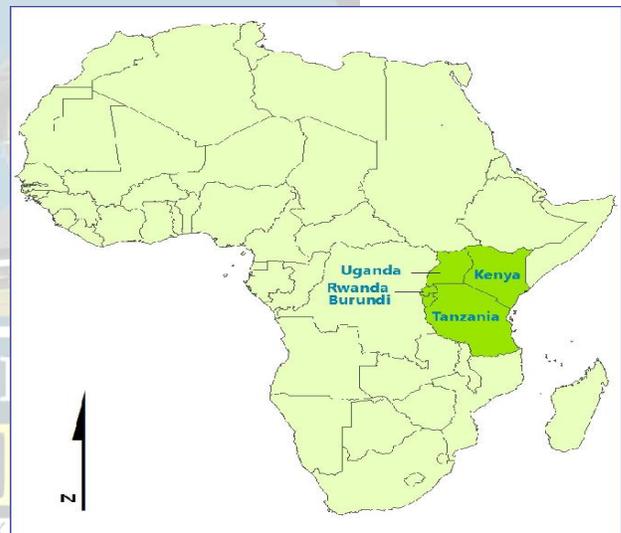
The Migration and Economic Development Partnership (MEDP) was announced in April 2022 by former Prime Minister Boris Johnson.

The objective of the deal is to “create a mechanism” for the transfer of asylum seekers not considered by the UK into Rwanda.

- The inadmissibility clause of the UK’s asylum system plays a key role in categorizing people who enter the U.K. through “irregular journeys” such as the English Channel.
- According to the Memorandum of Understanding between the two nations, the U.K. will screen asylum seeker applications and arrange for safe transport to Rwanda.
- On arrival of the refugees, Rwanda is obliged to provide accommodation

for every individual and protect them from ill treatment and refoulement.

- Rwanda will be the sole authority to recognise or not recognise the refugee status of an individual.
- If an individual is not recognised, they will be moved to their country of origin.



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annual International Labour Conference.

- Once a standard is adopted, member states are required under article 19(6) of the ILO Constitution, to *submit* it to their competent authority (normally Parliament) within a period of twelve months for consideration.

The Hindu

ILO Conventions

- International labour standards are legal instruments drawn up by the ILO's constituents (governments, employers and workers) and setting out basic principles and rights at work.
 - They are either Conventions (or Protocols), which are legally binding international treaties that may be ratified by member states, or Recommendations, which serve as non-binding guidelines
 - Conventions and Recommendations are drawn up by representatives of governments, employers and workers and are adopted at the
- Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87)
 - Right to Organize and Collective Bargaining Convention, 1949 (No. 98)
 - Forced Labour Convention, 1930 (No. 29) (and its 2014 Protocol)
 - Abolition of Forced Labour Convention, 1957 (No. 105)
 - Minimum Age Convention, 1973 (No. 138)
 - Worst Forms of Child Labour Convention, 1999 (No. 182)
 - Equal Remuneration Convention, 1951 (No. 100)

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- **Discrimination (Employment and Occupation) Convention, 1958 (No. 111)**
- **Occupational Safety and Health Convention, 1981 (No. 155)**
- **Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)**
- **The Constitution of the ILO was drafted in early 1919 by the Labour Commission, chaired by Samuel Gompers, head of the American Federation of Labour (AFL) in the United States.**
- **It was composed of representatives from nine countries: Belgium, Cuba, Czechoslovakia, France, Italy, Japan, Poland, the United Kingdom and the United States.**

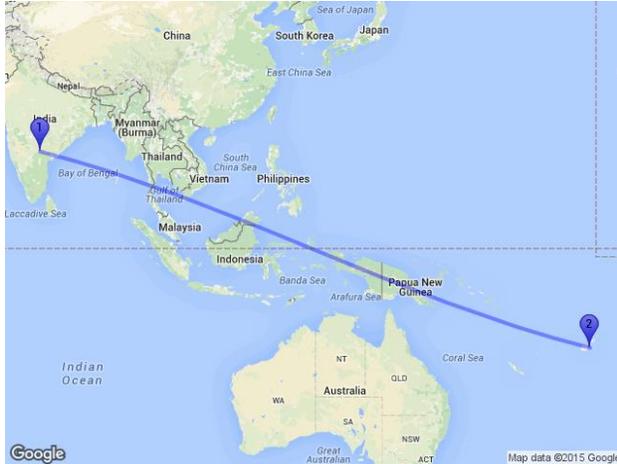
The four governance Conventions are:

- **Labour Inspection Convention, 1947 (No. 81)**
- **Employment Policy Convention, 1964 (No. 122)**
- **Labour Inspection (Agriculture) Convention, 1969 (No. 129)**
- **Tripartite Consultation (International Labour Standards) Convention, 1976 (No. 144)**
- **China in Fiji**
- **China may help Fiji develop its ports and shipyards, the Pacific island country's**
- **China's expanding security footprint in the Pacific, praised Beijing's record of aid to Fiji in fighting COVID19, developing agriculture and revamping infrastructure.**

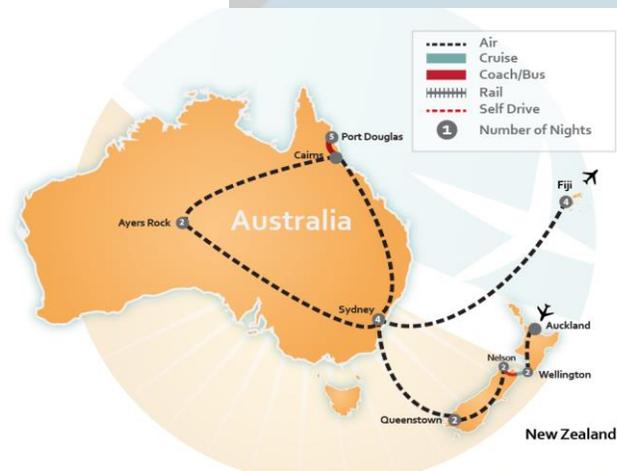
• **ABOUT ILO**

- **It was created in 1919, as part of the Treaty of Versailles that ended World War I, to reflect the belief that universal and lasting peace can be accomplished only if it is based on social justice.**

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- Whether one applies individually or as a corporate entity, a lender always conducts a detailed and systematic credit appraisal process.
- The credit appraisal process before giving a loan to entities is comprehensive as it appraises or evaluates management, market, technical, and financial elements.



- No lender approves and sanctions anybody's loan application instantly without an evaluation.
- A lender needs to carry out a credit appraisal process to ensure that the borrower can repay the entire loan amount on time without missing any payment deadlines.

The Hindu

Credit appraisal

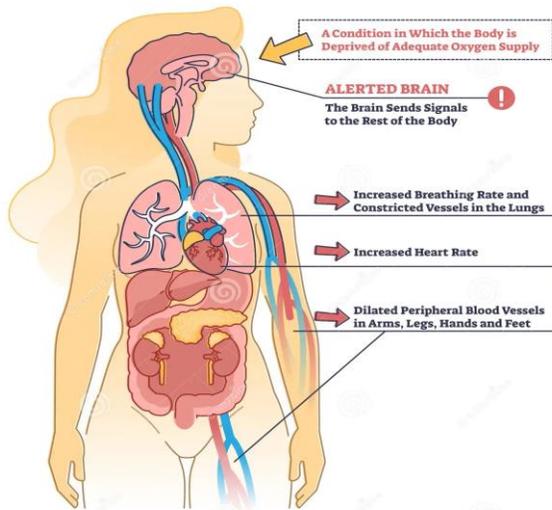
- Credit appraisal refers to assessing a particular loan application or proposal thoroughly to gauge the repayment ability of the loan applicant.
- A lender conducts a credit appraisal chiefly to make certain that the bank gets back the money that it lends to its customers.

(CIVIL SERVICES EXAMINATIONS) • This is very crucial for a bank as this determines the interest income and the capital of the bank. The repayment behavior of a borrower directly affects the performance of the bank.

The Hindu

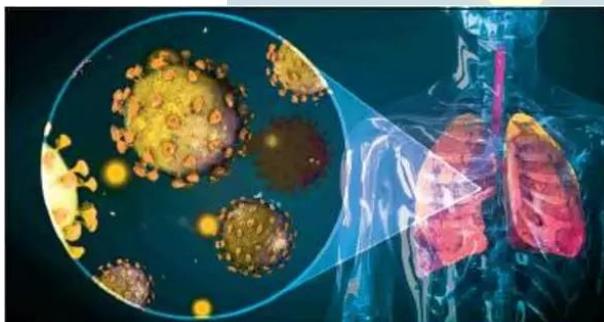
HYPOXIA

HYPOXIA



dreamstime.com

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WHAT IS HAPPY HYPOXIA

- Happy hypoxia is when patients have low oxygen saturation, but do not feel any symptoms
- They do not get alarmed till the disease has progressed and there is severe damage to lungs

- The phenomenon is particularly seen in younger people because their immunity is high
- They withstand some amount of hypoxia and are comfortable even at 81 saturation level
- This is a reason for late admissions

Why study hypoxia?

- The researchers have noted that theirs is the first study to demonstrate that oxygen restriction, or continuous hypoxia, can extend lifespan in an ageing mammal.

- Previous reports on oxygen restriction lengthening life span have come from mammalian cells grown in Petri dishes, yeast, and in less complex lab animals such as roundworms and fruit flies.
- Hypoxia prompted the mice to restrict their diets.
- But they found that the hypoxic mice ate slightly more food than those living in normoxia, ruling out dietary restriction as the fundamental underlying mechanism.

The Hindu

PANDEY CO₂ vs CH₄

- Climate talks often revolve around reducing the most dangerous greenhouse gas, carbon dioxide (CO₂).
- But other powerful heat trapping emissions, namely methane, are also likely to be in the crosshairs of negotiators at the crucial CoP28
- Atmospheric methane (CH₄) occurs abundantly in nature as the primary component of natural gas.

Current Affairs 23rd November 2023 by Saurabh Pandey

- It is the second largest contributor to climate change, accounting for around 16% of the warming effect.
- Methane remains in the atmosphere for only about 10 years, but has a much more powerful warming impact than CO₂.
- Its warming effect is 28 times greater than CO₂ over a 100 year timescale
- Agriculture is the biggest culprit, responsible for roughly a quarter of emissions.
- Most of that is from livestock (cows and sheep release methane during digestion and in their manure) and rice cultivation, where flooded fields create ideal conditions for methane-emitting bacteria.
- The energy sector coal, oil, and gas is the second largest source of human caused methane emissions.
- Methane leaks from energy infrastructure, such as gas pipelines, and from deliberate releases during maintenance.
- Discarded household waste also releases large quantities of methane when it decomposes, if left to rot in landfills.
- A recent IEA report estimates that rapid cuts in methane emissions linked to the fossil fuel sector could prevent up to 0.1 degrees Celsius of warming by midcentury
- For rice fields, changes to water management are the “most promising” way to reduce emissions, according to a FAO report

COP28

- The United Nations Framework Convention on Climate Change (UNFCCC) in 1992 noted that per capita emissions in developing countries are still “relatively low” and that their share in the global emissions will grow to meet their social and developmental needs.
- The Convention recognizes the ‘common but differentiated responsibilities and respective capabilities’ (CBDRRC) principle.
- This means different States have different responsibilities and respective capabilities in tackling climate change.
- This principle has been reaffirmed in the Paris Agreement, whose main aim is to hold “the increase in the global average temperature to well below 2 degrees Celsius above pre industrial levels” and pursue efforts “to limit the temperature increase to 1.5 degrees Celsius above pre industrial levels”.
- According to the Intergovernmental Panel on Climate Change’s Sixth Assessment Report (IPCC AR6), every 1,000 billion tonnes of CO2 in emissions causes an estimated 0.45 degrees’ Celsius rise in the global surface temperature.
- **What is the global carbon budget?**
- The term ‘global carbon budget’ refers to the maximum cumulative global anthropogenic CO2 emissions from the preindustrial era to when such emissions reach net zero, resulting in limiting global warming to a given level with a given probability.
- The remaining carbon budget indicates how much CO2 could still be emitted, from a specified time after the preindustrial period, while keeping temperature rise to the specified limit.
- The IPCC AR6 has shown that the world warmed by a staggering 1.07 degrees Celsius until 2019 from pre-industrial levels, so almost four fifths of the global carbon budget stands depleted.
- Only a fifth remains to meet the target set in the Paris Agreement

Who’s responsible for cumulative global emissions?

- According to the IPCC AR6, the developed countries have appropriated a disproportionately

larger share of the global carbon budget to date.

- The contribution of South Asia which includes India to historical cumulative emissions is only around 4% despite having almost 24% of the entire world population
- At COP 28, India must demand a fair share of its carbon budget or equivalent reparations to bring about fairness within the global order.
- Only development brings with it an assurance to tide over the roller coasters of climate change.
- Scientists estimate that at a conservative price of \$50/tCO₂eq, developed countries' carbon debt to the world is pegged at over \$51 trillion.
- Based on India's historical emissions (1850-2019), it has a carbon credit equivalent of 338 GtCO₂eq., equal to around \$17 trillion at \$50/tCO₂eq.
- Without finance and technology as promised in 1992 at the Rio Earth Summit, developing countries stare at an even more unfair world.

The Hindu

PIN

- Fathima Beevi, first woman judge in Supreme Court died.



The Hindu

AI Regulation

- India will evolve norms for regulating artificial intelligence, and the AI regulator could function like financial regulator SEBI.
- Stating that the model of self regulation and bureaucratic regulation is unlikely to work in the AI space
- India could think of having a regulator that understands the technology and pays attention to how it is evolving.
- "Need to create the equivalent (of SEBI) for the AI system.
- Need a regulator who understands the technology.

Current Affairs 24th November 2023 by Saurabh Pandey

- Have to enforce regular audits
- Good protocol on developing AI regulation.
- The Hindu

Personalized banking

- Despite personalization having been a buzzword in the banking industry for some time, 94% of banks are unable to provide customers with the kind of hyper-personalization they currently prefer.
- With growing digitalization, the way we bank has undergone a huge transformation.
- Hyper-personalization refers to a thorough and nuanced understanding of each customer's needs, preferences and behaviour; banks leverage data and analytics to gain this understanding about their customers.

- This allows banks to offer targeted services and products that are tailored to the individual customer, resulting in a more engaging and satisfactory customer experience.
- The Hindu

Mapping in news

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The Hindu

TO UPSC BRILLIANCE

Ponzi scheme

- A Ponzi scheme is an investment fraud that pays existing investors with funds collected from new investors. Ponzi scheme organizers often promise to invest your money and generate high returns with little or no risk.
- But in many Ponzi schemes, the fraudsters do not invest the money. Instead, they use it to pay those who

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invested earlier and may keep some for themselves.

- With little or no legitimate earnings, Ponzi schemes require a constant flow of new money to survive

Characteristics of Ponzi schemes

- High returns with little or no risk
- Unregistered investments. Ponzi schemes typically involve investments that are not registered with the SEC or with state regulators
- Unlicensed sellers. Federal and state securities laws require investment professionals and firms to be licensed or registered.
- Overly consistent returns. Investments tend to go up and down over time. Be skeptical about an investment that regularly generates positive returns regardless of overall market conditions.

- The Hindu

SC on governor

- The Supreme Court has laid down the law that a Governor, in case he withholds assent to a Bill, should send it back to the State legislature “as soon as possible” with a message to reconsider the proposed law.

- If the Assembly reiterates the Bill “with or without amendments”, the Governor has no choice or discretion, and has to give his assent to it

- “The substantive part of Article 200 empowers the Governor to withhold assent to the Bill.

- In such an event, the Governor must mandatorily follow the course of action which is indicated in the first proviso of communicating to the State Legislature ‘as soon as possible’ a message warranting the reconsideration of the Bill...,”

- “The ultimate decision on whether or not to accept the advice of the Governor as contained in the message belongs to the legislature alone.

- That the message of the Governor does not bind the legislature is evident from the use of the expression ‘if the Bill is passed again ...with or without amendments’,” the Bench held.

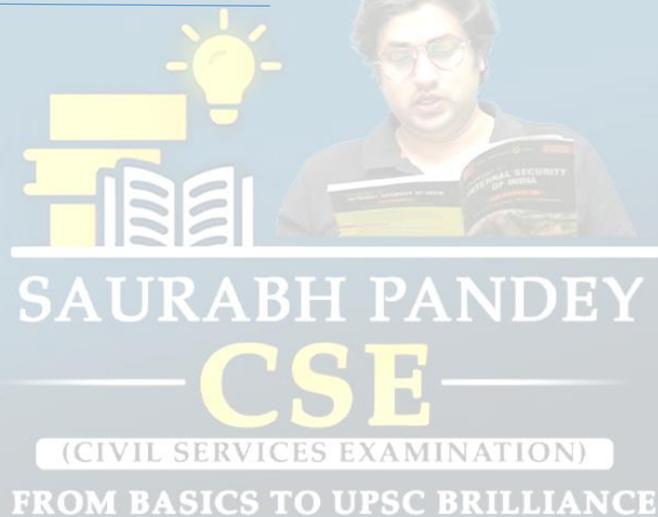
- The court held that a Governor who chooses to withhold a Bill without doing anything further would be acting in contravention of the Constitution.

- “The Governor as the unelected Head of State would be in a position to

virtually veto the functioning of the legislative domain by a duly elected legislature by simply declaring that assent is withheld without any further recourse.

- Such a course of action would be contrary to fundamental principles of a constitutional democracy based on a Parliamentary pattern of governance,”

The Hindu



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Climate smart agriculture

- The world's southern continents are reportedly experiencing severe drought due to climate change, which negatively impacts agricultural production and farmers' livelihoods.
- Both population expansion and dietary changes are contributing to an increase in the demand for food
- As a result of climate change, traditional farming practices are becoming less productive.
- Climate change is increasing the dangers faced by farmers, prompting them to reevaluate their practices.
- Climate smart agriculture is an approach for transforming food and agriculture systems to support sustainable development and safeguard food security under climate change.
- **CSA comprises three pillars or objectives**
 - (1) sustainably increase agricultural productivity and incomes;
 - (2) adapt and build resilience to climate change; and
 - (3) reduce/remove GHG (greenhouse gases) emissions, where possible."
- Dimensions of climate smart practices include water smart, weather smart, energy smart, and carbon smart practices.
- They improve productivity, deal with land degradation, and improve soil health.
- The National Action Plan on Climate Change emphasizes the role of climate resilient agriculture in India's adaptation measures.
- Programmes such as the Soil Health Card Scheme use precision nutrient management to optimize agricultural methods
- CSA promotes crop diversification, increases water efficiency, and integrates drought resistant crop types, all of which help lessen the disruptive effects of climate change.
- The importance of CSA lies in its ability to increase agricultural output while maintaining ecological stability.
- This correlation is not only a desired consequence but rather essential for long-term food security and sustainable resource usage in a warming planet.
- By reducing exposure to climate - related dangers and shocks, CSA increases resilience in the face of longer term stressors like shorter

seasons and erratic weather patterns.

- In addition to these benefits, a significant outcome of CSA implementation is the increasing economic autonomy of farmers.
- CSA causes a dramatic change in farming communities' economic and social structure by distributing information about and providing access to climate resilient methods. The increasing popularity of CSA is a promising indicator for the future of biodiversity conservation.
- CSA's ecosystem based approach and different crop varieties help cropland and wild regions coexist together.
- The majority of Indian farmers are small or marginal.
- Therefore, CSA can play a significant role in helping them increase their profits.
- The intersection of climate vulnerability and agricultural importance places India at a unique juncture where CSA adoption is not merely desirable but essential.
- The National Adaptation Fund for Climate Change, National Innovation on Climate Resilient Agriculture, Soil Health Mission, Pradhan Mantri Krishi Sinchayee Yojana, Paramparagat Krishi Vikas Yojana,

Biotech KISAN, and Climate Smart Village are a few examples of government initiatives in India focusing on CSA.

- The Hindu

H9N2

- On November 23, the details shared with the WHO by China indicated that the spike in cases and hospitalisations among children were due to Mycoplasma pneumonia pneumonia since May, and RSV, adenovirus and influenza virus since October

mycoplasma pneumonia

- Mycoplasma pneumonia is an infection of the lungs by the bacteria *Mycoplasma pneumoniae* (*M. pneumoniae*).
- This type of pneumonia is also called atypical pneumonia because the symptoms are different from those of pneumonia due to other common bacteria.

Respiratory syncytial) virus, or RSV, is a common respiratory virus that usually causes mild, cold-like symptoms. Most people recover in a week or two, but RSV can be serious.

- Adenoviruses are a group of viruses that can cause infections.
- Adenovirus infections can happen in kids of any age, but are more

common in babies and young children.

- Adenoviruses are medium-sized, nonenveloped viruses with an icosahedral nucleocapsid containing a double-stranded DNA genome.

The Hindu

- **SC on Governor**

- The Court's reading of the scheme of Article 200, which deals with grant of assent to Bills, is in line with the core tenet of parliamentary democracy: -
- that an elected regime responsible to the legislature runs the State's affairs.
- While granting assent is a routine function, the other options withholding assent or reserving a Bill for the President's consideration have been subjects of controversy.
- There is a proviso to the Article which states that "as soon as possible", the Governor may return the Bill (if it is not a Money Bill) to the House for reconsideration, but when the Bill is passed again, with or without changes, he cannot withhold assent
- The Supreme Court has now read the power to withhold assent and the proviso in conjunction, holding that whenever the Governor withholds

assent, he has to send the Bill back to the legislature for reconsideration.

- This effectively means that the Governor either grants assents in the first instance or will be compelled to do so after the Bill's second passage.
- The Court has done well to point out that Governors, in a system that requires them to function mainly on the aid and advice of the Council of Ministers, cannot withhold action on Bills and must act as soon as possible.
- This is a clear reprimand administered to Governors who believe they can endlessly delay action on Cabinet or legislative proposals because of the absence of a prescribed timeframe.
- The Ministry maintained that it is closely monitoring the reported outbreak of H9N2 cases and clusters of respiratory illness in children in northern China.
- It, however, maintained that there is a need for strengthening surveillance among human, animal husbandry and wildlife sectors, and improving coordination.

- It maintained that India is prepared for any kind of public health exigency
 - Influenza A virus subtype H9N2 (A/H9N2) is a subtype of the species Influenza A virus (bird flu virus).
 - H9N2 is the most common subtype of influenza viruses in Chinese chickens and thus causes great economic loss for the poultry industry, even under the long-term vaccination programs.
 - The H9N2 influenza virus can be transmitted by air droplet, dust, feed, or water. Chickens usually seemed to be healthy after the infection but some of them do show depression and ruffled feathers. The virus replicates itself in the trachea.
 - The Hindu
- fumarylacetoacetate hydrolase (FAH), which is needed for the final break down of the amino acid tyrosine.
 - Gaucher (go-SHAY) disease is the result of a buildup of certain fatty substances in certain organs, particularly your spleen and liver.
 - This causes these organs to enlarge and can affect their function.
 - The fatty substances also can build up in bone tissue, weakening the bone and increasing the risk of fractures.
 - Wilson disease (hepatolenticular degeneration) is a rare, autosomal recessive disorder caused by abnormal copper accumulation in the body particularly involving the brain, liver, and cornea.

Tyrosinemia Type 1, Gauchers Disease, Wilson's Disease, and the DravetLennox Gastaut Syndrome

- It affects 1 in 30,000 individuals and may present as weakness, abdominal pain, jaundice, personality change, seizures, etc.
- Providing relief to patients with rare diseases across India, the Union Health Ministry has made available generic drugs to support the care and treatment of four ailments: Tyrosinemia Type 1, Gauchers Disease, Wilson's Disease, and the DravetLennox Gastaut Syndrome.
- Tyrosinemia Type I is a rare autosomal recessive genetic metabolic disorder characterized by lack of the enzyme
- Dravet syndrome is a genetic epilepsy. The majority of children are found to have a mutation in the SCN1A gene, or sodium channel gene, whereas Lennox-Gastaut is an epilepsy syndrome with a myriad of etiologies.
- Epilepsy is a disorder of the brain characterized by repeated seizures. A seizure is usually defined as a sudden

alteration of behavior due to a temporary change in the electrical functioning of the brain

- The Ministry is also in the process of making available drugs for more rare diseases, including Phenylketonuria and Hyperammonemia, over the next few months.
- Phenylketonuria, also called PKU, is a rare inherited disorder that causes an amino acid called phenylalanine to build up in the body.
- PKU is caused by a change in the phenylalanine hydroxylase (PAH) gene. This gene helps create the enzyme needed to break down phenylalanine.

PHENYLALANINE

- Is essential amino acid
- Normally degraded by way of the tyrosine pathway
- Phenylalanine and tyrosine are precursor amino acids for important compounds like:

DEFINITION

Phenylketonuria (PKU) : is a genetic disorder that is characterized by an inability of the body to utilize the essential amino acid, phenylalanine.

SUMMARY

- Phenylketonuria is genetic disorder
- characterized by an inability of the body to utilize the essential amino acid, phenylalanine.
- phenylalanine hydroxylase, is completely or nearly completely deficient.

- Hyperammonemia is a metabolic condition characterized by the raised levels of ammonia, a nitrogen-containing compound. Normal levels of ammonia in the body vary according to age. Hyperammonemia can result from various congenital and acquired conditions in which it may be the principal toxin.

- The Hindu

CERT-IN

- CERT-In is operational since January 2004. The constituency of CERT-In is the Indian Cyber Community. CERT-In is the national nodal agency for

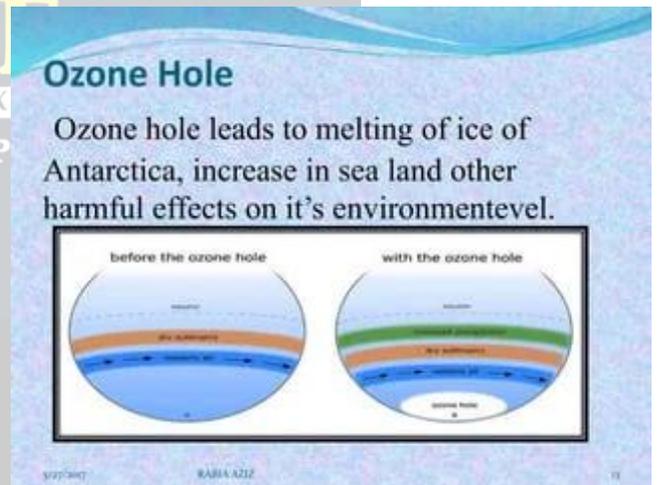
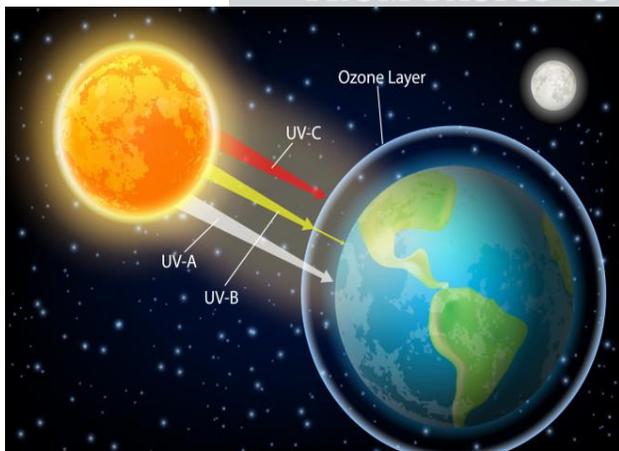
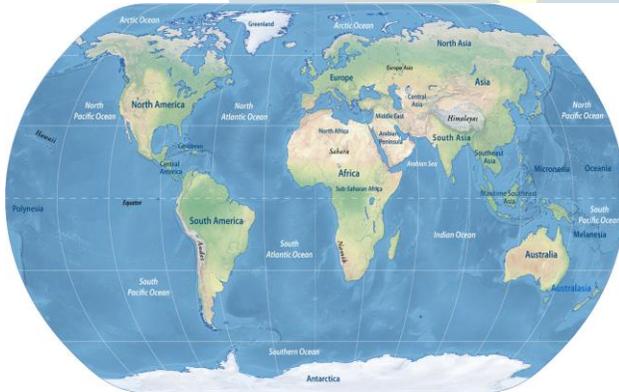
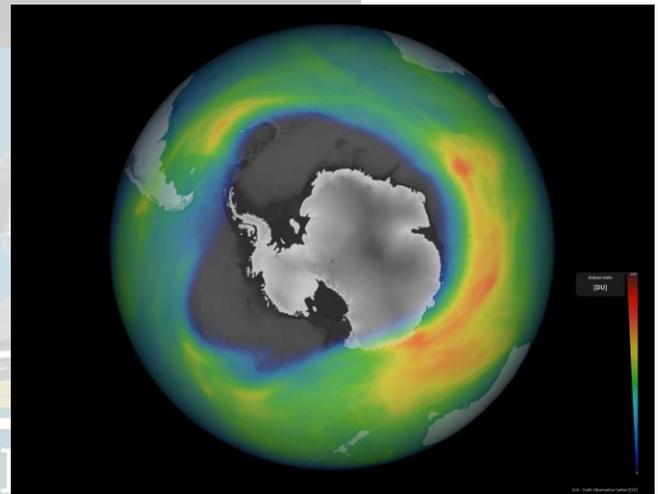
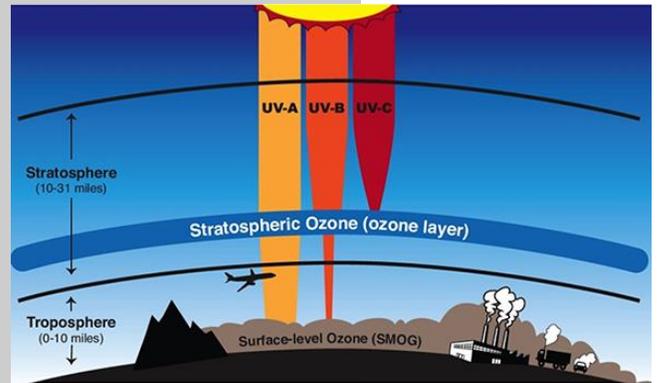
Current Affairs 25th November 2023 by Saurabh Pandey

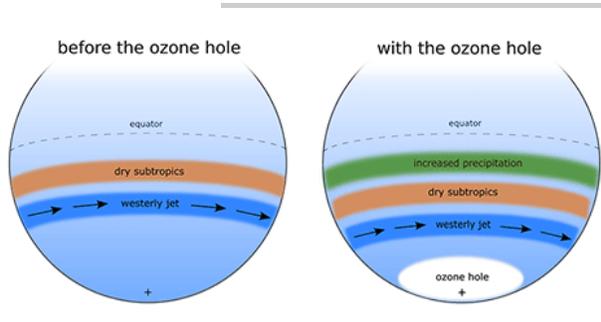
responding to computer security incidents as and when they occur.

- CERT-In has been designated to serve as the national agency to perform the following functions in the area of cyber security:
 - Collection, analysis and dissemination of information on cyber incidents.
 - Forecast and alerts of cyber security incidents. Emergency measures for handling cyber security incidents
 - Coordination of cyber incident response activities.
 - Issue guidelines, advisories, vulnerability notes and whitepapers relating to information security practices, procedures, prevention, response and reporting of cyber incidents.
 - Such other functions relating to cyber security as may be prescribed.
- [The Hindu](#)

Antarctica ozone hole

- The core (middle stratospheric layer) of the Antarctic ozone in mid spring (October) has experienced a 26% reduction since 2004, contrary to previously reported recovery trends in total ozone.
- The Montreal Protocol designated a list of controlled ozone depleting substances that were banned from future production in 1987 and is widely considered to have been successful for ozone recovery.





- However, the past three years (2020-2022) have witnessed the re-emergence of large and long lived ozone holes over Antarctica in mid spring, while early spring.
- The middle stratosphere has been dominated by continued, significant ozone reduction since 2004, amounting to 26% loss in the core of the ozone hole.
- This reduction is potentially driven by dynamical changes in the mesosphere (the atmospheric layer above the stratosphere and the ozone layer).
- The findings suggest that changes in the Southern Hemisphere atmosphere are contributing to a persistent Antarctic ozone hole.

The Hindu

Dolomite problem

- Addressing the longstanding “dolomite problem,” researchers have found that dolomite crystals require cycling of saturation conditions to grow.

- The findings provide new insights into how dolomite is formed and why modern dolomite is primarily found in natural environments with pH or salinity fluctuations.
- As per the simulation’s predictions, frequent cycling of a solution between supersaturation and undersaturation can speed up dolomite growth by up to 10 million times.
- Supersaturation is a state of a solution that contains more of the dissolved material than could be dissolved by the solvent under normal circumstances.

About Dolomite

Dolomite is a type of limestone. It is rich in magnesium carbonate and calcium carbonate.

It also contains several other minerals. Dolomite is made of 60% calcium carbonate and 40% magnesium carbonate.

- However, it might also contain heavy metals, such as lead



Extra galactic particles

- An extremely energetic cosmic ray an extragalactic particle with an energy exceeding about 240 exa-electron volts (EeV) has been detected by the Telescope Array experiment's surface detector.
- According to the findings, its arrival direction shows no obvious source.
- Although low energy cosmic rays emanate from the sun, the origins of rarer ultra-high energy cosmic rays (UHECRs) are thought to be related to the most energetic phenomena in the Universe, such as those involving black holes.

BOLT FROM BEYOND

Astronomers have detected a powerful cosmic ray beamed at Earth from a mysterious part of deep space



- Extragalactic cosmic rays are very-high-energy particles that flow into the Solar System from beyond the Milky Way galaxy.
- While at low energies, the majority of cosmic rays originate within the Galaxy, at high energies the cosmic

ray spectrum is dominated by these extragalactic cosmic rays.

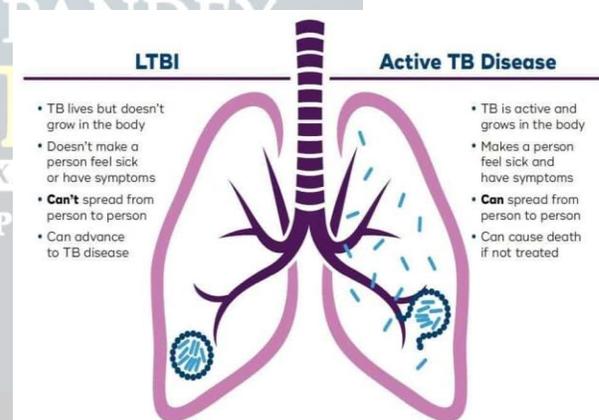
The Hindu

Dyslexia

- Dyslexia is a learning disorder that involves difficulty reading due to problems identifying speech sounds and learning how they relate to letters and words (decoding).
- Also called a reading disability, dyslexia is a result of individual differences in areas of the brain that process language.

The Hindu

3HP



- Eight months after Prime Minister Narendra Modi launched the Pan-India rollout of a shorter TB Preventive Treatment (TPT) in March 2023 called the 3HP once-weekly isoniazid-rifapentine for 12 weeks.

The Hindu

Measles

What is measles?

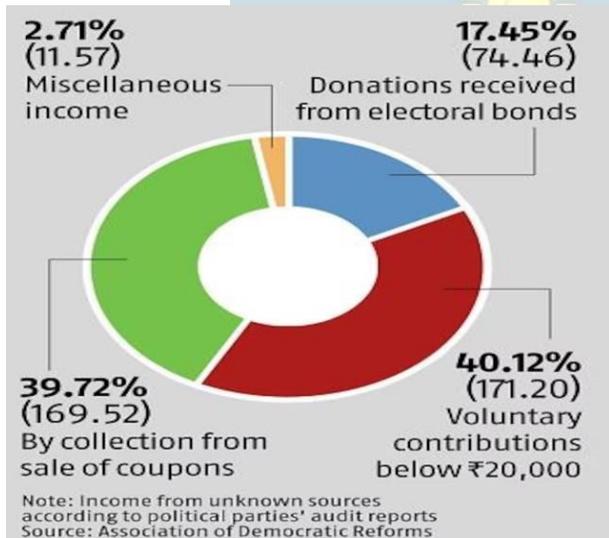
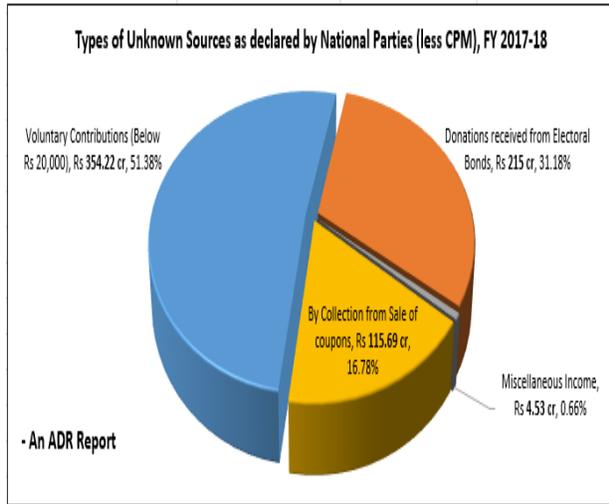
- Measles is a contagious disease caused by a virus, which spreads through the air when an infected person coughs or sneezes.
- Measles starts with a cough, runny nose, red eyes, and fever.
- Then a rash of tiny, red spots break out. It starts at the head and spreads to the rest of the body.
- According to the WHO, measles vaccination averted 56 million deaths between 2000 and 2021.
- “Even though a safe and cost-effective vaccine is available, in 2021, there were an estimated 1,28,000 measles deaths globally, mostly among unvaccinated or under vaccinated children under the age of five.
- Additionally in 2022, about 83% of the world’s children received one dose of measles vaccine by their first birthday through routine health services the lowest since 2008,” it said. Measles can be prevented with the MMR vaccine.
- The vaccine protects against three diseases measles, mumps and rubella.
- Two doses of MMR vaccine are about 97% effective at preventing

measles; one dose is about 93% effective.

- “This viral disease affecting mainly children causes significant morbidity and mortality. In an unimmunised population, the disease can rapidly break into an epidemic,”

The Hindu

Political donation/funding



Battle in top court

'Absolutely transparent': Centre tells apex court
 "...the methodology of receiving money is so transparent that it is impossible to get any money in black or unaccounted money."
 — Tushar Mehta, solicitor general, appearing for the government

Petitioners seek Constitution bench
 "Electoral bonds are the most opaque system... and a constitution bench is ideally suited to hear this."
 — Kapil Sibal, representing the petitioner

What the petitioners say
 The petitioners have claimed that electoral bonds are an anonymous route of funding that amounted to legitimising bribery. These donations enjoy 100% tax exemption and even foreign companies can donate through Indian subsidiaries

Interim safeguards
 The Supreme Court in April 2019 introduced an interim "safeguard" by directing all political parties to submit details of receipts of EBs to the Election Commission in a sealed cover

Flow of funds

A look at what the petition filed by the NGO says:

- The Finance Act of 2017 introduced the use of electoral bonds, which are exempt from disclosure under the Representation of the People Act, 1951, opening doors to unchecked, unknown funding to parties
- The amendments have removed the existing cap of 7.5% of net profit in the past three years on campaign donations by companies and have legalised anonymous donations

- Contribution received by any eligible political party in the form of electoral bonds will be exempt from income tax

The Election Commission vide letter dated May 26, 2017 and the RBI in letters on 31.01.2017, 14.09.2017, 27.09.2017 had objected to electoral bonds and advised against the issuance of electoral bonds as a mode for donation to political parties



Political parties in any country play an indispensable role in the democratic process.

They form the government and have the responsibility under our constitution of holding the government to account. It is thus essential that the parties are adequately funded in a manner which enjoys public confidence.

- The amendments made to the Representation of the People Act 1951 and other laws which provide for electoral bonds, provide complete anonymity to political donors.

The Hindu

Regulating political funding

- As far back in 1910, the United States of America enacted the Publicity Act, which not only made all funding of political parties and candidates to be

disclosed, it also imposed limits on political contribution

- In 2014, the European Union enacted a Regulation of the European Parliament and of the Council on the funding of European political parties and European political foundations.
- Under this Regulation, there were limits set on the value of donations that parties and foundations may accept per year and per donor
- In the U.K., under the Political Parties, Elections and Referendums Act 2000, there are restrictions on the donations and loans a political party can accept, and requirements for the declaration of the source of the donations.

The need for disclosure

- We need public disclosure of funding because political parties are the pillars of representative democracy and transparent accounts are the key to preserving citizens' trust in parties and politicians, maintaining the rule of law and removing corruption in the electoral and political process.
- Limits on donations are imposed because unchecked large donations to political parties and their allies have the effect of bringing democracy into disrepute.

- The outcome of elections should not depend on which party has more money to campaign and woo, or buy voters.
- The separation of wealth from power is a basic condition of a democratic system

The road ahead

- A key element of democracy is electoral justice.
- Electoral justice ensures that every action, procedure and decision related to the electoral process is in line with the law and that the enjoyment of electoral rights are protected.
- An electoral justice system upholds the rule of law and guarantees the democratic principle of holding free, fair and genuine elections.
- Electoral bonds which keep donor details undisclosed are volative of the democratic requirements of transparency and will undermine free and fair elections.
- Therefore, merely holding them unconstitutional is not enough.
- For a healthy democracy, it is absolutely necessary that we have a law that ensures full publication of all donations made to political parties.

- We need a separate legislation that mandates public disclosure of the identity of donors to political parties, candidates or political foundations which are above a certain nominal limit,
- the immediate reporting of large donations to the election commission, mandating that political party accounts be made public and reported to the election commission, auditing of accounts of political parties by an independent authority,
- Setting limits on funding and expenditure by political parties and mechanisms on enforcement of the law.

The Hindu

RBI to increase risk weights for lending

- Seeking to rein in an observed rise in unsecured personal loans and credit cards, the Reserve Bank of India (RBI) directed banks and nonbanking financial companies (NBFCs) to reserve more capital for risk weights.
- The mandatory risk weight requirement has been increased by 25 percentage points.
- This would be applicable to unsecured personal loans, credit cards and lending to NBFCs.

What has the RBI proposed?

- The idea is to address the notion of 'credit risk.'
- It refers to the risk entailed by a borrower being unable to meet their obligations or defaulting on commitments.
- 'Risk weights' are an essential tool for banks to manage this risk.
- This metric, in percentage factors, adjusts for the risk associated with a certain asset type. In other words, it is an indicator of the essential holding the lender should ideally have to adjust the associated risk.
- This is what the RBI has directed to be increased.
- The primary purpose of effective risk management by banks is to maximise their returns by maintaining credit risk exposure within acceptable parameters.
- Earlier, the RBI had raised concerns about the growth seen in consumer credit and increased dependency of NBFCs on bank borrowings. Now, it has directed that the risk weight for consumer credit exposure be increased by 25 percentage points to 125%, for all commercial banks and NBFCs.

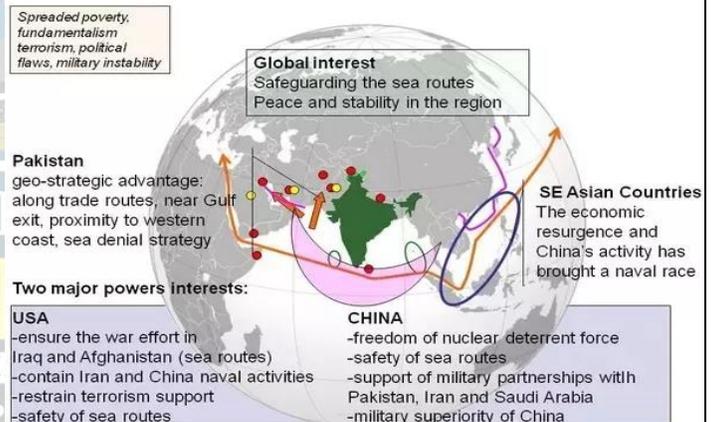
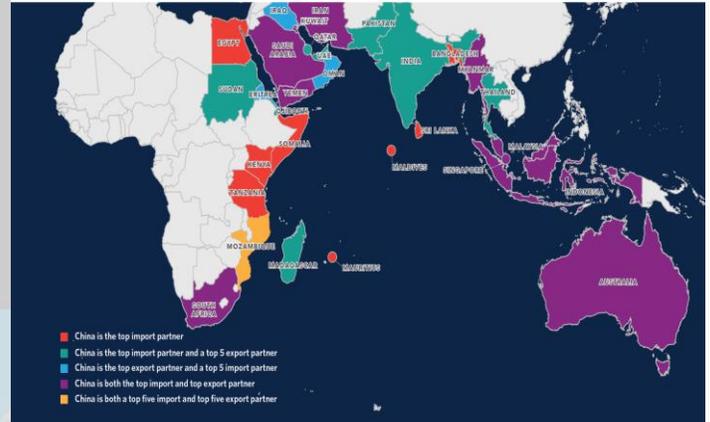
- This would apply to personal loans (and retail loans for NBFCs), excluding housing loans, education loans, vehicle loans and loans secured by gold and gold jewellery.
- At present, exposures in this realm mandate a risk weight of 100%.
- Credit card loans of scheduled commercial banks (SCBs) currently attract a risk weight of 125% while that of NBFCs attract 100%.
- The apex banking regulator has decided to increase the risk weight to 125% for NBFCs and 150% for SCBs.
- Lastly, bank credit to NBFCs, excluding core investment companies, also had their risk weights increased by 25 percentage points.
- This would, however, not apply to housing finance companies and loans to NBFCs classified into the priority sector

What are the chief concerns?

- The primary concerns relate to the impact on capital adequacy and the bank's overall profitability.
- S&P's latest report states that slower loan growth and an increased emphasis on risk management will likely support better asset quality in the Indian banking system.

Maritime security and global south

Figure 12. China's Trading Partners in the Indian Ocean Region





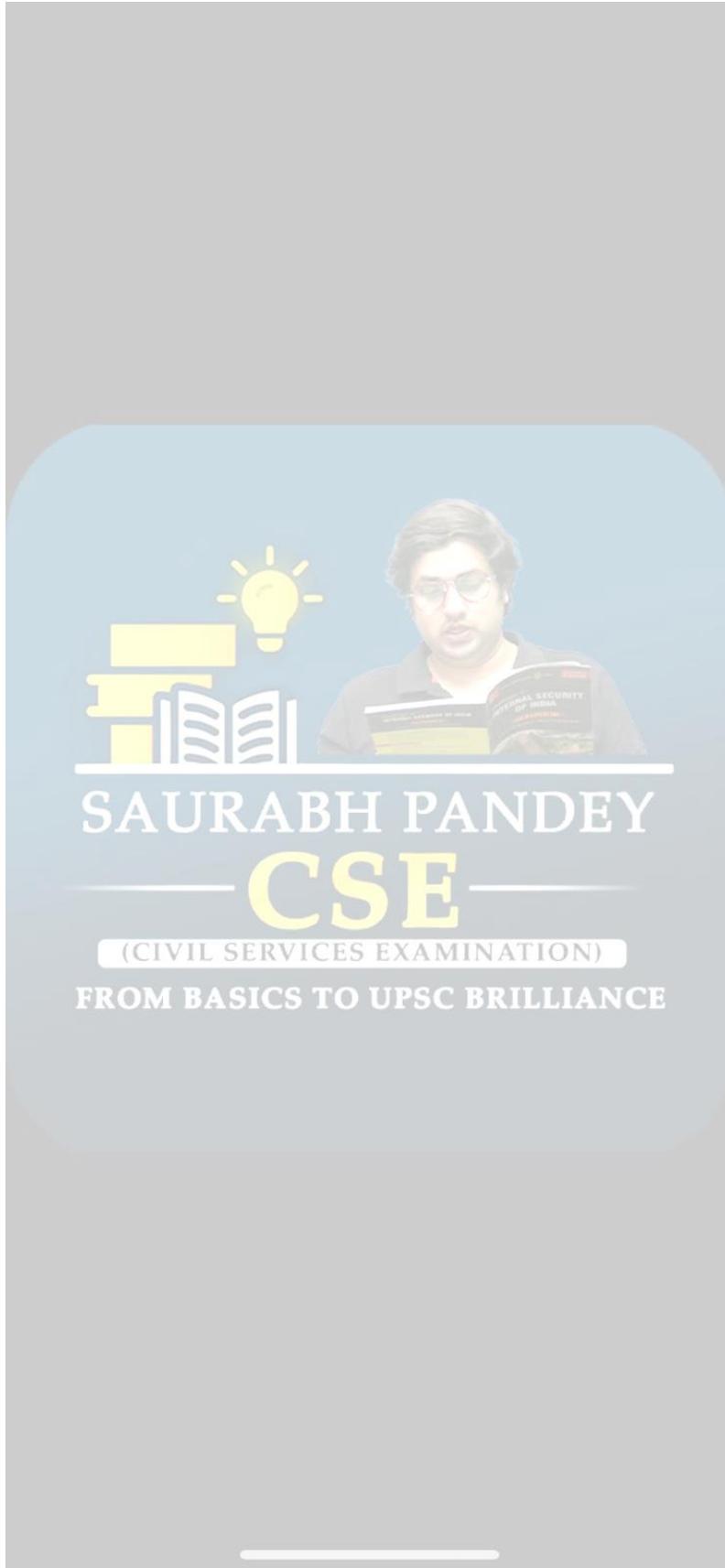
- With Ukraine's growing use of asymmetrical tactics against Russia in the Black Sea or China's deployment of maritime militias in the South China Sea, there is an unmistakable element of improvisation.
- The radical new tactics at sea involve the use of greyzone warfare, land attack missiles, and combat drones.
- It is instructive, however, that the bulk of the demand for maritime security in recent years has come from states facing unconventional security threats, such as illegal fishing, natural disasters, marine pollution, human and drug trafficking, and the impact of climate change.
- These are difficult to fight using only military means. States must instead be prepared to commit capital, resources, and specialist personnel over prolonged periods to meet security needs.
- Throughout its G20 presidency, India has sought to emphasize the concerns of the Global South in discussions to find solutions to the most pressing issues in the maritime domain.
- Yet, there is no functioning template to fight non-traditional threats at sea
- There is a widespread perception in the Global South that the zero sum competition among powerful nations in the has been to the detriment of the developing world.
- The cross jurisdictional linkages between these diverse areas make them challenging to manage.
- Rising sea levels, marine pollution, climate change, and natural disasters have had a disproportionate impact on less developed states, placing them in a position of vulnerability.
- Worryingly, littoral states in Asia and Africa have unequal law enforcement capabilities and lack the security coordination required to jointly combat maritime threats.
- Many have varying security priorities and are not always willing to leverage partner capabilities to combat threats such as piracy, armed robbery, and maritime terrorism

Approach needed

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- Sea power is increasingly about generating prosperity and meeting the aspirations of the people.
 - India's Maritime Vision 2030 sets out a creative model.
 - This 10-year blueprint for the maritime sector envisages the development of ports, shipping, and inland waterways as a way of generating growth and livelihoods.
 - Dhaka's inaugural official document on the IndoPacific details guiding principles and objectives that demonstrate a developmental approach to maritime security, focused on the provisioning of goods and services, and the protection of marine resources.
 - The talk in Africa, too, is about a thriving Blue Economy and a secure maritime domain.
 - The sharp uptick in illegal unreported and unregulated fishing has been aided by faulty policies that encourage destructive fishing methods such as bottom trawling and seine fishing.
 - Environmentalists highlight three specific anomalies: lenient regulations that allow for the misuse of resources; lax implementation of the law by security agencies; and the harmful impact of subsidies that states offer to incentivize smaller fishermen to shift to motorized trawling.
 - Among the proposals that set out ways to deal with maritime challenges is India's IndoPacific Oceans Initiative.
 - It rests on seven pillars including maritime ecology, marine resources, capacity building, disaster risk reduction, and maritime connectivity. It acknowledges that countries need collective solutions to their common problems, especially since they remain economically interdependent.
 - Implementing a collaborative strategy is challenging since it requires maritime agencies to improve interoperability, share intelligence, and agree on a regional rules based order.
 - States must adapt to an integrated form of maritime security operations and overhaul regulatory frameworks to align domestic regulation with international law an unappealing proposition for many that continue to prioritise sovereignty and strategic independence over collective action.
 - Unsurprisingly, consensus eludes the Global South.
- [The Hindu](#)

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India on Golan height

- India has voted in favour of a draft resolution in the United Nations General Assembly (UNGA) that expressed deep concern over Israel not withdrawing from the Syrian Golan.
- The Syrian Golan is a region in southwest Syria that was occupied by Israeli forces on June 5, 1967.
- The resolution, introduced by Egypt, was adopted by 91 votes in favour, eight against and 62 abstentions.
- Australia, Canada, Israel, the U.K. and the U.S. voted against it.
- The resolution also stressed the illegality of the Israeli settlement construction in the Golan.



The Hindu

Industry and Higher education

- First, HEIs and industry can only collaborate if they evolve shared goals. HEIs predominantly seek to educate students and conduct research.

- They often focus on creating theoretical knowledge.
- On the other hand, industries are profit driven and pursue practical applications of knowledge to enhance productivity and innovation.
- Second, there are cultural differences between how HEIs and industrial partners approach the issue of collaboration.
- Let us say an HEI is collaborating with an industrial partner (a renewable energy company) on a research project associated with sustainable energy
- Third, Indian HEIs must establish good communication channels with the industry.
- If a research team from a university is partnering with a pharmaceutical company, it needs to be acquainted with the industry's regulatory processes
- Fourth, Indian HEIs must focus on building trust. Let us suppose a university and a tech company are collaborating to develop a new software application.

- A professor may be an expert in developing algorithms, but the industrial partner may want solutions that can be implemented in real world products

- HEIs and industries should, therefore, work on developing a symbiotic relationship.

- Industries in specific domains should collaborate with research groups across different.

The Hindu

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Rat hole mining

- National Green Tribunal (NGT) banned it in April 2014.
- Rathole mining, of two types, is so named as it involves digging tunnels 34 feet deep, barely allowing workers to crawl in and out.
- They have to squat while extracting coal with pickaxes.
- The side cutting type of mining is usually done on hill slopes by following a coal seam dark brown or blackbanded coal deposited within layers of rock— visible from the outside.
- The second type called box cutting entails digging a circular or squarish pit at least 5 sq. metre in width up to a depth of 400 feet.
- Miners who drop down in makeshift cranes or using rope and bamboo ladders dig horizontally after finding the coal seam.

Why is such mining banned?

- The government has little control over the land in Meghalaya, a Sixth Schedule State where the Coal Mines Nationalisation Act of 1973 does not apply.
- The landowners are thus also the owners of the minerals beneath. Coal mining boomed after Meghalaya attained statehood in January 1972.
- However, the terrain and expenses involved discouraged mine owners from employing advanced drilling machines.
- So, labourers mainly from Assam, Nepal, and adjoining Bangladesh risked the hazards of rat hole mining asphyxiation

because of poor ventilation, collapse of mines due to lack of structural support, and flooding.

- Apart from issues of safety and health, unregulated mining led to land degradation, deforestation, and water with high concentrations of sulphates, iron, and toxic heavy metals, low dissolved oxygen, and high biochemical oxygen demand.
- At least two rivers, Lukha and Myntdu, became too acidic to sustain aquatic life. These factors led to the NGT banning rat-hole mining in Meghalaya in 2014
- Unlike in Chhattisgarh and Jharkhand, coal seams in Meghalaya are very thin.
- This, miners say, makes rat hole mining more economically viable than opencast mining.

• The Hindu

India and G20

- Assuming the G20 Chair, India sought to offer the world an alternative to status quo, a shift from a GDP centric to a human - centric progress. India aimed to remind the world of what unites us, rather than what divides us.
- Inclusive, ambitious, action oriented, and decisive these four words defined our approach as the G20 President, and the New Delhi Leaders' Declaration (NDLD), unanimously adopted by all G20 members,
- Inclusivity has been at the heart of our Presidency.
- The inclusion of the African Union (AU) as a permanent member of the G20 integrated

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- 55 African nations into the forum, expanding it to encompass 80% of the global population
- The first of its kind “Voice of the Global South Summit”, convened by India in two editions, heralded a new dawn of multilateralism.
- India mainstreamed the Global South’s concerns in international discourse and has ushered in an era where developing countries take their rightful place in shaping the global narrative.
- Inclusivity also infused India’s domestic approach to the G20, making it a People’s Presidency that befits that world’s largest democracy.
- Through Jan Bhagidari (people’s participation) events, the G20 reached 1.4 billion citizens, involving all States and Union Territories as partners.
- India delivered the G20 2023 Action Plan to Accelerate Progress on the Sustainable Development Goals (SDGs), taking a cross-cutting, action oriented approach to interconnected issues, including health, education, gender equality, and environmental sustainability.
- A key area driving this progress is robust digital public infrastructure (DPI).
- Here, India was decisive in its recommendations, having witnessed the revolutionary impact of digital innovations like Aadhaar, UPI, and Digi locker firsthand.
- Through the G20, we successfully completed the Digital Public Infrastructure Repository, a significant stride in global technological collaboration.
- For “One earth”, we introduced ambitious and inclusive aims to create urgent, lasting, and equitable change.
- The Declaration’s “Green Development Pact” addresses the challenges of choosing between combating hunger and protecting the planet, by outlining a comprehensive road map where employment and ecosystems are complimentary, consumption is climate conscious, and production is planetfriendly.
- In tandem, the G20 Declaration calls for an ambitious tripling of global renewable energy capacity by 2030. Coupled with the establishment of the Global Biofuels Alliance and a concerted push for Green Hydrogen, the G20’s ambitions to build a cleaner, greener world is undeniable.
- This has always been India’s ethos, and through Lifestyles for Sustainable Development (LiFE),
- The Declaration underscores our commitment to climate justice and equity, urging substantial financial and technological support from the Global North.
- For the first time, there was a recognition of the quantum jump needed in the magnitude of development financing, moving from billions to trillions of dollars.
- The G20 acknowledged that developing countries require \$5.9 trillion to fulfil their Nationally Determined Contributions (NDCs) by 2030.
- Given the monumental resources required, the G20 emphasised the importance of

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better, larger, and more effective multilateral development banks.

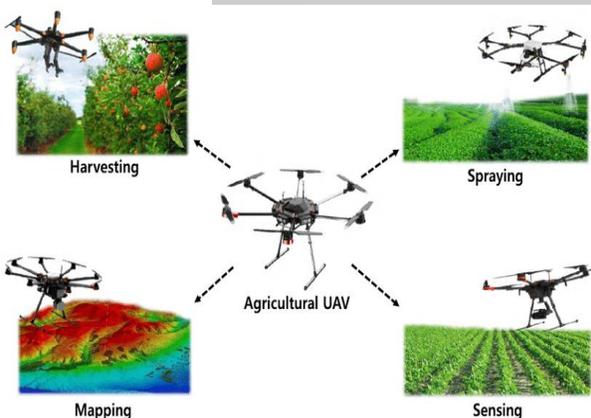
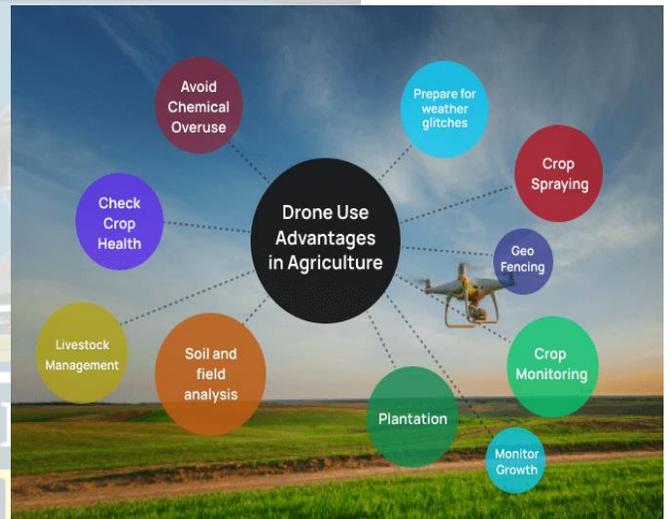
- Concurrently, India is taking a leading role in UN reforms, especially in the restructuring of principal organs like the UN Security Council, that will ensure a more equitable global order.
- Gender equality took centre stage in the Declaration, culminating in the formation of a dedicated Working Group on the Empowerment of Women next year.
- India's Women's Reservation Bill, 2023, reserving one-third of India's
- Terrorism and the senseless killing of civilians is unacceptable, and we must address it with a policy of zero-tolerance.



The Hindu

Drones application in agriculture

- The Centre will provide drones to 15,000 progressive women self-help groups (SHG) to be rented out to farmers for agricultural purposes.
- The drone services are envisaged to be used by the farmers for nano fertilizer and pesticide applications.



Paris club

- Sri Lanka has reached an "agreement in principle" with India and the Paris Club group of creditors, including Japan, on a debt treatment plan that will help the crisis hit island nation tap the next tranche of the International Monetary Fund's nearly \$3-billion recovery package.
- The Paris Club is a group of mostly western creditor countries that grew from a 1956 meeting in which Argentina agreed to meet its public creditors in Paris.

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- It describes itself as a forum where official creditors meet to solve payment difficulties faced by debtor countries

What is Paris Club?

"The Paris Club is an informal group of official creditors whose role is to find coordinated and sustainable solutions to the payment difficulties experienced by debtor countries."
"As debtor countries undertake reforms to stabilize and restore their macroeconomic and financial situation, Paris Club creditors provide an appropriate debt treatment. Paris Club creditors provide debt treatments to debtor countries."



Facilitate with:

- Debt rescheduling
- Concessional rescheduling

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Paris Club – main principles:

- Solidarity
- Consensus
- Sharing Information
- Case by Case
- Conditionality
- Comparability of Treatment



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Born in 1956:

when the first negotiation between Argentina and its public creditors took place in Paris.

Organization:

Leaders: 00000000000000

• Chairperson	Odile Renaud Basso
• Co-Chairperson	Guillaume Chabert
• Vice-Chairperson	Cyril Rousseau
• Secretary General	Geoffrey Cailloux

Terms:

Classic Terms: the standard terms available to any country eligible for Paris Club relief.
Houston Terms: for highly-indebted lower to middle-income countries.
Naples Terms: for highly-indebted poor countries.
Cologne Terms: for countries eligible for the IMF and World Bank's Highly Indebted Poor Countries Initiative (HiIPC).

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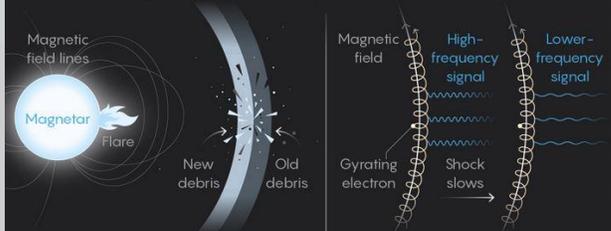
Fast radio burst

- In radio astronomy, a fast radio burst (FRB) is a transient radio pulse of length ranging from a fraction of a millisecond to 3 seconds, caused by some high-energy astrophysical process not yet understood.
- Astronomers estimate the average FRB releases as much energy in a millisecond as the Sun puts out in three days.
- Radio waves are a type of electromagnetic radiation with the longest wavelengths in the electromagnetic spectrum, typically with frequencies of 300 gigahertz (GHz) and below.

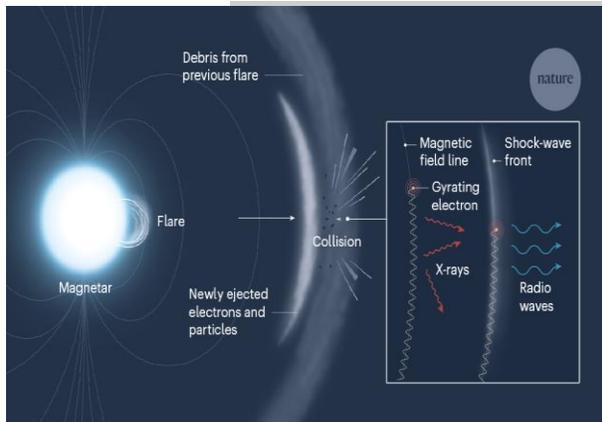


How Fast Radio Bursts Work

Fast radio bursts are brief, energetic blips of radio waves that originate far across the universe. At least one repeats, which has added to the challenge of explaining what might be creating them. A new model accounts for past observations and predicts specific features that should be seen going forward.



- 1 A magnetar releases a flare of electrons and other charged particles.
- 2 The flare collides with the remnants from an old flare, creating huge magnetic fields.
- 3 In the ensuing shock, gyrating electrons generate energetic radio waves. As the shock slows, the radio signal downshifts to lower frequencies.



towards cleaner energy, for which many countries require financial support.

5. Strong language highlighting a commitment to phasing out fossil fuels is expected to be a major point of discussion

6. In June 2023, the EU and the COP28 Presidency had pledged to seek support to increase renewable energy capacity worldwide and so help countries shift from the unabated use of fossil fuels.

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COP 28 Aim

Six topics expected to dominate discussions.

1. The global stock take is a periodic review by countries to contain greenhouse gas (GHG) emissions and transition their fossil fuel dependent energy systems to renewable energy sources

2. The COP28 Presidency and the U.N. Food Systems Coordination Hub announced a new partnership to elevate the role of food systems in achieving targets set in the Paris Agreement.

3. The idea of a 'loss and damage' (L&D) fund is to help developing countries cope with financial losses due to the climate crisis and environmental degradation. At COP27 in November 2022, representatives of countries party to the United Nations Framework Convention on Climate Change agreed to set up the L&D fund.

4. Larger provisions related to climate finance will be at the heart of COP28, including technology transfer and capacity building to reduce emissions and pivot

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