DAILY CURRENT AFFAIRS ANALYSIS

LAKSHYA ACADEMY®

01 SEPTEMBER 2023

1 – About Antarctica’s melting sea ice:

GS I

Geography related issues

- According to a new study, four colonies of emperor penguins in the Antarctic's Bellingshausen Sea may have lost up to 10,000 babies as the sea ice beneath their nesting grounds melted and crumbled in late 2022.

- **About the Emperor Penguins:**

- The emperor penguin is the tallest and heaviest species of penguin still in existence.
- It is unique to Antarctica.
- The male and female are comparable in size and plumage.
- Like all penguins, it is flightless and has a streamlined body.
- When hunting, the species can submerge itself for up to 20 minutes.

- **Many changes have been made to it to make this process simpler:**

- an oxygen-dependent haemoglobin having a special structure that allows it to work at low oxygen levels,
- stability of the skeleton to reduce barotrauma, and
- the ability to decrease metabolism and shut down non-essential organ function.
- This is the only species of penguin that breeds during the Antarctic winter.

- **Emperor penguins depend on sea ice because:**

- The emperor penguin's reproductive cycle depends heavily on stable sea ice.
- Emperor penguins spend their whole mating season on the sea ice.
- The sea ice that emperor penguins breed on needs to stay stable from April through January in order for breeding to be successful.

- **Principal findings of the research:**

- It is the first time that emperor penguin breeding has been widely unsuccessful due to sea ice loss that has been reported at multiple locations in a region.
- The amount of Antarctic sea ice has shrunk since 2016, almost yearly reaching all-time lows for the region of the frozen water encircling the continent.

- Its sea ice extent is the portion of Antarctica covered by sea ice that is at least 15% thick.
- Because emperor penguins could go extinct by the end of this century if Earth's temperature continues to rise at its current rate, more than 90% of emperor penguin colonies are already in risk.

- The findings show a clear connection between low sea ice anomalies and unsuccessful emperor penguin nesting.
- The region around the Bellingshausen Sea was the hardest affected; in some places, all of the sea ice was gone by November.

- This resulted to the complete failure of breeding in four of the five colonies.
- The next year, emperor penguins have been known to move to new, more stable locations to deal with breeding issues caused by the localised melting of sea ice.
- However, given the significant decrease of the sea ice, such a strategy is doomed to fail.
- For the penguins, this regional failure in the Bellinghausen Sea is difficult because they are unable to simply travel to the nearest colony. A 1,500 km2 area has virtually no sea ice left. Fretwell claims, "We really don't know what occurs in the event that there is no ice.

- **Antarctica's sea ice extent is declining:**

- Similar to last year, the Antarctic sea ice extent has shrunk to a new record low in 2023, but this time around the ice cover is exceptionally thin. A NASA Earth Observatory report states that the average sea ice extent in July 2023 was 13.5 million sq km, the smallest extent recorded for this time of year since the continuous satellite record began in late 1978.

- **Further consequences of ice melting:**

- **More conversation starters:**

- More of the continent's ice is exposed to the ocean when there is less sea ice, increasing the likelihood that it will melt and split.

- **Impact on Humans:**

- This could lead to rising sea levels, which might affect millions of people who live along the shore.

- **Rising sea surface temperatures:**

- Because sea ice keeps heat from being absorbed in the seas and reflects solar radiation back into space, a reduction in the ice sheet likewise raises sea surface temperatures
- Among many other consequences, warmer oceans make ice formation more challenging.

- ***Source → The Hindu***

2 – Details about Zoning of flood plains:

GS I

Geography related issues

- Zoning flood plains is the suggested solution to Punjab's continuing flood troubles, which have persisted for more than a month.

- **The significance of flood plains:**

- A river will naturally grow larger or smaller with the passing of time.
- An area beside a river that regularly floods when the river rises is known as a flood plain.
- An absence of careless construction and concrete has left well-maintained flood plains as natural barriers against floods farther inland.
- They contribute to groundwater replenishment and water table maintenance.

- **How do floodplains get identified?**

- It is carried out based on topographical characteristics near rivers.
- For example, in flood plains, where the river once flowed before altering its course, one can commonly see oxbow lakes, which are essentially abandoned river meandering channels.

- **Zoning in flood plains:**

- To regulate how land is used, flood plains are zoned.
- In order to specify the types of projects that are permitted in certain areas, zoning involves identifying areas near rivers that are prone to floods of varying intensities and frequency.
- This is done in an effort to lessen damage should flooding actually occur.

- **As per the floodplain zoning requirements set forth by the National Disaster Management Authority, the following properties ought to be located above the levels that correspond to either the maximum levels of observed flooding or a 100-year frequency:**

- defensive establishments.
- businesses.
- public facilities like phone booths, airports, train stations, hospitals, power plants, water supplies, and retail centres, among others.

- **The ramifications of not having zoning**

- The poor management and encroachment upon flood plains lead to unsuitable development activities.
- Buildings that are not fit for the area they influence and the damage they cause help floods creep inland.
- Concrete prevents water from just draining away, therefore floods happen much more slowly.
- This is detrimental to flood plains because it affects the soil's fertility and quality.

- ***Source → The Hindu***

3 – About the Aditya-L1 mission:

GS III

Science and Technology

- As per the Indian space Research Organisation (ISRO), the Aditya-L1 mission, which is the first observatory in India to study the Sun from orbit, is scheduled to launch in the near future.

- **About:**

- The 1,475-kg spacecraft for the Aditya-L1 mission will be launched by the Polar Satellite Launch Vehicle (PSLV) and placed in an elliptical orbit around the earth.
- The spacecraft, which will carry seven research packages, is more than two times lighter than the Chandrayaan-3 mission.
- The spacecraft's orbit and velocity will be boosted until they are launched into the Sun, much like the Chandrayaan-3 programme.
- Reaching the L1 stage will take more than four months.
- The spacecraft will subsequently be placed in a halo orbit around the L1 point.
- There will be data collection for five years.

- **What is meant by L1 point?**

- L1 through L5, the five Lagrange points, are the spaces between any two planetary bodies.

- Since the centripetal force required to keep a satellite in orbit is equal to the gravitational attraction of the celestial objects, these places in space can behave as parking lots.
- Thus, spacecraft positioned in the vicinity of Lagrange points don't need a lot of fuel to remain in place.
- If the spacecraft makes it to Lagrange 1, it will be somewhere beyond the Moon and in between the Earth and the Sun.
- This makes it possible for the spacecraft to see the Sun well even when there are eclipses or other natural events.
- Because the trip will only cover 1% of the distance between Earth and the Sun, the payloads will be able to look directly at the Sun.
- The L1 point is the reason why the mission uses less fuel.
- The Italian-French mathematician Josephy-Louis Lagrange is the namesake of the five Lagrange points, which are L1, L2, L3, L4, and L5.
- The NASA James Webb Space Telescope is situated at L2.
- Currently stationed close to the Earth-Sun system's L1 point, which offers a clear view of the Sun, is the Solar and Heliospheric Observatory Satellite SOHO.

- **Objectives of Aditya-L1:**

- Finding out more about our nearest star and how its radiation, heat, particle movement, and magnetic fields affect us is the main objective of the project.
- The chromosphere and corona of the Sun, two of its higher atmosphere regions, will be studied by the mission's payloads.
- Their area of study will be coronal mass ejections (CMEs), which are plasma and magnetic field eruptions.
- The magnetic field of the corona and the variables affecting space weather will also be studied.
- It might provide answers to the long-standing mystery of why the Sun's surface, which is only 5,500 degrees Celsius, is a million degrees Celsius hotter than its relatively bright corona.
- It will also help scientists understand the physics behind the particle acceleration caused by the solar wind on the Sun.

- **The importance of studying the sun:**

- All planets, including Earth and the exoplanets outside the Solar System, are in a state of constant evolution, which is guided by the parent star.
- The solar weather and environment affect the weather throughout the entire system.
- Variations in this weather can create power outages and other disturbances on Earth, interfere with or damage the onboard electronics of satellites, and impact their orbits or lives.
- It is necessary to appreciate solar activity in order to understand space weather.
- It need ongoing solar observations to comprehend, track, and predict the effects of storms that are aimed towards Earth.
- Every storm that departs from the Sun and moves towards Earth passes through L1.

- **Cargo for the Aditya-L1 mission:**

- **The Sun will be studied using the following remote sensing payloads:**

- VELC (Visible Emission Line Coronagraph) for corona imaging and spectroscopy
- SUIT, which images the photosphere and chromosphere using UV light
- The Solar Low Energy X-ray Spectrometer (SoLEXS), a soft X-ray spectrometer that is used to examine the Sun like a star
- High Energy L1 Orbiting X-ray Spectrometer (HEL1OS) is a hard X-ray spectrometer designed for Sun-as-star studies.

- **The following are the payloads that will be used to study the L1 in situ, or at their location:**

- Aditya Solar wind Particle Experiment (ASPEX), which uses a solar wind/particle analyzer to measure protons and heavier ions;
- Use the Plasma Analyzer Package for Aditya (PAPA) with instructions for heavier ions and electrons from solar wind/particle analyzers.
- Advanced triaxial high resolution digital magnetometers are used to study the magnetic field in situ.

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- ***Source → The Hindu***

4 - Wrestling Federation of India suspended by United World Wrestling:

GS I

Sports related issues

- United World Wrestling (UWW), the international governing body of the sport, has temporarily suspended the Wrestling Federation of India (WFI). This action was taken mostly in response to the WFI's tardiness in holding elections following the wrestlers' protest over various issues.

- **Implications of the suspension:**

- The Indian Olympic Association (IOA) has appointed an ad hoc committee to oversee the WFI in the absence of an elected body.
- Wrestlers and their support personnel are still welcome to attend any UWW-sanctioned event, but they have to do so while flying the UWW flag.

- Indian wrestlers are hence ineligible to compete for their nation at UWW competitions.
- The national anthem will not be played in the event that an Indian wrestler wins a gold medal.

- **What caused the delay?**

- The previous WFI president was accused of financial fraud, administrative mistakes, sexual harassment, and intimidation by a number of prominent wrestlers.
- The head of the federation was asked to step down by the Union Sports Ministry until the Oversight Committee (OC) had completed its inquiry.
- It was not possible to hold elections because of the ongoing protests.
- Enraged state groups protesting for voting rights caused more delays.
- Two high courts, the Punjab and Haryana High Court one day before the election's latest scheduled date, and the Gauhati High Court the day before, both suspended the elections.
- The UWW Disciplinary Chamber decided there were sufficient grounds to temporarily suspend the WFI for a minimum of six months in light of the existing situation.
- The UWW's membership qualifications and rules were not followed by the absence of a board and an elected president.

- **Going forward:**

- Various WFI groups need to realise the huge loss the sport has suffered as a result of the ongoing issue.
- If the country wishes to spare itself from international shame and grant the athletes their right to compete under the Tricolour, the WFI elections must be conducted in a free and fair way.

- ***Source → The Hindu***

5 – About Article 35A:

GS II

Constitution related issues

- The Chief Justice of India declared that by enabling the Jammu and Kashmir Legislature to define "permanent residents" of the State and offer them special benefits, Article 35A violated the fundamental rights of others

- **About Article 35A:**

- Under Article 35A, citizens of Jammu and Kashmir are entitled to certain privileges and rights.

- By a decree issued in 1954 by then-President Rajendra Prasad, it was incorporated into the Indian Constitution on the advice of the Jawaharlal Nehru Cabinet.
- What constitutes a state's "permanent residents" is entirely up to the J&K legislature to decide.

- **Furthermore, it gives them exclusive advantages and privileges in:**

- labour as a state government employee,
- acquisition of real estate in the state,
- moving to the state; with
- the entitlement to state financial aid, including scholarships.
- It also grants the state legislature the authority to apply the previously described limitations to non-permanent residents.
- To protect these specific rights and benefits, the Article stipulates that no act of the state legislature covered by it may be disputed on the basis that it contravenes the Constitution or any other law.
- Analyse: Several difficulties need to be handled before India and Pakistan may fully employ the Indus River systems in accordance with the conditions of the Indus Water Treaty.

- The Indus Water Treaty (IWT), which gives India control over the Beas, Ravi, and Sutlej rivers in the east and Pakistan control over the Indus, Chenab, and Jhelum rivers in the west, was established and negotiated by the World Bank in 1960 to utilise the water found in the Indus River and its tributaries.
- **However, the Indus Water Treaty has generated debate and led to a number of issues between Pakistan and India, including:**

- Conflict over hydroelectric projects: One of the main areas of contention between India and Pakistan is the Kishanganga and Ratle hydroelectric power stations in India's Jammu and Kashmir. While India sees these projects as necessary for the region's growth and energy demands, Pakistan has expressed opposition, citing possible harm to its water supply and treaty violations.
- Agreement modification: India has sent Pakistan a notification demanding a modification to the Indus Waters Treaty, citing Pakistan's failure to engage in settlement talks and its autonomous decision to bring a lawsuit before the Permanent Court of Arbitration in The Hague.
- Technical issues: The agreement no longer meets the spirit of many of the technical requirements that it defined. For example, the treaty does not take into account new building techniques, technologies, or studies that increase the longevity and efficiency of hydroelectric plants.
- Pakistan's viewpoint: Pakistan has not agreed to any of the Indian projects; starting with the Salal hydropower project in the 1970s and continuing with the most recent projects being built on the Western rivers, Pakistan has used the treaty to escalate disagreements into disputes that are then settled by an arbitration court or a neutral expert. The Indian projects are delayed, increasing their cost and endangering their techno-economic viability.

- Using state-sponsored terrorism, for example, against India, Pakistan employs the "thousand cuts" tactic to repeatedly try to undermine the nation's peace. Following the 2016 Uri terrorist incident, the Prime Minister declared that "blood and water can't flow together" and temporarily suspended the Permanent Indus Commission (PIC).

- **Going forward:**

- Building trust: Better relations and enduring trust between India and Pakistan are vital for any such integration; equitable and reasonable usage as well as the no damage criterion should be incorporated into the Indus Water Treaty rather than just bringing the matter to court for resolution.
- Stakeholder participation: Regional stakeholders must be involved in any negotiations between India and Pakistan regarding shared water issues. To investigate the core of the problem, a combined group comprising technocrats, climate experts, water management specialists, and scientists from both countries can be formed.
- The two countries must recognise that the best development of the Indus River System is something that is in their shared interest in order for the Indus Water Treaty to be effective. This can be done by investigating the cooperative mechanisms listed in Article VII of the IWT.
- A parliamentary standing committee that the government appointed stated that the treaty needs to be renegotiated in order to establish the institutional and legal frameworks necessary to deal with situations like climate change and global warming. The committee also stated that the deal did not take climate change, global warming, environmental impact studies, and other pressing issues into consideration.
- Trust between the two riparian countries is crucial for any adjustment. The Indus Water Treaty was signed more than sixty years ago, and given the current state of affairs in the Indus River Basin region, adjustments may be necessary. The IWT's rules, however, cannot be amended unilaterally.
- ***Source → The Hindu***