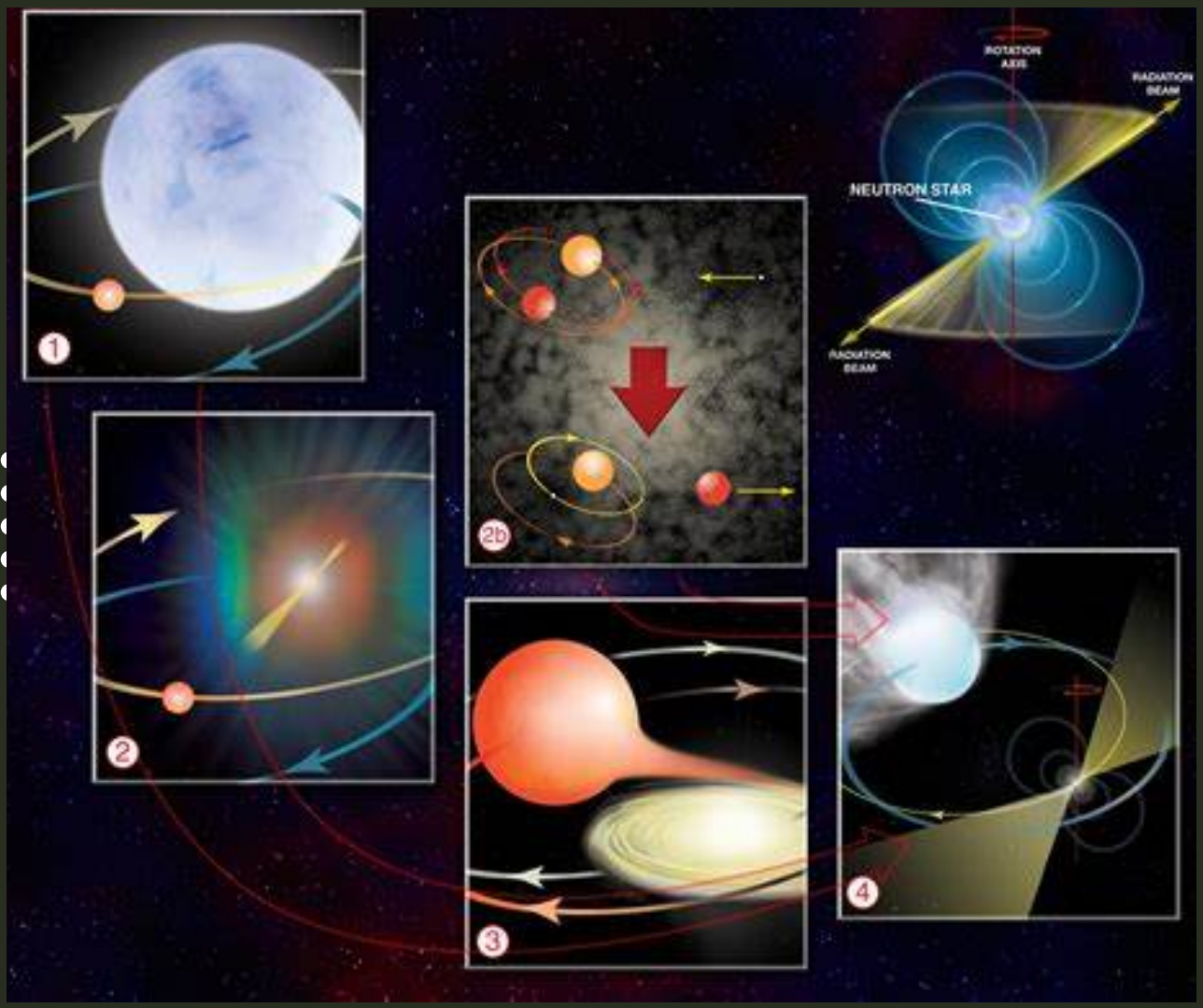
APRIL 2023

GES REPORTER



Best Geography, Science and ENvironment Magazine

April 2023

The Best Magazine for Geography, Environment, Science Technology

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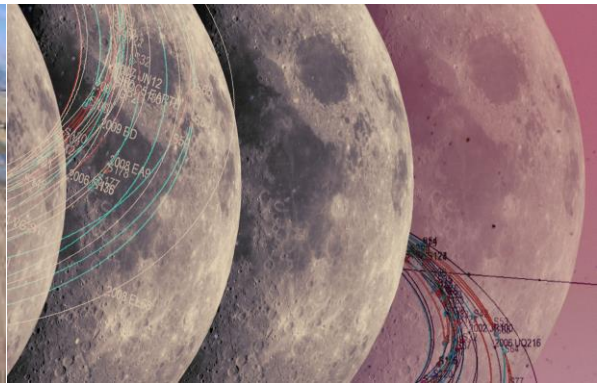

Saurabh Pandey	**Mentor**
Vishali Sharma	**Chief Editor**

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Media one case

- The Supreme Court verdict setting aside the denial of broadcasting permission to Malayalam channel Media One.
- The Court has struck a blow for media freedom by ruling that the government could not term critical coverage or airing of critical opinions as "anti -establishment", and so initiate action.
- A significant aspect of the judgement is that it seeks to end the casual resort to 'sealed cover procedure' by courts by suggesting an alternative approach to state claims of immunity from publication in public interest. Drawing upon both Indian and foreign jurisprudence, the Bench has said it is now an established principle of natural justice that relevant material must be disclosed to the affected party, ensuring that the right to appeal can be effectively exercised.
- It acknowledges that confidentiality and national security could be "legitimate aims for the purpose of limiting procedural guarantees"
- In a bid to balance the public interest in nondisclosure with the one in ensuring a fair hearing, the Court has mooted alternatives such as redacting sensitive portions and providing a gist of the material given to the affected party.
- The Court could also appoint an amicus curiae, who could be given access to the material whenever the state claims immunity from disclosure.

India space policy

- The Indian Space Policy 2023 seeks to institutionalize the private sector participation in the space sector, with ISRO focusing on research and development of advanced space technologies.
- The Indian Space Policy-2023, approved by the Cabinet Committee on Security, also delineated the roles and responsibilities of ISRO, space sector PSU News

pace India Limited (NSIL), and Indian National Space Promotion and Authorization Center.

- Union Minister Jitendra Singh said the policy will allow the private sector to take part in end- to -end space activities that include building satellites, rockets and launch vehicles and data collection.
- ISRO Chairman S. Somanath said the focus of the policy would be to increase the participation of the private players in the sector.

Regulation fake news

- The Ministry of Electronics and Information Technology on Thursday released an amendment to the IT Rules, 2021, to regulate “online real money games” where users have to risk money to play, while the Ministry of Information & Broadcasting issued a fresh advisory warning media entities, platforms, and online intermediaries against airing advertisements of betting and gambling platforms.
- In the advisory, the I&B Ministry took strong exception to the recent instances of mainstream English and Hindi newspapers carrying advertisements and promotional content of betting websites.

- The government would be constrained to take appropriate legal action against any non-compliance.
- “The advisory has been issued to all media forms.
- The IT Ministry’s Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2023 require real money gaming platforms to register with a self-regulatory body (SRB) that will determine whether or not the game is “permissible”

Monetary policy

- The Reserve Bank of India’s Monetary Policy Committee (MPC) has unanimously and wisely decided to apply a temporary pause to its inflation -battling monetary tightening by keeping the repo rate unchanged.

  - Developments in the global financial system, particularly the banking sector turmoil and the volatility and uncertainty they have triggered, have weighed heavily on policymakers’ decision to wait and watch.

  - It is the spectre of rising credit costs posing risks to both consumption demand and private investment that was a key factor in the World.

  - Global economy still facing headwinds including unabated geopolitical tensions, which the World Bank warned could result in a recession were more shocks to

occur, the RBI's policymakers have judiciously chosen to subordinate their concerns over inflation

- As the RBI's latest Monetary Policy Report notes, upside risks to the inflation outlook emanate from factors including higher global crude and commodity prices and extreme weather conditions, and deficient monsoon rains.
- Already, as Mr. Das acknowledged, the sudden recent announcement of an output cut by OPEC producers had resulted in a jump in crude prices, which could well upset the RBI's assumption of crude averaging $85 a barrel (for the Indian basket) this year.
- Similarly, the outlook for food prices to is beset with uncertainty given the unseasonal rains in parts of the country combined with the likelihood of an El Niño, which could raise summer temperatures and depress monsoon rainfall.

LIGO

- The Union Cabinet's approval to set up a gravitational -wave detection facility in Maharashtra, a ₹2,600 crore project, is one that will consist of a detector called the Laser Interferometer Gravitational Wave Observatory (LIGO), to be built in

the image of the twin LIGO instruments already operational in the U.S.

- Their detection of gravitational waves, in 2016, launched a new era of astronomy.
- Second, LIGO -India can demonstrate an ability to reckon intelligently with Indian society's relationship with science, using the opportunities that Big Science affords
- LIGO stands for "Laser Interferometer Gravitational-wave Observatory".
- LIGO exploits the physical properties of light and of space itself to detect and understand the origins of gravitational waves (GW).
- LIGO does not see electromagnetic radiation (e.g., visible light, radio waves, and microwaves).
- It doesn't have to because gravitational waves are not part of the electromagnetic spectrum.
- They are a completely different phenomenon altogether

Genome India project

- The Genome India Project, a Centre backed initiative to sequence 10,000 Indian

human genomes and create a database.

- About 20 institutions across India are involved in the project though the analysis and coordination is done out of the Centre for Brain Research, Indian Institute of Science (IISc), Bangalore.
- Its aim is to ultimately build a grid of the Indian "reference genome", to fully understand the type and nature of diseases and traits that comprise the diverse Indian population.
- The mega project hopes to form a grid after collecting 10,000 samples in the first phase from across India, to arrive at a representative Indian genome.
- The Indian population of 1.3 billion consists of over 4,600 population groups, and many of them are endogamous.
- Creating a database of Indian genomes means that researchers anywhere can learn about genetic variants that are unique to India's population groups and use that to customize drugs and therapies.

- "It is necessary to create public infrastructure such as genomic databases similar to what the Information Technology industry has created for India's biotechnology sector to expand and have more valuable companies and

startups,”.

Magic Number

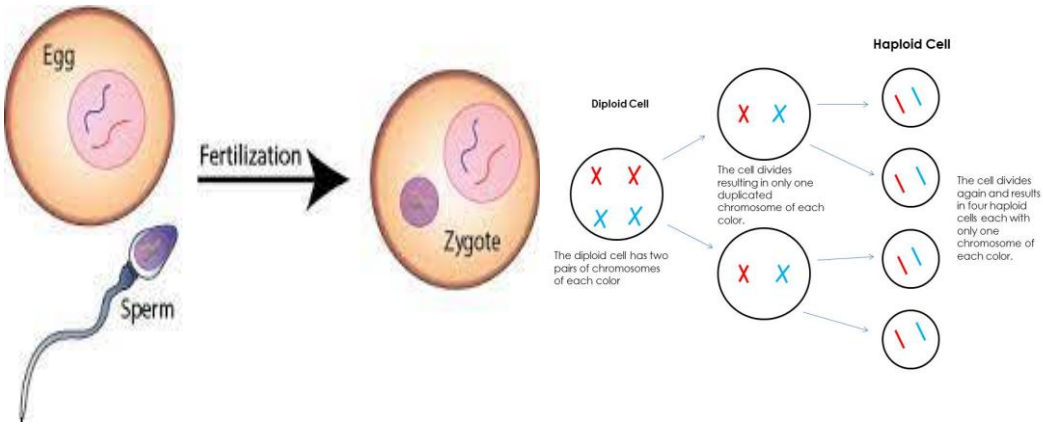
- While studying the atoms of heavy elements, physicists in Japan discovered a previously unknown isotope of uranium, with atomic number 92 and mass number 241, i.e. uranium-241.
- “The discovery of a new neutron -rich uranium isotope is the first since 1979,”
- “In general, an atom’s mass is slightly lower than the sum of the masses of protons, neutrons, and electrons,”
- systematically measuring the mass of “uranium and its neighborhood elements yields essential nuclear information to understand the synthesis of such heavy elements in explosive astronomical events

What is magic no. Nuclei??

- Physicists refer to the number of protons or neutrons in a full shell as “magic” numbers, with numbers 2, 8, 20, 28, 50, 82, and 126 widely recognized as being “magic” numbers. The number of protons and neutrons also determines the size of an atom's nucleus, called its charge radius.
- In nuclear physics, a magic number is a number of nucleons such that they are arranged into complete shells within the atomic nucleus.

Yellow crazy ant- Haploid

- Male yellow crazy ants (Anoplolepis gracilipes) are chimeras of two separate genetic lineages, researchers report in a study (Science) that reveals a unique mode of reproduction in this species one previously unknown to science.
- While most multicellular organisms develop from a single cell zygote into a collection of genetically identical cells a hallmark of biological inheritance the new findings show that male yellow crazy ants are composed of haploid cells with two distinct genetic compositions.



- Haploid refers to the presence of a single set of chromosomes in an organism's cells.
- Sexually reproducing organisms are diploid (having two sets of chromosomes,

one from each parent). In humans, only the egg and sperm cells are haploid.

PHA Plastic

- A class of polyesters considered a promising alternative to common plastics have now been made more mechanically tough and thermally stable.
- Researchers replaced the reactive hydrogens in the monomer of these materials polyhydroxyalkanoate (PHA) plastics and found that it enhanced PHA thermal and mechanical properties and enabled closed loop chemical recyclability.
- The new approach (Science) could provide a route for increased use of sustainable PHA plastics.

What are PHA??

- Polyhydroxyalkanoates or PHAs are polyesters produced in nature by numerous microorganisms, including through bacterial fermentation of sugars or lipids.
- When produced by bacteria they serve as both a source of energy and as a carbon store.
- More than 150 different monomers can be combined within this family to give

materials with extremely different properties. These plastics are biodegradable and are used in the production of bioplastics.[3]

- They can be thermoplastic, with melting points ranging from 40 to 180 °C

Autoimmune

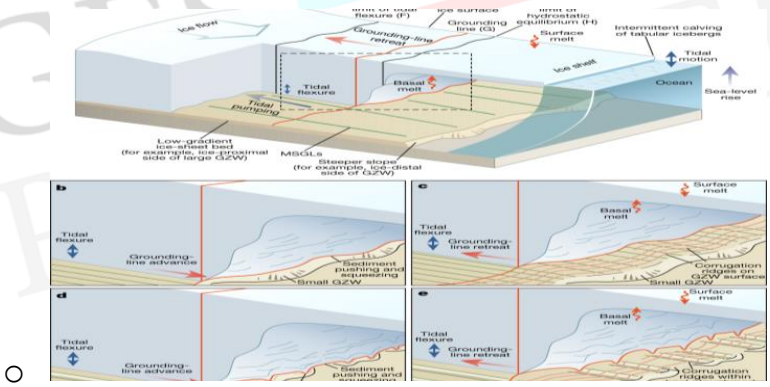
What is an autoimmune disease?

- The immune system usually guards against bacteria and viruses. When it senses these foreign invaders, it sends out an army of fighter cells to attack them.
- Usually, the immune system can tell the difference between foreign cells and your own cells.
- In an autoimmune disease, the immune system mistakes part of your body, like your joints or skin, as foreign. It releases proteins called auto antibodies that attack healthy cells.

- Some autoimmune diseases target only one organ. Type 1 diabetes damages the pancreas. Other diseases, like systemic lupus erythematosus (SLE), or lupus, can affect the whole body.

Ice sheet retreat

- Ice sheets can retreat up to 600 metres a day during periods of climate warming, 20 times faster than the highest rate of retreat previously measure



- While the first infection with any of the four dengue serotypes can prevent reinfection by the same serotype for a long period, the second infection by a different serotype can have very high viral load and cause severe disease.

- This is because the cross protection offered by the first infection acts as a shield against other serotypes only for two- three years and then begins to drop.

- While the antibodies are not able to neutralize the virus belonging to different serotypes, the virus is better able to bind to the antibodies leading to higher cell

infection and thus enhanced severity and viral load. This is called the antibody-dependent enhancement mediated by cross-reactive antibodies.

- While the virus that is identical to the one that caused the first infection will be neutralized for a long time, viruses that are a bit look-alike of the serotype that caused the first infection have a greater ability to take advantage of the weakened immune responses and bind to pre-existing antibodies and cause severe disease than the three other serotypes that did not cause the first infection
- The dominant immune selection pressure has led to the emergence of a unique Indian dengue lineage (DENV-4-Id) belonging to serotype 4 (DENV-4).
- "The DENV-4-Id lineage has diverged away from global sequences,"
- "The DENV-4-Id lineage is dominant in South India, and about 50% of infections in South India are due to this India Unique lineage,"
- The E gene, which is seen across the dengue virus exterior, plays an important role in binding to the cell receptors.

Pulicat Lake

- The island of Sriharikota serves as a barrier that shields a brackish water lagoon that we call the Pulicat Lake.
- Being mostly off -limits to tourists because it is an ISRO launch site, this area is teeming with 76 species of water birds. The lake itself has an average depth of only one meter, although it is nearly 60 km long
- Pulicat Lake is the second largest brackish water lagoon in India, measuring 759

square kilometers.

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Second space age

- The Space Age began in 1957 with the launch of satellite Sputnik 1, and in 1961, cosmonaut Yuri Gagarin became the world's first person in space.
- Neil Armstrong made history by walking on the moon in 1969. The First Space Age became reality. Today, the Second Space Age is here.
- The origins of the Second Space Age can be traced to the Internet.
- In India, the process began accelerating as the 1990s saw the emergence of private TV channels, together with cable TV followed by direct home transmissions.
- The demand for satellite transponders and ground- based services exploded.

Today, more than half the transponders beaming into Indian homes are on foreign satellites.

- The age of mobile telephony, followed by smartphones has shown the world what a data- hungry and data rich society India is. Broadband, OTT, and now 5G promise a double- digit annual growth in demand for satellite -based services.
- In 2020, the global space economy was estimated at $450 billion, growing to $600 billion by 2025.
- The Indian space economy, estimated at $9.6 billion in 2020, is expected to be $13 billion by 2025
- Media and entertainment account for 26% of India's space economy, with consumer and retail services accounting for another 21%.
- In terms of space activities, downstream activities such as satellite services and associated ground segments are dominant, accounting for over 70% of India's space economy; upstream activities of satellite manufacturing and launch services contribute the smaller share.
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- The growing role of the private sector is also evident in the numbers and

ownership of satellites.

- According to the United Nations Office for Outer Space Affairs (UNOOSA), there are 8,261 satellites in orbit, of which nearly 5,000 are active.
- Till 2010, about 60 to 100 satellites were launched annually. The pace has picked up in recent years. In 2020, 1,283 satellites were launched.
- Today, Starlink operates a constellation of over 3,500 satellites and has a million paying customers.
- Both Starlink and One Web (in which Airtel has a stake) project constellations of 40,000 satellites each. And Jeff Bezos of Amazon has launched Project Kuiper to bring low -latency broadband connectivity around the globe.

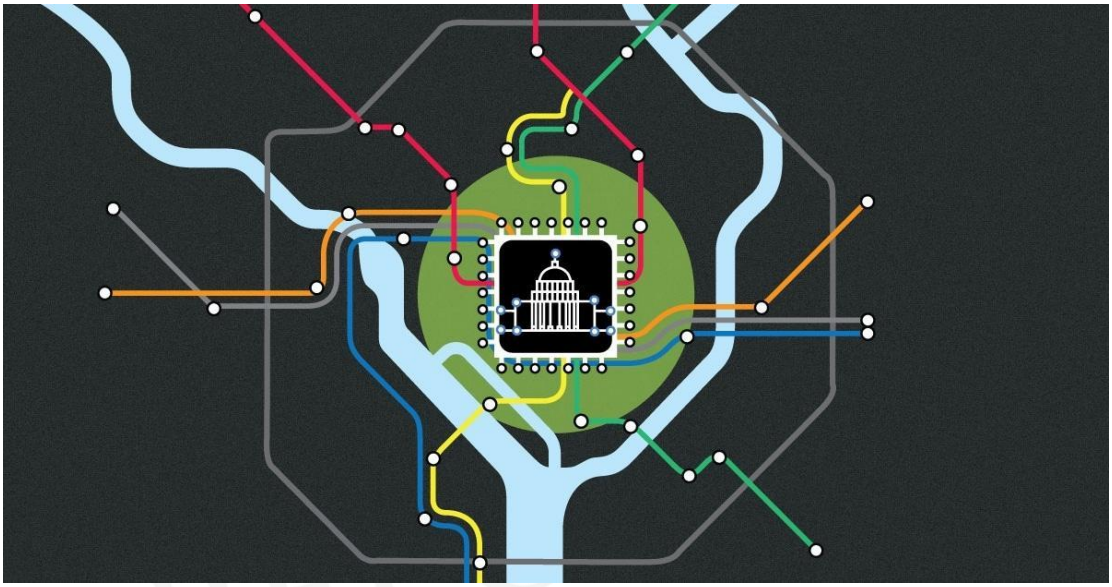
Creating an enabling environment

- The Indian private sector is responding to the demands of the Second Space Age.
- From less than a dozen space start-ups five years ago, there are over 100 today.
- The pace of investment is growing. From $3 million in 2018, it doubled in 2019 and crossed $65 million in 2021.
- Today, ISRO manages four to five launches annually. It manages 53 operational satellites 21 for communication, 21 for earth observation, eight for navigation and the remaining as scientific experimental satellites (China operates 541). In addition, ISRO has missions such as Chandrayaan, Mangalyaan, and Gaganyaan (manned space mission).
- Government introduced the first draft of the Space Activities Bill in Parliament but it lapsed in 2019.

- There has been talk of commercializing the PSLV and SSLV launch services and NewSpace India Limited (NSIL) was set up to replace Antrix.
- The Indian National Space Promotion and Authorization Centre (IN-SPACe) was set up in 2020 as a single -window- clearance for the private sector.

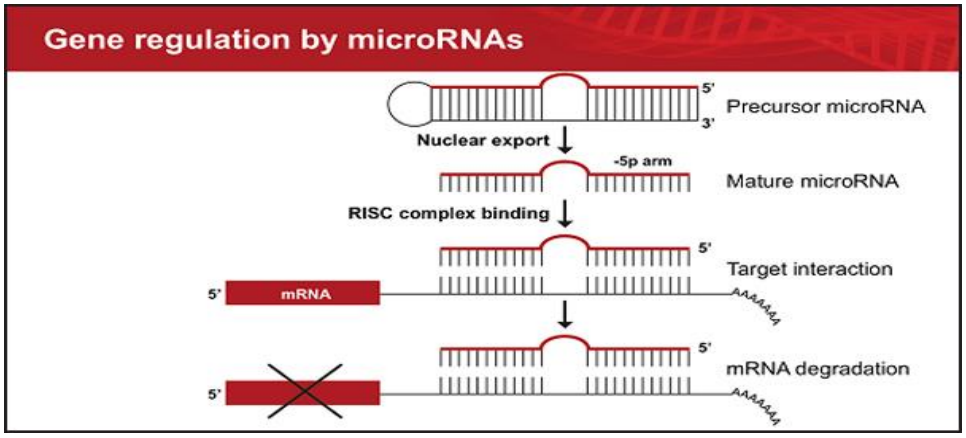
AI and smarter legislation

- Artificial Intelligence (AI) is attracting the attention of entrepreneurs, political leaders, and policymakers the world over.

- Most mature democracies are now using AI tools for better pieces of legislation and parliamentary procedures.
- For instance, AI tools can assist parliamentarians in preparing responses for legislators, enhancing research quality, obtaining information about any Bill, preparing briefs, providing information on particular House rules, legislative drafting, amendments, interventions, etc.
- 

Mi RNA

- Endometriosis is a painful chronic disease in which tissue similar to the lining of the uterus, or endometrium, grows outside of it.
- MicroRNA (miRNA) are small, single-stranded, non-coding RNA molecules containing 21 to 23 nucleotides. Found in plants, animals, and some viruses, miRNAs are involved in RNA silencing and post-transcriptional regulation of gene expression



Tiger census

- India's tiger population in 2022 was at least 3,167 cats, according to the results of the quadrennial census of the tiger population.
- The previous such exercise, in 2018, estimated the number to be 2,967
- Being the 50th year of Project Tiger, it is notable that governments, since 1973, have consistently devoted attention to ensuring that tigers generally vulnerable to environmental degradation and extinction in several countries continue to populate India’s forests.
- Being able to ensure an increase in tiger numbers without relying on fenced reserves and by engaging the participation of forest- dwelling communities in conservation are distinct traits of India’s big cat conservation approach.
- The ‘Status of Tiger’ report warns that all of India’s five main tiger zones, while largely stable, face challenges of deforestation and loss of tiger habitat.
- The Western Ghats, while one of the most biodiverse spots globally, also hosts some of India’s most populous tiger reserves.
- Over the years, there is an increasing presence of tigers outside protected reserves.
- From nine tiger reserves in 1973 to 53 today, the increase in numbers has not translated to all of these reserves becoming suitable habitats for tigers.
- Serious conservation efforts are needed to help, for instance, tiger population recovery in Jharkhand, Odisha, Chhattisgarh, Telangana, and Andhra Pradesh.

- Wildlife habitats here face various threats that include habitat encroachment, hunting, and conflicts with humans, unregulated cattle grazing, excessive harvesting of non timber forest products, fires, mining, and expanding infrastructure.
- India's reserves, in their present state, ought to be able to sustain populations of up to 4,000, and with expanded efforts at improving fledgling reserves, these numbers can increase.
- But, care has to be taken to maintain the delicate balance between making the ground fertile for conservation and keeping the rights of forest-dwelling communities intact.
- Showcasing conservation efforts ought not to come at the expense of ensuring the right to livelihood and dignified living of communities, who often live the closest to these majestic wild creatures

Climate change and wheat

- The unusual rise in mercury in February this year, followed by an untimely spell of widespread rain during the month of March in parts of the country's key grain- producing States has left wheat- growing farmers worried as

they anticipate a drop in yield.

- It's not just the untimely rains in March, but the unusually higher temperature in February this year that has also been detrimental for the wheat.
- Heat that severe could cause crop failures.
- "Physiologically, if we get heat waves that are unprecedented and bigger than things that we've seen in the past, this can be devastating for wheat crops. She added that these two key agricultural areas have never experienced temperatures as high or damaging as the climate models say is possible.

EL NINO and monsoon

- The monsoon rainfall in India is expected to be 94% of the long -term average, said Skymet, retaining its previous forecast of a subpar monsoon.
- India defines normal rainfall as between 96% and 104% of the 50-year average of 88 centimeters for the four -month season beginning June.

- India is likely to get “below -normal” monsoon rainfall in 2023, with an increased likelihood of Elion, which typically brings dry weather to Asia.
- Likelihood of El Nino is increasing and its probability to become a dominant category during the monsoon is growing large.

Weaponization of space

- Weaponising space entails putting weapons in space or on celestial bodies, along with developing weaponry that can travel across space as well as from Earth to destroy targets in the outer spectrum.
- Locating orbital or suborbital satellites to strike opponent spacecraft, utilizing ground-based specific ascent missiles to target space assets, jamming indicators sent out by opponent spacecraft, using laser light to immobilize enemy satellites, plasma targets, orbital ballistic missiles, and satellite strikes on Earth aims are all such examples.
- The militarization of space is not anything like space weaponization.

- The militarization of space occurs when space assets are utilized to acquire relevant data to aid armies in conducting terrestrial, aerial, and marine activities.
- Using the space field against land objects or targeting weapons in orbital space, on the other hand, comes under the realm of weaponization, as does harm or destroy another province's space holding.
- Analysts believe that the extraordinary increase of Chinese space assets, and also China's aim to rule outer space, has heightened the need for democratic states to join together to protect their strategic objectives while also promoting long-term stability in the skies above.
- They believe that a slew of technological advancements over the last few years have resulted in a dramatic increase in the devastating capability of space warfare.

6 GHZ spectrum

- The primary differences between wireless frequencies are the range (coverage) and bandwidth (speed) that the bands provide.
- The 2.4 GHz band provides the most coverage but transmits data at slower speeds.

- The 5 GHz band provides less coverage but transmits data at faster speeds.
- The 6 GHz band, introduced with the new WiFi 6E standard, provides the least coverage but transmits data at the fastest speeds of the three frequencies.
- Your WiFi connection on a particular frequency band can also be affected by interference from other devices.
- Many WiFi-enabled technologies and other household devices use the 2.4 GHz band, including microwaves and garage door openers. When multiple devices attempt to use the same radio space, overcrowding occurs.
- Wireless range decreases with higher frequencies because higher frequencies cannot penetrate solid objects, such as walls and floors.
- However, higher frequencies allow data to be transmitted faster than lower frequencies, so higher frequencies like 5 GHz and 6 GHz allow you to upload and download files faster than 2.4 GHz.
- The 5 GHz band tends to have less overcrowding than the 2.4 GHz band because fewer devices use it and because it has 23 channels for devices to use, while the 2.4 GHz band has only 11 channels. The number of channels that are available to you depends on the wireless regulations in your region. If you're experiencing a lot of interference from other devices, consider using the 5 GHz band.
- The 6 GHz band is newly certified and is exclusive to devices that support WiFi 6E.
- This means that on 6 GHz, the WiFi network doesn't need to slow down

to accommodate legacy devices.

- The 6 GHz band also supports almost twice as many channels as 5 GHz. Fewer devices, more spectrum, and more bandwidth mean less interference and network congestion.

Exercise Cope India 23

- Exercise Cope India 23, a bilateral Air Exercise between the Indian Air Force (IAF) and the United States Air Force (USAF) is being held at Air Force Stations Arjan Singh (Panagarh), Kalaikunda and Agra. The exercise aims to enhance mutual understanding between the two Air Forces and share their best practices.

LHC

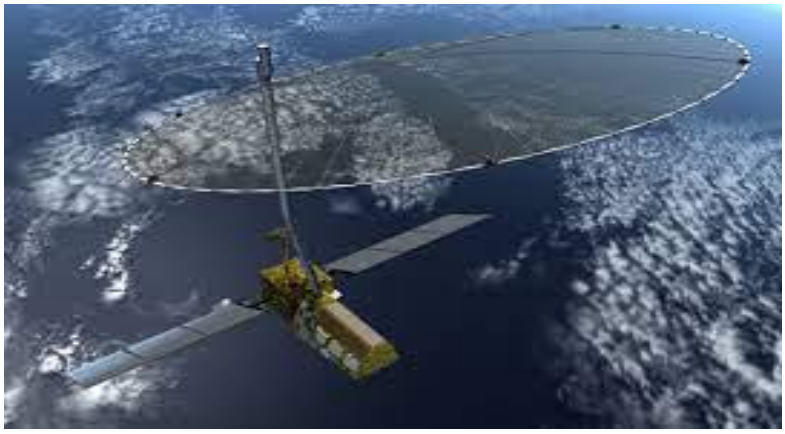
- The Large Hadron Collider (LHC), built by the European Organization for Nuclear Research (CERN), is on the energy frontier of physics research, conducting experiments with highly energized subatomic particles..
- First, it is so large that it is the world's largest science experiment.
- Second, it is a collider. It accelerates two beams of particles in opposite directions and smashes them head on
- Third, these particles are hadrons.

The functioning of the LHC

- A hadron is a subatomic particle made up of smaller particles. The LHC typically uses protons, which are made up of quarks and gluons.
- It energizes the protons by accelerating them through a narrow circular pipe that is 27 km long.
- When two antiparallel beams of energized particles collide head-on, the energy at the point of collision is equal to the sum of the energy carried by the two beams.

- *The findings of the LHC*

  - The LHC consists of nine detectors.
  - Located over different points on the beam pipe, they study particle interactions in different ways.
  - Every year, the detectors generate 30,000 TB of data worth storing, and even more overall. Physicists pore through this data with the help of computers to identify and analyze specific patterns.
  - This is how the ATLAS and CMS detectors helped discover the Higgs boson in 2012 and confirmed their findings in 2013.
  - ATLAS and CMS are the two 'general-purpose' detectors at the LHC. They're looking for any new particles or unknown physics that the LHC's record-breakingly high energies might allow us to observe for the first time
  - NISAR uses a sophisticated information-processing technique known as synthetic aperture radar to produce extremely high-resolution images.
  - Radar penetrates clouds and darkness, enabling NISAR to collect data day and night in any weather
  - NISAR is planned to launch in 2024 from India’s Satish Dhawan Space Center in Sriharikota, India, into a near-polar orbit.

- 

NISAR

- The NASA-ISRO SAR (NISAR) Mission will measure Earth's changing ecosystems, dynamic surfaces, and ice masses providing information about biomass, natural hazards, sea level rise, and groundwater, and will support a host of other applications.
- NISAR will observe Earth's land and ice-covered surfaces globally
- NISAR is the first satellite mission to collect radar data in two microwave bandwidth regions, called the L-band and the S-band, to measure changes in our planet's surface, including movements as small as a centimeter.
- This allows the mission to observe a wide range of Earth processes, from the flow rates of glaciers and ice sheets to the dynamics of earthquakes

and volcanoes.

- NISAR, jointly developed by the Indian Space Research Organization (ISRO) and the National Aeronautics and Space Administration (NASA) of the U.S. will map the most earthquake-prone regions in the Himalayas with unprecedented regularity.
- The data this will generate can potentially give advance warning of land subsidence, as recently observed in Joshimath, Uttarakhand, as well as point to places that are at greatest risk from earthquakes.

Chabahar Port

- **REASONS WHY CHABAHAR PORT IS CRUCIAL FOR INDIA**

- The first and foremost significance of the Chabahar port is the fact that India can bypass Pakistan in transporting goods to Afghanistan. Chabahar port will boost India's access to Iran, the key gateway to the International North-South Transport Corridor that has sea, rail, and road routes between India, Russia, Iran, Europe and Central Asia.
- Chabahar port will ensure the establishment of a politically sustainable connectivity between India and Afghanistan. This is will, in turn, lead to better economic ties between the two countries.

- From a diplomatic perspective, Chabahar port could be used as a point from where humanitarian operations could be coordinated.

Tiger conservation

- Much of the success of wildlife conservation in India has been attributed to the Wild Life (Protection) Act (WLPA).
- We are now losing tigers from Jharkhand, Chhattisgarh, and the Eastern Ghats and from the Northeastern forests.
- With it, we lose genetic diversity unique to these geographical regions, dashing hopes of maintaining long--term population viability and natural recovery
- Chabahar port will be beneficial to India in countering Chinese presence in the Arabian Sea which China is trying to ensure by helping Pakistan develop the Gwadar port.
- Gwadar port is less than 400 km from Chabahar by road and 100 km by sea.
- With Chabahar port becoming functional, there will be a significant boost in the import of iron ore, sugar, and rice to India.

- The import cost of oil to India will also see a considerable decline. India has already increased its crude purchase from Iran since the West-imposed ban on Iran was lifted.

Tiger census

- A tool that is increasingly being used to thwart this reduction is to reintroduce tigers from central Indian forests, where the populations are thriving, as was done for the Panna and Sariska Tiger Reserves.
- However, if this is done too often, re-introduction will homogenize tiger genetic structure across the country.
- The tiger was considered an “umbrella species”. Saving the tiger meant saving the entire ecosystem.
- Tigers in India occur in a wide range of habitat types, from the evergreen forests of the Western Ghats to the Terai grasslands of the Himalayan foothills; from the tropical dry forests of Rajasthan to the mangroves of the Sundarbans.
- Given the inherent differences in such habitat types, it is inevitable that not all of them will support similar densities of tigers.
- Habitats that boast the highest tiger numbers are typically those with a high prey abundance
- The most common interventions were to manipulate ecosystems so that they could support the high densities of the tiger’s principal prey species.
- In most cases, this involved improving the habitat for the cheetah, a mixed feeder that thrives in the ‘ecotone’ (a transition area between two biological communities) between forests and grasslands. It also required

provisioning water.

- This has resulted in the “cheetalification” of tiger reserves.
- For example, in the Kanha Tiger Reserve, the explosion in the cheetah population resulted in the habitat becoming unsuitable for the endangered hard-ground barasingha, which depends on tall grass.
- There is no policy framework and incentive for ordinary citizens to aid in conservation be it for tigers or for any other species. As a result, conservation has not reached beyond these PAs.
- In other countries, natural lands are owned or managed by individuals, communities, farmers, ranchers, corporates, charities, and the government.
- Each one of them is incentivized to conserve these lands according to their interests. As a result, several conservation models operate simultaneously.
- Much of the success of wildlife conservation in India has been attributed to the Wild Life (Protection) Act (WLPA).
- We are now losing tigers from Jharkhand, Chhattisgarh, the Eastern Ghats, and the Northeastern forests.
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- Large tracts of forest land are “Reserved Forests” under the jurisdiction of the “territorial” wing of State Forest Departments. Such areas can be co-managed with an inclusive approach which also provides economic benefits for local communities.
- Indeed, in many landscapes, degraded agricultural lands adjoining these forest areas can be restored to enhance connectivity between PAs, and further afield forest patches can act as “stepping stone” reserves for tigers and other large mammal movements in our increasingly human-modified environment.

Carbon-free electricity and G7

- Climate and Energy Ministers and envoys from G-7 countries on Sunday committed to work towards ensuring carbon-free electricity production by 2035 and “accelerating” the phase- out of coal.
- This was part of an agreement by the countries at the end of a two-day conference in Sapporo, Japan, ahead of the G-7 summit in Hiroshima this May. A proposal to have a 2030 deadline for phasing out coal

- What is the G7?

  - The G7 (Group of Seven) is an organization of the world's seven largest so-called "advanced" economies, which dominate global trade and the international financial system.
  - They are Canada, France, Germany, Italy, Japan, the UK, and the United States.
  - Russia joined in 1998, creating the G8, but was excluded in 2014 for its takeover of Crimea.
  - China has never been a member, despite its large economy and having the world's biggest population.

The EU is not a member of the G7 but attends the annual summit

Heat Stress

- Around 350 million Indians were exposed to strong heat stress between April and May 2022.
- Between 1990 and 2019, summer temperatures on average rose by 0.5-0.9°C across districts in Punjab, Haryana, Uttar Pradesh, Bihar, and Rajasthan; about 54% of India's districts have also seen a similar rise in winter temperatures
- Our cities are beset with the urban heat island effect, with temperatures 4-12°C higher than rural outlying areas
- 90% of India's cumin production is from Gujarat and Rajasthan. The recent weather variability has destroyed the majority of the cumin crop in Rajasthan
- For laborers doing heavy work, heat exposure leads to a loss of 162 hours per year, as per one study.
- A rise in temperatures directly impacts labor productivity.
- About 50% of India's workforce is estimated to be exposed to heat during

their working hours. This includes marginal farmers, laborers at construction sites, and street vendors parlaying their produce on the streets

Mitigating the problem

- Greening could help mitigate part of the problem. Ideally, for every urban citizen in India, we should have at least seven trees in the urban landscape
- Expanding wetlands and restoring dead and decaying ponds/lakes may also help ensure ecological functioning along with reducing urban heat. We need to reduce the urban heat island effect
- Urban layouts such as brick jalis for ventilation and terracotta tiles to allow hot air to escape, and curbs on anthropogenic heat emissions from vehicles, factories, etc. may be considered.
- Urban building standards should be upgraded to avoid usage of heat absorbent galvanized iron and metal roof sheets.
- Additionally, using cleaner cooking fuels will reduce indoor air pollution, which may also help reduce urban heat.
- The urban design of Chandigarh considered climate responsiveness as a key facto
- Other measures can also be considered from embracing public transportation, to reducing personal vehicle usage and, most importantly, reducing the size of landfills.
- Methane production from mountainous landfills may lead to fires, often exacerbating urban heat and weather variability in our cities. .

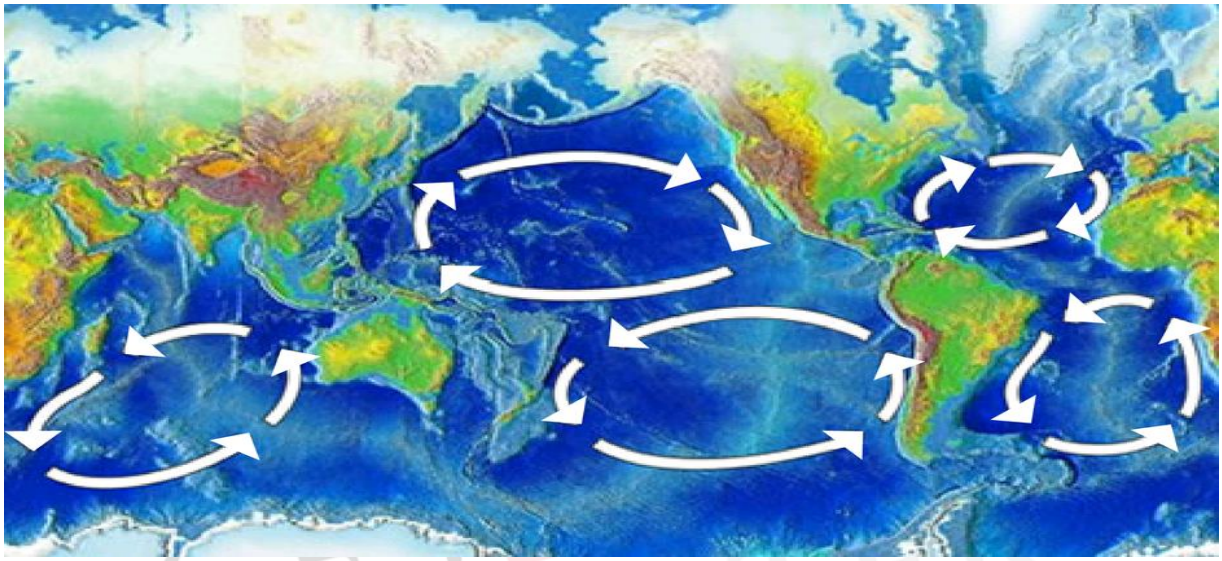
- A push for waste segregation, along with solid waste management at source, can help. We need to improve our forecasting ability, including the potential impact of heat on food production

Oceanic Gyre

- There are some water currents in the ocean that, driven by winds and the Coriolis force, form loops.
- These are called gyres. The North Pacific Subtropical Gyre (NPSG) is one such, located just north of the equator in the Pacific Ocean. It consists of the Kuroshio, North Pacific, California, and North Equatorial currents and

moves in a clockwise direction.

- These currents flow adjacent to 51 Pacific Rim countries.
- Any trash that enters one of these currents, from any of these countries, could become part of the gyre.



- Inside this gyre, just north of Hawai'i, lies a long east west strip where some of the debris in these currents has collected over the years.
- The eastern part of this is the Great Pacific Garbage Patch.
- It is, per one estimate, 1.6 million sq. km big and more than 50 years old. It contains an estimated 45,000-1, 29,000 metric tonnes of plastic, predominantly in the form of microplastics.

Mangrove pitta

- Odisha forest officials have sighted 179 mangrove pitta birds in the first ever census conducted of these exotic and colorful birds in the country.
- The habitats of these beautiful birds are confined to mangrove forest areas in Odisha's Bhitarkanika and Sundarban in West Bengal.
- The mangrove pitta (Pitta megarhyncha) belongs to the family of pittas, the Pittidae. The mangrove pitta species is distributed in India, Bangladesh, Myanmar, Thailand, Malaysia, Singapore and Indonesia.

Space X

- SpaceX postponed the first test flight of Starship, the most powerful rocket ever built, designed to send astronauts to the moon and Mars and beyond.
- Liftoff of the gigantic rocket was called off just minutes ahead of the scheduled launch time because of a pressurization issue in the booster stage

- NASA will take astronauts to lunar orbit itself in November 2024 using its own heavy rocket called the Space Launch System (SLS), which has been in development for more than a decade.
- Starship is both bigger and more powerful than SLS. It generates 17 million pounds of thrust, more than twice that of the Saturn V rockets used to send Apollo astronauts to the Moon

About starship

- SpaceX's Starship spacecraft and Super Heavy rocket collectively referred to as Starship represent a fully reusable transportation system designed to carry both crew and cargo to Earth orbit, the Moon, Mars and beyond.
- Starship will be the world's most powerful launch vehicle ever developed, capable of carrying up to 150 metric tonnes fully reusable and 250 metric tonnes expendable.

Heat Wave

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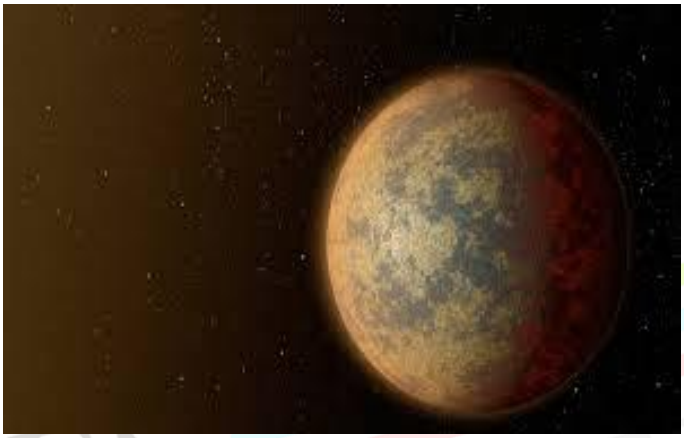
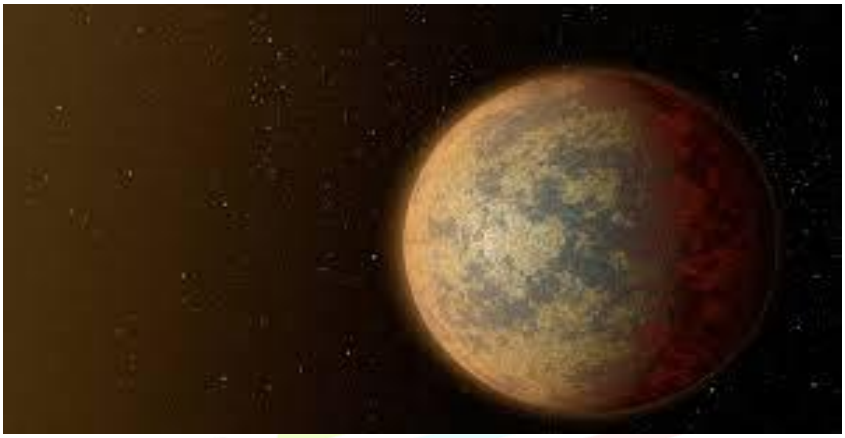
YZ Ceti b



- An alien world called YZ Ceti b has suddenly become the cynosure of astronomers.
- YZ Ceti b is a rocky, earth-sized exoplanet rotating around a small red dwarf star, YZ Ceti, barely 12 light-years from Earth.
- Astronomers have detected a repeating radio signal from this exoplanet, suggesting the presence of a magnetic field, one of the prerequisites for a habitable planet. Why does the magnetic field matter?
- Just as energy surges from the sun sometimes disrupt telecommunications on Earth and damage orbiting satellites, intense bursts of energy from the YZ Ceti star-e exoplanet exchange produce spectacular auroral lights.
- “We get to see this indirectly in the form of the radio emission we receive,”

- These radio waves, strong enough to be picked up on Earth, confirmed the existence of an exoplanetary magnetic field.
- Such signals can only be produced if the exoplanet orbits very close to its parent star and has its own magnetic field to influence the stellar wind and generate the signal.



National quantum

- The Union Cabinet approved the ₹6,003 crore National Quantum Mission (NQM) that will fund research and development of quantum computing technology and associated applications.
- Quantum computers are a work in progress globally and exploit properties of the atom, which are only explainable by the principles of quantum mechanics.
- Just like bits (1 and 0) are the basic units by which computers process information, ‘qubits’ or ‘quantum bits’ are the units of process by quantum computers.
- Other ambitions include developing “ satellite based secure quantum communications between ground stations over a range of 2,000 kilometers within India, long distance secure quantum communications

with other countries, inter-city quantum key distribution over 2,000 km as well as multi node quantum network with quantum memories are also some of the deliverables of the mission

- The mission will help develop magnetometers with high sensitivity in atomic systems, atomic clocks for precision timing, communications and navigation.
- Fabrication of quantum materials such as superconductors, novel semiconductor structures, and topological materials for fabrication of quantum devices.
- “Four Thematic Hubs (T-Hubs) would be set up in top academic and National R&D institutes on the domains of ‘quantum computing’, ‘quantum communication’, ‘quantum sensing and metrology’ and ‘quantum materials and devices’.
- The hubs will focus on the generation of new knowledge through basic and applied research as well as promote R&D in areas that are mandated to them,

Patriot missiles

- The MIM-104 Patriot is a surface-to-air missile (SAM) system, the primary

such system used by the United States Army and several allied states.

- It is manufactured by the U.S. defense contractor Raytheon and derives its name from the radar component of the weapon system.
- The AN/MPQ-53 at the heart of the system is known as the "Phased Array Tracking Radar to Intercept on Target", which is an acronym for "Patriot".
- Starting in 1984, the Patriot system began to replace the Nike Hercules system as the U.S. Army's primary High to Medium Air Defense (HIMAD) system and the MIM-23 Hawk system as the U.S. Army's medium tactical air defense system.

Sri Lanka export to monkey

- Zoologists and conservationists in Sri Lanka on Wednesday slammed a recent government proposal exploring the export of monkeys to China, terming it an ad hoc, illegal, and short-sighted response to a long -standing human- animal conflict.
- The Chinese firm, said to be an animal breeding company according to

Sri Lankan portal Newswire, had written to the Ministry, making an offer to buy a “large qua number monkeys” from Sri Lanka, as the island nation was reportedly looking to “get rid of certain crop- destroying species”.

IT Rules amendment

- The Union government introduced a new set of measures with a view to crushing fake news and misinformation on the Internet. These introductions came through an amendment made to the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, or IT Rules.
- The amendment grants to the Union Ministry of Electronics and Information Technology (MeitY) unbridled power to create a “fact check unit”, which will identify false or misleading online content that concerns the central government’s business in any manner.
- Should social media intermediaries fail to prevent users from hosting or publishing information that has been flagged as false by the fact check unit, they stand to lose their “safe harbor” immunity.
- The IT Rules derive their authority from the Information Technology Act, of 2000, a law which, at its inception, was meant to provide “legal recognition” for electronic commerce.
- Through section 79, the Act provides a “safe harbor”, by granting immunity to intermediaries, so long as these entities observe “due diligence” in discharging their duties under the law, and so long as they follow other guidelines prescribed by the state.
- An intermediary under the law refers to any person who receives, stores, or transmits electronic records it would include Internet service providers,

search engines, and social media platforms

- Article 19(1)(a) grants to every citizen a right to freedom of speech and expression. That right can only be limited through reasonable restrictions made by law on one or the other of the grounds stipulated in Article 19(2), namely, in “the interests of the sovereignty and integrity of India, the security of the State, friendly relations with foreign States, public order, decency or morality or in relation to contempt of court, defamation or incitement to an offense.
- In its landmark judgment in Shreya Singhal vs Union of India (2015), the Supreme Court, in striking down Section 66A of the IT Act, held that a law that limits speech can neither be vague nor over-broad.

TB Program

- World TB Summit in Varanasi, Uttar Pradesh on March 24, 2023, and Prime Minister Narendra Modi instilled fresh energy into global tuberculosis (TB) elimination response and reiterated India’s commitment to spearhead this effort.
- India’s National TB Elimination Programme, or the NTEP (previously known as the Revised National Tuberculosis Control Programme or RNTCP), has introduced several measures to find, notify and treat TB cases, with case notifications rising from 15.6 lacks in 2014 to over 24 lacks in 2022.
- Novel approaches including engagement with the private sector, launch of social support provisions, and introduction of diagnostic tools and new drug regimens, have improved TB management.

- However, while these efforts have been commendable, the lack of widespread awareness about the disease and lack of access to quality care continues to be a challenge it is also heartening to see the establishment of centers of excellence, which will facilitate collaboration between Indian Council of Medical Research laboratories and the private sector.
- It is possible, therefore, to strengthen and expand research and development efforts for TB, to develop new tools that will help India (and other developing countries) meet the End TB targets.
- First, for any infectious disease, a vaccine is what makes elimination possible.
- We do have the Bacille Calmette-Guérin (BCG) vaccine for TB, but it does not adequately protect adolescents and adults who are at the highest risk for developing and spreading TB.
- Second, testing for, and diagnosing TB needs to become more accessible and affordable so that each person with suggestive symptoms or frontline workers can test and get results within minutes, at minimal costs.
- Point-of-Care Tests (POCTs), such as home-based tests for COVID, allowed decentralized, rapid, and low--cost diagnostics to provide results within minutes
- Third, the development and introduction of new therapeutic molecules can play a crucial role in the long run.
- While we continue to invest in drug discovery, we must also scale up newer and more effective regimens and also dip into our armory to re-purpose existing drugs for TB.

- Finally, part of the process of strengthening the innovation ecosystem also involves creating regulatory and policy frameworks that smoothen the rollout of proven tools to reach people with as little delay as possible.
- This requires greater collaboration: not just between policymakers, scientists, product developers and clinical researchers across the country and even across regions, but potentially even between governments

LCA

- Against the sanctioned strength of 42 fighter squadrons, the IAF today is at 31 squadrons. The bulk of the heft to arrest the drawdown and ensure that the number doesn't fall below 29 squadrons rests on the 83 Light Combat Aircraft (LCA) MK1A, LCA-MK2, and MRFA.
- India has an ambitious plan lined up for the acquisition of over 500 fighter jets, a bulk of them to be indigenously designed and manufactured, with a majority of them being for the IAF. However, these are at various stages of development and procurement.
- The LCA which is the fulcrum of the indigenous jet development program, originally intended as a Mig-21 replacement, has seen a series of delays and has now come back on track. The LCA achieved Initial Operation

Clearance (IOC) in December 2013 and Final Operational Clearance (FOC) in February 2019.

- The IAF had earlier signed two contracts with Hindustan Aeronautics Limited (HAL), for 20 IOC configuration aircraft including four IOC trainers on March 31, 2006, and, d for 20 FOC configuration jets along with four trainers on December 23, 2010.
- On this, the IAF representative noted that they were supposed to get the 40 LCA from HAL much earlier but they are getting them now.

UNICEF REPORT-The State of the World's Children 2023: For Every Child, Vaccination

- Only China, India, and Mexico, that is three out of the 55 countries studied for popular perception of the importance of vaccines for children, showed improvement as per data collected by The Vaccine Confidence Project (London School of Hygiene and Tropical Medicine) and published by

UNICEF on Thursday.

- This is when vaccine confidence marks a decline in over a third of the studied countries, including the Republic of Korea, Papua New Guinea, Ghana, Senegal, and Japan after the start of the pandemic. The report warns of the growing threat of vaccine hesitancy due to factors such as misleading information and declining trust in vaccine efficacy. UNICEF India today released the agency's global flagship report 'The State of the World's Children 2023: For Every Child, Vaccination,' highlighting the significance of childhood immunization.
- The decline in vaccine confidence globally comes amid the largest sustained backslide in childhood immunization in 30 years, fuelled by the COVID-19 pandemic.

Starship

- Starship, the most powerful rocket ever built, exploded during its first flight on Thursday, but Elon Musk congratulated his SpaceX team on an "exciting" test of the spacecraft designed to send astronauts to the moon, Mars, and beyond.
- The unscrewed rocket disintegrated minutes after successfully blasting off

at 8.33 a.m. Central Time (7.03 p.m. IST) from Star base, the SpaceX spaceport in Boca Chica, Texas

- NASA has picked the Starship spacecraft to ferry astronauts to the Moon in late 2025 a mission known as Artemis III for the first time since the Apollo programme ended in 1972

India's largest botanical garden

- On this Earth Day (April 22), we should celebrate the recent decision of the Tamil Nadu government to establish a large botanical garden (the Chengalpattu Botanical Garden) in the State as an important and welcome piece of news

- The exact number of botanical gardens in India is not known; the published number ranges from between 10 to 35. Globally, botanical gardens are important centers for plant exploration, discovery, and research, as well as biodiversity outreach. Indian botanical gardens have often lacked this wider perspective.

- Only a handful of botanical gardens, such as the Botanic Garden of the Council of Scientific and Industrial Research (CSIR)-National Botanical

Research Institute, Lucknow (Uttar Pradesh), the Kerala State Council for Science, Technology and Environment (KSCSTE)-Jawaharlal Nehru Tropical Botanic Garden and Research Institute in Palode (Kerala)

- The ₹300 crore Chengalpattu Botanical Garden (CBG), at Kadambur village in Chengalpattu district, is being planned across 138 hectares and will be India's largest botanical garden.
- The CBG has the potential to become a major center for the exploration and discovery of our plant wealth, a center of research, education, citizen science, and outreach in plant biology, and be a forceful voice in conservation.

REPORT ON-MELTING

- Scientists report that the seven worst years for polar ice sheets melting and losing ice have occurred during the past decade, with 2019 being the worst year on record.
- Combining 50 satellite surveys of Antarctica and Greenland taken between 1992 and 2020, the international team of researchers have found that the melting ice sheets now account for a quarter of all sea level rise, a fivefold increase since the 1990s
- In their study, the researchers found that earth's polar ice sheets lost 7,560 billion tonnes of ice between 1992 and 2020, which is equivalent to an ice cube that would be 20 km in height.
- They also found that the polar ice sheets have together lost ice in every year of the satellite record, and the seven highest melting years have occurred in the past decade.
- The loss, driven by an Arctic summer heatwave, led to record melting from Greenland peaking at 444 billion tonnes that year. Antarctica was found to have lost 168 billion tonnes of ice, the sixth highest on record, due to the continued speedup of glaciers in West Antarctica and record melting from the Antarctic Peninsula.
- The East Antarctic ice sheet was found to remain close to a state of balance, as it had throughout the satellite era.
- Melting of the polar ice sheets has found to cause a rise of 21 milli-metre (mm) in global sea level since 1992, almost two thirds, or 13.5 mm, of which has originated from Greenland and one third, or 7.4 mm, from Antarctica

ABC PROGRAM

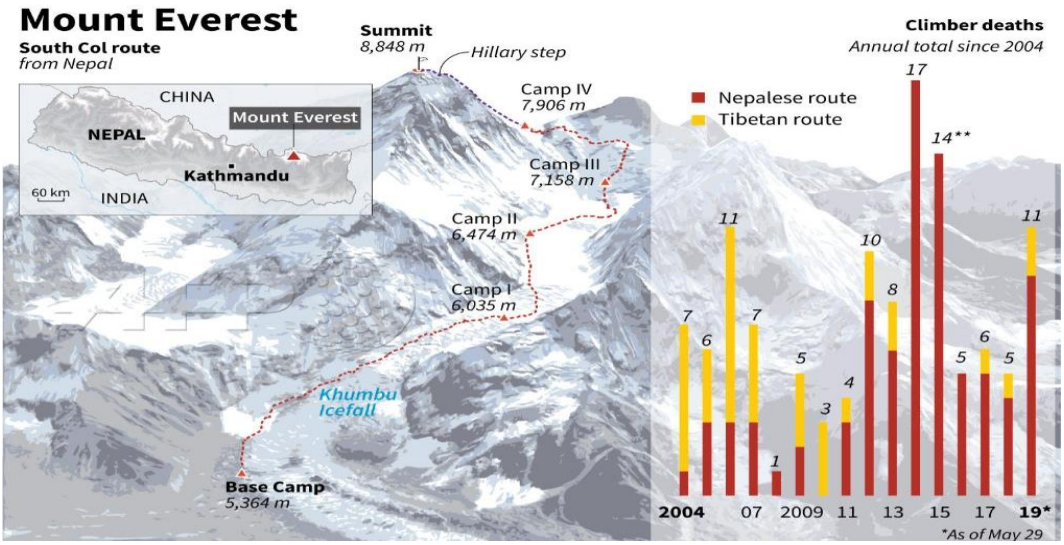
- The Animal Birth Control (ABC) Rules that were first introduced in 2001 by the Ministry of Culture, and now replaced by even more absurd ABC Rules, 2023.The policy aims to implement a technique called ‘catch-neuter-vaccinate-release’ to control populations of free -ranging dogs and cats. .
- The ABC programme does not seem to have any benchmarks or targets.
- The other major problem is that the ABC Rules, 2023, bizarrely require people to feed dogs, wherever they may be

- The kindest cut of all is that the ABC Rules ban the euthanasia of rabid animals, making India the only country in the world to follow such a cruel practice.

SOUTH COL and RNA sequencing

- The South Col is the ridge that separates Mt. Everest from Lhotse, the fourth-highest mountain on Earth. The two peaks are only three kilometres apart.
- Microbes keep arriving, carried by either birds, animals, or winds. Up to about 6,000 msl, dust particles, less than 20 micrometers in diameter, are blown in by the winds.
- Using sophisticated methods such as 16S and 18S rRNA sequencing, the microbe hunters were able to identify the bacteria and other microorganisms found on the South Col.
- The South Col is a sharp-edged col between Mount Everest and Lhotse, the highest and fourth-highest mountains in the world, respectively. The South Col is typically swept by high winds, leaving it free of significant

snow accumulation.



RNA SEQUENCING

- RNA-Seq (named as an abbreviation of RNA sequencing) is a sequencing technique which uses next-generation sequencing (NGS) to reveal the presence and quantity of RNA in a biological sample at a given moment, analyzing the continuously changing cellular transcriptome

- The transcriptome is the set of all RNA transcripts, including coding and non-coding, in an individual or a population of cells.

- The term can also sometimes be used to refer to all RNAs, or just mRNA, depending on the particular experiment.

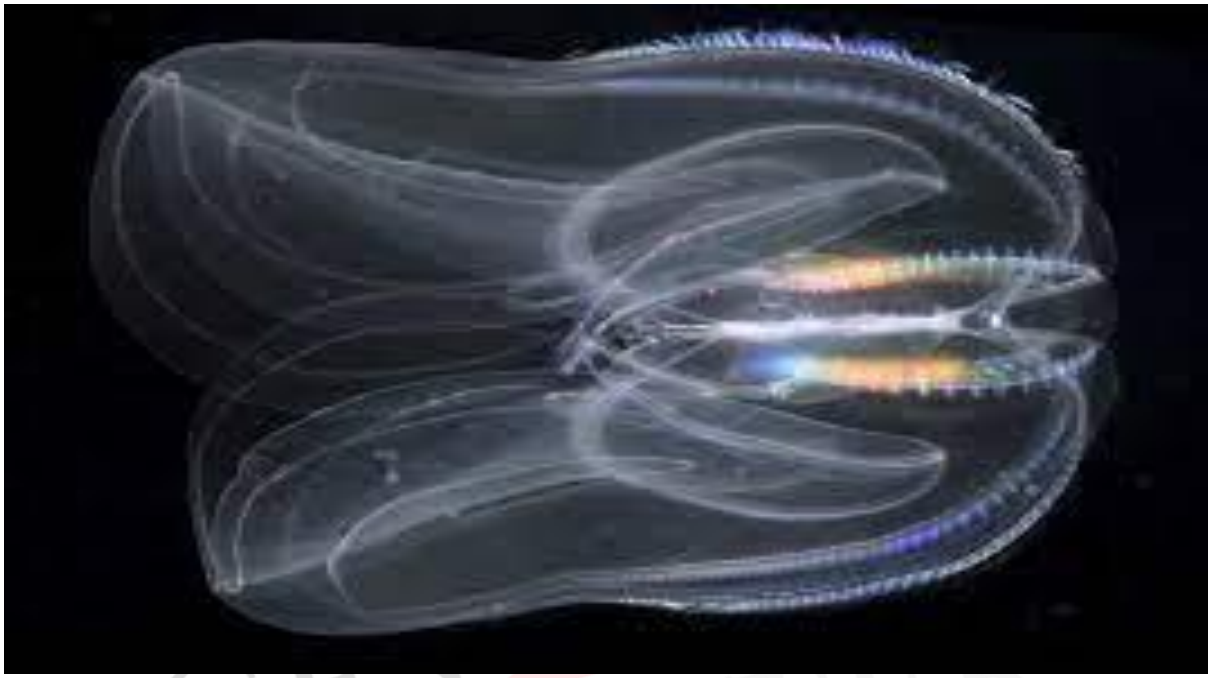
Melanocyte stem cells

- Melanocyte stem cells (McSCs). During normal hair growth, the melanocyte stem cells continually move back and forth on the maturity axis as they transit between compartments of the developing hair follicle
- Melanocytes are specialized neural crest-derived cells.
- They are responsible for hair, skin and eye pigmentation, so they are specialized pigment-producing cells.
- The melanins are pigments that are synthesized in melanosomes.
- 

Ctenophora

- The evolution of the nervous system may have followed multiple paths and risen independently in two early lineages of animals, as per a study of ctenophores marine invertebrates that contain an elaborate nerve net nervous system, commonly known as comb jellies

- The findings (Science) show that the nerve net of ctenophores is different than nerve nets found in species from other lineages of animals, providing new insights into the complex origins of the nervous system



Cerrado

- Areas set aside for conservation within private lands could play a valuable role in protecting the biodiversity of the Brazilian Cerrado (Science).

- The analysis in this region, where private agricultural land use often conflicts with conventional conservation approaches, suggests that sharing the responsibility for protecting biodiversity with the private sector can increase international commitments to avoid biodiversity loss. Private protected areas accommodate up to 14.5% of threatened vertebrate species' ranges

- The Cerrado is a vast ecoregion of tropical savanna in eastern Brazil, being present in the states of Goiás, Mato Grosso do Sul, Mato Grosso, Tocantins, Maranhão, Piauí, Bahia, Minas Gerais, São Paulo, Paraná and

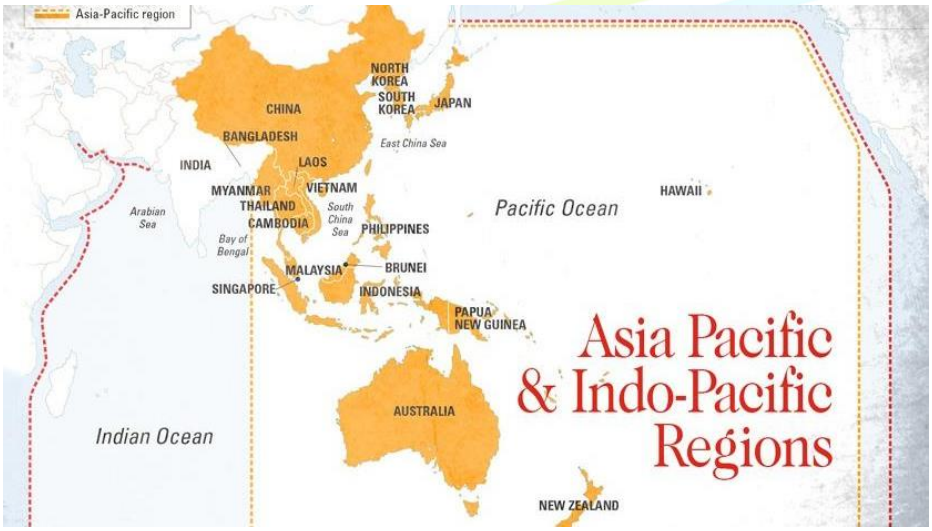
the Federal District.

- The core areas of the Cerrado biome are the Brazilian highlands – the Planalto.
- The main habitat types of the Cerrado consist of forest savanna, wooded savanna, park savanna and gramineous-woody savanna

Animal seal

- Elephant seal, also called sea elephant, either of the two largest pinnipeds (aquatic mammals of the suborder Pinnipedia): the northern elephant seal (species Mirounga angustirostris), now found mainly on coastal islands off California and Baja California; or the southern elephant seal (M. leonina), found throughout sub-Antarctic regions.
- Rivalling the record for least sleep among mammals, northern elephant seals sleep a mere two hours a day, split into a series of nap-like “sleeping dives” at depths not typically occupied by predators.
- The findings (Science), which leveraged a new tool to detect sleep at sea, provide insights into the sleeping behaviour of animals who must sleep while avoiding predation

MiCA



- The third India Japan Intellectual Dialogue (April 11–12, 2023), hosted by the Asian Confluence (ASCON), in Agartala, Tripura, was an ideal opportunity to assess the evolving thinking of experts and policymakers.
- It showed that the current decade may produce path -breaking changes in the northeast, bringing the troika of Bangladesh, India and Japan closer.
- One of the most important projects is the development of Matarbari Deep

Sea Port (DSP) on the southeastern coast of Bangladesh. It is being constructed with Japanese assistance and is scheduled to be operational in 2027.

- A recent ASCON study envisages this port to be “a game changer”.
- To be optimally viable, the port will have to cater to the needs of Bangladesh and India’s northeast. The long term vision is for Bangladesh and the northeast to become a hub and key industrial corridor of this region, serving a population of 220 million.
- The northeast is blessed with vast natural resources. Its strategic location, sharing borders with Nepal, Bhutan, China, Bangladesh and Myanmar, is an asset.
- Creating value chains and manufacturing products should encompass diverse sectors such as agro -processing, manmade fibers, handicrafts, assembly of two- wheelers and perhaps mobile phones, and pharmaceuticals.
- The goal of connecting a large part of South Asia with Southeast Asia requires an astute pilot. This leadership can come from the triad of Bangladesh, India and Japan (BIJ).
- A BIJ Forum should be launched first at the level of Foreign Ministers, a move that will be welcome in the northeast.

Lock-Bit

What is Lock-Bit ransomware?

- First reported in September 2019 and dubbed the “abcd” virus, due to the file extension used when encrypting victims’ files, the Lock Bit

ransomware is designed to infiltrate victims' systems and encrypt important files.

- The virus is categorized as a "crypto virus" due to its requests for payment in cryptocurrency to decrypt files on the victim's device of victims who refuse to meet their demands, as part of their business model.
- The ransomware is therefore typically deployed against victims who feel hindered enough by the disruption to pay heavy sums in exchange for access to the files and can afford to do so. The gang behind the LockBit ransomware reportedly maintains a dark web portal to recruit members and release data
- Ransomware has targeted Windows, Linux, and VMware ESXi servers.
- However, Lock Bit is now working to create encryptors targeting Macs for the first time.

De dollarisation

- De-dollarisation refers to the deposing of the U.S. dollar from the reserve currency status it enjoys globally.
- Some of the factors supposedly indicating a shift towards de-dollarisation are: the U.S. dollar has depreciated against most major currencies and has declined by more than 10% in the past six months against the euro (due to growth expectations favoring the EU).

- Also, the price of gold has rallied in the past six months even though the Federal Reserve raised interest rates relentlessly.
- Russia and China buying large amounts of gold has been cited as the reason for the rally (a move seen to be a retaliation against the U.S. dollar).
- Those forecasting a global trend towards de dollarisation also cite the sanctions the U.S. and its allies have levied against Russia due to the latter's invasion of Ukraine.
- The reasoning being countries would prefer to distance themselves from a currency weaponized by the government to serve a geopolitical agenda.

Nuclear liability

- Two years after the French energy company Electricite de France (EDF) submitted its techno -commercial offer for the construction of six nuclear power reactors in Maharashtra's Jaitapur, talks between Indian and French officials over several issues, including liability, have not resulted in any breakthrough yet.

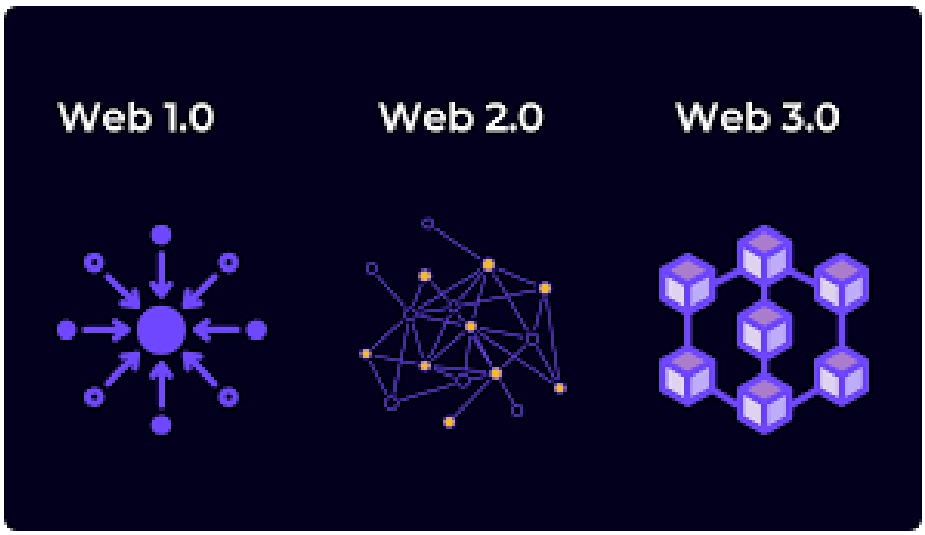
Malaria

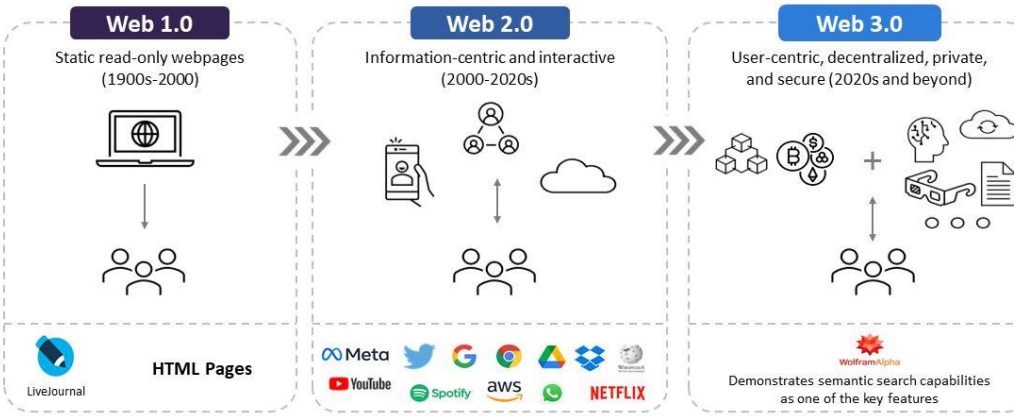
- Malaria is all set to become a notifiable disease across India, with Bihar, Andaman and Nicobar Islands and Meghalaya too in the process of putting the vector borne disease in the category.
- This will then require by law that cases be reported to government authorities. Currently, malaria is a notifiable disease in 33 States and Union Territories in India.
- A notifiable disease is any disease that is required by law to be reported to government authorities.
- The collation of information allows the authorities to monitor the disease, and provides early warning of possible outbreaks.

Bangladesh and indo pacific

- Bangladesh will work with all the stakeholders for peacekeeping, peace building and counter-terrorism initiatives in the Indo-Pacific region.
- Bangladesh will aim for “inclusive development by strengthening free, transparent and rules -based international order,”
- It further said that it supports “unobstructed oceanic movement” .
- As part of its strategy, Bangladesh will support upholding of national sovereignty and oppose interference in the internal affairs of members of the region

WEB 3.0

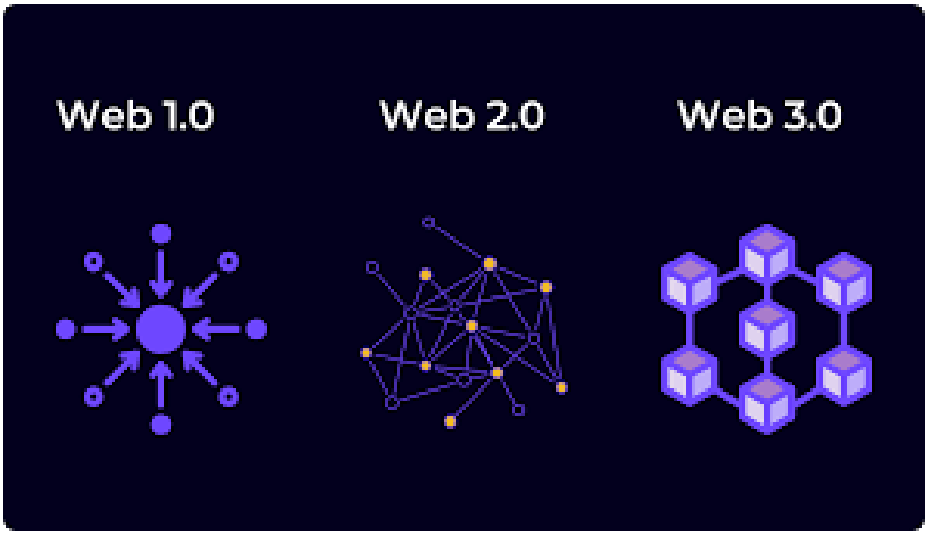




- **What Is Web 3.0?**

- Tim Berners-Lee, a developer who created the WWW or World Wide Web, originally referred to Web 3.0 as the Semantic Web and saw an intelligent, self-sufficient, and open Internet that employed AI and machine learning to function as a "global brain" and interpret content conceptually and contextually.

- Due to technological constraints, such as how expensive and challenging it is to translate human language into machine understandable language, this idealized version didn't quite work out.



- It gives users a choice to interact in public or in private without exposing them to dangers through a third party, providing "trustless" data.
- 3-D graphics are used.

- It is applicable to:

- Metaverse: A limitless, virtual environment that is 3D-rendered
- Blockchain video games adhere to the NFTs' ideals by enabling users to possess actual ownership of in-game resources.
- Digital infrastructure and privacy: Zero-knowledge proofs and more secure personal data are used in this application.
- Financial decentralization. Peer-to-peer digital financial transactions, smart contracts, and cryptocurrencies are examples of this use.

BENEFITS

- India’s handicraft industry is renowned for design related innovations, many of which are not protected by Intellectual Property rights. The digital tokens minted by Web 3 platforms would enable our handcraft enterprises

to secure their innovations.

- Web 3-based instruction tools enable the rapid dissemination of grassroots innovations from master artisans to fellow members, which would improve the economic fortunes of craftsmen and artisan communities in north -east, western and peninsular India.
- The Atal Bhujal Yojana is an important source of data on groundwater utilization practices and aquifer contamination, although this resource remains largely untapped for want of data analytics capabilities at the community level.
- This limitation can be overcome by Web3's (decentralised) analytics systems.
- The report, entitled 'State of the Global Climate 2022'.
- Along with accelerating sea-level rise, it focused on a consistent rise in global temperatures, record-breaking increases in the concentration of greenhouse gases as well as glacier loss, sustained drought like conditions in East Africa, record rainfall in Pakistan, and unprecedented heat waves that struck Europe and China in 2022.
- The rate of global mean sea-level [GSML] rise has doubled between the first decade of the satellite record and the last."
- Since the 1990s, scientists have been measuring sea-level rise using satellite altimeters.
- These instruments send radar pulses to the sea surface and measure the time they take to get back and the change in their intensity..

What causes accelerated sea level rise?

- The WMO report points to the following factors as being responsible for a rising GSML: “ocean warming, ice loss from glaciers and ice sheets, and changes in land water storage”.
- The report also quantifies the individual contribution of these factors to yield what researchers call the “GSML budget”. According to the report, in 2005-2019, loss of glaciers and ice sheets contributed 36% to the GSML rise.
- Ocean warming, the phenomenon of rising mean ocean temperatures contributed 55%, and changes in the storage of land water contributed less than 10%.

- As increasing concentrations of carbon dioxide and other greenhouse gases drive global warming, 90% of the ‘extra’ heat is stored in the oceans.
- This leads to ocean warming. And as the ocean heats up, it undergoes thermal expansion, which in turn leads to a rise in the GSML. One measure of ocean warming is the ocean heat content (OHC).

- As per the report, OHC measures in 2022 touched a new record. The report also says that the earth's ice cover, known as the cryosphere, has thinned.
- The cryosphere includes the Arctic and Antarctic regions (called "sea ice"), glaciers, the ice sheets of Greenland and Antarctica (area of ice on land covering more than 50,000 km2), seasonal snow cover, and permafrost (mass of land that remains below 0 degree Celsius for at least two straight years).
- Web 3.0 can also yield insights from large volumes of community data, generated by IoT-enabled development programmes such as the Jal Jeevan Mission.
- Web 3.0's natural advantage of facilitating 'analytics at the edge' provides considerable scope for mapping the water use habits of communities.
- Similarly, early warning systems for floods will improve with Web 3.0 due to data analytics facilities being obtained at the sub basin level.

Nuclear liability

- **What is the law governing nuclear liability in India?**
- Laws on civil nuclear liability ensure that compensation is available to the victims for nuclear damage caused by a nuclear incident or disaster and set out who will be liable for those damages.
- The international nuclear liability regime consists of multiple treaties and was strengthened after the 1986 Chernobyl nuclear accident.
- The umbrella Convention on Supplementary Compensation (CSC) was adopted in 1997 with the aim of establishing a minimum national

compensation amount.

- The amount can further be increased through public funds, (to be made available by the contracting parties), should the national amount be insufficient to compensate the damage caused by a nuclear incident
- Even though India was a signatory to the CSC, Parliament ratified the convention only in 2016. To keep in line with the international convention, India enacted the Civil Liability for Nuclear Damage Act (CLNDA) in 2010, to put in place a speedy compensation mechanism for victims of a nuclear accident.
- The CLNDA provides for strict and no -fault liability on the operator of the nuclear plant, where it will be held liable for damage regardless of any fault on its part expects the government to step in and has limited the government liability amount to the rupee equivalent of 300 million.
- It also specifies the amount the operator will have to shell out in case of damage caused by an accident at ₹1,500 crore and requires the operator to cover liability through insurance or other financial security. In case the damage claims exceed ₹1,500 crore, the CLNDA
- Section 10 of the annex of the CSC lays down “only” two conditions under which the national law of a country may provide the operator with the “right of recourse”, where they can extract liability from the supplier one, if it is expressly agreed upon in the contract or two, if the nuclear incident “results from an act or omission done with intent to cause damage”.
- However, India, going beyond these two conditions, for the first time introduced the concept of supplier liability over and above that of the operator’s in its civil nuclear liability law, the CLNDA. The architects of the law recognized that defective parts were partly responsible for historical

incidents such as the Bhopal gas tragedy in 1984 and added the clause on supplier liability.

- So, apart from the contractual right of recourse or when “intent to cause damage” is established, the CLNDA has a Section 17(b) which states that the operator of the nuclear plant, after paying their share of compensation for damage in accordance with the Act, shall have the right of recourse where the “nuclear incident has resulted as a consequence of an act of supplier or his employee, which includes supply of equipment or material with patent or latent defects or sub-standard services”.

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Report on sea level

- The World Meteorological Organisation (WMO) has found in a new report

that the world's sea level is rising at an unprecedented rate, portending potentially disastrous consequences for the weather, agriculture, the extant groundwater crisis, and social disparities

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land covering more than 50,000 km2), seasonal snow cover, and permafrost (mass of land that remains below 0 degree Celsius for at least two straight years).

- **Impact-**
- As rising seas swallow more of the land cover, particularly in coastal areas, coastal communities will face an “acute shortage of land for human use”.
- This land crunch, according to Dr. Prabakaran, will mean that those who are better off will be able to cope better than marginalised groups, leading to an increase in social disparities between people living in coastal areas. Second, weather formations such as cyclones are known to typically originate in the open seas
- As the GSML continues to rise, along with a rise in ocean temperatures, the chances of cyclones could increase, affecting coastal communities and leading to large economic liabilities for tropical countries
- GSML continues to rise, more seawater could seep into the ground, leading to the groundwater which is usually freshwater turning more and more saline.
- This, in turn, can exacerbate water crises in coastal areas as well as agriculture in adjacent regions.

- **How will sea level rise affect societies?**
- Coastal ecosystems could be “completely changed”. For example, he said that in the Sundarbans delta in West Bengal, the world’s largest mangrove area, rising sea levels and coastal erosion, due to loss of land and sediment from coastal areas, has left more islands submerged under

water, and that, in turn, has forced members of local communities to migrate.

- Since the lives of coastal communities, including their economic activities, is tied intricately with the coastal ecosystem, changes in the coastal ecosystem as a result of GSML rise especially when it happens faster than rehabilitative policies and laws can catch up will further endanger the socio-economic stability of these communities

- Indeed, a combination of these forces having increased child trafficking in the Sundarbans area has already been documented.

Gulf of Oman

- Iran's Navy seized a Marshall Islands Flagged oil tanker in the Gulf of Oman on Thursday amid wider tensions over Tehran's nuclear programme, the latest -such capture in a waterway crucial for global energy supplies.

Iran said the tanker collided with an unidentified Iranian vessel hours before its seizure, leading to several crew members falling overboard and going missing and others getting injured. The tanker then fled the scene and ignored radio calls for eight hours before its

seizure based on a court order, the Iranian army said.