



News Analysis (09 Jun, 2020)

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e-Diplomacy

Why in News

Recently, the **first India-Australia Virtual Leaders' Summit** was held where important strategic decisions, ranging from military interoperability to jointly tackling the **pandemic**, were made.

The summit was noteworthy for its **novel modus operandi** after the dangers posed by **Covid-19** have compelled the traditional summit diplomacy to adapt to new digital ways.

Key Points

- **e-Diplomacy (electronic diplomacy)** is the use of technology by nations to define and establish diplomatic goals and objectives and to efficiently carry out the functions of diplomats.
 - These functions include representation and promotion of the home nation, establishing both bilateral and multilateral relations, consular services and social engagement.
- The pandemic has forced mankind to **maintain physical and social distancing**, leading to a **shift towards work from home mode and using online platforms** for education (**online classes**), business (**e-Commerce**) and other daily things.
 - Just as corporations and educational institutions have migrated to online mediums, nation-states are left with no choice but to do the same by conducting virtual or e-summits.
- **Advantages:**
 - These are **physically safer** for leaders because there is no need for any physical contact with anyone.
 - The process is **time-saving** as the leaders can attend the summits and conferences from their offices without having the need to physically reach the venue or other country.
 - These **economise events** by avoiding costly physical journeys and event management.

- **Challenges:**

- It is **doubtful** that major breakthroughs or deals requiring the direct intervention of leaders can happen **without all the protocols and structured dialogues** in person.
- There is a possibility of **e-diplomacy becoming less productive** as online summits will simply **not satisfy the broader political goals and bigger objectives** that heads of state carry with them.
- Threats related to **cybersecurity** also come in the picture:
 - E-diplomacy is riskier and could be subject to **hacking** of classified content.
 - This could reduce the spontaneity and openness of the conversations.
 - In pre-Covid-19 times, summit venues were debugged to prevent sensitive foreign policy content from being spied upon or leaked.

Way Forward

- The **British scholar Ernest Satow** dubbed “**summits a permanent feature of diplomatic topography**”. It has been a maxim in diplomacy that face-to-face interactions at the highest level mark the zenith of foreign relations.
- In-person summits will restart one-day but the **online interlude has to go on because diplomacy has to go on**.
- However artificial and unsatisfying the video conferencing medium is, **having some summit is better than no summit at all**. Key partners have to get on with it and hold high-level meetings as part of their strategic signalling.

Source: TH

Sixth Mass Extinction

Why in News

Recently, the researchers have observed that the **ongoing sixth mass extinction** is one of the **most serious environmental threats** to the existence of civilisation.

Mass extinction refers to a substantial **increase in the degree of extinction** or when the Earth **loses more than three-quarters of its species** in a geologically **short period of time**.

Since life first evolved on the planet, a short geological period of time is defined as **less than 2.8 million years**.

History of Mass Extinction

So far, the Earth has experienced **five mass extinctions**.

Era	Impact and Possible Reasons
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<p>First Mass Extinction: End Ordovician, 444 million years ago</p>	<ul style="list-style-type: none"> • 86% of species lost • Severe ice age that lowered sea levels, possibly triggered by the uplift of the Appalachians. The newly exposed silicate rock sucked CO₂ out of the atmosphere, chilling the planet.
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<p>Second Mass Extinction: Late Devonian, 383-359 million years ago</p>	<ul style="list-style-type: none"> • 75% of species lost • With the emergence of land plants, their deep roots stirred up the earth, releasing nutrients into the ocean. This might have triggered algal blooms which sucked oxygen out of the water, suffocating bottom dwellers like the trilobites.
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<p>Third Mass Extinction: End Permian, 252 million years ago</p>	<ul style="list-style-type: none"> • 96% of species lost • A cataclysmic eruption near Siberia blasted CO₂ into the atmosphere. Methanogenic bacteria responded by belching out methane, a potent greenhouse gas. Global temperatures surged while oceans acidified and stagnated, belching poisonous hydrogen sulfide.
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<p>Fourth Mass Extinction: End Triassic, 201 million years ago</p>	<ul style="list-style-type: none"> • 80% of species lost • No clear causes have been found.
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<p>Fifth Mass Extinction: End Cretaceous, 66 million years ago</p>	<ul style="list-style-type: none"> • 76% of all species lost • Volcanic activity and climate change along with asteroid species

Key Points

- **Background:**
 - The five mass extinctions that took place in the **last 450 million years** have led to the **destruction of 70-95%** of the species of plants, animals and microorganisms that existed earlier.
 - All these extinctions were caused due to the **catastrophic alterations** to the environment, such as massive volcanic eruptions, depletion of oceanic oxygen or collision with an asteroid.
 - After each of these extinctions, it took millions of years to regain species comparable to those that existed before the event.
- **Ongoing Sixth Mass Extinction:**
 - It has been observed that the sixth extinction is **human-caused** and is **more immediate** than climate destruction. Thus, the ongoing sixth mass extinction is referred to as the **anthropocene extinction**.
 - Currently, only an **estimated 2% of all of the species** that ever lived are **alive** but the **absolute number** of species is **greater than ever before**.
 - It is described as the most serious environmental problem since **the loss of species will be permanent**. The loss of species has been occurring **since human ancestors developed agriculture over 11,000 years ago**. Since then, the human population has increased from about 1 million to 7.7 billion.

- **Outcomes of the Study:**

- The study has described sixth mass extinction as the most **serious environmental problem**.
 - The study analysed **29,400 species** of terrestrial vertebrates and concluded that over **515 of them are near extinction**.
 - Most of these 515 species are from South America (30%), followed by Oceania (21%), Asia (21%) and Africa (16%) among others.
- It has also observed that the **disappearance** of these populations has been **occurring since the 1800s**.

- **Impacts:**

- The extinction of the species causes **tangible impact** such as in the form of a loss in crop pollination and water purification.
- Further, if a species has a specific function in an ecosystem, the loss can lead to consequences for other species by **impacting the food chain**.
- When the number of individuals in a **population or species drops too low**, its contributions to ecosystem functions and services **become unimportant**.
- The effects of extinction are expected to worsen the **genetic and cultural variability** which would change entire ecosystems.

When genetic variability and resilience is reduced, its contribution to **human welfare may be lost**.

Way Forward

- The current **Covid-19 pandemic** is also linked to the wildlife trade. It has been also predicted that there will be more pandemics if we continue destroying habitats and trading wildlife for human consumption as food and traditional medicines.
- In general, **loss of biodiversity** in a region may lead to (a) decline in plant production, (b) lowered resistance to environmental perturbations such as drought and (c) increased variability in certain ecosystem processes such as plant productivity, water use, and pest and disease cycles.

Source:IE

Environmental Performance Index

Why in News

India secured **168th rank** in the 12th edition of the Environment Performance Index (EPI) 2020.

India's rank was **177th in 2018**.

Environmental Performance Index

- EPI is a **biennial index** prepared by **Yale University and Columbia University** in collaboration with the **World Economic Forum**.

- It offers a **scorecard that highlights leaders and laggards** in environmental performance and **provides practical guidance** for countries that aspire to move toward a sustainable future.
- This index was first published in 2002 designed to supplement the environmental targets set forth in the United Nations Millennium Development Goals.

Key Points

- **EPI 2020:**
 - EPI Index 2020 measured the environmental performance of **180 countries**.
 - The index considered **32 indicators** of environmental performance and included **10-year trends in environmental performance** at the national and global levels.
 - **Denmark topped the index** with a score of 82.5.
- **India' Performance:**
 - India scored 27.6 out of 100 in the 2020 EPI index and its performance **was worse than all South Asian countries**, except Afghanistan.
 - India scored **below the regional (South-Asia) average score on all five key parameters on environmental health**, including air quality, sanitation and drinking water, heavy metals and waste management.
 - These findings resonated with the concerns raised by the **'State of India's Environment 2020 in Figures'**, published by the Centre for Science and Environment.
 - It has also **scored below the regional average on parameters related to biodiversity and ecosystem services** too.
 - India was at **second position after Pakistan on 'climate change'** among the **South-Asia countries**.
 - Pakistan's score (50.6) was the highest under the climate change category.
 - A ten-year comparison progress report in the index showed that **India slipped on climate-related parameters**.
 - The report indicated that black carbon, carbon dioxide emissions and greenhouse emissions per capita increased in ten years.

Environmental Conservation Programmes in India

- **Climate Change:** National Action Plan on Climate Change
- **Desertification:** National Action Programme to Combat Desertification
- **Pollution Control:** National Clean Air Program
- **Environmental Impact Assessment:** Environment Management Plan
- **Forest Protection:** National Afforestation Programme
- **Animal Conservation:** Project Elephant, Project Tiger

Way Forward

- India needs to **re-double national sustainability efforts** on all fronts.
- It needs to focus on a wide spectrum of **sustainability issues, with a high-priority to critical issues such as air and water quality, biodiversity and climate change**.

Assam Gas Leak

Why in News

Recently, a gas leak has occurred at **Baghjan well** in Tinsukia district of Assam following a blowout.

- The Baghjan well is a purely gas-producing well in **Tinsukia district**, and is at an aerial distance of 900 metres from the **Dibru-Saikhowa National Park**.
- It has been drilled by **Oil India Limited (OIL)** since 2006.
- Natural gas is a mix of propane, methane, propylene and other gases.

Key Points

- **Gas Leak:**
 - The gas well at Baghjan **was under maintenance**, for which it was temporarily shut. The Blowout Preventer (BOP) was also removed.
 - However, the gas started to ooze out of the well during the maintenance. The reason behind the blowout (a sudden/uncontrolled release of gas/oil) is not clear.
- **Possible Reasons:**
 - It may have occurred **due to lack of attention, poor workmanship, bad maintenance, old age, sabotage to morpho-tectonic factors**.
 - Sometimes, the **disturbance of pressure balance in a well may also lead to sudden blowouts**.
- **Steps Taken:** The authorities have built a temporary water reservoir through pipelines from the **Dangori river** nearby the well to control the blowout.
 - To control a blowout, a huge quantity of water is required so that the gas does not catch fire.
 - The **control of a blowout depends on two things: the size of the reservoir and the pressure at which the gas is flowing out**. Many blowouts also automatically collapse on their own.
- **Challenges:** The gas leak at the Baghjan is still not under control and it is continuously leaking.
 - The limited space and non-availability of open space above the well head poses a huge challenge in placement of BOP.
 - The BOP placement involves a huge risk since Baghjan is a gas well and runs the risk of catching fire at any point.
- **Impact:**
 - The **gas is flowing with the wind** in the radius of up to 5 km and **condensate (the residue from gas) is falling** on bamboo, tea gardens, banana trees, betel nut trees among others.
 - While the well is outside the **Eco Sensitive Zone** of the park, there are reports that the condensate is falling into **Dibru-Saikhowa National Park** and **Maguri-Motapung wetland** too.
 - The gas leak has also caused deaths of **Gangetic dolphins**, and a variety of fish. The number of birds have also decreased because they have flown away.

- **Assessment of the Impact:** To safeguard the environment, OIL has engaged a **National Accreditation Board for Education and Training (NABET)** accredited consultant to carry out an **Environment Impact Assessment study** to assess the effects of blowout on terrestrial and aquatic ecosystems and to work on a **Socio-Economic Impact Assessment**.
 - NABET is a constituent Board of **Quality Council of India**.
 - It offers accreditation to **educational organisations, vocational training organizations and skill certification bodies**.

Dibru-Saikhowa National Park

- Dibru-Saikhowa is a **National Park** as well as a **Biosphere Reserve** situated in the south bank of the river Brahmaputra in Assam.
- It is one of the **19 biodiversity hotspots in the world**.
- The forest type of Dibru-Saikhowa comprises **semi-evergreen forests, deciduous forests, littoral and swamp forests and patches of wet evergreen forests**.
 - It is the largest swamp forest in north-eastern India.
- It is an identified **Important Bird Area (IBA)** notified by the **Bombay Natural History Society**. It is most famous for the rare **white-winged wood ducks** as well as **feral horses**.

Maguri-Motapung Wetland

- Maguri Motapung Beel is less than 10 km from Dibru-Saikhowa National Park and part of the Dibru-Saikhowa Biosphere Reserve.
- The wetland derives its name from “Magur”, the local word for the catfish ‘Clarius batrachus’.
- It is an **Important Bird Area** notified by the Bombay Natural History Society.

Source:IE

microRNA

Why in News

Recently, researchers at the **Indian Institute of Technology (IIT) Madras** have identified a specific **microRNA (miRNA)** called ‘**miR-155**’ that is over-expressed in tongue cancer.

Key Points

- **MicroRNAs:**

- These are **short non-coding Ribonucleic Acids** (RNAs) containing 20–24 nucleotides that participate in virtually all biological pathways in animals.
- They play important roles in many cancers, in **carcinogenesis, malignant transformation** and **metastasis**.
 - **Carcinogenesis:** It is the formation of cancer (uncontrolled development of cells), whereby normal cells are transformed into cancer cells. It is also called **oncogenesis** or **tumorigenesis**.
 - **Malignant transformation:** It is the process by which cells acquire the properties of cancer. This may occur as a primary process in normal tissue, or secondarily as malignant degeneration of a previously existing benign tumour.
 - **Metastasis:** The spread of cancer cells from the place where they first formed to another part of the body. In metastasis, cancer cells break away from the original (primary) tumour, travel through the blood or lymph system and form a new tumour in other organs or tissues of the body.

- **Oncomirs:**

- The **miRNAs associated with cancer** are called Oncomirs.
- They affect cancer growth through **inhibiting or enhancing the functions** of certain proteins.
- Oncomirs affect cancer by **suppressing the performance of tumour-suppressing agents** which can prevent the growth and spread of cancer cells and sometimes prevent tumour growth itself.

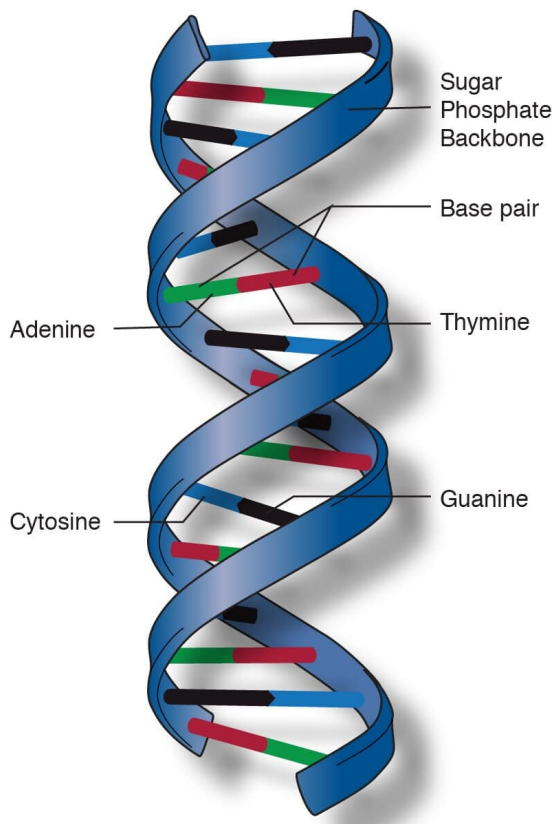
- **Significance of the Research:**

- The finding could **help develop molecular strategies** to manipulate miR-155 expression to develop therapeutics for tongue cancer.
- miRNA manipulation is being **combined with conventional cancer treatment methods** such as **chemotherapy, radiotherapy** and **immunotherapy**.
- Eliminating miR-155 causes **death of cancer cells, arrests the cell cycle and regresses tumour size** in animal models and **reduces cell viability and colony formation** in benchtop (suitable for convenient use on a laboratory workbench) assays.

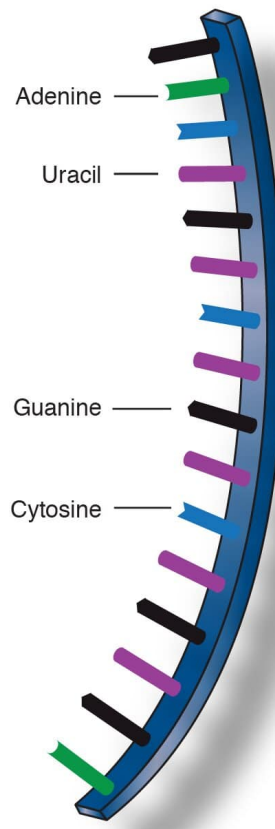
An assay is an investigative (analytic) procedure in laboratory medicine, pharmacology, environmental biology and molecular biology for qualitatively assessing or quantitatively measuring the presence, amount, or functional activity of a target entity (the analyte).

Ribonucleic Acid

- RNA is a **polymer of ribonucleotides** and an important biological macromolecule that is present in all biological cells.
- It is principally involved in the synthesis of proteins, carrying the messenger instructions from **Deoxyribonucleic acid** (DNA), which itself contains the genetic instructions required for the development and maintenance of life.
- **RNA differs from DNA in three basic respects:**
 - RNA employs uracil as a nitrogenous base, in place of the thymine used in DNA.
 - RNA nucleotides possess a hydroxyl group at the 2nd position, while DNA is deoxygenated at that position to a proton.
 - RNA is more often found single-stranded than DNA, which is typically completely base-paired into a double helix.



Deoxyribonucleic acid
(DNA)



Ribonucleic acid
(RNA)

Source: TH

36th Anniversary of Operation Blue Star

Why in News

Recently, the **36th anniversary** of **Operation Blue Star** was observed by the country.

Key Points

- **Operation Blue Star:**

- It is a **code name** given to an Indian Military Operation to remove the separatists who were hidden inside the Golden Temple at Amritsar on **5th June 1984**.
- The operation was ordered by the then Prime Minister Indira Gandhi, primarily to take **control of the Harmandir Sahib Complex in Amritsar** (popularly known as the Golden Temple).
- The Indian military entered into the premises of the temple to drive out the Sikh **extremist religious leader, Jarnail Singh Bhindranwale** and **his armed followers**.
- The operation had two components to it, **Operation Metal** which was the invasion on the temple complex and **Operation Shop** which was confined to the countryside of the state.
- This Operation helped in **eliminating Khalistani terrorism**.

- **Background:**

- **Jarnail Singh Bhindranwale** wanted the Indian government to pass the Anandpur Resolution, and thereby agree to the formation of a separate state of Khalistan for Sikhs.
 - Since 1982, this radical leader of Sikhism had managed to gain enough support for his cause and by mid-1983 had **set up a base inside the Golden Temple complex**, with **ammunition and his followers**.
 - Hence, **Operation Blue Star** was launched between 1st June and 6th June 1984, with the aim of getting rid of Bhindranwale and his demands.
 - The operation resulted in the death of Bhindranwale.
- Few months post-Operation Blue Star, Indira Gandhi was assassinated by her Sikh bodyguards, followed by severe anti-Sikh riots in Delhi.

National Security Guard

- The **National Security Guard (NSG)** is a counter-terrorism unit that formally came into existence in 1986 by an act of Parliament- 'National Security Guard Act, 1986'.
- Its headquarters is located in Manesar, Gurugram.
- The **idea behind raising such force** came in the aftermath of **Operation Blue Star, Akshardham Temple attack** and the assassination of former PM Indira Gandhi, for **combating terrorist activities with a view to protect states against internal disturbances**.

Source: TH

Dropping Water levels in Germany's Rhine River

Why in News

Recently, a part of the **Rhine River** flowing through **Germany** has been experiencing its **lowest water levels in two decades**.

The lowest water levels have prompted **fears of shipping disruption** on **Europe's most important inland waterway**.

Rhine waters in Germany have dropped **40%** since **April 2020**.

Key Points

- **Reduced Water Levels:**

- Germany has **not** received the **spring showers** and subsequently, the **water level dropped to around 1 meter** in the month of June which is the **lowest for the time of year in at least two decades**.

Usually, a mix of glacial run-off and rain feeds the river, but contributions from glaciers have been **disturbed in recent years due to global warming**.

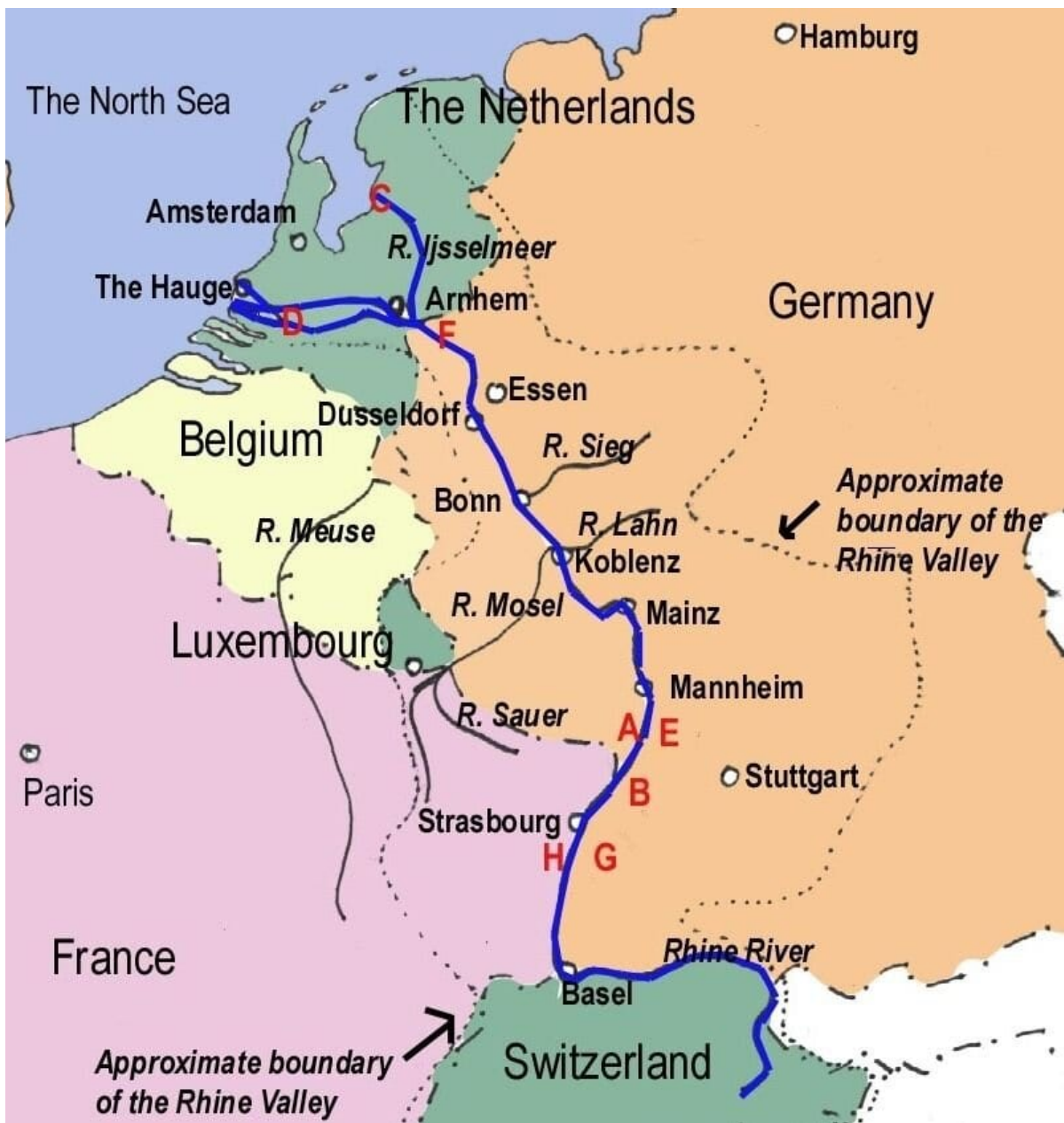
- Germany had experienced **dropped water levels in 2018** which had **disrupted industrial ships**, severing downriver factories from North Sea ports.

- **Impacts:**

- The water drop levels in 2018 were **severe enough** to **affect German economic growth**.
- Further, **groundwater levels** have **reduced** after record-breaking **heat waves recorded in 2019** which have consequently **dried out soil and wilted vegetation** from consecutive years of drought.
- Additionally, if the low water levels are sustained, **refineries using the river's water will have reduced output** compared to 2018.

Rhine River

- The Rhine River is the **second-longest river** in Central and **Western Europe after the Danube** and originates in the **Swiss Alps (in Switzerland)**.
- The Rhine river is called by different names depending on the country it flows through. It is called Rhein in Germany; Rhine in France and Rijn in the Netherlands.
- The Rhine flows through six countries -**Switzerland, Principality of Liechtenstein, Austria, Germany, France and the Netherlands** before flowing into the **North Sea at Rotterdam**.



Source:IE

Aditya: India's First Solar Ferry

Why in News

Recently, India's **first solar-powered ferry, Aditya** has been shortlisted for the **Gustave Trouvé Award** as the **only entrant** from Asia.

Aditya, is among **12 such ferries** that have been **shortlisted** for the award across the world.

Gustave Trouvé Awards

- Gussies Electric Boat Awards were **instituted in memory of Gustave Trouvé**, a **French electrical engineer and pioneer in electric cars and boats**.
- Trouvé was a prolific inventor with over 75 patents. He had also developed a 5-m-long prototype electric boat in 1881.

Key Points

- **Description:**

- Aditya is **operating between Vaikom and Thavanakkadavu** in Kerala. It was launched in November 2016 and started its services in 2017.
- It is India's **first solar-powered ferry** and the **largest solar-powered boat**.
It is operated by the **Kerala State Water Transport Department (KSWTD)** and built by Navalt Solar and Electric Boats, Kochi.
- It is powered by a motor that can source energy from solar panels, batteries, and generators.
Solar vessels do not create air and noise pollution.

- **Significance:**

- Aditya has a **very low per km energy cost** and it **operates 22 trips a day, covering a total of 66 km**, carrying 75 passengers per trip.
- It needs **just Rs. 180 per day in energy cost**, compared to about **Rs. 8,000** for a diesel-run ferry of similar size, which is unusual for a high technology product to have such a low energy cost.
- It has a high **financial viability with zero pollution vessels**.

Source: TH

Airborne Rescue Pod for Isolated Transportation: ARPIT

Why in News

Recently, the **Indian Air Force (IAF)** has designed, developed and inducted an **Airborne Rescue Pod for Isolated Transportation i.e. ARPIT**.

- This pod will be **utilised for evacuation of critical patients** with infectious diseases including **Covid-19** from high altitude areas, isolated and remote places.
- Supporting the **Atmanirbhar Bharat Initiative**, only indigenous materials have been used to fabricate this pod.
- Requirement of an air evacuation system with facility to prevent spread of infectious **aerosol** from a Covid-19 patient during air travel was felt by IAF when the disease was declared as a **pandemic**.

Key Points

- **Lightweight Isolation System:**

- The pod has a **transparent and durable cast perspex** (transparent plastic that is sometimes used instead of glass) for enhanced patient visibility which is larger, higher and wider than the existing models.
- The isolation system **caters for a suitable number of air exchanges, integration of medical monitoring instruments, and ventilation** to an intubated patient.
- In addition, **it generates high constant negative pressure** in the isolation chamber for prevention of infection risk to aircrew, ground crew and health care workers involved in air transportation.

- **High Efficiency Particulate Air:**

- It utilises **High Efficiency Particulate Air (HEPA)** H-13 class filters and supports invasive ventilation using transport ventilators.
- **HEPA:** It is an **air-filtration system** designed to capture at least 99.97% of fine airborne particles, dust, pollen, mold, bacteria, with a size of at **least 0.3 micrometre**.

- **Cost Effective:**

It has been developed at a **cost of Rs. 60,000 only**, as compared to the imported systems costing up to Rs. 60 lakh.

Source: PIB

World Oceans Day

Why in News

The World Oceans Day is celebrated every year on **8th June** to create awareness about the benefits that mankind gets from the ocean.

- The Day was designated by the United Nations General Assembly in 2008.
- The **theme** of the World Oceans Day 2020 is '**Innovation for a Sustainable Ocean**'.

Key Points

- **Importance of Oceans:**

- Oceans cover 71% of the Earth's surface and hold 97% of the planet's water.
- They help feed the world and provide most of the oxygen.
- A variety of life-saving medicinal compounds, including anti-inflammatory and anti-cancer drugs have been discovered in the oceans.
- The ocean is vital to the world's economy, with more than 90% of trade using sea routes and as a source of jobs for millions of people.
- They play a key role in regulating the weather and climate.
- The Sustainable Development Goal 14 is 'Conserve and sustainably use the oceans, seas and marine resources for sustainable development'.

- **Threats to Oceans:**

- Pollution, overfishing, invasive species, and rising ocean acidity due to the extensive use of fossil fuels.
- Plastic waste is also one of the biggest threats faced by the oceans today.

Way forward

The oceans are facing unprecedented pressures from factors ranging from pollution to climate change. Thus, the need to balance the preservation of a healthy ocean and ever-increasing economic activities requires a fresh approach and rethinking in many areas.

Source:UN

Biodiversity Park in Uttarakhand

Why in News

Uttarakhand opened its biggest biodiversity park in **Haldwani** on the **World Environment Day** (5th June).

- **Biodiversity** is the variety and variability of life on Earth. **Biodiversity Parks are basically natural reserves** with varieties of plants and animals.
- The theme of this year's World Environment Day is 'Celebrate Biodiversity'

Key Points

- Inside the Park, there are thematic gardens, a soil museum, species of plants, lichens, mosses and algae from the Jurassic era, a vermicompost unit, an interpretation centre, and a state-of-the-art weather station.
- The Park has 40 unique sections having 479 rare plant species of cactus, medicinal herbs, different types of trees, etc.
 - The various species of plants have been brought to the park from diverse terrains like **Niti Mana Valley** and even from some glaciers around Kedarnath.
 - Niti Mana Valley is located near the India Tibetan Border in Chamoli district of Uttarakhand.
- The plant species in the biodiversity park is divided into spiritual & religious, scientific, human health, and aesthetic value sections.
 - The spiritual section has trees that find mention in holy scriptures like Guru Granth Sahib, Quran, Bible, and others.
- It showcases the **different kinds of soil** found in various topographies of Uttarakhand — alpine, bhabhar, sub-mountainous, mountainous, tertiary, loam, terai.
- Various environmental concepts and conservation issues including global warming, forest rivers, species extinction, internal communication of plants and recent developments like spread of virus from animals to human beings are explained at the interpretation centre inside the park.

Source:ToI

