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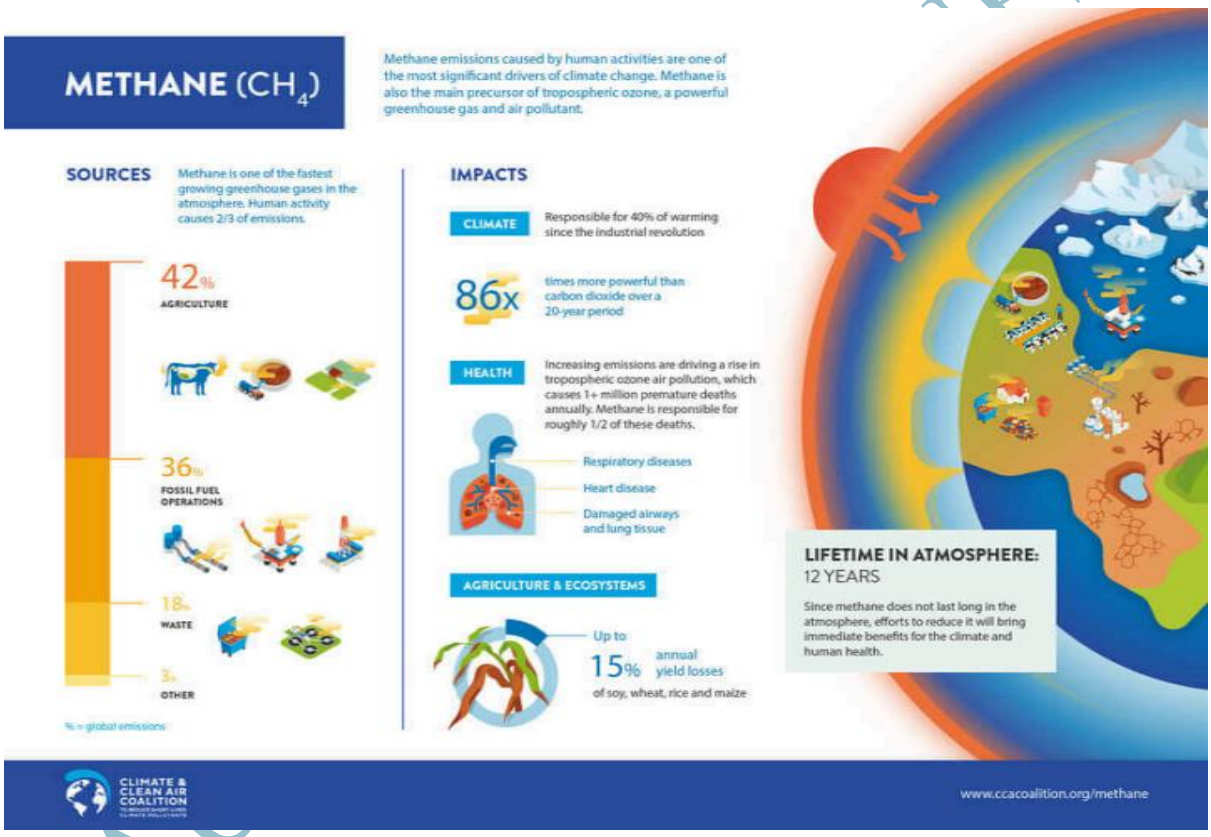
Contents

Methane

Methane is the second most abundant anthropogenic greenhouse gas after carbon dioxide (CO2) but it warms the planet more. Over a century, methane has a global warming potential 28- times greater than CO2, and even higher over shorter periods like two decades.

At the U.N. climate talks in 2021, member countries launched the 'Global Methane Pledge' to cut the gas emissions and slow the planet's warming



The sources of methane

Scientists are increasingly recognizing various sources of methane, most of which fit into two categories: biogenic and thermogenic. When fossil fuels such as natural gas or oil are extracted from deep within the earth's crust, thermogenic methane is released. Biogenic methane comes from microbial action. The microbes that produce methane are archaea single-celled microorganisms distinct from bacteria and eukaryotes and are called

methanogens. They thrive in oxygen-deficient environments, such as the digestive tracts of animals, wetlands, rice paddies, landfills, and the sediments of lakes and oceans. Methanogens play a crucial role in the global carbon cycle by converting organic matter into methane. While methane is a potent greenhouse gas, its production by methanogens is an essential part of natural ecosystems. But human activities like agriculture, dairy farming, and fossil fuel production have further increased methane emissions. Both biogenic and thermogenic activities produce different isotopes of methane. Tracking the isotopes is a way to track which sources are the most active.

Mount Ruang

Mount Ruang was seen erupting from Tagulandang Island in Sitaro, North Sulawesi, Ruang is the southernmost stratovolcano in the Sangihe Islands arc, North Sulawesi, Indonesia. It comprises an island 4 by 5 kilometres (2.5 mi × 3.1 mi) wide. The summit contains a partial lava dome and reaches some 725 metres (2,379 ft) in altitude. From its summit, Klabat's peak in the south, that of Siau to the north, and Ternate to the east can all be seen.

Why do we shiver when it is cold?

Physical thermogenesis) occurs when the tension of the skeletal muscles rises beyond a critical level or when the body temperature falls below the critical level of 37.1 Deg C. Shivering is an involuntary contraction of muscles to maintain body temperature during fever and in cool environments. It involves oscillating skeletal-muscle contractions that occur at 10-20 per second. The posterior hypothalamus region in the brain harbours the primary motor centre responsible for shivering. When the body temperature falls below 37.1 degrees C, the skin sends cold signals to the spinal cord.

Expanded Programme on Immunization (EPI)

The year 2024 marks a significant milestone for immunization programmes, both globally and in India. It commemorates 50 years since the launch of the Expanded Programme on Immunization (EPI) by the World Health Organization (WHO) in 1974. The EPI was introduced as the eradication of the smallpox virus was on the horizon, and a need to leverage the then-immunization infrastructure and a trained workforce was recognized to expand the benefit of available vaccines. Following the announcement, nearly every country worldwide initiated its national immunization program. India launched the EPI in 1978, which was later renamed the Universal Immunization Programme (UIP) in 1985. In India, this year is also two decades since the country conducted the last nationwide independent Field evaluation of the UIP, in collaboration with international experts. This is an opportune moment to assess the progress made and envision the future. Globally, and in India, there has been significant progress in terms of the impact of immunization and vaccines. While in 1974, there were vaccines to prevent six diseases, five decades later, there are vaccines against 13 diseases that are universally recommended, and vaccines against 17 additional diseases are recommended for a context-

specific situation.

Biases in brain

- **In a study, scientists found a stark difference between participants' explicit statements and their implicit beliefs. While everyone said they believed in the equality of all races, they also harboured implicit biases in favor of socially advantaged groups. This bias was universal, irrespective of racial identity Studies have found that the criteria our brains use to categorize others as 'us' or 'them' shift constantly. Bias doesn't exist at birth. It is a learned response built on cultural associations together with the brain's biology. Factors that lead to hostility include associating an out-group with a threat. Uncertain circumstances can also heighten mistrust toward the outgroup**

Catatumbo lightning

- **Catatumbo lightning is a mesmerizing natural phenomenon that occurs over the Catatumbo River in Venezuela, where lightning strikes almost continuously. This phenomenon primarily happens at the mouth of the Catatumbo River, where it meets Lake Maracaibo, the largest lake in Venezuela. A convergence of several factors gives rise to unique conditions required for Catatumbo lightning. Warm, moist air from the Caribbean Sea is pushed towards the Andes mountains, where it collides with cooler air descending from the peaks. This collision creates a perfect storm of sorts, as the warmer air is forced to rise rapidly by the shape of the local landscape. And as it does, it cools and condenses, forming towering cumulonimbus clouds. Meanwhile, the combination of strong winds and temperature differentials generates electrical charges within these clouds. The cumulonimbus clouds sometimes reach heights of more than 5 km and load up on static electricity. When the electrical potential within the clouds becomes too great, it discharges in the form of lightning. Warm, moist air from the Caribbean Sea is pushed towards the Andes**

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An aerial view of hippopotamuses stuck in a dry channel in the Okavango Delta, Botswana. A drought across southern Africa has been driven mostly by the El Nino weather pattern, not climate change, scientists have said. Zambia, Zimbabwe and Malawi have declared a national disaster over the severe dry spell that started in January and has devastated the agricultural sector, decimating crops and pastures. AFP

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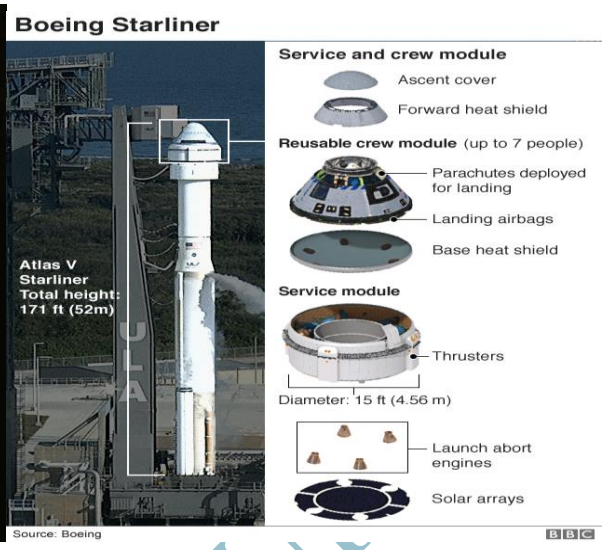
Benefits of bamboo

The fast-growing bamboo has been promoted by the United Nations and others for its high uptake of carbon dioxide. The Bamboos (Bambusoidaea) consists of 1439 different species in 116 genera. It is one of the 12 subfamilies of the grass family

(Poaceae) the only one to diversify in forests. Bamboo is a great plant for individuals concerned with a green environment. Bamboo is the fastest-growing plant on this planet. It has been recorded as growing at an amazing 47.6 inches in 24 hours. Bamboo is a crucial element in the balance of oxygen and carbon dioxide in the atmosphere. A grove of bamboo releases 35% more oxygen than an equivalent stand of trees. Because of this, planting bamboo is a great way to reduce your carbon footprint and help fight global warming. Bamboo is a viable replacement for wood. It can be harvested in 3-5 years versus 10-20 for most softwoods. It can out-yield pine 6 to 1 in biomass production. It is also one of the strongest building materials with a tensile strength of 28,000 psi. To help give you an idea of how much this is, mild steel measures 23,000 psi. It is a great soil conservation tool. It greatly reduces erosion with a sum of stem flow rate and canopy intercept of 25%.

Starliner

- **Boeing is finally poised to launch astronauts to the International Space Station for NASA. Starliner is a spacecraft that transports astronauts in space, after being launched there by a rocket. It consists of a crew capsule and a service module. The crew capsule houses the astronauts; like others of its kind, it will be able to survive reentry and return to the ground. The service module consists of the equipment and systems, the astronauts need to survive in space, including air and temperature control, water supply, sanitation, etc., plus the engines and fuel required to maneuver the spacecraft. The service module won't be reusable.**
- **After several rounds of competitive development contracts within the Commercial Crew Program starting in 2010, NASA selected Starliner, along with the SpaceX Crew Dragon, in the Commercial Crew Transportation Capability contract round. The first crewed test flight test was initially planned to occur in 2017.**

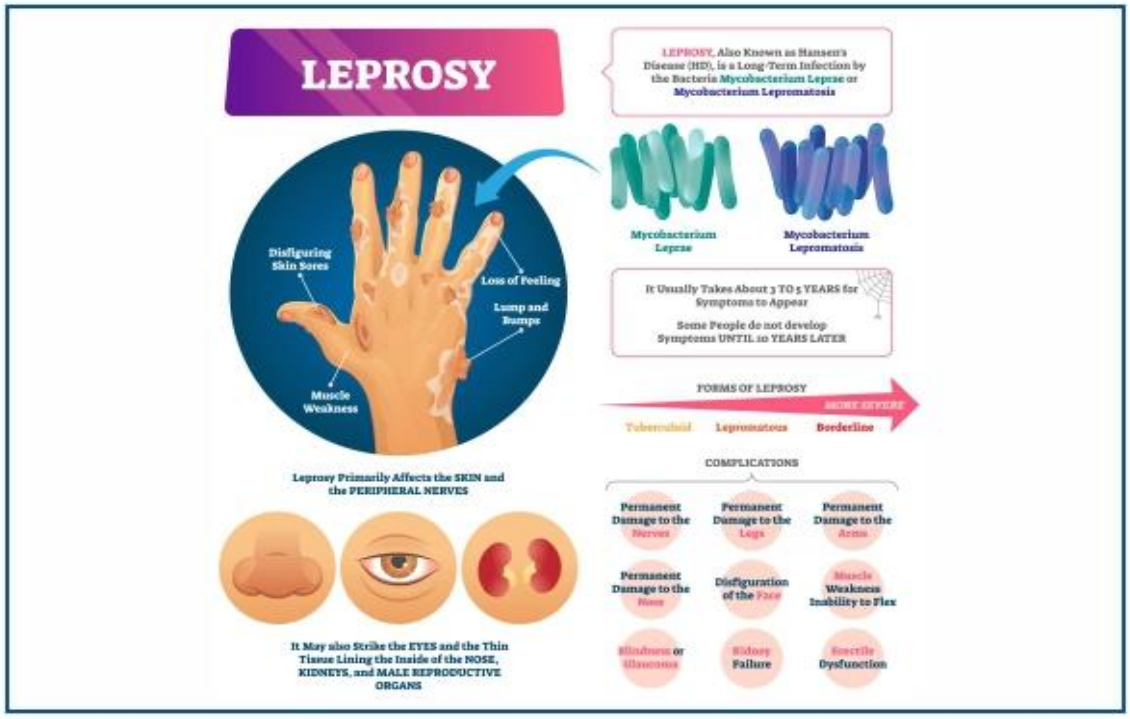


What is Star Liner's purpose?

- **Since being awarded the NASA contracts, Space has flown 13 missions to the ISS onboard its Dragon crew capsule (which can also house seven astronauts). Assuming the starliner's crewed test flight is successful, SpaceX and Boeing will take turns launching astronauts to the ISS each crew's expedition lasts up to six months until the ISS is decommissioned next decade.**

Leprosy

- **Red squirrels once served as an important host for Mycobacterium leprae strains that caused leprosy in people.**
- **Leprosy is spread between people, although extensive contact is necessary. Leprosy has a low pathogenicity, and 95% of people who contract *M. leprae* do not develop the disease. Leprosy does not spread during pregnancy to the unborn child or through sexual contact. Leprosy occurs more commonly among people living in poverty. There are two main types of the disease – paucibacillary and multibacillary, which differ in the number of bacteria present.**



Red Squirrel

Red squirrels are a small mammal that falls under a rodent group called Sciuridae (meaning shadow-tailed). Examples of the squirrel family include tree squirrels, ground squirrels, and flying squirrels. *Mycobacterium leprae* in the southern population of Brownsea Island squirrels originated from a medieval human strain. *M. lepromatosis* was found in red squirrels from elsewhere in the United Kingdom and Ireland. Human leprosy is proving hard to eradicate, despite available drugs. Perhaps other wildlife species are also reservoirs for this stubborn disease.

Wealth Distribution

Wealth Distribution the Supreme Court has also constituted a nine-judge Bench to interpret the Directive Principles of State Policy (DPSP) with respect to ownership and control of material resources.

What does the Constitution provide?

The Preamble to the Constitution aims to secure for all citizens social and economic justice, liberty, and equality. Part III of the Constitution lists down the fundamental rights that guarantee liberty and equality while Part IV contains the DPSP.

These are principles that the central and State governments should follow to achieve social and economic justice in our country. Unlike the fundamental rights in Part III, the DPSP is not enforceable in court. They are nevertheless fundamental in the governance of the country. Article 39(b) and (c) in Part IV contain principles that are aimed at securing economic justice. They provide that ownership and control of material resources of the society should be distributed to serve the common good and that the operation of the economic system does not result in the concentration of wealth in the common retirement.

What is the historical context?

The Constitution originally guaranteed the right to property as a fundamental right under Article 19(1)(f). It is provided under Article 31 that the state shall pay compensation in case of the acquisition of private property. It is pertinent to note that at the time of independence, the main property rights related to agricultural and other land. The government had to acquire the rights in such estates for carrying out land reforms and the construction of public assets.

P versus NP problem

The P versus NP problem is to determine whether every language accepted by some nondeterministic algorithm in polynomial time is also accepted by some (deterministic) algorithms in polynomial time. An algorithm is said to be solvable in polynomial time if the number of steps required to complete the algorithm for a given input is for some nonnegative integer, where is the complexity of the input. To define the problem precisely it is necessary to give a formal model of a computer. In computer programming, a non-deterministic algorithm is an algorithm that, even for the same input, can exhibit different behaviors on different runs, as opposed to a deterministic algorithm. There are several ways an algorithm may behave differently from run to run. The standard computer model in computability theory is the Turing machine was introduced. By Alan Turing in 1936. Although the model was introduced before the physical computers were built; it nevertheless continues to be accepted as the proper computer model for defining the notion of a computable function. Informally class P is the class of decision problems solvable by some algorithm within several steps bounded by some fixed polynomial in the length of the input.

Liquid Nitrogen

The Hindu reported that a London-based company developed a system to improve the quality and shelf life of food by introducing droplets of liquid nitrogen in the packaging. When nitrogen evaporates, it displaces oxygen in the food pack, preventing microbial action and preserving freshness. The technique was useful in packing come, potato crisps, peanuts and peanut butter, milk products, cheese, and dried potatoes, "Liquid nitrogen, an inert, colorless, odorless cryogenic fluid has traditionally been used in the management of many

benign pre-cancers and cancers since the 1960s. The procedure involves using the element at a frosty -196-degree C to freeze and destroy cancer cells.

"The treatment is Cryotherapy.

Contamination of spices

At least Five countries including Singapore, Hong Kong, and the U.S. have announced an investigation into possible contamination of spice mixes sold by Indian brands, MDH and Everest. The complaints cite the presence of ethylene oxide (EtO), a toxic chemical used as a food stabilizer, beyond permissible limits. The Spices Board of India in response has initiated mandatory testing of products shipped abroad and is reportedly working with exporters to identify the root cause of contamination.

Geotextile

Geotextiles are woven, nonwoven, or knitted textile materials consisting of synthetic and or natural polymers. They are used in geotechnical and civil engineering applications, such as infrastructure works, roads, railways, coastal protection, landfills, and erosion control.

Benefits

Geotextile products have been improving geotechnical designs for years, providing numerous advantages in comparison to traditional techniques: A reduced environmental impact when using geotextiles. In use as a filter layer instead of traditional materials, greenhouse gas emissions are reduced by 90%, and energy demand dropped by 80%. See Quality & Certification for more information.

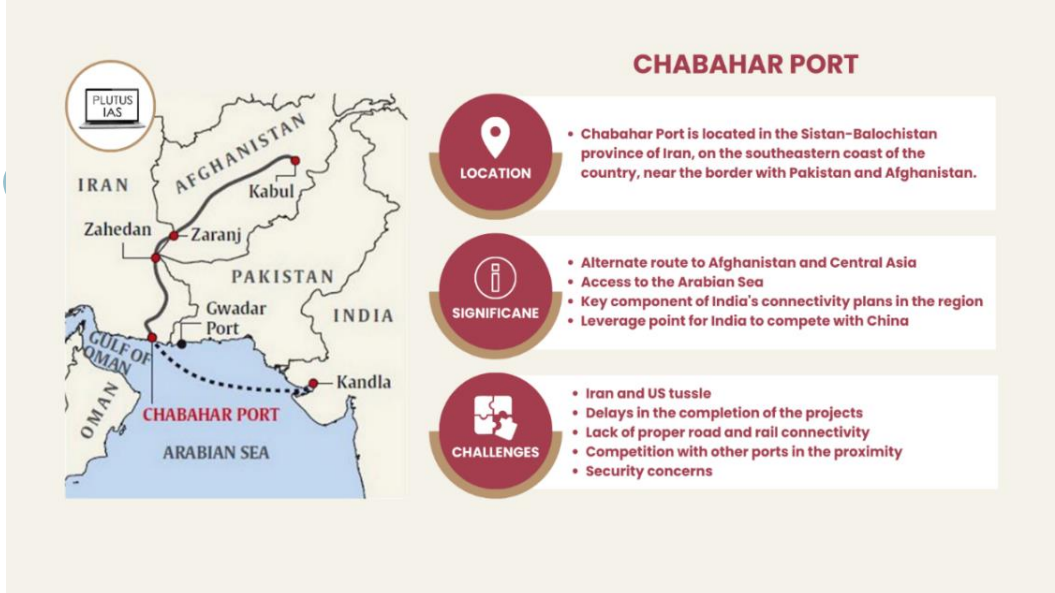
A reduced thickness

A geotextile fabric can act as a high-performing filter layer, replacing up to 1m of filter

material in e.g. erosion control systems.

India-Iran agreement on Chabahar port

The new 10-year agreement between India and Iran to develop the Chabahar port carries the "potential risk" of sanctions, the U.S. State Department, casting a cloud over whether the special exemption India received from the U.S. in 2018 will still be applicable for the next phase of development and investments in the Iranian project. In particular, India's plans under the new agreement to invest approximately $120 million in equipment for the port and a credit window of $250 million are likely to be under the scanner if the U.S. decides against extending its sanctions carve out for India.



In response to specific questions about the long-term contract signed between India Ports Global Ltd. and Port and Maritime Organisation of Iran. According to the U.S.'s carve-out clause, detailed in amendments to the Iran Freedom and Counter-Proliferation Act (IFCA) made in November. In 2018, the U.S. President could authorize exemptions to sanctions imposed against Iran in two cases: humanitarian aid for the Iranian people, and assistance for Afghanistan. Section 1244 of the IFCA (f) states that "The [US] President may provide for an exception from the imposition of sanctions under this section for reconstruction assistance or economic development for Afghanistan" provided it is in the "national interest of the United States". A third exception, a six-month waiver on oil imports from Iran ran out in 2019, and India complied with the U.S. demand to "zero out" its purchases of Iranian oil.

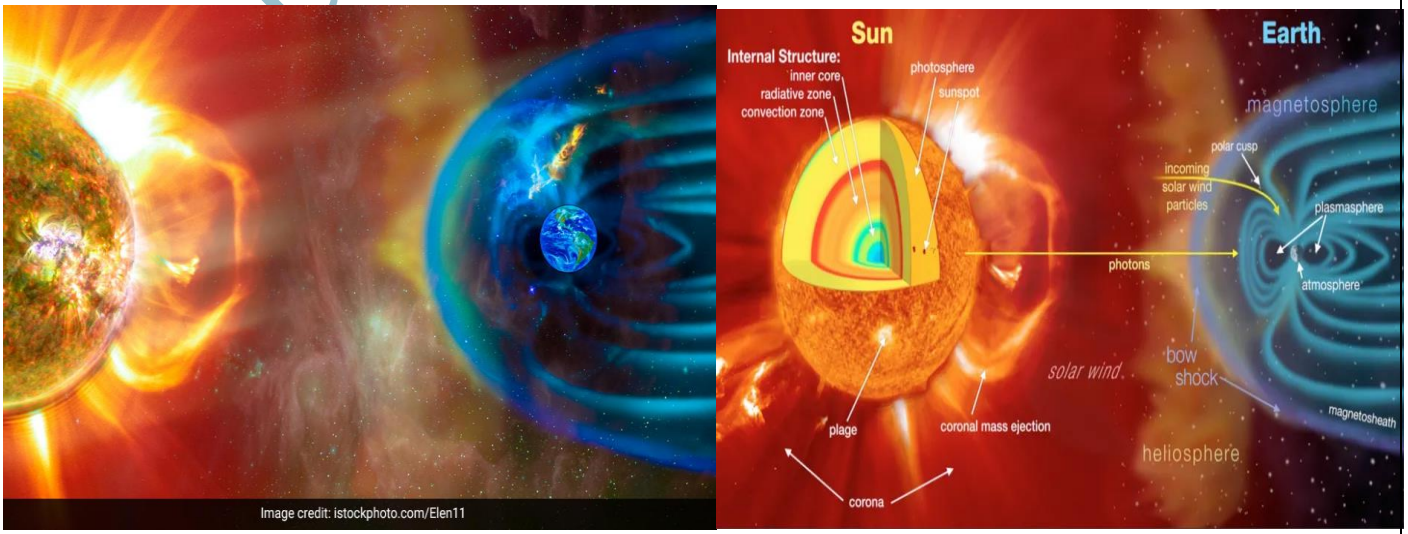
The Indian Ocean Region Strategic Review Act

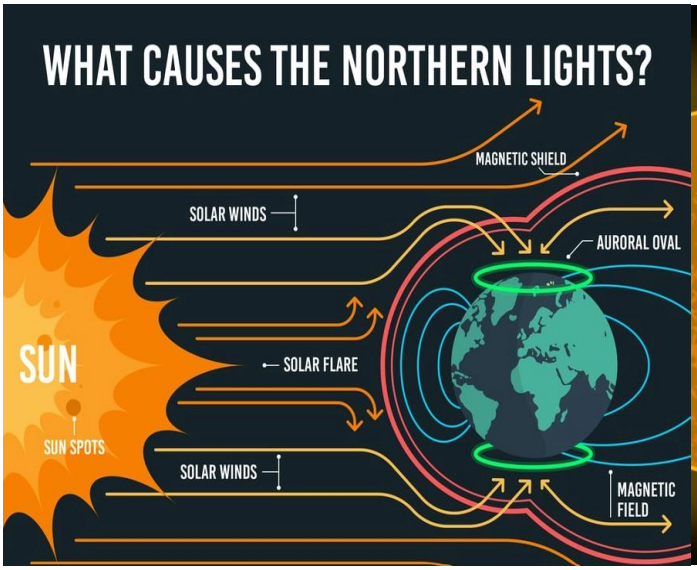
Members of the U.S. House of Representatives Foreign Affairs. The committee will introduce legislation requiring the U.S. administration to present a formal and "cohesive" Indian Ocean strategy across key departments. The Indian Ocean Region Strategic Review Act. is based on a recommendation of the Bipartisan U.S.-China Economic and Security Review Commission, a body set up in 2000 to review and report on the U.S.-China Relationship the U.S. administration submitted an Indian Ocean Region (IOR) strategy that would include plans to develop U.S. economic interests in the region, defend freedom of navigation, support regional partners, and promote cooperation with Japan, Australia, India, the U.K., and France, among others. The proposed Act would require coordination across three key Departments state, Defence, and the U.S International Agency for International Development (USAID) in synthesizing and executing a strategy for the IOR. The strategy

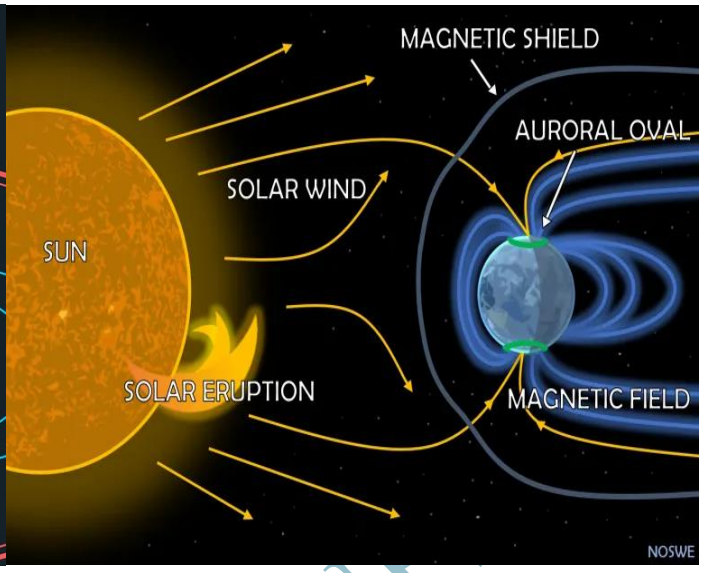
will require the U.S. to strengthen diplomatic ties in the region such as via its participation in regional organizations. The Act will require the U.S. to "build upon existing agreements with strategic partners like India to foster military communication and intelligence sharing", there is also a freedom of navigation clause in the legislation and a mandate to Protect international shipping lanes. The legislation will also require the administration to work closely with island nations, India, Japan, Australia, and others to foster commercial exchanges and economic development.

Solar storm -Aditya L1

Solar storms are rare, occurring around once every few decades. The last time charged particles from the Sun blew into the earth with similar energy was in 2003. Both events happened as the Sun was nearing the peak of its solar cycle Scientists monitoring a sunspot called AR 3664 observed it growing. By May 7, it was 16 times as wide as the earth and brimming with magnetic energy. On May 10, three coronal mass ejections struck the earth. In 1859, the Sun spouted a strong solar flare and triggered a super-geomagnetic storm on the earth, the most powerful in history. Telegraph wires either caught fire or were able to operate without a power supply




WHAT CAUSES THE NORTHERN LIGHTS?
MAGNETIC SHIELD
SOLAR WINDS
AURORAL OVAL
SUN
SOLAR FLARE
SUN SPOTS
SOLAR WINDS
MAGNETIC FIELD


MAGNETIC SHIELD
AURORAL OVAL
SOLAR WIND
SUN
SOLAR ERUPTION
MAGNETIC FIELD
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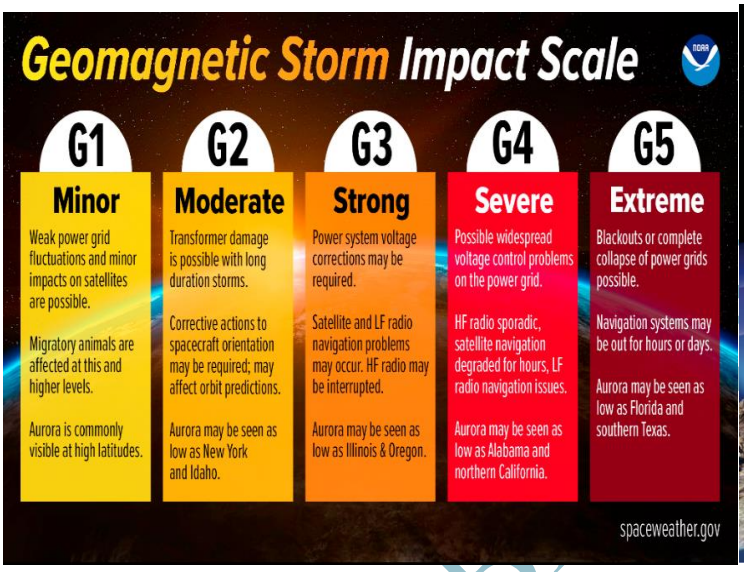
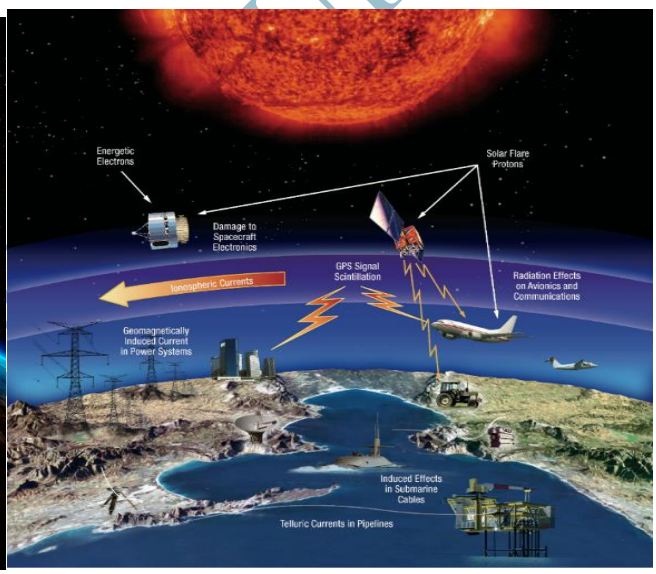
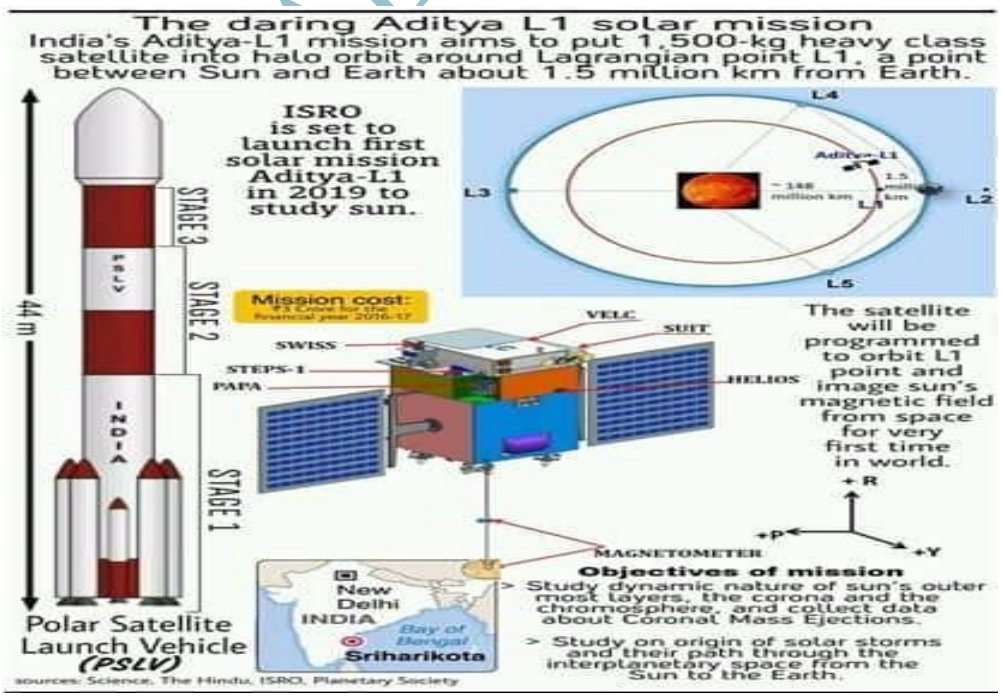

Geomagnetic Storm Impact Scale
G1
Minor
Weak power grid fluctuations and minor impacts on satellites are possible.
Migratory animals are affected at this and higher levels.
Aurora is commonly visible at high latitudes.
G2
Moderate
Transformer damage is possible with long duration storms.
Corrective actions to spacecraft orientation may be required; may affect orbit predictions.
Aurora may be seen as low as New York and Idaho.
G3
Strong
Power system voltage corrections may be required.
Satellite and LF radio navigation problems may occur. HF radio may be interrupted.
Aurora may be seen as low as Illinois & Oregon.
G4
Severe
Possible widespread voltage control problems on the power grid.
HF radio sporadic, satellite navigation degraded for hours, LF radio navigation issues.
Aurora may be seen as low as Alabama and northern California.
G5
Extreme
Blackouts or complete collapse of power grids possible.
Navigation systems may be out for hours or days.
Aurora may be seen as low as Florida and southern Texas.
spaceweather.gov


Energetic Electrons
Solar Flare Protons
Damage to Spacecraft Electronics
Ionospheric Currents
GPS Signal Scintillation
Radiation Effects on Avionics and Communications
Geomagnetically Induced Current in Power Systems
Induced Effects in Submarine Cables
Telluric Currents in Pipelines


The daring Aditya L1 solar mission
India's Aditya-L1 mission aims to put 1,500-kg heavy class satellite into halo orbit around Lagrangian point L1, a point between Sun and Earth about 1.5 million km from Earth.
ISRO is set to launch first solar mission Aditya-L1 in 2019 to study sun.
L4
L3
L1
L2
L5
Aditya-L1
~ 148 million km
1.5 million km
Mission cost:
44 m
STAGE 3
STAGE 2
STAGE 1
PSLV
INDIA
VELC
SUIT
SWISS
STEPS-1
PAPA
HELIOS
The satellite will be programmed to orbit L1 point and image sun's magnetic field from space for very first time in world.
+R
+P
+Y
MAGNETOMETER
Objectives of mission
> Study dynamic nature of sun's outer most layers, the corona and the chromosphere, and collect data about Coronal Mass Ejections.
> Study on origin of solar storms and their path through the interplanetary space from the Sun to the Earth.
New Delhi
INDIA
Bay of Bengal
Sriharikota
Polar Satellite Launch Vehicle (PSLV)
sources: Science, The Hindu, ISRO, Planetary Society

Many spacecraft that monitor the Sun for these events are parked in the L1 point in space, about 1.5 million km in the Earth-Sun direction, from where they have an uninterrupted view of the star. One of these spacecraft is Aditya-L1 of the Indian Space Research Organization (ISRO), which reached L1 in March this year. The principal investigator of its primary instrument, The Visible Emission Line Coronagraph (VELC), is still being calibrated, so it hasn't chimed in on the events since May 10. Of the other instruments: ISRO said on May 14 that the ASPEX payload had "captured the enhancement of the alpha particle and proton Flux of the solar wind" as signatures of the solar storm. It also said the SoLEXS and HEL1OS payloads had detected "the multiple X- and M-class flares during the last few days". The Chandrayaan-2 orbiter around the moon also reportedly detected "signatures" of the emissions from the Sun.

Wax treatment

The principle behind the wax treatment is the latent heat given of by the molten wax (above 45 degrees C) during its cooling process. This heat enlarges the blood vessels (a process called vasodilation) below the applied area and helps to effectively drain the accumulated fluid. This temperature is quite bearable and soothing. But the latent heat given of by hot water, at about 100 degrees C, is certainly harmful to the human body. Hot water can also be used at bearable temperatures but it cools far more rapidly than molten wax.

Grande Prairie Forest

The National Human Rights Commission of India (NHRC) was formally informed late last week the deferral of its status would continue for a year more. The deferral was put in place by the sub-committee on Accreditation (SCA) of the Global Alliance of National Human Rights Institutions (GANHRI) for a year, in 2023. While the SCA did not agree with the plea of some leading international non-governmental organizations, to put the NHRC in category 'B', was also rejected. India's request to lift the deferral.

BIG SHOT

This picture from the Alberta Wildfire Service, taken on May 10, shows smoke from wildfires burning in the Grande Prairie Forest area, 4 km east of the town of Teepee Creek, in Alberta, Canada. After its worst-ever-wildfire season last year, Canada experienced one of its warmest winters with low to non-existent snow in many areas, raising fears of a hot summer triggering blazes in forests amid an ongoing drought. AFP

Grande Prairie Forest area, 4 km east of the town of Teepee Creek, in Alberta, Canada

NHRC had stressed the importance of the 'A' status. It stated, 'A' status accreditation also grants participation in the work and participation of the GANHRI, as well as the work of the Human Rights Council and other UN mechanisms". On the Paris Principles the NHRC noted, "The United Nations Paris Principles provide the international benchmarks against which the National Human Rights Institutions (NHRIs) can be accredited".

The Paris Principles were adopted by the UN in 1993. The NHRC stated that the Paris Principles set out "six main criteria that NHRIs are expected to meet. These are Mandates and competence, Autonomy from Government, Independence guaranteed by a Statute or Constitution, Pluralism, Adequate Resources; and adequate powers of investigations.

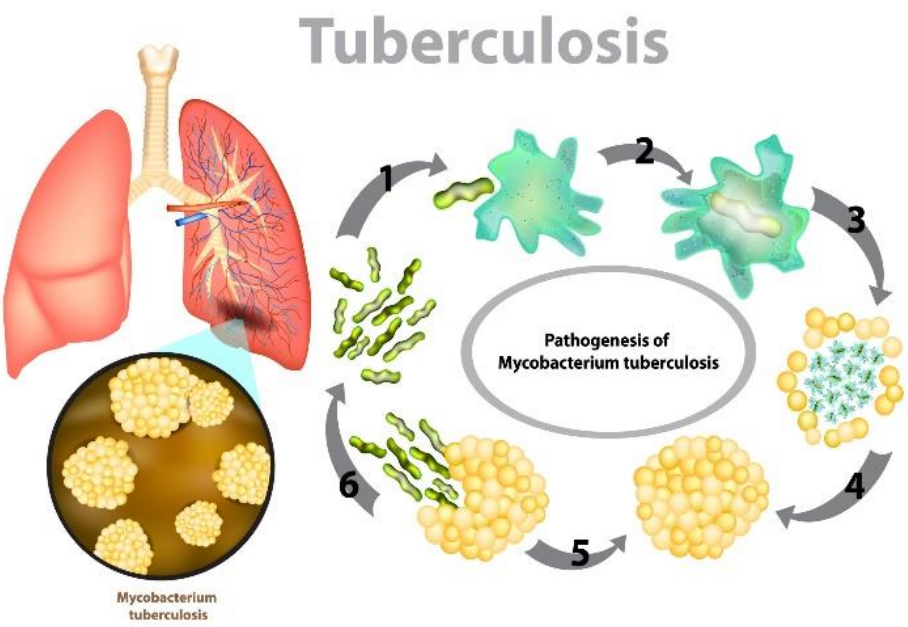
GANRAHI

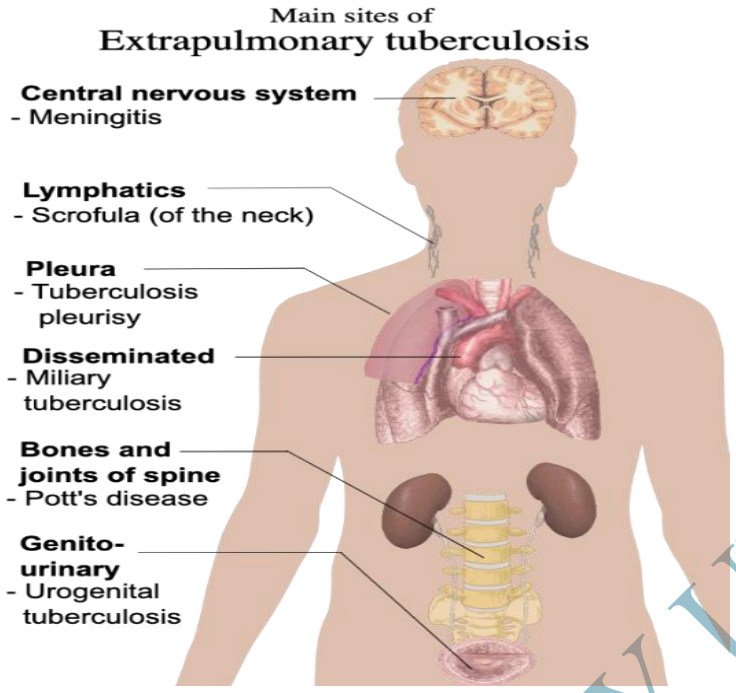
It is an organization affiliated to the UN High Commissioner for Human Rights. It is a

global network of national human rights institutions (NHRIs) that works to promote and protect human rights. GANHRI represents 120 NHRIs from around the world. GANHRI's mission is to unite, promote, and strengthen NHRIs to operate in line with the UN Paris Principles.

Tuberculosis (EPTB)

It is tuberculosis outside of the lungs. EPTB includes tuberculosis meningitis, abdominal tuberculosis (usually with ascites), skeletal tuberculosis, Pott's disease (spine), scrofula (lymphadenitis), and genitourinary (renal) tuberculosis.





What is an AI Sandbox?

The AI Sandbox is the development of hardware, software, data, tools, interfaces, and Policies are necessary for starting an enterprise deep learning practice. Deep learning models require lots of data and specialized computing resources called GPUs (graphical processing units).

India –EFTA

The India-European Free Trade Association signed a Trade and Economic Partnership Agreement (TEPA) today i.e. on 10th March 2024. India has been working on a Trade and Economic Partnership Agreement (TEPA) with EFTA countries comprising Switzerland, Iceland, Norway & Liechtenstein. The Union Cabinet chaired by the Hon'ble Prime Minister has approved the signing of the TEPA with the EFTA States. EFTA is an inter-governmental organization set up in 1960 for the promotion of free trade and economic integration for the benefit of its four Member State. EFTA is an important regional group, with several growing opportunities for enhancing international trade in goods and services.

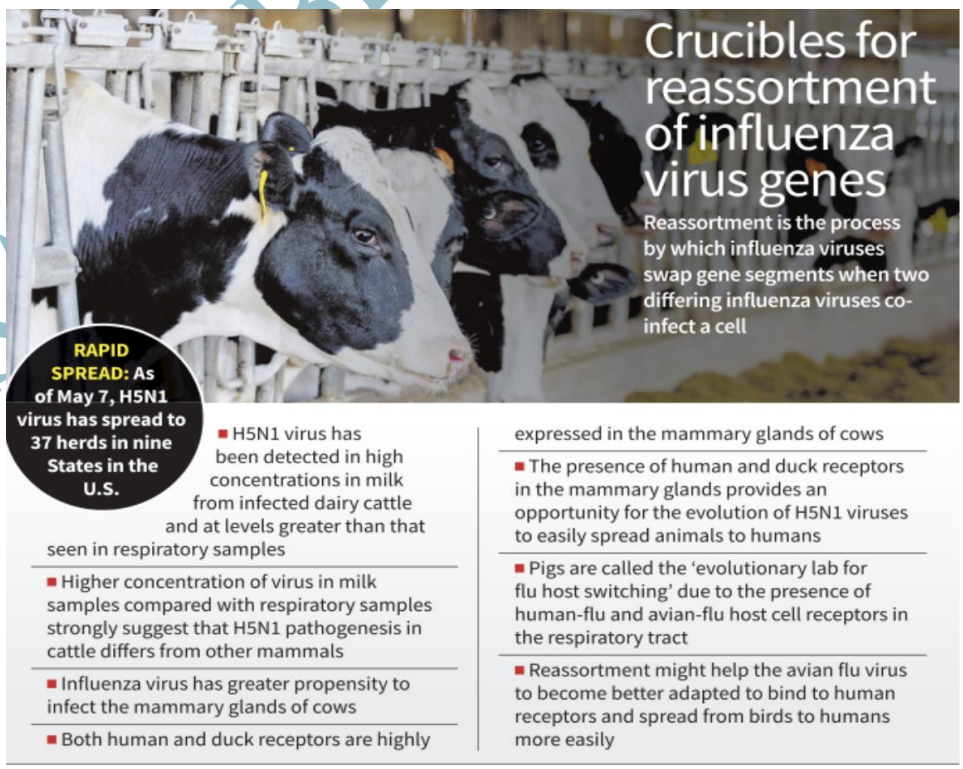
EFTA is one important economic block out of the three (the other two - EU &UK) in Europe. Among EFTA countries, Switzerland is the largest trading partner of India followed by Norway.

The highlights of the agreement are:

EFTA has committed to promoting investments to increase the stock of foreign direct investments by USD 100 billion in India in the next 15 years and to facilitate the generation of 1 million direct employments in India, through such investments. The investments do not cover foreign portfolio investment. For the first ever time in the history of FTAs, a legal commitment is being made to promote target-oriented investment and the creation of jobs. EFTA is offering 92.2% of its tariff lines which covers 99.6% of India's exports. The EFTA's market access offers covers 100% of non-agri products and tariff concession on Processed Agricultural Products (PAP). EFTA is an important regional group, with several growing opportunities for enhancing international trade in goods and services. EFTA is one important economic block out of the three (the other two - EU &UK) in Europe. Among EFTA countries, Switzerland is the largest trading partner of India followed by Norway. India is offering 82.7% of its tariff lines which covers 95.3% of EFTA exports of which

more than 80% of imports is Gold. The effective duty on Gold remains untouched. Sensitivity related to PLI in sectors such as pharma, medical devices & processed food, etc. have been taken while extending offers. Sectors such as dairy, soya, coal, and sensitive agricultural products are kept on the exclusion list. India has offered 105 sub-sectors to the EFTA and secured commitments in 128 sub-sectors from Switzerland, 114 from Norway, 107 from Liechtenstein, and 110 from Iceland. TEPA would stimulate our services exports in sectors of our key strength/interest such as IT services, business services, personal, cultural, sporting, and recreational services, other education services, audio-visual services, etc. Services offer from EFTA includes better access through the digital delivery of Services (Mode 1), commercial presence (Mode 3), and improved commitments and certainty for entry and temporary stay of key personnel (Mode 4). TEPA has provisions for Mutual Recognition Agreements in Professional Services like nursing, chartered accountants, architects, etc. Commitments related to Intellectual Property Rights in TEPA are at the TRIPS level.

H5N1



Magpies

Magpies belong to the Corvidae family of birds including crows, jays and ravens. Birds of this family are generally considered to be noisy, inquisitive birds that in folklore from around the world have often been associated with omens, good or bad. The gold-billed magpie, Urocissa avirostris, also called the yellow-billed blue magpie, has mischief in its eyes and occupies the high altitude zone between 2000 and 3000 meters above sea level. At slightly lower heights we find the red-billed magpie, and the blue magpie is found at lower altitudes where humans live in larger numbers.

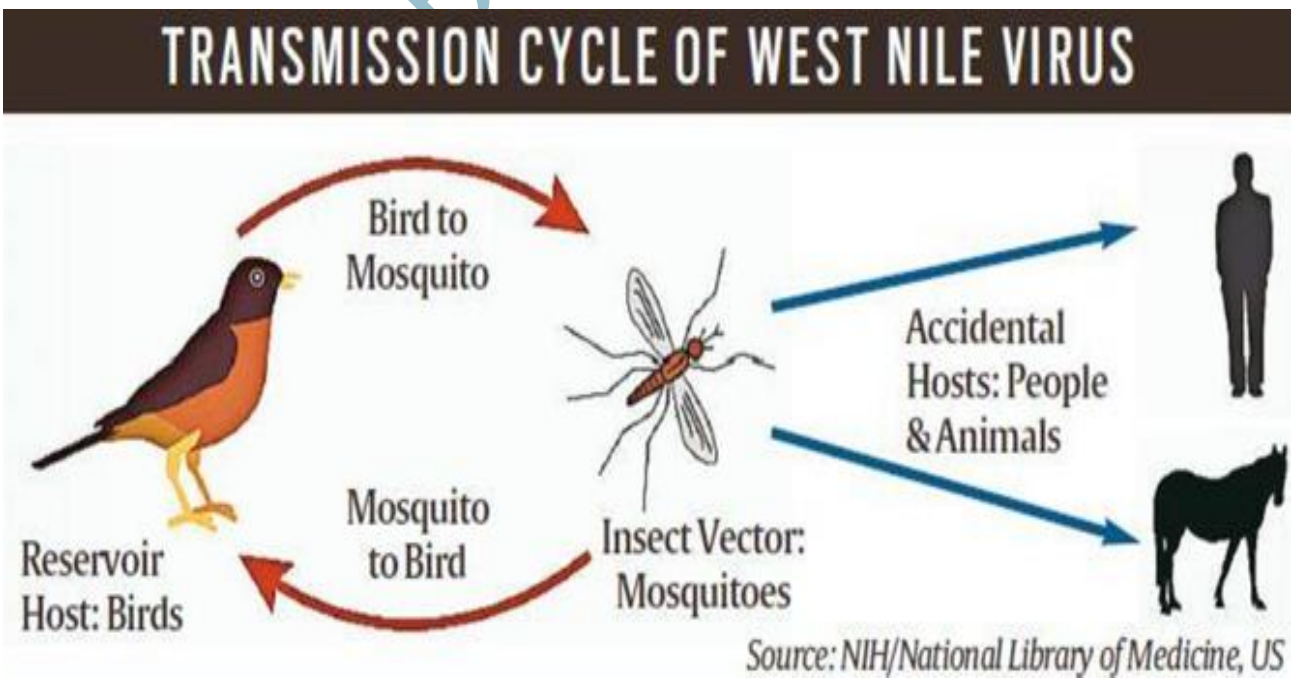
- **The blue magpie and the red-billed magpie are very similar in appearance too, though a**
- **little smaller. The blue magpie is less of a forest bird, and more often seen around villages.**

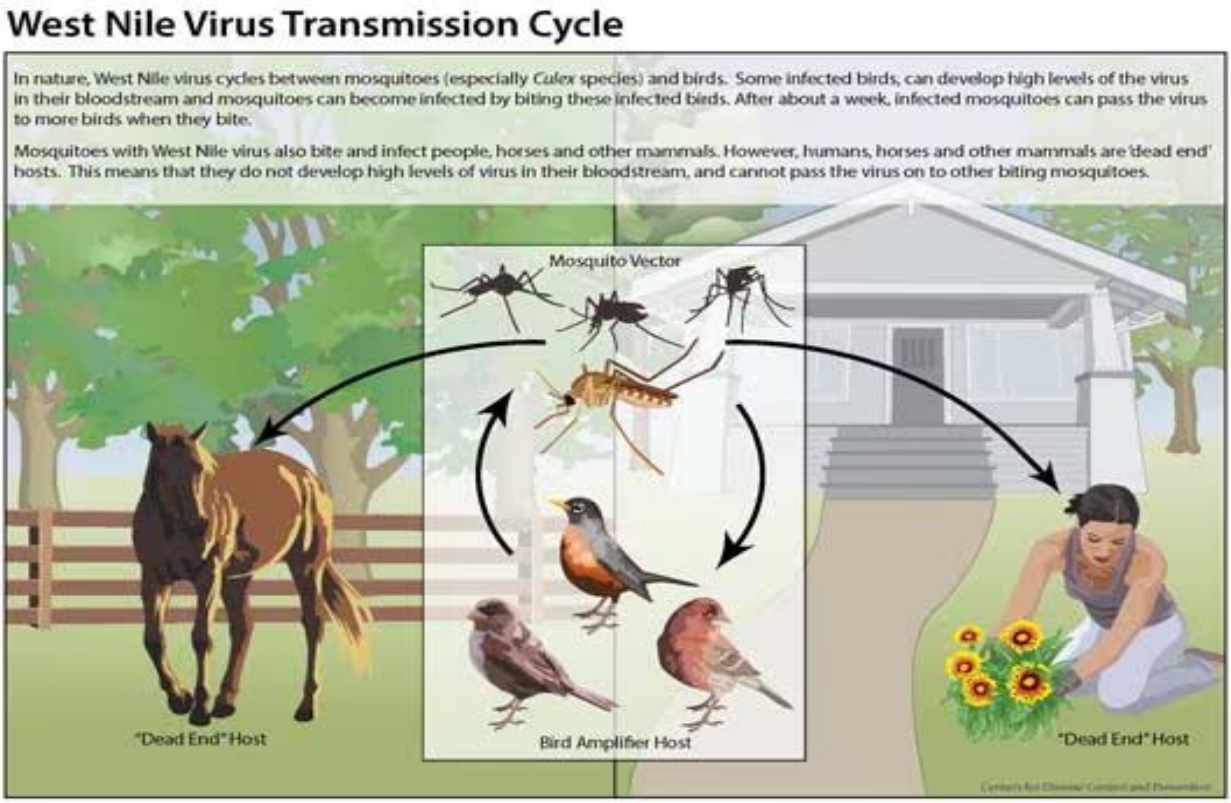
Can heavy snowfall and rain contribute to some earthquakes Can heavy snowfall and rain contribute to some earthquakes. A recent study has found that episodes of heavy snowfall and rain likely contributed to a swarm of earthquakes over the past several years' in northern Japan. This is the first time that climate conditions have been found to initiate some quakes. The seismic activity in the region was surprisingly found to synchronize with certain changes in underground pressure and those changes were influenced by seasonal patterns of snowfall and precipitation.

Scientists suspect that this new connection between quakes and climate may not be unique to Japan. Since late 2020, hundreds of small earthquakes and earthquake swarms have shaken up Japan's Noto Peninsula, in 2020 changes in seismic velocity appeared to be synchronized with the seasons. When it rains or snows, that adds weight, which increases pore pressure, which allows seismic waves to travel through slower. When the seismic velocity observations and the model of excess pore pressure overlapped, they fit extremely well.

West Nile Fever

- **West Nile virus is most commonly spread to people by the bite of an infected mosquito.**
- **Mosquitoes become infected when they feed on infected birds. Infected mosquitoes then**
- **spread West Nile virus to people and other animals by biting them.**





Climate Change and Mental Health

A study found that people with mental health conditions seem to be at a greater risk of succumbing to heat-related deaths. The risk is even higher for people diagnosed with schizophrenia, anxiety, or bipolar disorder Researchers believe one of the main reasons people with schizophrenia were more vulnerable could be dysfunction of the hypothalamus. It controls the body's temperature, heart rate, hunger, thirst, mood, libido, sleep, and regulation of hormones Antipsychotic medications also interfere with the hypothalamus. One side-effect of such drugs is a tendency to raise body temperature, which when coupled with anomalously high ambient temperatures can rapidly prove fatal

Superplasticizers

- **Superplasticizers (SPs), also known as high range water reducers, are additives used for**
- **making high-strength concrete or to place self-compacting concrete. Plasticizers are**
- **chemical compounds that enable the production of concrete with approximately 15%**

- **less water content. Superplasticizers allow a reduction in water content by 30% or more. These additives are employed at the level of a few weight percent. Plasticizers and superplasticizers also retard the setting and hardening of concrete.**

  According to their dispersing functionality and action mode, one distinguishes

Two classes of superplasticizers:

1. **Ionic interactions (electrostatic repulsion): lignosulfonates**
2. **(first generation of ancient water reducers), sulfonated synthetic polymers (naphthalene, or melamine, formaldehyde condensates) (second generation), and;**
3. **Steric effects: Polycarboxylates-ether (PCE) synthetic polymers bearing lateral chains (third generation).**

Superplasticizers are used when well-dispersed cement particle suspensions are required to improve the flow characteristics (rheology) of concrete. Their addition allows for a decrease in the water-to-cement ratio of concrete or mortar without negatively affecting the workability of the mixture.

Agriculture and global warming

Argentina's corn farmers are facing a dangerous new enemy because of global warming: A yellow insect just 4 mm long that thrives in hotter temperatures and is threatening harvests., leafhoppers are seen on a corn plant at a National Institute of Agricultural Technology experimental field in Cordoba, Argentina.

Global Plastic Treaty

The Global Plastics Treaty, an ambitious initiative involving at least 175 United Nations member nations to eliminate the use of plastics, concluded its fourth round of negotiations recently.

The goal is to finalize a legal document by the end of 2024 with timelines by which countries must agree to curb plastic production, eliminate its uses that create wastage, ban certain chemicals used in its production, and set targets for recycling. Unfortunately, an agreement is not in sight. There is yet another round of negotiations scheduled in Busan, South Korea this November. The primary hurdles are economic. Oil-producing and refining countries such as Saudi Arabia, the United States, Russia, India, and Iran are reluctant about hard deadlines to eliminate plastic production. A coalition of African countries, supported by several European nations, is in favor of a year, around 2040, to ensure that a timeline for reduction is in effect. There is also disagreement on whether contentious elements in the treaty should be decided on by a vote or consensus the latter implying that every country has a veto.

India's opinion, other than being uncomfortable with binding targets, is that legally binding instruments to end plastic pollution must also address ". availability, accessibility, and affordability of alternatives including cost implications and specifying arrangements. for capacity building and technical assistance, technology transfer, and financial assistance". This language and India is not the only proponent is reminiscent of the principle of 'Common but differentiated responsibility' enshrined in climate talks. In the year that the plastics treaty was mooted, in 2022, India brought into effect the Plastic Waste Management Amendment Rules (2021) that banned 19 categories of "single-use" plastics. It, however, does not include plastic bottles even those less than 200 ml, and multi-layered packaging boxes (as in milk cartons). Moreover, even the ban on single-use plastic items is not uniformly enforced nationally, with several outlets continuing to retail these goods. The global distribution of plastic pollution is unequal with Brazil, China, India, and the U.S. responsible for 60% of plastic waste.

Johan Castberg

Norway's largest floating-production ship 'Johan Castberg'. During the summer of 2024, it will set the course for the Johan Castberg field in the Barents Sea, located off the northern coast of Norway. Production at the field, comprising three oil fields viz. Johan Castberg (formerly Skrugard), Havis, and Drivis - is scheduled to start in the fourth quarter of 2024 and planned for 30 years,

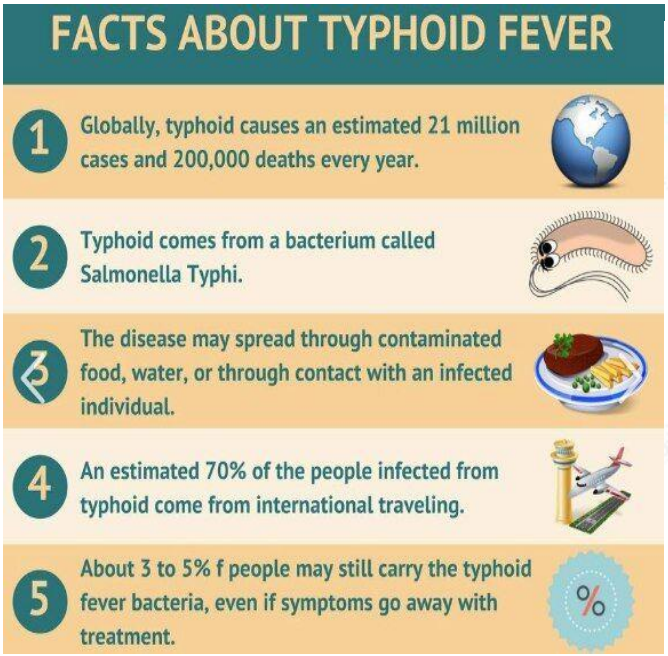
Tourmalet Pass

Tourmalet Pass

- **Tourmalet Pass near the Spanish border one of the highest paved mountain passes in the**
- **French Pyrenees, The Pyrenees are a mountain range straddling the border of France**
- **and Spain. They extend nearly 500 km (310 mi) from their union with the**
- **Cantabrian Mountains to Cap de Creus on the Mediterranean coast, reaching a maximum**
- **altitude of 3,404 metres (11,168 ft) at the peak of Aneto**

Typhoid and Widal test

Typhoid spreads through contaminated food and water and is caused by Salmonella Typhi and other related bacteria.



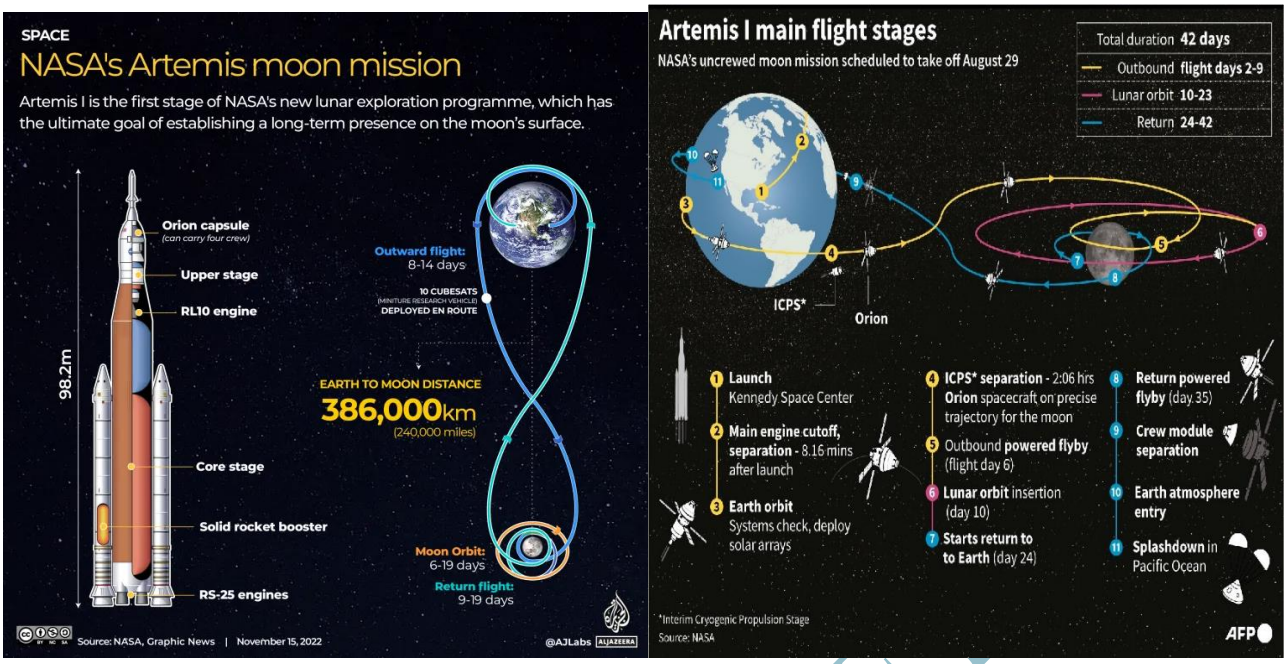
Principle of Widal test:

- Antibody in the serum produced in the response to *Salmonella* organism, the kit contains antigen suspensions that are killed bacteria and they were stained to enhance the reading of agglutination tests.
- The blue stained antigens are specific to the somatic antigens (O-Ag), while the red stained antigens are specific to the flagella antigens (H-Ag).

Standard time of the moon

In September 2025, NASA's four-member Artemis crew is scheduled to fly around the moon in preparation for the space agency's mission to land on the moon again. To support such missions, the White House Office of Science and Technology Policy (OSTP) has directed NASA to establish a Coordinated Lunar Time (LTC) to standardize time-telling on the moon. The LTC will be the standard to measure cislunar operations with the earth's UTC Coordinated Universal Time (UTC). The idea for the UTC was formulated in the 1960s. Atomic clocks are known for their extreme accuracy. A weighted average of hundreds of atomic clocks produces the International Atomic Time (TAI). Solar time on the other hand is calculated by measuring the earth's rotation relative to the Sun and is variable in nature. The UTC was designed to accommodate

the difference between solar time and atomic time,

- 

Atomic clocks

Atoms are composed of a nucleus (consisting of protons and neutrons) surrounded by electrons. Each element on the periodic table represents an atom with a certain number of protons in its nucleus. The number of electrons swarming around the nucleus can vary, but they must occupy discrete energy levels or orbits. A jolt of energy in the form of microwaves can cause an electron to rise to a higher orbit around the nucleus. The electron must receive exactly the right amount of energy meaning the microwaves must have a very specific frequency in order to make this jump. The energy required to make electrons change orbits is unique in each element and consistent throughout the universe for all atoms of a given element.

For instance, the frequency necessary to make electrons in a carbon atom change energy levels is the same for every carbon atom in the universe. The Deep Space Atomic Clock uses mercury atoms; a different frequency is necessary to make those electrons change levels, and that frequency will be consistent for all mercury atoms. "The fact that the energy difference between these orbits is such a precise and stable value is the key ingredient for atomic clocks,"? "It's the reason atomic clocks can reach a performance

level beyond mechanical clocks." Being able to measure this unchangeable frequency in a particular atom offers science a universal, standardized measurement of time.

("Frequency" refers to the number of waves that pass a particular point in space in a given unit of time. So, by counting waves, it's possible to measure time.)

Ritacuba Blanco Glacier

Columbia's missing snow

A tourist explores the Ritacuba Blanco glacier at Colombia's El Cocuy National Natural Park. The glacier, one of Colombia's highest peaks, should be covered by a blanket of homogeneous snow. But a brutal El Niño phenomenon melted it and exposed gigantic crevasses. AFP

- **The Ritacuba Blanco glacier at Colombia's El Cocuy National Natural Park.**
- **The glacier, one of Colombia's highest peaks, should be covered by a blanket of**
- **homogeneous snow. But a brutal El Niño phenomenon melted it and exposed gigantic**
- **crevasses.**

Freshwater beyond EEZ

Statistics show that the total volume of water on earth is estimated at 1.386 billion km3, where 97.5% is salt water and 2.5% fresh water. Out of this freshwater, only 0.3% is in liquid form on the surface, which means that the rest of the freshwater is underground, including on or under the ocean bed. A river under the sea was discovered at the bottom

of the Black Sea. This river appears to be over 100 feet deep and has a flow rate of about four miles per hour; about 22,000 cubic meters of water passes through this particular channel. It would count as one of the largest rivers in the world when compared to land-based rivers, considering that freshwater is a depleting resource, countries will begin exploring for and exploiting freshwater from above or under their ocean bed, within their maritime zones. Eventually, countries will expand exploration beyond their Exclusive Economic Zone (EEZ), into what is commonly known as the "Area", which is covered under Part XI of the United Nations Law of the Sea Convention, 1982 (UNCLOS). The "Area" under UNCLOS is defined as the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction, and is referred to as the common heritage of mankind.

UNCLOS

UNCLOS is known as a single comprehensive text covering the Constitution and the governance of the oceans, it is interesting to know that the Convention on the Territorial Sea and the Contiguous Zone, the Convention on the High Seas, the Convention on Fishing and Conservation of the Living Resources of the High Seas, and the Convention on the Continental Shelf (Geneva Conventions on the Law of the Sea, 1958) covers most of the issues such as UNCLOS and these Geneva Conventions are mostly platformers over customary international law. To complicate matters further, Article 311 of UNCLOS states that this Convention shall prevail as between states parties, over the Geneva Conventions on the Law of the Sea, 1958. Hence, not only is UNCLOS not applicable to these non-signatory states but also these countries do not recognise the doctrine of Exclusive Economic Zone (200 nm) or the "Area" (beyond 200 nm). Exploration and exploitation of the "Area" under UNCLOS is limited to the term "Resources", which is defined as all solid, liquid, or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules and resources when recovered from the Area are referred to

as “minerals”.

Alpha fold 3

Proteins are long chains of amino-acid residues that fold into specific shapes. Properly folded proteins function normally whereas misfolded ones can lead to debilitating diseases. Since these chains are quite long, a given protein can fold into one of a very large number of shapes yet it makes a beeline for a specific shape while avoiding all the others.

A Google subsidiary named DeepMind developed a purpose-built AI tool to predict the shapes into which different proteins could fold, called AlphaFold. Many scientists and technologists acknowledge that these two deep-learning systems have transformed human awareness of protein structures, a feat the machines demonstrated in the biennial Critical Assessment of Protein Structure Prediction contest.

Recently, DeepMind launched AlphaFold 3, which can reportedly predict the shapes with nearly 80% accuracy as well as model DNA, RNA, ligands, and modifications to them.

As with the first two Alpha Folds, no. 3 is great for being able to elucidate the folded proteins’ structures in seconds rather than the year’s humans have required with advanced microscopic techniques. Machines can predict protein structures with relatively high accuracy but they cannot say why they are folded that way; this is still the task of human scientists. How the AlphaFold will catalyze drug discovery is also unclear.

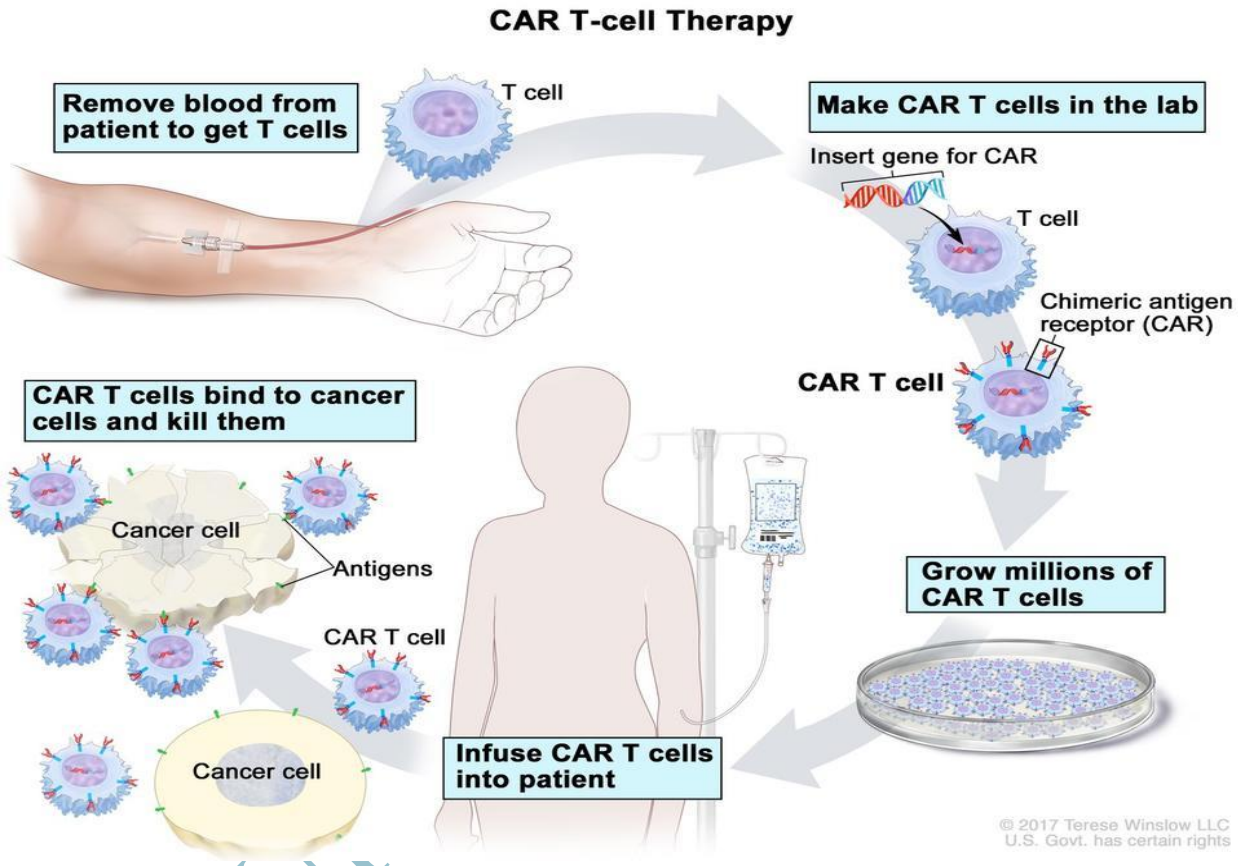
CAR -T and TIL Therapy

CAR T-cell therapy is a type of treatment in which a patient's T cells (a type of immune cell) cells and kill them.

TIL THERAPY

- TIL therapy uses T cells called tumor-infiltrating lymphocytes that are found in your tumor. Doctors test these lymphocytes in the lab to find out which ones best recognize
- your tumor cells. Then, these selected lymphocytes are treated with substances that make

- **them grow to large numbers quickly. The idea behind this approach is that the lymphocytes**
- **that are in or near the tumor have already shown the ability to recognize your tumor cells.**
- **But there may not be enough of them to kill the tumor or to overcome the signals**
- **that the tumor is releasing to suppress the immune system.**
- **Giving you large numbers of the lymphocytes that react best with the tumor**
- **can help to overcome these barriers.**



HC0+

- **Formyl cation (HCO+) a positively charged molecule.**
- **HCO+ molecules drive hydrogen escape on Mar**

Dissociative recombination reaction (DR) occurs in bulk at an altitude of about 125 km, above the clouds made of sulphuric acid. HCO+ is created when a carbon monoxide molecule (CO) loses an electron while absorbing a hydrogen atom.

DR is the reverse reaction:

HCO+ absorbs an electron and breaks up into CO and an hydrogen atom. These energetic hydrogen atoms then escape into space.

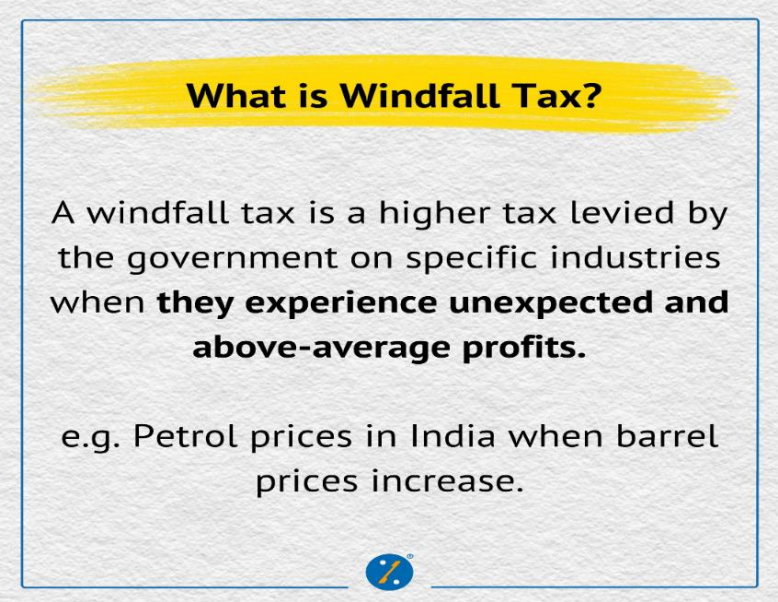
Baobab

Origins and history of the baobab, found in Madagascar and parts of Africa and Australia. The baobab lineage originated in Madagascar roughly 21 million years ago and reached Africa and Australia sometime in the past 12 million years, the researchers found. Madagascar, an island on Africa's southeastern coast, is a biodiversity hot spot and home to unusual Flora and fauna. Baobabs are long-lived deciduous, small to large trees from 5 to 30 m (20 to 100 ft) tall with broad trunks and compact crowns.

Two baobab lineages went extinct in Madagascar, but not before establishing themselves elsewhere, one in Africa and one in Australia, the study found. The tale of how a tree crossed the Indian Ocean to put down roots in two distant destinations is dramatic. It appears baobab seed pods floated from Madagascar to mainland Africa, located about 400 km to the west, and to Australia, situated more than nearly 7,000 km to the east. Baobabs, found in dry savannah habitats, provide food, shelter, and nesting sites for wildlife. Their fruits also provide nutrients and medicines for people, and the leaves are edible. The trees produce large, sweet-smelling flowers whose sugary nectar attracts

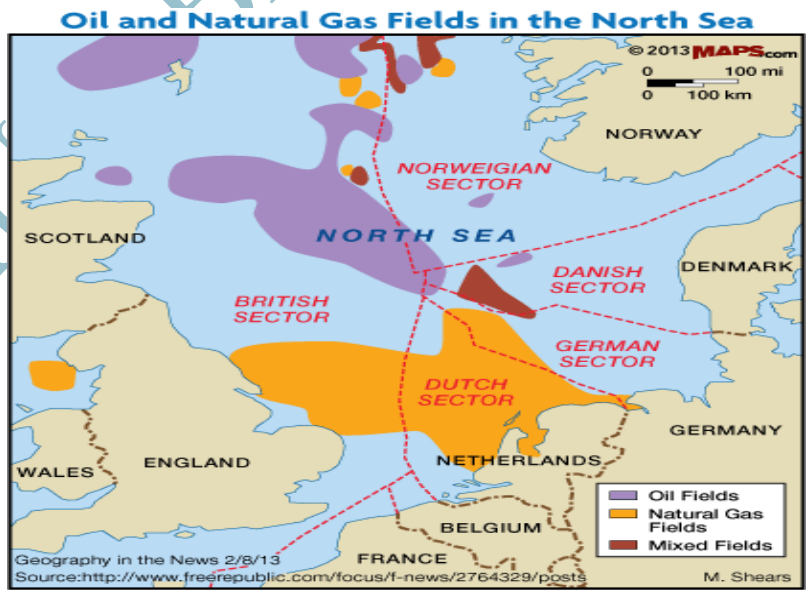
nocturnal pollinators as well as two types of primates, lemurs in Madagascar and bush babies in Africa.

Windfall tax



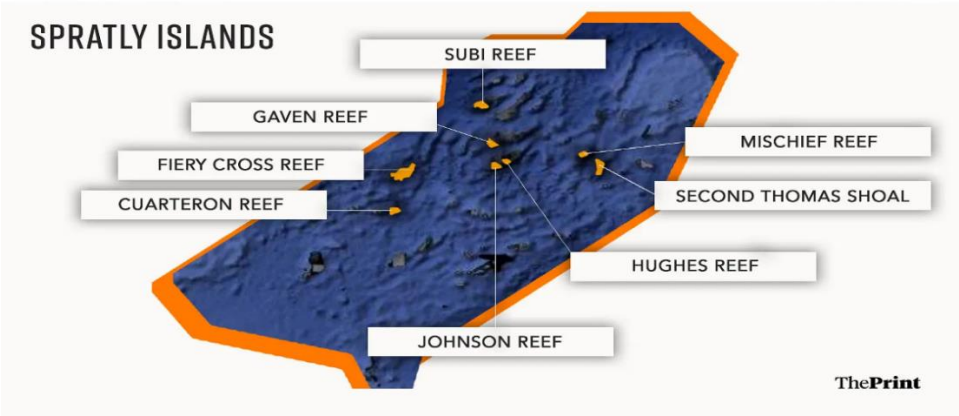
Brent crude

Brent Crude may refer to any or all of the components of the Brent Complex, a physically and financially traded oil market based around the North Sea of Northwest Europe



Scarborough Shoal

Scarborough Shoal and the Spratly Islands. The former is about 120 nautical miles (222 km) west of the Philippine island of Luzon and is considered a part of the Philippines' Exclusive Economic Zone (EEZ). The Spratly Islands are a group of over 100 islands and reefs, and while the Philippines claims some parts, China lays claim to the entire archipelago. China calls the Scarborough Shoal 'Huangyan Dao' while the Filipino name for it is 'Panatag Shoal' or 'Bajo de Masinloc'.



- **Located in the middle of the South China Sea and near shipping lanes carrying an**
- **estimated $3.4 trillion of annual commerce, its position is strategic for Beijing. There are**
- **concerns China might one day build a manmade island there, as it has on submerged reefs**
- **in the Spratly islands, some equipped with radar, runways and missile systems.**

WHO DOES THE SHOAL BELONG TO?

- **The Philippines and China lay claim to the shoal but sovereignty has never been**
- **established and it remains effectively under Beijing's control.**

- **A landmark 2016 ruling on the South China Sea by the Permanent Court of**
- **Arbitration, which went largely in favor of the Philippines, was not tasked with**
- **establishing sovereignty.**
- **It ruled China's blockade of the shoal violated international law and said the area**
- **was a traditional fishing ground for several countries.**
- **China seized the shoal in 2012 after a standoff with the Philippines and has since**
- **maintained a constant deployment of coastguard and fishing trawlers,**
- **some accused by Manila of being maritime militia**

Political Apathy

- **Political apathy is a lack of interest or apathy towards politics.**
- **This includes voter apathy, information apathy, and lack of interest in elections,**
- **political events, public meetings, and voting.**

भारत निर्वाचन आयोग
Election Commission of India

Focus on Increased participation

- **Clean** electoral roll
- **Low Turnout Polling Stations** identified in each Assembly
- Intensive and targeted outreach by respective DEOs in such PSs

Targeting URBAN APATHY

- MoUs with Departments & organizations having direct connect with people
- Organizations with 500+ employees to appoint Nodal Officer for awareness sessions for leave taking & non-voting employees.
- Focus on Young Voters – Special outreach campaign in Colleges/Universities

भारत निर्वाचन आयोग
Election Commission of India

Mission 300 - 5 lowest turnout polling stations per AC identified for intensive SVEEP Campaign

Outreach programme through Traditional Heads (Rangbah Shnong) & Youth Organizations (Seng Samla) to target young voters

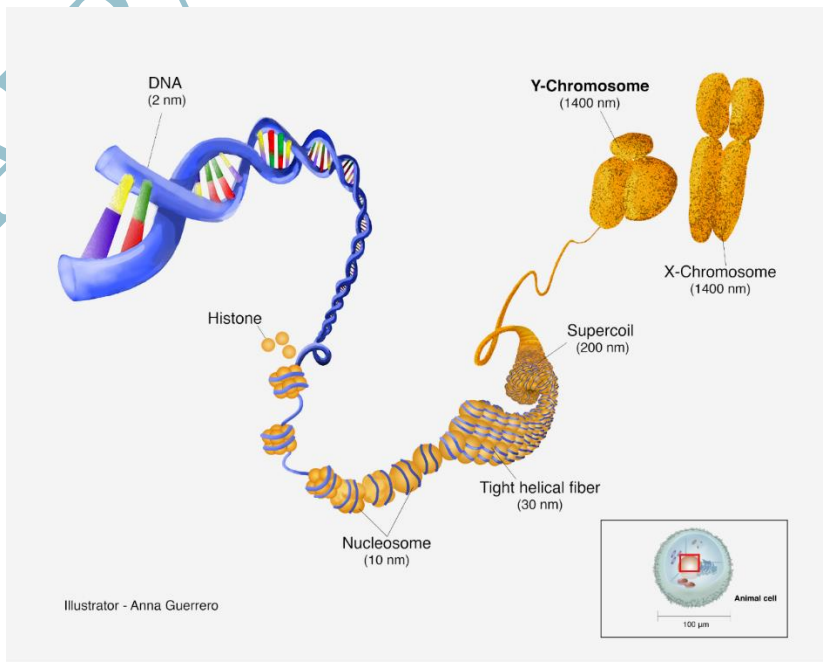
Mobile Studios with RJs to motivate voters to enrol and vote

Educational campaign to motivate voters

Newly registered first time voters felicitated with certificates and medals

X Chromosome-linked disease

- **In mammals, the females have two copies of the X chromosome, while the males carry a**
- **single copy. The X chromosome is more significant for its role in determining sex.**
- **Recent genomic studies have shed light on the fundamental biological processes of the**
- **X chromosome modulates the genes it encodes. The gathering evidence suggests,**
- **in fact, that it plays a part in a variety of biological functions as well as controlling the**
- **sex-specific susceptibility to certain diseases.**



There are more than 500 X-linked genetic diseases, and they mostly affect males. Many of the X-linked traits and diseases are not uncommon in the general population. For example, red-green color blindness is X-linked and affects around 8% of males Researchers unraveled X inactivation when they discovered Xist. The body deactivates X using Xist and another non-protein-coding RNA called Tsix. The regulation of these two genes mean that in the X chromosome that is to be deactivated, the Xist RNA is overexpressed such that it coats the chromosome French researchers perturbed the expression of Xist in female mice and found that previously inactive genes on the inactive X chromosomes were reactivated. The result was the spontaneous development of lupus-like inflammatory signs in the female mice

- **Why a waterfall appears white?**

When all colors are reflected from the surface of an object, it appears white. In a waterfall, water drops can be thought of as being suspended in air and as an inhomogeneous mixture of water and air. We know that when light enters from a lighter medium (air) into a denser medium (water), some of it is reflected by the surface and the rest is refracted. In a waterfall, light suffers numerous such reflections and refractions. The light refracted by a layer on top would also contribute to reflection at the next layer of drops. As a result, most of the light is reflected by the waterfall.

- **'Water, air pollution and carbon footprints of conspicuous/luxury consumption in India'**
- **Report**

A recent study titled 'Water, air pollution and carbon footprints of conspicuous/luxury consumption in India', of which the author is one of the contributor's highlights the Environmental impact of affluent individuals, particularly those who engage in consumption beyond basic needs. This study specifically examines the CO2, water, and particulate matter

(PM2.5) footprint. Associated with luxury consumption choices among households in India across different Economic classes. Specifically, the footprints of the richest 10% of households are approximately double the overall average across the population. A notable surge in footprints is observed from the ninth to the 10th decile, with air pollution footprint experiencing the highest increase at 68% in the 10th decile compared to the ninth. Conversely, emissions stand at 55%. This suggests that Indian consumers, particularly those in the top decile, are still in the 'take-off' stage, with only the wealthiest segment exhibiting substantial increases in consumption-related environmental footprints.

Key contributors

- **The study identifies eating out/restaurants as a significant contributor to the rise in**
- **environmental footprints, particularly in the top decile households, across all three**
- **footprints. Additionally, the consumption of fruits and nuts is highlighted as a factor**
- **driving the increase in water footprint in the 10th decile. Luxury consumption items such**
- **As personal goods, jewelry, and eating out contribute to the rise in CO2 and air pollution**
- **footprints. Given the influence of elite lifestyles on broader societal aspirations, policymaker**
- **should prioritise efforts to nudge consumption levels of affluent households downwards to**
- **align with sustainability goals local and regional environmental issues exacerbated by**
- **luxury consumption disproportionately affect marginalized communities.**
- **For instance, water scarcity and air pollution disproportionately impact marginalized**
- **groups, further marginalizing them, while affluent sections can afford**
- **protective measures such as air-conditioned cars and air purifiers**

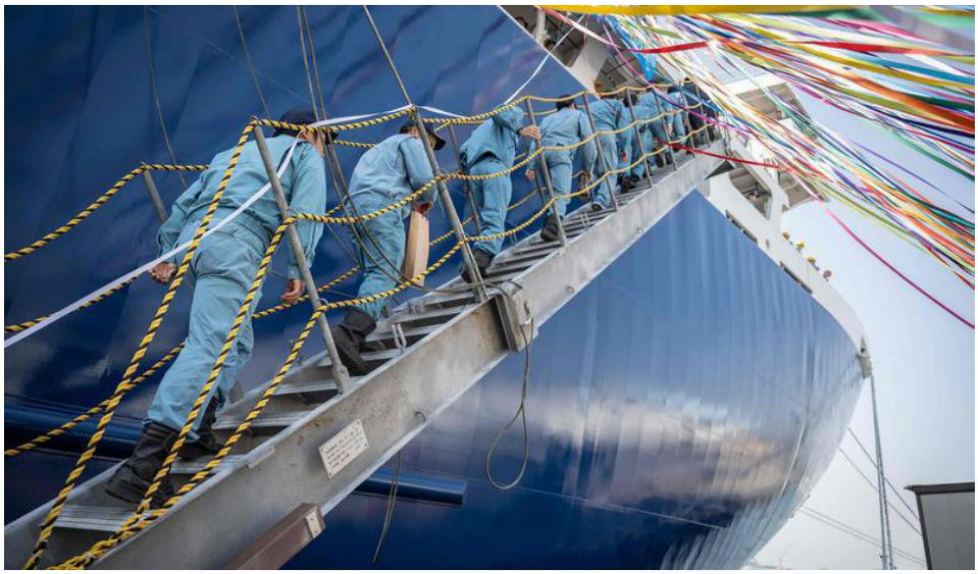
FAME –II

i. Scheme

The government has approved Phase II of the FAME Scheme with an outlay of Rs. 10,000

Crore for 3 years commencing from 1st April 2019. Out of total budgetary support, about 86 percent of funds have been allocated for the Demand Incentive to create demand for EVs in the country. This phase aims to generate demand by way of supporting 7000 e-buses, 5 lakhs e-3 Wheelers, 55000 e-4 Wheeler Passenger Cars (including Strong Hybrid) and 10 lakh e-2 Wheelers. Only advanced batteries and registered vehicles will be incentivized under the scheme. With greater emphasis on providing affordable & environment-friendly public transportation options for the masses, the scheme will be applicable mainly to vehicles used for public transport or those registered for commercial purposes in e-3W, e-4W, and e-bus segments. However, privately owned registered e-2Ws are also covered under the scheme as a mass segment.

Death knell for whales



Crew members board Japan's new whaling mothership, the *Kangei Maru*, in Shimonoseki city. The 9,300-tonne ship set sail on its maiden hunting voyage on Tuesday, heralding a new era for the controversial practice defended by the government as a part of national culture. AFP

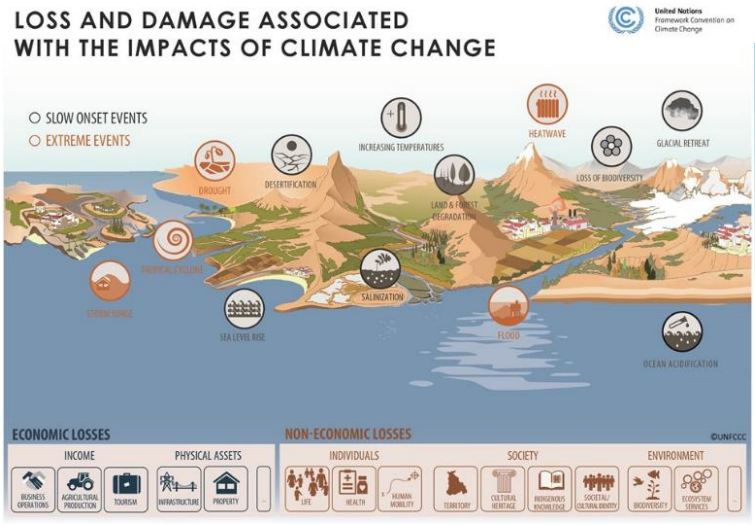
- **The new Kangei Maru set off from Shimonoseki, the first new ship of its kind to sail**
- **from Japan in over 70 years. The ship can process and store whale meat on board.**
- **Kangei Maru replaces a previous lead vessel, Nisshin Maru, which was retired last year.**
- **This is a new ship for a new era, symbolic of the new period of resumed commercial**
- **whaling," Japan was a member of the International Whaling Commission (IWC)**
- **before its moratorium on commercial whaling in 1985**

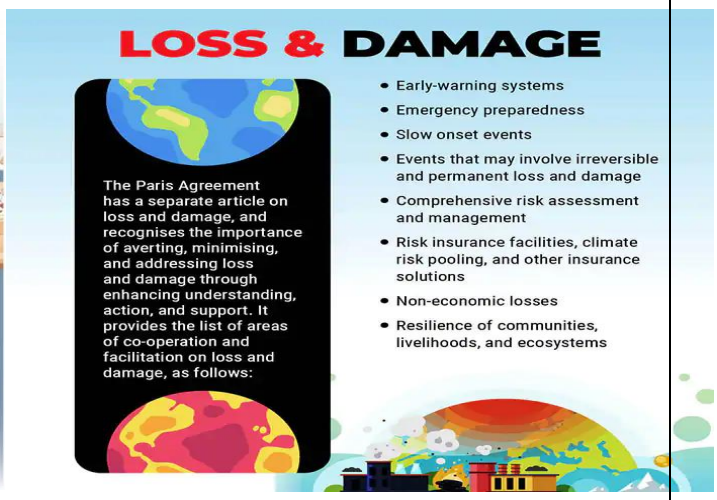
International Whaling Commission (IWC)

- The IWC was established in 1946 as the global body responsible for the management
- of whaling and conservation of whales. Today the IWC has 88 member countries.
- The mandate has not changed but many new conservation concerns exist and
- the IWC work program now also includes bycatch & entanglement, ship strikes,
- ocean noise, pollution and debris, and sustainable whale watching

L & D WARSAW MECHANISM

- The COP established the Warsaw International Mechanism for Loss and Damage
- associated with Climate Change Impacts (Loss and Damage Mechanism),
- to address loss and damage associated with the impacts of climate change,
- including extreme events and slow onset events, in developing countries that are
- particularly vulnerable to the adverse effects of climate change at COP19
- (November 2013) in Warsaw, Poland.





Steps under Warsaw mechanism

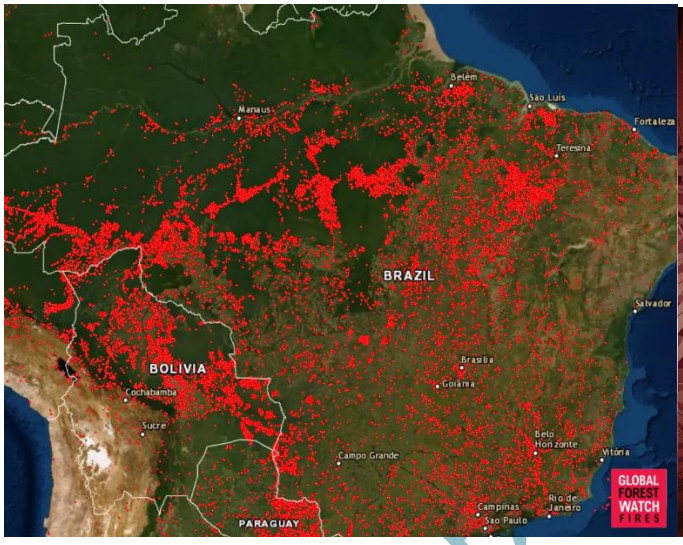
1. Enhancing knowledge and understanding of comprehensive risk management approaches to address loss and damage associated with the adverse effects of climate change, including slow onset impacts, by facilitating and promoting:

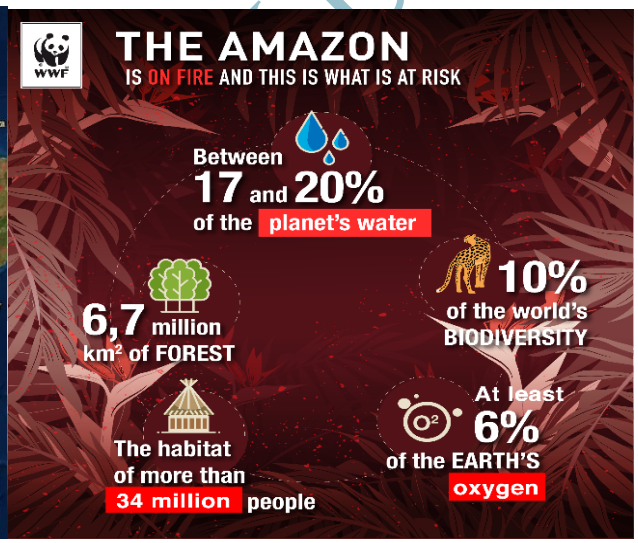
Providing leadership and coordination and, as and where appropriate, oversight under the Convention, on the assessment and implementation of approaches to address loss and damage associated with the impacts of climate change from extreme events and slow onset events associated with the adverse effects of climate change;

Providing technical support and guidance on approaches to address loss and damage associated with climate change impacts, including extreme events and slow onset events;

Amazon Forest

- **The Amazon, the world's largest rainforest, is vital to curbing catastrophic global**
- **warming because of the vast amount of greenhouse gas it absorbs.**
- **A record drought in the Amazon rainforest region, driven by the El Nino climate**
- **phenomenon and global warming, has helped contribute to dry conditions fueling**
- **fires this year.**
- **More than 12,000 square kilometers of the Brazil's Amazon rainforest burned**
- **between January and April.**





Fires in the Amazon generally do not occur naturally but are ignited by people, often seeking to clear land for agriculture.

"The government needs to understand that without total engagement from environmental workers, the situation foreseen for this year is an unprecedented catastrophe

MC13

- **The WTO's 13th Ministerial Conference (MC13) took place from 26 February**
- **to 2 March 2024 in Abu Dhabi, United Arab Emirates.**

Ministers from across the world attended to review the functioning of the multilateral trading system and to take action on the future work of the WTO.

The Conference was chaired by H.E. Dr. Thani bin Ahmed Al Zeyoudi,

UAE's Minister of State for Foreign Trade

- I. Accessions
- **On the first day of MC13, ministers endorsed the accession to the WTO of two**
- **least-developed countries Comoros and Timor-Leste.**
- II. WTO reform
- **At MC13, ministers endorsed progress on the WTO reform process,**
- **which covers the organization's deliberative, negotiating, and dispute settlement**
- **functions**
- III. E-commerce
- **Since 1998, Members have regularly extended a so-called e-commerce moratorium,**
- **which commits Members not to impose customs duties on e-commerce. At MC13,**
- **ministers decided to renew the e-commerce moratorium until MC14 or 31 March**
- **2026,**

whichever is earlier

Special and differential treatment

- **Ministers adopted a decision to improve the use of special and differential treatment**
- **(S&DT) provisions, in particular those in the Agreement on Technical Barriers to**
- **Trade and the Agreement on Sanitary and Phytosanitary Measures.**
- **The decision enhances training opportunities and endorses steps to make the S&DT**
- **provisions more effective and operational**
- **Plurilateral agreements and initiatives**
- **at MC13, Members failed to reach a consensus on agriculture and food security**

- **as well as further disciplines fisheries subsidies**

Plurilateral initiatives (covering less than the full Membership) are, therefore, becoming more prominent.

Domestic regulation of services

- **One commercially particularly relevant outcome is the agreement reached at MC13 on**
- **the entry into force, and integration into the WTO architecture, of new disciplines on**
- **domestic regulation of services. These disciplines are designed to facilitate trade**
- **in services by streamlining and simplifying regulatory procedures**.

Investment facilitation

- **Another important plurilateral initiative concerns Investment Facilitation for**
- **Development (IFD). At MC13, the parties to the IFD initiative welcomed an**
- **agreement that includes commitments to facilitate foreign direct investment.**

Sustainability-related initiatives

Members have also come together in different groupings to work on a series of sustainability-related initiatives. At MC13, they reported their progress

Fisheries subsidies

- **In June 2022, at MC12, Members concluded an Agreement on Fisheries Subsidies**
- **(AFS). The AFS prohibits the granting or maintaining of subsidies to entities**
- **involved in (1) illegal, unreported, and unregulated (IUU) fishing or (2) the fishing of**
- **overfished stocks. It is the first WTO agreement with a mostly sustainability-related**
- **objective (preserving the world's fisheries stocks). At MC13, ministers welcomed the**
- **progress over the past 20 months towards the AFS's entry into force.**

- **Present Development**

India is under pressure at the WTO to give its consent for the inclusion of the proposed

China-led investment facilitation for Development (IFD) pact in the formal WTO framework as a plurilateral agreement. At the WTO MC13, a joint ministerial declaration was issued by Trade Ministers 123 WTO member countries, including the EU, finalizing the IFD pact, and they wanted it to be formally brought into the WTO as a plurilateral agreement.

As a plurilateral pact, it would have been binding on only its signatories and not on non-members which include India, South Africa, the U.S. and some others. "India and South Africa, played a key role in blocking the move as they pointed out there was no exclusive consensus to add the proposed IFD as a plurilateral agreement between the member countries already on board. India stayed out of the IFD as it was concerned that some of its provisions would put the onus on the government to consult investors on policy matters that could encroach on its policy space.

What is a plurilateral Agreement??

- **A plurilateral agreement is a multi-national legal or trade agreement between countries.**
- **In economic jargon, it is an agreement between more than two countries, but not a great**
- **many, which would be a multilateral agreement**

Giz Galasi Dam

Giz Galasi Dam is an embankment dam on the Aras River straddling the international border between Azerbaijan and Iran. It is located in Jabrayil District, Azerbaijan, and Khoda Afarin County, East Azerbaijan Province, Iran, 12 km (7.5 mi) downstream of the Khoda Afarin Dam. Built both to generate electricity and to irrigate the plains in the region, it is the third joint Azerbaijan–Iran project on the Aras River

Lion-tailed macaques

Geographic Range

Lion-tailed macaques (*Macaca silenus*) are found only in India in the Western Ghats mountains.

Habitat

Macaca silenus lives in evergreen and semi-evergreen rainforests and monsoon forests. They typically are associated with broadleaf trees and can be found at elevations as great as 1,500 m.

This species is polygynous. Groups of M. silenus typically contain one male and several females and juveniles. Lion-tailed macaques are arboreal and diurnal. Lion-tailed macaques are the only macaques in which males use calls to advertise? their territorial boundaries. Male macaques are territorial and generally give off a loud call to let entering troops know They are in the area. Macaques have extensive patterns of communication, typical of diurnal primates. They rely heavily on vocal communication. "Lion-tailed macaques have 17 different vocal patterns and many types of body movements used to express communication. Lion-tailed macaques are omnivorous but their diet consists mainly of fruit.
They also eat a wide variety of vegetation such as leaves, stems, flowers, buds, and fungi. They occasionally eat meat from insects, lizards, tree frogs, and small mammals.
Because of their frugivory and their ability to carry fruits in their large cheek pouches, it is likely that these monkeys play some role in seed dispersal.

IUCN Red List ➜
Endangered
More information ➜

IUCN Red List ➜
Endangered
More information ➜

US Federal List ➜
Endangered No special status

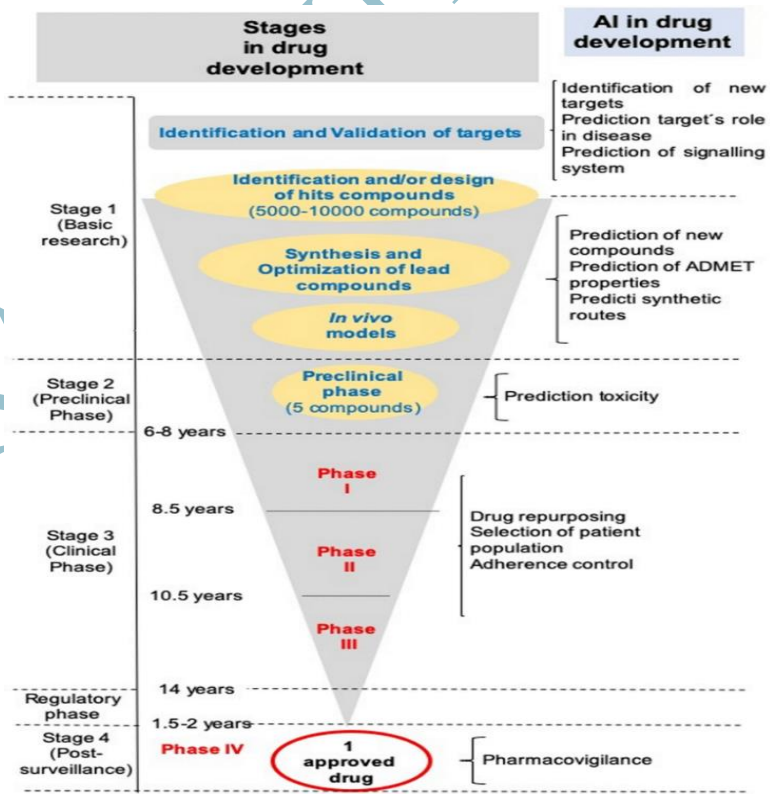
CITES ➜
Appendix I

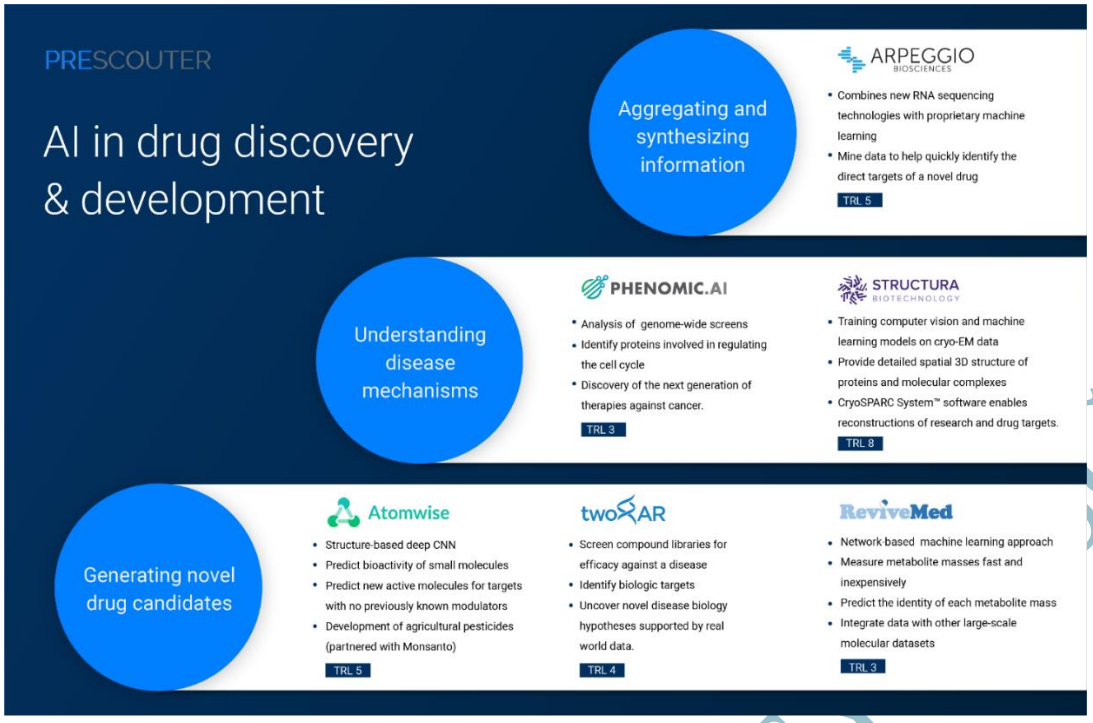
Contributors

Critical Priority Pathogens

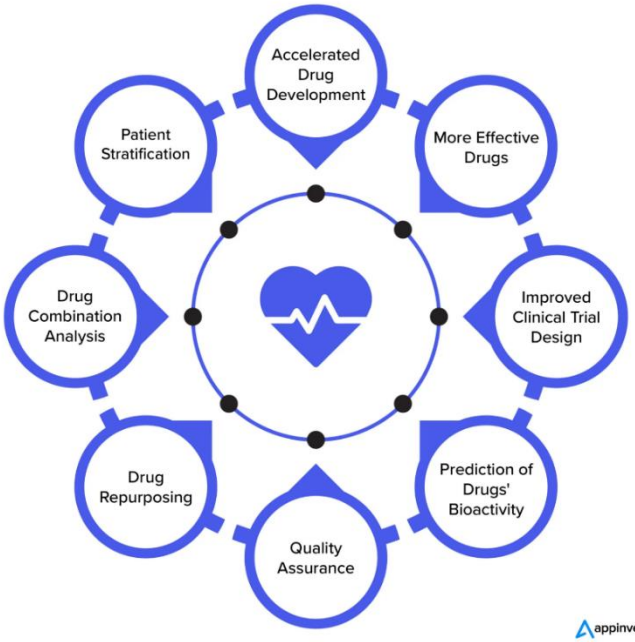
Critical priority pathogens present major global threats due to their high burden, and ability to resist treatment and spread resistance to other bacteria, noted the latest Bacterial Pathogens Priority List (BPPL) updated by the World Health Organization (WHO). This includes gram-negative bacteria resistant to last-resort antibiotics, and Mycobacterium tuberculosis resistant to the antibiotic Rifampicin. The list features 15 families of antibiotic-resistant bacteria grouped into critical, high, and medium categories for prioritization.

Role of AI in health sector





Ways in Which AI Transforms Drug Discovery



How can AI help this process?

AI has the potential to revolutionize target discovery and understand drug-target interaction by drastically cutting down time, increasing the accuracy of prediction of Interaction between a drug and its target, and saving money. The development of two

AI-based prediction tools, AlphaFold and Rosetta Fold, developed by researchers at DeepMind, a Google company, and The University of Washington, U.S., respectively, has provided a major scientific breakthrough in the last four years in the area of computational drug development.

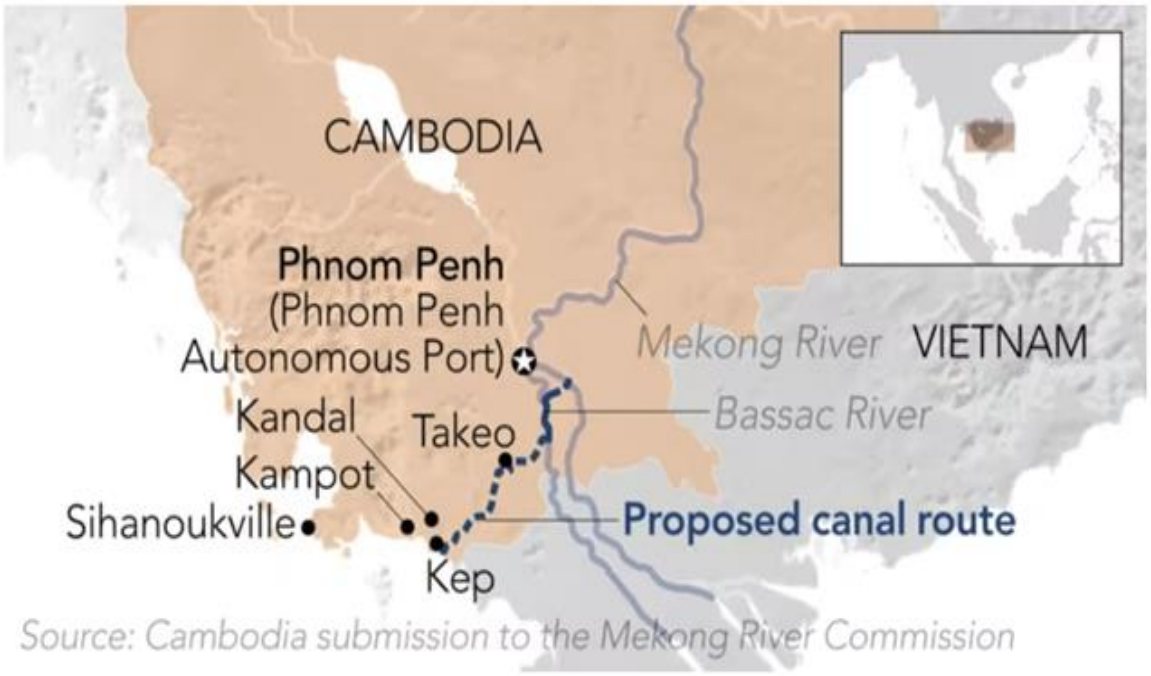
- **Both tools are based on deep neural networks. Alpha Fold 3 (developed jointly by Isomorphic Labs, a DeepMind spinoff) and Rosetta Fold. All-Atom, respectively, take the capability of these tools to an entirely new level. The significant difference between the upgraded versions and their previous forms are their capability to predict not just static structures of proteins and protein-protein interactions but also their ability to predict structures and interactions for any combination of protein, DNA, and RNA, including modifications, small molecules, and ions.**

About GPU

- **What does GPU stand for?**
- **Graphics processing unit, a specialized processor originally designed to accelerate graphics**
- **rendering. GPUs can process many pieces of data simultaneously, making them useful for**
- **machine learning, video editing, and gaming applications.**
- **GPUs may be integrated into the computer's CPU or offered as a discrete hardware unit.**

The Funan Techo canal

Cambodia's planned 180-kilometre Funan Techo Canal, worth US$1.7 billion, is funded by China as a part of the Belt and Road Initiative. This canal provides a waterway linking the capital Phnom Penh and the deep seaport in the coastal province Kep, ultimately opening onto the South China Sea. The Cambodian government hopes that this ambitious project may foster economic development by facilitating the transportation of goods and eco-tourism, along with an estimated 5 million jobs to be created. Moreover, the Funan Techo waterway would reduce Cambodia's dependence on Vietnam's seaport, notably Cai Mep.



The canal project may bring economic benefits to Cambodia, however, it has led to mounting concerns within neighboring Vietnam. Water security is a particular concern, with the canal is thought to act like a dam, altering the flow of the river and preventing water from reaching areas in the Mekong Delta in the south of Vietnam. The project also brings geopolitical anxiety to Vietnam. The canal is thought to have "dual-use" potential that is, promoting economic growth and domestic connectivity for Cambodia, but it could also facilitate China's military presence in the country. The canal is said to connect the Ream naval base in Sihanoukville, recently refurbished with Chinese funding. Two Chinese navy frigates docked at the base. Security concerns have been raised about the ability of vessels to transit the Funan Techo Canal from the Gulf of Thailand

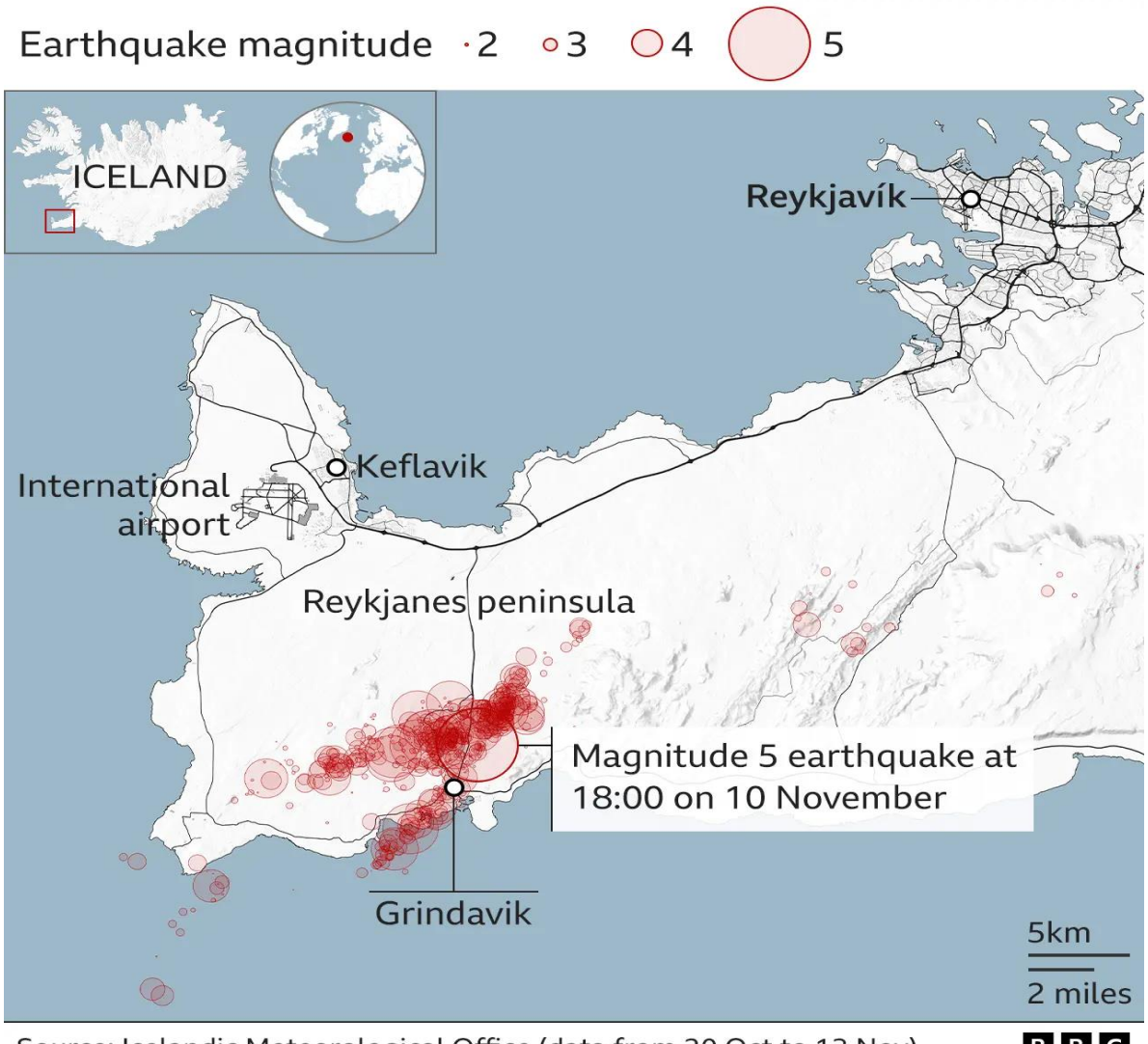
- **Nigeria changes its national anthem, angering citizens irked over reforms Spain's**
- **Parliament gave the final green light to a controversial amnesty Bill for Catalan separatists**
- **paving the way for the return of them figurehead Carles Puigdemont.**

From deep down

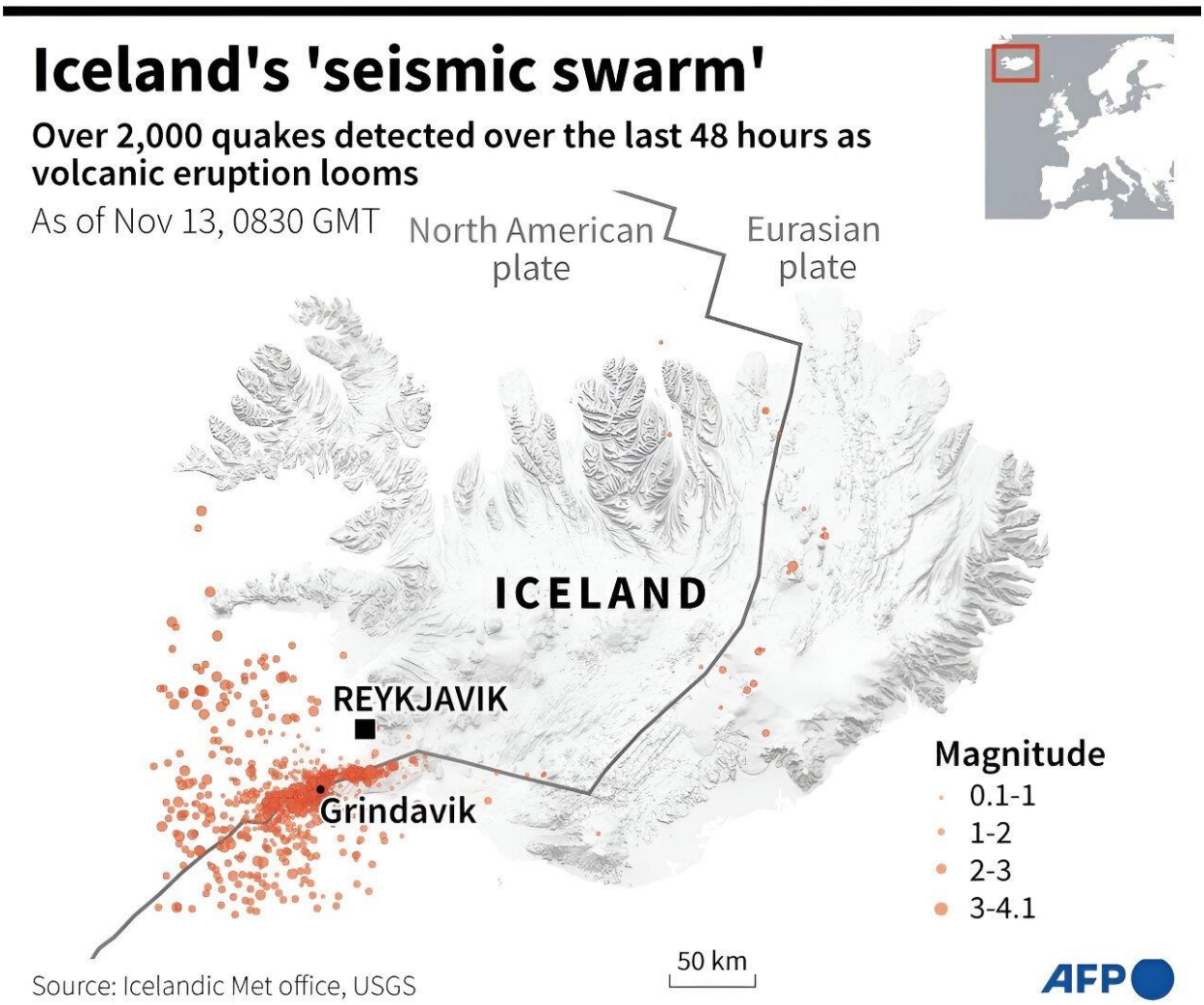
Smoke and lava: A handout picture released by the Icelandic Coast Guard shows billowing smoke and flowing lava pouring out of a new fissure, during a surveillance flight above a new volcanic eruption on the outskirts of the evacuated town of Grindavik, western Iceland. AFP

Blue Lagoon

- **The Blue Lagoon is a geothermal spa in southwestern Iceland. The spa is located in a**
- **lava field 5 km (3.1 mi) from Grindavík and in front of Mount Þorbjörn on the**
- **Reykjanes Peninsula, in a location favorable for geothermal power, and is supplied by**
- **water used in the nearby Svartsengi geothermal power station. The lagoon is man-made**
- **The water is a byproduct from the nearby geothermal power plant Svartsengi where**
- **superheated water is vented from the Ground near a lava flow and used to run turbines**
- **generate electricity. After going through the turbines, the steam and hot water**
- **pass through a heat exchanger to provide heat for a municipal water heating system.**
- **Then the water is fed into the lagoon.**



Source: Icelandic Meteorological Office (data from 20 Oct to 13 Nov) BBC



Artificial intelligence Semi-Conductor

- **Revenue from artificial intelligence (AI) semiconductors globally is expected to total $71**
- **billion in 2024, a rise of 33% from 2023, according to the latest forecast by Gartner Inc.**
- **“Today, generative AI (GenAI) is fueling demand for high-performance AI chips in data**
- **Centers Gartner forecasts AI PC shipments will reach 22% of total PC shipments in 2024,**
- **and by the end of 2026, 100% of enterprise PC purchases will be an AI PC. AI PCs include**
- **a neural processing unit (NPU) enabling them to run longer, quieter and cooler and have**

AI tasks

- **Running continuously in the background, creating new opportunities for leveraging AI in**
- **everyday activities. While AI semiconductor revenue would continue to experience**
- **double-digit growth through the forecast period, 2024 was expected to experience the**
- **highest growth rate during that period.**

How will AI affect semiconductor design and production?

AI demands will have lasting impacts on semiconductor design and production. In large part, this is because of the amount of data processed and stored by AI applications are massive. Semiconductor architectural improvements are needed to address data use in AI-integrated circuits. Improvements in semiconductor design for AI will be less about improving overall performance and more about speeding the movement of data in and out of memory with increased power and more efficient memory systems.

One option is the design of chips for AI neural networks that perform like human brain synapses. Instead of sending constant signals, such chips would "fire" and send data only when needed. Nonvolatile memory may also see more use in AI-related semiconductor designs. Nonvolatile memory can hold saved data without power. Combining nonvolatile memory on chips with processing logic would make a "system on a chip" processors possible, which could meet the demands of AI algorithms.

While semiconductor design improvements are emerging to meet the data demands of AI applications, they pose potential production challenges. As a result of memory needs, AI chips today are quite large. With this large chip size, it is not economically easy for a chip vendor to make money while working on specialized hardware.

This is because it is very costly to manufacture a specialized AI chip for every application.

A general-purpose AI platform would help address this challenge. System and chip vendors would still be able to augment the general-purpose platform with accelerators, sensors,

and inputs/outputs

Light and Viral Infection

A viral infection can stress cells and change their shapes, sizes, and features.

As the infection gains the upper hand and the body becomes 'diseased', the changes become starker.

The researchers behind the new study translated these cellular changes into patterns that could be used to say if a cell had been infected. The researchers recorded these distortions at different points in time so that the light data mimicked a progressing viral infection.

The distortion in the question referred to diffraction patterns. Diffraction is the tendency of light waves to spread out after they pass through narrow openings or around small objects. light reaches, say, a wall, it renders a pattern of alternating light and Dark rings or stripes around a dark center.

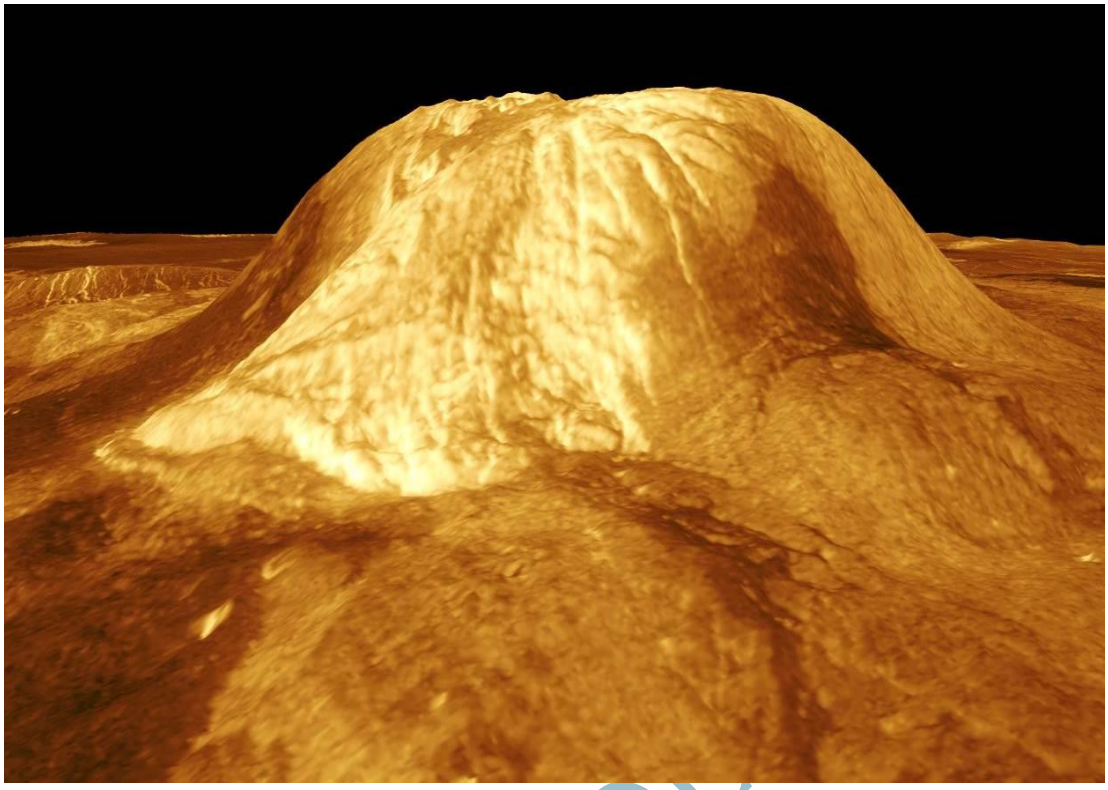
Venus Volcanism and Magell

Venus appears to be more volcanically active than previously known, according to scientists whose new analysis of decades-old radar images has spotted evidence of eruptions at two additional sites on the surface of the earth's inhospitable planetary neighbor. Radar images obtained by NASA's Magellan spacecraft from 1990 to 1992 indicated large lava flows at these two locations in the Venusian northern hemisphere. The Magellan spacecraft, which arrived at Venus in 1990, made the first global map of the surface of Venus as well as global maps of the planet's gravity field.

The mission produced surprising findings about Venus, including a relatively young planetary surface possibly formed by lava flows from planet-wide volcanic eruptions.

In October 1994, the Magellan spacecraft intentionally plunged to the surface of Venus to gather data on the planet's atmosphere before it ceased operations.

It marked the first time an operating planetary spacecraft had been intentionally crashed.



RITES

RITES Limited, a NavRatna, and Schedule 'A' Central Public Sector Enterprise under the Ministry of Railways, incorporated on April 26, 1974, is a multidisciplinary engineering and consultancy organization, providing a comprehensive range of services from concept to commissioning in all facets of transport infrastructure and related technologies. The company's market capitalization has placed it among the top 500 listed companies in India, a testament to the high-quality solutions and services it delivers, driven by its talented pool of professionals. RITES is uniquely placed in terms of diversification of services and geographical reach in various sectors such as railways, highways, metros, tunnels, bridges, urban engineering, sustainability & green mobility, airports, ports, ropeways, institutional buildings, inland waterways, etc.

L’Hoest’s Monkeys

Crowd pullers

In a safe place: A pair of L’Hoest’s monkeys at the Indira Gandhi Zoological Park in Visakhapatnam on Tuesday. The zoo has reported more visitors coming in to see the monkeys from Uganda that were recently rescued from animal traffickers in Srikakulam. K.R DEEPAK

- **L’Hoest’s monkeys (*Cercopithecus lhoesti*) are found in montane forests of the Albertine Rift, including southwestern Uganda, Rwanda, Burundi, and Democratic Republic of the Congo.**

Habitat

L'Hoest's monkeys reside in montane tropical rainforests, including both primary and secondary forests. In secondary forests, they occupy the thick underbrush that grows where trees have fallen. L'Hoest's monkeys can be found at altitudes ranging from 900 to 2,500 m. The species is typically more terrestrial than other guenons. (Tolo, et al., 2008; "L'Hoest's monkey (Cercopithecus lhoesti)", 2007)

Habitat Regions: tropical

Terrestrial Biomes: forest ; rainforest ; mountains

L'HOEST'S MONKEY

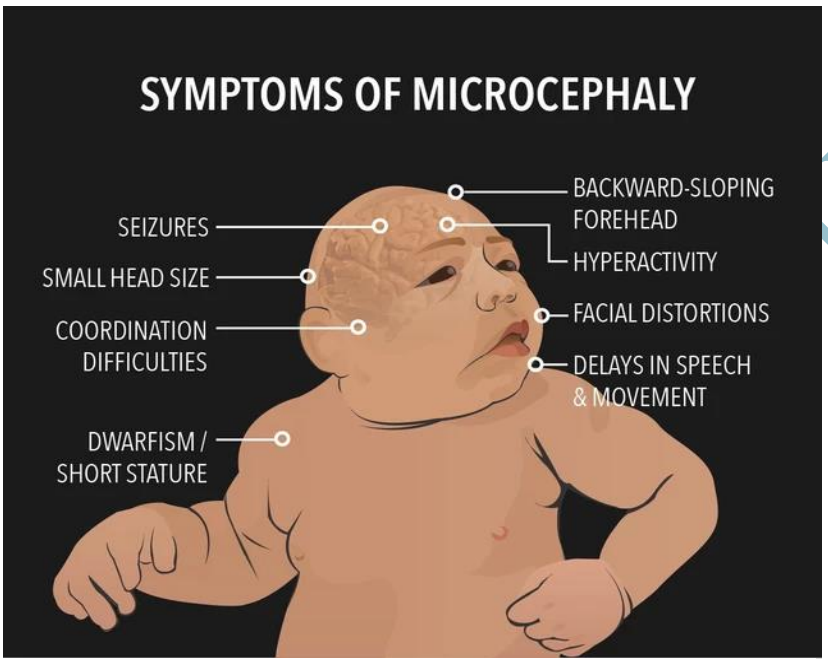
Allochrocebus lhoesti

CONSERVATION STATUS: VULNERABLE

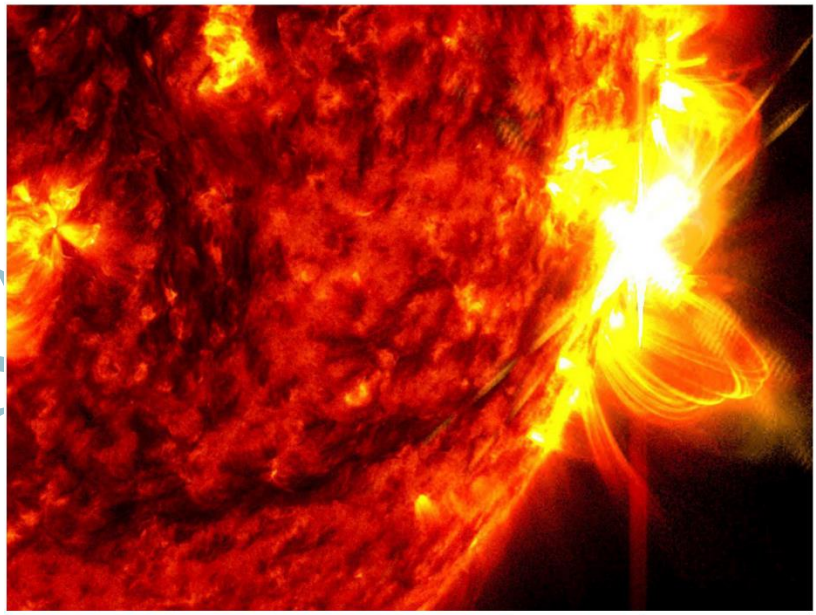
- Also called mountain monkeys
- Endemic to eastern DR Congo, Burundi, Rwanda, and western Uganda
- Reclassified from the *Cercopithecus* genus to *Allochrocebus* in 2013
- Mostly ground-dwelling, they sleep in trees sitting upright, holding onto tree limbs or each other
- Threatened by regional human conflicts, deforestation, and bushmeat hunting; populations are rapidly decreasing

SASS6

- **SASS6 gene's role in causing microcephaly. But more importantly, the team also**
- **found that if one copy of the SASS6 gene was non-functional, the other retained at**
- **least some function. The implication was that if both copies are non-functional,**
- **the human embryo dies Before; it becomes a foetus.**



BIG SHOT



This image provided by NASA's Solar Dynamics Observatory shows a solar flare, right, on May 14, captured in the extreme ultraviolet light portion of the spectrum colorised in red and yellow. An international team of mathematicians and scientists reported on May 22 that the Sun's magnetic field originates much closer to the surface than previously thought. NASA/AP

Solar dynamic observatory

On Feb. 11, 2010, NASA launched the Solar Dynamics Observatory, also known as SDO. SDO keeps a constant eye on the sun, helping us track everything from sunspots to solar flares to other types of space weather that can have an impact on Earth. For instance, solar activity is behind the aurora, one of Earth's most dazzling natural events. SDO's goal is to understand, driving towards a predictive capability, the solar variations that influence life on Earth and humanity's technological systems by determining: how the Sun's magnetic field is generated and structured how this stored magnetic energy is converted and released into the heliosphere and geospace in the form of solar wind, energetic particles, and variations in the solar irradiance.

Why are planets formed in a spherical shape?

- **The short answer is gravity. This 'force', by virtue of the large masses of planets and stars,**
- **Forces them into a spherical shape. Part of the answer is also geometry: a sphere is the most**
- **compact three-dimensional shape.**

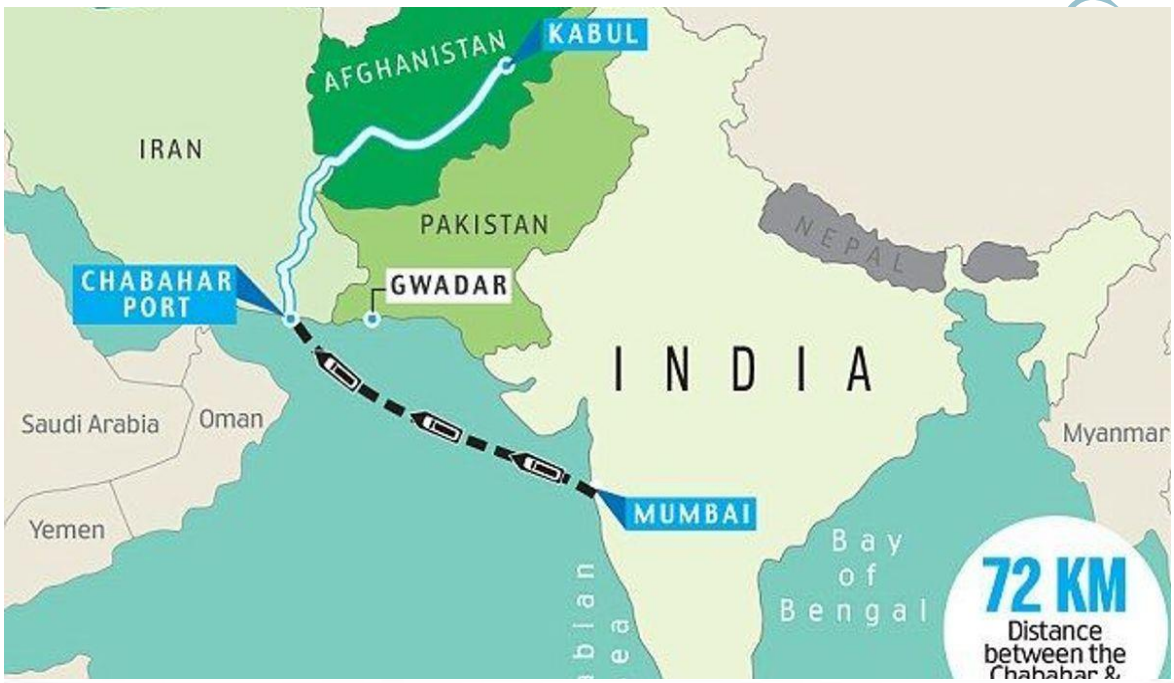
Caterpillars sixth sense

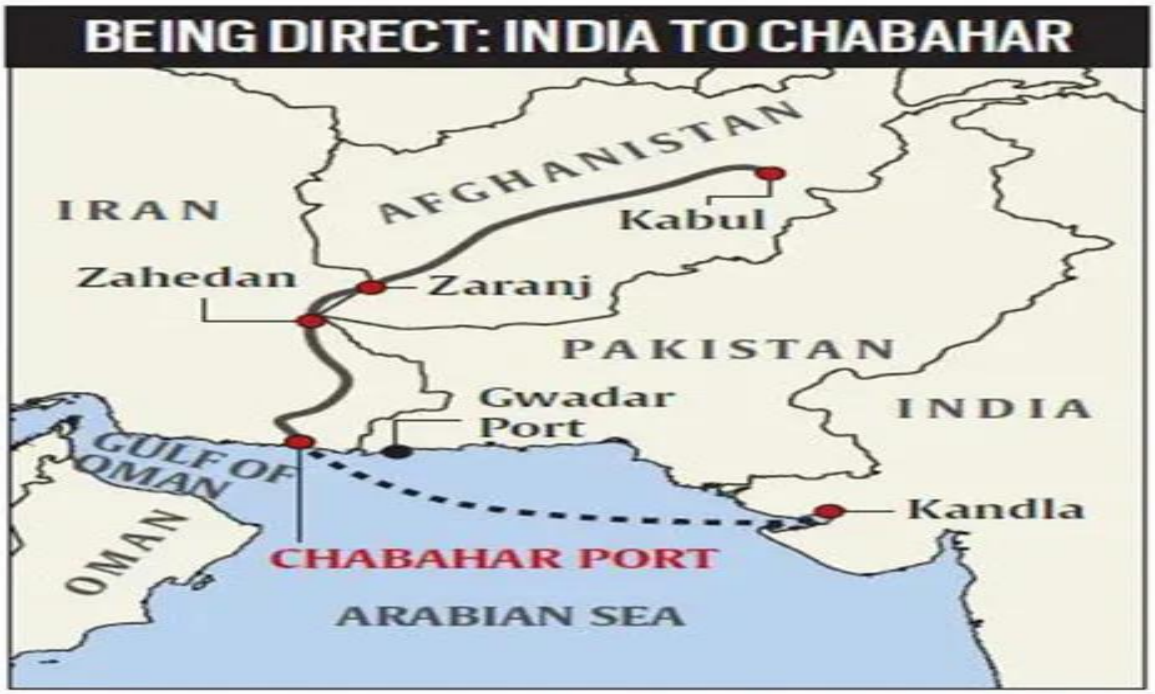
Caterpillars have a sixth sense that most land-based animals do not. They can sense electric fields around them with small bristles called setae on its body a feat called electroreception.

- **Researchers have long known that aquatic and amphibious animals use electroreception to**
- **detect both predators and prey. Since 2013, scientists have also found electroreception in**
- **arthropods like bumblebees, hoverflies, and spiders. However, none of these land-based**
- **creatures use the ability to defend against predators. Caterpillars, which are also arthropods,**
- **may break this mould, using electroreception to sense predatory insects nearby.**

Chabahar port

- **At the core of it, Chabahar, for India, represents its thinking from the perspective of an extended neighborhood, and not necessarily as part of its West Asia outlook. The port is a fulcrum of the International North-South Transport Corridor, a project looking towards seamlessly linking India with Central Asia and Russia, bypassing Pakistan. Beyond this, Chabahar is also astutely tuned into the 'new' realities of Afghanistan.**





- **The Taliban-led interim government in Kabul has also thrown its weight behind the port,**

Offering an investment of $35 million as it looks to secure alternatives and not be economically reliant on Pakistani ports such as Karachi or the China-backed Gwadar. Chabahar's development, which offers access to difficult political terrain such as Central Asia, and even Afghanistan, could bring in a significant level of integration and help in building alternatives to China-backed projects for Chabahar, there are two main points to consider moving forward.

First, the port project cannot be the singular major play in the bilateral relationship. This concentration of interests is volatile. Second, the U.S. must move towards being accommodative on sanctions against Chabahar. Viewing the port as collateral against problematic Iranian policies in West Asia would not be an accurate understanding of the big picture of India's outreach towards its extended neighborhood which could benefit larger American aims as well as Eucalyptus as invasive.

The Kerala government issued an order allowing the Kerala Forest Development Corporation (KFDC) to plant eucalyptus trees for its financial sustenance in 2024-2025. Environmentalists soon protested the decision saying the move would adversely affect forests and heighten human-animal conflicts in the future. Invasive species of plants as well as animals had rendered "serious damage to natural habitats and ecosystems" and "eradicating such invasive species is of high priority."

There are many possible reasons why introduced species become invasive the introduced species is adapted to grow in a wide range of climatic regimes or soil types; it is dependent on generalist pollinators; it has no natural enemies in its adventive range; grows rapidly; establishes easily; etc. With these attributes, invasive plants can outcompete/displace native species for space, access to nutrients and water, etc.

Gums have another tool in their arsenal and that is allelopathy they displace other species through chemical warfare, in other words they release chemicals that other plant species don't like. In this way they displace native species, improving conditions for themselves eliminating competitors, etc. Wetlands in water scarce countries are critical, especially now that climate change is impacting on the frequency and abundance of rainfall. However, in the past, gums were used to dry up wetlands, swamps, marshes, etc. to try to

- **curb the incidence of malaria – the gums suck up the water which is then lost to the**
- **atmosphere as a result of evapotranspiration. To mitigate their negative impacts, it is**
- **important not to grow them near any water resources wetlands, rivers, etc. where they will**
- **have a far greater impact on water.**

What is eco-restoration?

- **Ecological restoration aims to recreate, initiate, or accelerate the recovery of an ecosystem**
- **that has been disturbed. Disturbances are environmental changes that alter ecosystem**
- **structure and function. Common disturbances include logging, damming rivers, intense**
- **grazing, hurricanes, floods, and fires.**

Farm subsidies

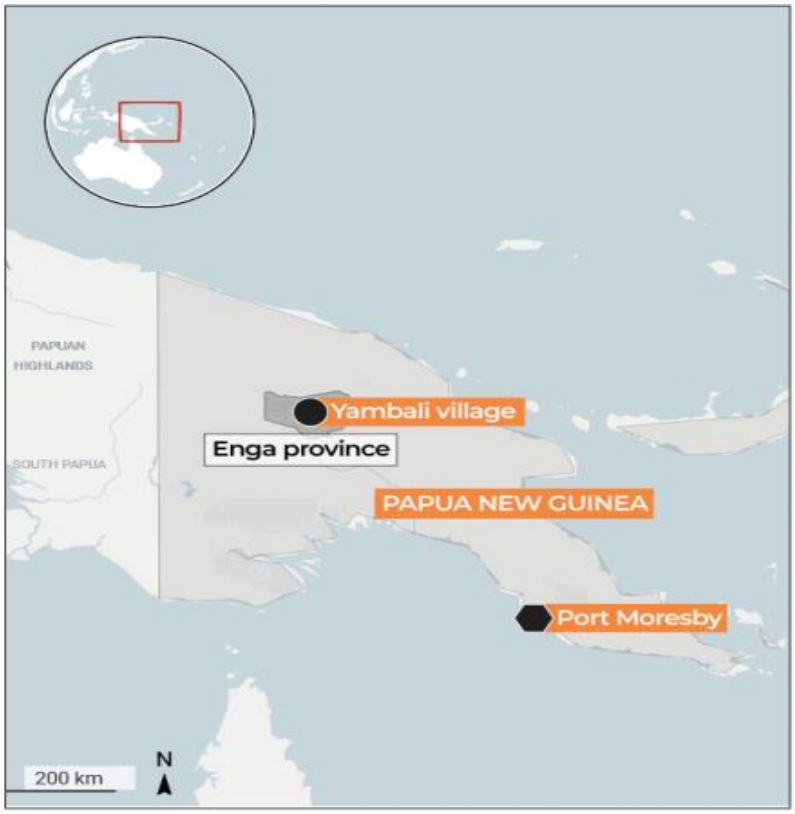
- **India's farm input subsidies, including sops for fertilizers, electricity and irrigation, have**
- **increased by a sharp 50% to $48.13 billion in 2022-23 from $32.07 billion in the previous**
- **fiscal, as per notifications of the country at the WTO. This prompted several countries**
- **such as the EU, the U.K. and the U.S., to raise concerns**
- **and calfor greater transparency at a recent peer group review meeting of the WTO**
- **"New Delhi explained the input subsidies are mainly for power, irrigation and fertilizers,**
- **and the increase was due to inflation and rising costs of fertilizers. It further said the**
- **country had duly notified the information to the WTO Farm Subsidies Agricultural input**
- **subsidies, targeted towards low income and resource poor farmers, are exempt from limits**
- **on domestic subsidies under the carve-out of special and differential treatment measures**
- **offered to developing nations under WTO rules. As India has declared that 99.43% of**
- **farm holdings in the country are of low-income or resource-poor farmers**
- **(per the Agricultural Census for 2015-16), its input subsidies are excluded from capping.**

Box	Status	Payment Type
Amber	Trade-distorting	• Marketing loan benefits • Product-specific supports • Crop and revenue insurance subsidies • Irrigation subsidies • Renewable energy programs
Blue	Market-distorting and production-limiting	• Deficiency payments
Green	Non-trade-distorting	• Environmental payments • Natural disaster relief • Decoupled income support • Farm credit programs

PAPUA NEW GUINEA

More than 670 feared killed in landslide

Emergency crews continue to retrieve bodies after a massive landslide in the South Pacific island nation's Enga province buried more than 150 homes on Friday.



Source: Al Jazeera | May 26, 2024

@AJLabs ALJAZEERA

Why PNG is prone to landslides??

- **Attributes PNG's regular landslides to a number of specific factors, chief amongst them being the country's deeply weathered, mountainous terrain and tropical climate.**
- **Heavy rain and storms lead to increased erosion, flooding, and higher tides, all of which raise the chance of dangerous rock falls, Add to that the fact that the country sits on the Ring of Fire a string of active volcanoes and high seismic activity that runs along the border of two tectonic plates in the Pacific and you have perfect landslide conditions.**
- **You have regular significant earthquakes, which of course trigger landslides in their own right, but also weaken the rock slope," The whole area is very tectonically active.**
- **Alongside small villages and farms, PNG's forests play host to a number of large industries that create conditions where landslides can become more likely Gold, silver, nickel, copper,**

and cobalt are all mined in the country, and LNG operations have been taking place in areas where deadly landslides occurred in the past. PNG also has a large illegal logging industry, as well as being the world's fifth-largest exporter of palm oil, which requires extensive deforestation. In the meantime, climate change itself exacerbated by deforestation is making extreme weather events more likely, as well as contributing to higher king tides as global sea levels rise.

Cyclones in the Bay of Bengal

(1) BoB water is warmer than Arabian sea water,

- **(a) landlocked- less heat circulation**
- **(b) less powerful winds- again lesser heat circulation**

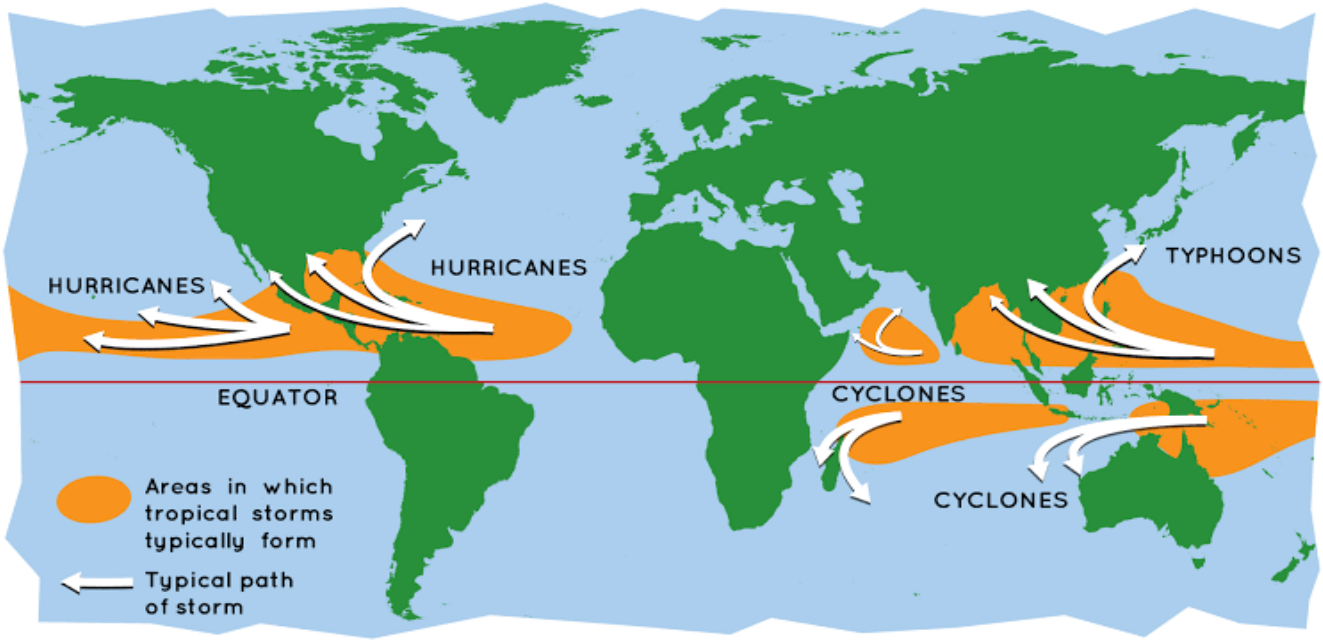
(2) fresh water from rivers falls into BoB, (as suggested in and above) making the water as a light thin layer, more prone to evaporation

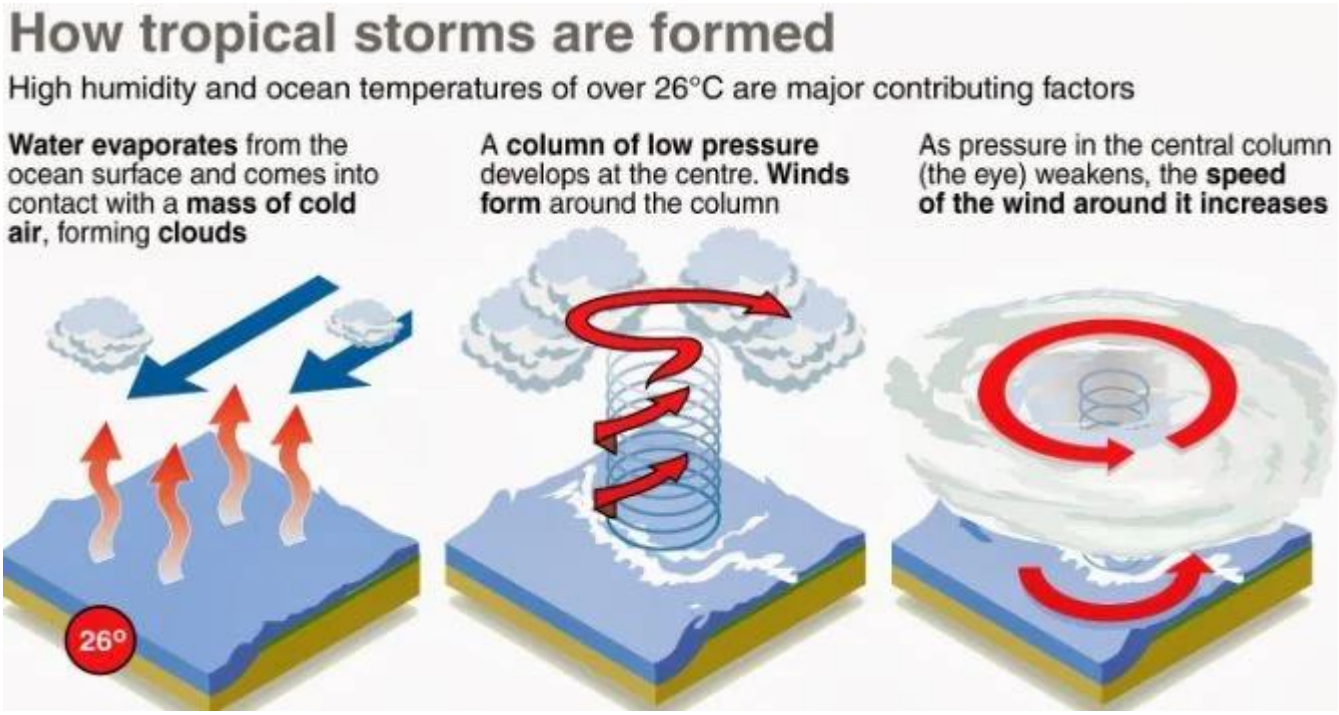
(3) easterly jet - causing the windfall in eastern coastal States of India. In the Arabian sea these winds will steer the windfall towards eastern Africa, not towards the western coast of India. On average, five to six significant cyclonic storms emerge in the Bay of Bengal Region every year.

The months of April and May just before the start of the monsoon, and then October to December immediately after the end of the monsoon, is the prime season for tropical Cyclones. A big difference between the strengths of cyclones in April-May and October-December is that the former originate in situ in the Bay of Bengal itself, barely a

few hundred kilometers from the landmass.

On the other hand, cyclones in October-December are usually remnants of cyclonic systems that emerge in the Pacific Ocean but manage to come to the Bay of Bengal, considerably weakened after crossing the southeast Asian landmass near the South China Sea





Cyclones are named as per guidelines decided by the World Meteorological Organisation (WMO). The WMO says that countries in the affected region should name the cyclones.

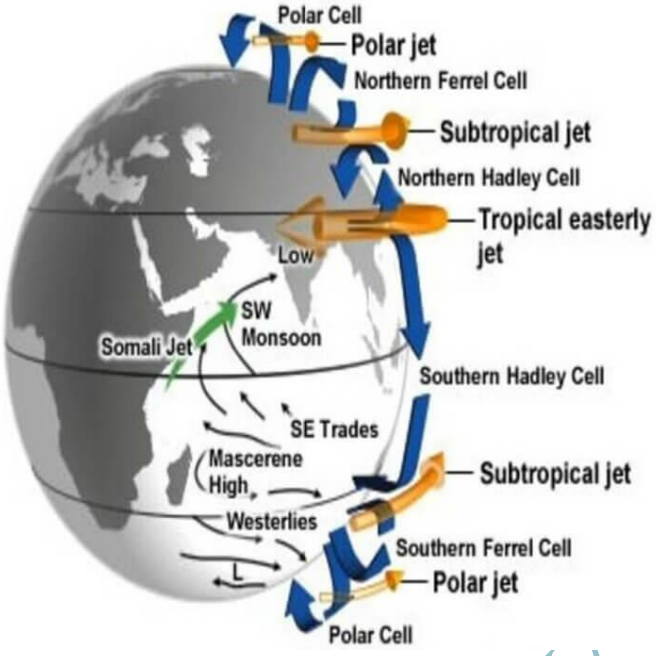
In the north Indian Ocean region, eight countries decide the names of cyclonic storms. These countries include India, Bangladesh, Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand. The name 'Remal' in the list of tropical cyclones is given by Oman. It will be the first cyclone to hit the region this 2024 pre-monsoon season. 'Remal,' meaning 'sand' in Arabic,

The jet stream and Heat waves

Heatwaves have increased in frequency, from about 75 events averaged over 1979-1983 to About 98 over 2016-2020. Though natural climate variability and natural events also influenced how heat waves have changed, human activity and greenhouse gas emissions have played a dominant role in rendering the slower-moving and longer-lasting heat.

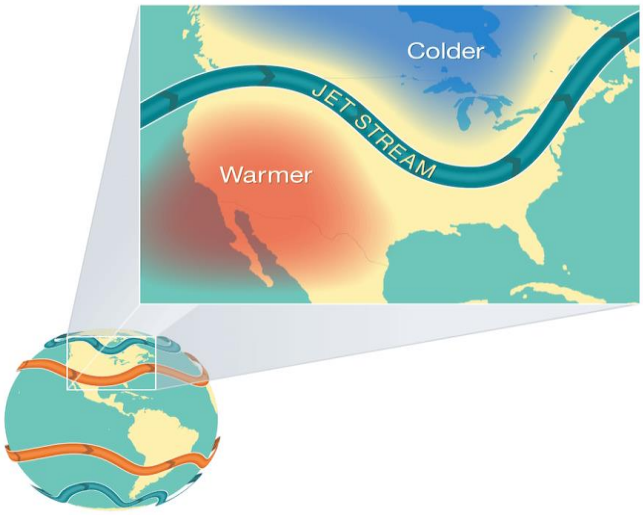
The jet stream guides atmospheric waves, waves that are caused by the earth's rotation and which influence the earth's surface temperature. As the jet stream weakens, these waves also move more slowly, leading to more persistent weather events, and more spells of high and slow-moving heat. The natural climate variability and natural events also influenced how heat waves have changed, human activity and greenhouse gas emissions have played a dominant role in rendering the slower-moving and longer-lasting heat.

Jet streams are narrow bands of strong wind that generally blow from west to east all across the globe. Earth has four primary jet streams: two polar jet streams, near the north and south poles, and two subtropical jet streams closer to the equator.



What Causes Jet Streams?

Jet streams form when warm air masses meet cold air masses in the atmosphere.



The Sun doesn't heat the whole Earth evenly. That's why areas near the equator are hot and areas near the poles are cold. So when Earth's warmer air masses meet cooler air masses, the warmer air rises up higher in the atmosphere while cooler air sinks down to replace the warm air. This movement creates an air current, or wind. A jet stream is a type of air current that forms high in the atmosphere.

'Transient

In astronomy, a 'transient' is any celestial object whose brightness changes in short spans of time. There are many kinds of astronomical transients, all of them united by phenomena that are violent in some measure. Astronomers study transients to understand where their Violence. One of the most well-known such transients is supernovae when the outer layers of large stars blow up while their cores implode because the stars have run out of elements to fuse. Many a supernova has been known to become so bright that it emits light more intensely than the stars in the rest of its host galaxy combined. Another famous transient is the active galactic nucleus (AGN). The centers of massive galaxies host supermassive black holes. Sometimes, these black holes actively feast on matter in their orbit. Interactions between the black holes and the matter in this process cause the latter to acquire energy and glow with a changing brightness

AI Convention

The Council of Europe (COE) took a big step by adopting the Framework Convention on Artificial Intelligence and Human Rights, Democracy, and the Rule of Law, also known as

The 'AI convention',

What is a framework convention?

A 'framework convention' is a legally binding treaty that specifies the broader commitments and objectives under the convention and sets mechanisms to achieve them. The task of setting specific targets is left to subsequent agreements. Those agreements that are negotiated under the framework convention will be called Protocols. The framework convention approach is useful because it allows flexibility even as it encodes the core principles and processes by which the objectives are to be realized. Parties to the convention have the discretion to decide the ways in which to achieve the objectives, depending on their capacities and priorities.

What is the scope of the convention?

- **Article 1 of the convention states: "The provisions of this Convention aim to ensure that**
- **Activities within the lifecycle of artificial intelligence systems are fully consistent with**
- **human rights, democracy and the rule of law".**
- **Article 3 states: "The scope of this Convention covers the activities within the lifecycle of**
- **artificial intelligence systems that have the potential to interfere with human rights,**
- **democracy, and the rule of law**

Does it address national security?

The exemptions in Articles 3.2, 3.3, and 3.4 are broad and pertain to the protection of national security interests, research, development and testing, and national defence, respectively. As a result, military applications of AI are not covered by the AI convention. While this is a matter of concern, it's a pragmatic move given the lack of consensus on regulating such applications.

Finally, the 'General Obligations' in the convention pertain to the protection of human

rights (Article 4), the integrity of democratic processes, and respect for the rule of law (Article 5). While disinformation and deep fakes haven't been addressed specifically, parties to the convention are expected to take steps against them under Article 5.
In fact, the convention indicates (in Article 22) that parties can go beyond the commitments and obligations specified. Finally, the 'General Obligations' in the convention pertain to the protection of human rights (Article 4), the integrity of democratic processes, and respect it for the rule of law (Article 5). While disinformation and deep fakes haven't been addressed specifically, parties to the convention are expected to take steps against them under Article 5.
In fact, the convention indicates (in Article 22) that parties can go beyond the commitments and obligations specified.

What is flash drought?

Flash drought is simply the rapid onset or intensification of drought. It is set in motion by lower-than-normal rates of precipitation, accompanied by abnormally high temperatures, winds, and radiation. Together, these changes in weather can rapidly alter the local climate. Higher temperature increases evapotranspiration the process by which water is transferred from the land to the atmosphere by evaporation from the soil and by transpiration from plants and further lowers soil moisture, which decreases rapidly as drought conditions continue. If not predicted and discovered early enough, changes in soil moisture that accompany flash drought can cause extensive damage to agriculture, economies, and ecosystem goods and services.

Cobalt blue

- The Egyptians and Babylonians used lapis lazuli 6,000 years ago. In 1802, a French
- chemist synthesized cobalt blue. In 2009 scientists discovered cobalt Blue, otherwise
- known as Oregon Blue. However, most of these pigments have limitations. In 2020,
- researchers reported a new class of 'cool' blue colorants that are inexpensive and more
- environmentally friendly.
- For the last 200 years, cobalt blue has been a dominant commercial blue pigment
- because of its color intensity, ease of synthesis, and versatility. However, 33% of the
- colorant by mass is carcinogenic, making cobalt blue relatively expensive and
- environmentally harmful to produce. The Oregon State University researchers were
- inspired by the crystalline structure of a light-blue mineral called hibonite.
- The team substituted aluminum ions in hibonite with cobalt, nickel or titanium ions

Bush moa

The bush moa, little bush moa, or lesser moa (*Anomalopteryx didiformis*) is an extinct moa from the family Emeidae. It was the smallest known moa species, only slightly taller than a turkey (approx. 1.3m tall). A slender bird, it weighed around 30 kilograms (66 lb). The species went extinct alongside other native New Zealand wildlife around 500-600 years ago, following the arrival and proliferation of the Māori people in New Zealand (who called them " moariki"), as well as the introduction of Polynesian dogs. Scientists at Harvard University assembled the first nearly complete genome of the species from toe bones, thus bringing the species a step closer to being "resurrected" in the future by using the emu as a proxy.

Mad honey

BIG SHOT

'Mad honey' (komar honey in Turkish) is displayed in a shop in Cayeli, in the Turkish province of Rize. The lush green Pontic Alps are home to a subspecies of rhododendron whose purple flowers contain a hallucinogenic neurotoxin with which bees make 'mad honey'. Its fans swear it can cure heart palpitations, dodgy stomachs, and even impotence. Yet every year, hundreds of people end up in hospitals after gorging themselves on the substance. AFP

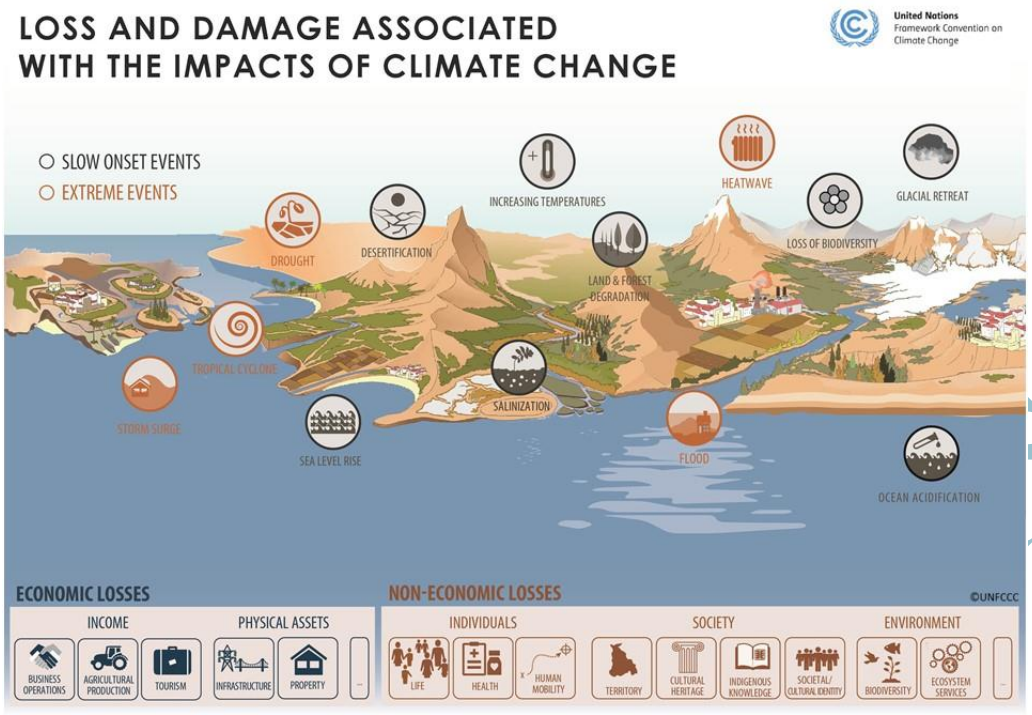
- **When bees feed on the pollen of rhododendron flowers, the resulting honey can pack a hallucinogenic punch. It's called mad honey, and it has a slightly bitter taste and a reddish color. More notably, a few types of rhododendrons, among them *Rhododendron luteum* and *Rhododendron ponticum*, contain grayanotoxin, which can cause dramatic physiological reactions in humans and animals. Depending on how much a person consumes, reactions can range from hallucinations and a slower heartbeat to temporary paralysis and unconsciousness.**

Giz Galasi Dam

- **Giz Galasi Dam is an embankment dam on the Aras River straddling the international border between Azerbaijan and Iran. It is located in Jabrayil District, Azerbaijan, and Khoda Afarin County, East Azerbaijan Province, Iran, 12 km (7.5 mi) downstream of the Khoda Afarin Dam. Built both to generate electricity and to irrigate the plains in the region, it is the third joint Azerbaijan–-Iran project on the Aras River**

L & D WARSAW MECHANISM

The COP established the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (Loss and Damage Mechanism), to address loss and damage associated with impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change at COP19 (November 2013) in Warsaw, Poland.



1. Enhancing knowledge and understanding of comprehensive risk management approaches to address loss and damage associated with the adverse effects of climate change, including slow onset impacts, by facilitating and promoting:

Providing leadership and coordination and, as and where appropriate, oversight under the Convention, on the Assessment and implementation of Approaches to address loss and damage associated with the impacts of climate change from extreme events and slow onset events associated with the adverse effects of climate change; Providing technical support and guidance on approaches to address loss and damage associated with climate change impacts, including extreme events and slow-onset events; rainforest burned between January and April.

NEER (Nominal Effective Exchange Rate)	REER (Real effective exchange rate
Measures a nation's ability to compete in the (forex) market, so called Trade-weighted currency index.	It is reflection of inflation-adjusted value of a currency with respect to that of the trading partners
The trade-weighted currency index by forex dealers.	This indicator is trade-weighted and is determined using the NEER.
The worth of Home currency as compare to other currencies	The adjustment of home currency value in relation to other significant trading currencies.
It is not adjusted for inflation differential, so not an accurate measure	More accurate measure to calculate currency's strength

Cruise Missile	Ballistic Missile
Self-propelled for the most part of their flight, flying in a relatively straight line	Flight path is like a large arc up and back down again.
Cruise missiles are self-guided and use different methods to accurately deliver their payload	Ballistic missiles can carry either nuclear or conventional warheads
Subsonic or supersonic (slower)	Supersonic to hypersonic (much faster)
Nirbhay, Brahmos	Prithvi I, Prithvi II, Agni I, Agni II, Dhanush Missiles
Its Propulsion is Air-breathing (jet or propeller-driven)	Its Propulsion is Rocket-powered

WPI	CPI
Measures inflation at wholesale level	Measures inflation at consumer level
Gives more weightage to manufactured goods	Gives more weightage to food items
Publishe by office economic advisor	Published by center statics office
Uses Financial Year as a reference	Uses Calender year as reference
It covers goods	It covers Goods and services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Tarang Shakti-2024
in August.
First Multinational Air Exercise
HOSTED BY THE INDIAN AIR FORCE.
Objective:
To invite friendly foreign countries with whom the IAF interacts regularly.
To enhance interoperability among the participating forces.
Participating Countries:
Australia
France
Germany
Japan
Spain
The United Arab Emirates
The United Kingdom
The United States.
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