

**DAILY  
CURRENT  
AFFAIRS  
ANALYSIS**



LAKSHYA ACADEMY®

**15 MARCH 2024**

# 1 - Supreme Court strikes down the electoral bonds scheme:

## GS II

### Election related issues

- **Context:**
- The Electoral Bond Scheme (EBS) and related amendments were unanimously declared unlawful by a five-judge Constitution Bench of the Supreme Court (SC) of India in a historic ruling that has profound implications for political finance in India.
- The SC claimed that the EBS had breached Article 19(1)(a) of the Constitution, which guarantees a person's fundamental right to information.
- **What is the Electoral Bond Scheme's ruling from the SC?**
- The SC ruled that the EBS was unconstitutional, as were the modifications made to the Companies Act of 2013, the Finance Act of 2017, the Representation of the People Act (RPA), 1951, and the Income Tax Act of 1961.
- Political parties had to abide by strict regulations prior to these revisions, which included disclosing contributions over Rs 20,000 and capping corporate donations.
- **Restoring the status quo by the SC:**
- The Supreme Court's ruling restored the pre-Finance Act legal framework in a number of acts that are essential to political party financing.
- **The Representation of the People Act 1951:**
- By requiring political parties to reveal donations over Rs 20,000, Section 29C struck a compromise between donor privacy rights and the right to transparency.
- Finance Act of 2017 Intervention:
- introduced a clause removing the need for disclosure for donations made using Electoral Bonds.
- SC Opinion:
- rejected the change, highlighting the significance of striking a balance between privacy and transparency.

- **The Companies Act 2013:**

- Corporate donations were regulated by Section 182, which also imposed transparency requirements and a limitation of 7.5% of the average profits of the three fiscal years prior.

- **Finance Act 2017 Intervention:**

- eliminated the corporate donation cap and the disclosure requirements.

- **SC Opinion:**

- declared the amendment void, expressing worries about unbridled corporate influence on politics.

- **The Income-tax Act 1961:**

- The retention of records for contributions over Rs 20,000 was required by Section 13A(b).

- **Test of Proportionality:**

- The SC used the proportionality test to determine whether the plan infringed on voters' right to information and election process transparency.
- An important judicial benchmark for determining how to strike a balance between state activity and individual basic rights is the proportionality test.
- Part III of the Constitution guarantees essential rights, among them the freedom of speech (Article 19(1)). Any interference with these rights must adhere to the proportionality test-ascertained "reasonable restrictions" outlined in Article 19(2).
- The government may place reasonable limitations on the right to freedom of speech and expression under Article 19(2).
- The reasons for these limitations may include maintaining India's integrity and sovereignty, maintaining public order, fostering goodwill with other countries, preventing defamation or contempt of court, or preventing the instigation of criminal activity.
- In the K.S.A., the proportionality test gained popularity. The 2017 Puttaswamy v. Union of India decision upheld privacy as a fundamental right.
- The proportionality test, upheld in the 2018 Aadhaar Act verdict, makes ensuring that state activities do not disproportionately violate basic rights in the name of advancing justifiable government goals.

- **State Interests and the Argument of the Government:**

- Reducing illegal money and safeguarding donor anonymity, according to the administration, are justifiable state objectives.
- Donor anonymity was argued to be necessary to protect donors' basic right to privacy.

- The government argued that obtaining information that the state does not know or possess is not covered by the right to information.

- **SC Position:**

- The Court ruled that voter access to information under Article 19(1)(a) of the Constitution supersedes donor anonymity as a justifiable governmental goal.
- It underlined how important it is for people to have access to information in order to promote participatory democracy and hold their government responsible.
- SC used the "double proportionality" test concept. Here, the competing fundamental rights of the right to knowledge and the right to privacy must be balanced.
- The SC emphasised that when rights conflict with government action, the proportionality test is applicable. However, the court takes one step further to ensure that the state selects the least restrictive measures for each right and stays away from having disproportionate effects in order to balance them both.
- The SC emphasised that the state could effectively accomplish its goals through less invasive means, including the electoral trusts system.

- **Issued Directions:**

- The Election Commission of India (ECI) has directed the State Bank of India (SBI) to promptly cease issuing any more electoral bonds and provide information about the bonds that political parties have purchased after April 12, 2019. These particulars have to include the date of purchase for every bond, the buyer's name, and the bond's denomination.
- By March 13th, 2024, the ECI will have posted all of the information that the SBI gave on its official website.
- Returning electoral bonds that are still valid but haven't been cashed by political parties is required, and the issuing bank will reimburse buyers.

- **How do Electoral Bonds Work?**

- Electoral bonds are a 2018 initiative that permits political parties to receive anonymous finance.
- Similar to promissory notes or bearer bonds, these bonds serve as financial instruments that are intended to be contributed to political parties.
- The 2017 Budget Session was the initial announcement of the EBS. In order to facilitate the Electoral Bonds Scheme, it was subsequently notified in January 2018 that it was a source of political finance through revisions to the Finance Act of 2017, the Representation of the People Act of 1951, the Income Tax Act of 1961, and the Companies Act of 2013.
- The modifications eliminated the donation cap for corporations and the need to declare and keep a record of all contributions made through electoral bonds, allowing electoral bonds to circumvent many of the limitations on political party funding.

- **Contributions Made Using Election Bonds:**

- The State Bank of India (SBI) and its approved branches are the issuers of electoral bonds, which are available in several values of Rs 1,000, Rs 10,000, Rs 1 lakh, Rs 10 lakh, and Rs 1 crore.
- Donors can buy electoral bonds by using an account that complies with Know Your Customer (KYC) regulations, and then they can transfer the money to political parties.
- These bonds are available for purchase by individuals or corporations, and the donors' identities are kept secret from the bank and the political parties that receive them.
- Under the plan, donations made through electoral bonds were fully exempt from taxes.
- Notably, an individual or business is able to purchase an unlimited quantity of electoral bonds.

- **Qualifications for Election Bond Fund Receivability:**

- To be eligible to obtain electoral bonds, political parties must be registered under Section 29A of the RPA, 1951, and must have received at least 1% of the votes cast in the most recent Lok Sabha or state legislative assembly elections.

- **The recommendations of the Election Commission:**

- The Election Commission's 2004 report underlined how important it is for political parties to release their annual reports so that interested parties and the public can review them.
- Accurate accounting that have been audited and authorised by the Comptroller and Auditor General should be made available to the public.

- **Law Commission 1999:**

- declared full state funding of elections to be "desirable," provided that political parties are not allowed to accept outside funding.
- In its 1999 report, the Law Commission suggested modifying the RPA, 1951 and adding section 78A, which would have required political party finances to be maintained, audited, and published, along with fines for noncompliance.

**Source → The Hindu**

## 2 - Relations between India and the UAE:

### GS II

#### International relations

- **Context:**
- India and the United Arab Emirates (UAE) have recently inked eight agreements to strengthen collaboration in important domains like investments, trade in electricity, and digital payment systems.
- **What are the main points of the agreement that India and the UAE signed?**
- **Digital Payment Platform Interlinking:**
- **Linking AANI and UPI together:**
- The two nations inked agreements to connect their respective digital payment networks, AANI (UAE) and UPI (India).
- This would improve financial connection and collaboration by making cross-border transactions between India and the UAE easier and more frictionless.
- **Connecting Domestic Credit/Debit Cards (JAYWAN and RuPay):**
- A deal to integrate domestic debit and credit cards was struck by both nations: RuPay (India) and JAYWAN (UAE).
- It will improve RuPay's widespread popularity in the United Arab Emirates and is a significant step towards fostering financial sector collaboration.
- The digital RuPay credit and debit card stack serves as the foundation for UAE's domestic card, JAYWAN.
- **Treaty on Bilateral Investment:**
- The Bilateral Investment Treaty (BIT), which was signed by both nations, is thought to be a "Key Enabler" for future investment in both nations.
- UAE has made large investments in India's infrastructure market.

- UAE ranked as India's fourth-largest foreign direct investment (FDI) investor in 2022–2023. It has promised to put up USD 75 billion towards infrastructure development in India.
- The Middle East-India Economic Corridor (IMEC) is an intergovernmental framework agreement.
- By fostering cooperation between India and the UAE, it seeks to increase regional connectivity. In September 2023, the IMEC was unveiled in New Delhi during the G20 leaders' conference.

- **Collaboration in Energy:**

- Additionally, agreements on electrical interconnection and trade were inked by the two parties, which "opens new areas of collaboration in the field of energy, including energy security and energy trade."
- India is increasingly signing long-term LNG contracts, with the United Arab Emirates being one of the major suppliers of LPG and crude.

- **Collaboration Across Cultures:**

- To restore and preserve historical information, the two nations signed a "cooperation protocol between the National Archives of the two countries."
- The Maritime Heritage Complex in Lothal, Gujarat, was intended to be supported by both nations.
- India expressed gratitude to the UAE for providing land for the building of the BAPS Temple in Abu Dhabi, highlighting the temple's significance as a representation of the friendship and cultural ties between the two countries.

- **Development of Port Infrastructure:**

- RITES Limited and the Gujarat Maritime Board have signed agreements with Abu Dhabi Ports Company to improve port infrastructure and connectivity between the UAE and India.
- Bharat Mart
- The Indian Prime Minister laid the foundation stone for Bharat Mart, which will include retail, warehousing, and logistics facilities at the Jebel Ali Free Trade Zone in Dubai.
- Bharat Mart might potentially play a vital role in encouraging the exports of India's micro, small and medium sectors by providing them with a platform to reach overseas clients in the Gulf, West Asia, Africa and Eurasia.

- **What is BAPS Temple?**

- BAPS (Bochasanwasi Akshar Purushottam Swaminarayan Sanstha) temples are religious and cultural centres linked with the Swaminarayan Sampradaya, a Vaishnava sect of Hinduism.
- The doctrine of Swaminarayan Sampradaya was given by Bhagwan Swaminarayan, which is firmly rooted in the traditional Hindu scriptures.

- BAPS has a network of around 1,550 temples across the world, including the Akshardham temples in New Delhi and Gandhinagar, and Swaminarayan temples in London, Houston, Chicago, Atlanta, Toronto, Los Angeles, and Nairobi.
- **Features:**
  - Traditional Architecture: The Abu Dhabi temple is a traditional stone Hindu temple with seven shikhars. Built in the traditional Nagar style, the temple's front panel depicts universal values, stories of harmony from different cultures, Hindu spiritual leaders and avatars.
  - The height of the temple is 108 ft, length 262 ft and width 180 ft. While the external facade uses pink sandstone from Rajasthan, the interior uses Italian marble.
- **Architectural Features:**
  - Non-ferrous material (which resists corrosion) has been used in the temple.
  - While many different types of pillars can be seen in the temple, such as circular and hexagonal, there is a special pillar, called the 'Pillar of Pillars', which has around 1,400 small pillars carved into it.
  - Deities from all four corners of India have been featured in the temple. These include Lord Ram, Sita, Lakshman and Hanuman, Lord Shiv, Parvati, Ganpati, Kartikeya, Lord Jagannath, Lord Radha-Krishna, Akshar-Purushottam Maharaj (Bhagwan Swaminarayan and Gunatitanand Swami), Tirupati Balaji and Padmavati and Lord Ayappa.
  - Apart from 15 value tales from Indian civilisation, stories from the Maya civilisation, Aztec civilisation, Egyptian civilisation, Arabic civilisation, European civilisation, Chinese civilisation and African civilisation have been depicted.
- **How have India-UAE Bilateral Relations Been So Far?**
  - India and the UAE established diplomatic relations in 1972.
  - The greater push was achieved in bilateral relations when the visit of India's Prime Minister to the UAE in August 2015 marked the beginning of a new strategic partnership between the two countries.
  - Further, during the visit of the Crown Prince of Abu Dhabi to India in January 2017 as the chief guest at India's Republic Day celebrations, it was agreed that bilateral relations were to be upgraded to a comprehensive strategic partnership.
  - This gave momentum to launch negotiations for an India-UAE comprehensive economic partnership agreement.



- **Economic Relations:**

- The economic partnership between India and the UAE has flourished, with bilateral trade reaching USD 85 billion in 2022-23. The UAE is India's third-largest trading partner and second-largest export destination.
- The aim is to boost bilateral merchandise trade to above USD 100 billion and services trade to USD 15 billion in five years.
- Also, many Indian companies have set up manufacturing units either as joint ventures or in Special Economic Zones (SEZs) for cement, building materials, textiles, engineering products, consumer electronics, etc. in the UAE.
- Under India's revamped FTA strategy, the Government has prioritised at least six countries/regions to deal with, in which the UAE figures at the top of the list for an early harvest deal (or Interim Trade Agreement), the others are the UK, the EU, Australia, Canada, Israel and a group of countries in the Gulf Cooperation Council (GCC).
- The UAE too announced earlier its intent to pursue bilateral economic agreements with India and seven other countries (U.K., Turkey, South Korea, Ethiopia, Indonesia, Israel, and Kenya).

- **Cultural Relations:**

- The UAE is home to more than 3.3 million Indians, and Emiratis are well acquainted with and open to Indian culture. India participated as the Guest of Honour Country in Abu Dhabi International Book Fair 2019.
- Indian cinema/TV/radio channels are easily available and have good viewership; major theaters/cinema halls in the UAE screen commercial Hindi, Malayalam and Tamil films.
- The Emirati community also participates in our annual International Day of Yoga events and various schools of yoga & meditation centres are running successfully in the UAE.

- **Fintech Collaboration:**

- Initiatives such as the acceptance of the RuPay card in the UAE since August 2019 and the operationalization of a Rupee-Dirham settlement system demonstrate mutual convergence in digital payment systems.
- The framework for the use of local currencies for transactions between India and the UAE aims to put in place a Local Currency Settlement System (LCSS).
- The creation of the LCSS would enable exporters and importers to invoice and pay in their respective domestic currencies, which in turn would enable the development of an INR-AED (United Arab Emirates Dirham) foreign exchange market, according to the RBI.

- **Energy Security Cooperation:**

- The UAE plays a crucial role in India's energy security, with strategic oil reserves stored facility in Mangaluru, India.

- **Strategic Regional Engagement:**

- India and the UAE are actively engaged in various regional groupings and initiatives such as the I2U2 and the India-Middle East-Europe Economic Corridor (IMEC), reflecting shared interests and strategic alignment.

- **What are the Challenges in India-UAE Relations?**

- **Trade Barriers Impacting Indian Exports:**

- Non-tariff barriers (NTBs) like Sanitary and Phytosanitary (SPS) measures and Technical Barriers to Trade (TBT), notably mandatory Halal certification, have impeded Indian exports, particularly in sectors such as poultry, meat, and processed foods.
- These barriers have led to a significant decline in processed food exports to the UAE by almost 30% in recent years, according to a report from India's Ministry of Commerce and Industry.

- **Chinese Economic Influence in the UAE:**

- China's "Cheque Book Diplomacy," characterized by offering low-interest loans, has overshadowed Indian economic endeavors in the UAE and the broader Middle East.

- **Challenges of the Kafala System:**

- The Kafala system in the UAE, which grants employers considerable power over immigrant labourers, especially those in low-wage jobs, presents significant human rights concerns.
- Instances of passport confiscation, delayed wages, and poor living conditions underscore the challenges faced by migrant workers under this system.

- **Concerns Over UAE's Financial Support to Pakistan:**

- The UAE's substantial financial aid to Pakistan raises apprehensions about the potential misuse of these funds, considering Pakistan's history of sponsoring cross-border terrorism against India.

- **Diplomatic Balancing Act Amid Regional Conflicts:**

- India finds itself in a delicate diplomatic position due to the ongoing conflict between Iran and Arab nations, notably the UAE.
- The recent outbreak of war between Israel and Hamas further aggravates the challenges as it runs the proposed IMEC into rough weather.
- **The Way Ahead:**
- India and the UAE should work together to address non-tariff barriers that impede Indian exports, particularly in sectors such as processed foods. Both countries can engage in dialogues to streamline regulations and facilitate smoother trade flows.
- India can boost its economic presence in the UAE by increasing investments in key sectors and exploring opportunities for joint ventures and partnerships. Fostering a conducive business environment and promoting entrepreneurship can attract more Indian businesses to the UAE.
- India and the UAE can collaborate to counter Chinese economic influence in the region by promoting transparency, sustainability, and fair business practices.
- Both countries should work towards improving the rights and welfare of migrant workers in the UAE, including reforming the Kafala system. Ensuring fair wages, decent living conditions, and protecting workers' rights.

Source → *The Hindu*

LAKSHYA ACADEMY®

### 3 - Farmers Protest 2.0 and MSP:

#### GS III

#### Agriculture related issues

- **Context:**
- Farmers from Punjab, Haryana, and Uttar Pradesh are marching towards Delhi in the 'Delhi Chalo' protest, demanding legal guarantees for the Minimum Support Price (MSP).
- In 2020, farmers protested against three farm laws passed by the government, at Delhi borders, leading to their repeal in 2021.
- These laws were -- The Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, The Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Act, and The Essential Commodities (Amendment) Act.

- **What are the Key Demands of Farmers?**

- The headline demand in the farmers' 12-point agenda is for a law to guarantee Minimum Support Price (MSP) for all crops, and the determination of crop prices in accordance with the Dr M S Swaminathan Commission's report.
- The Swaminathan Commission Report states that the government should raise the MSP to at least 50% more than the weighted average cost of production. It is also known as the C2+ 50% formula.
- It includes the imputed cost of capital and the rent on the land (called 'C2' ) to give farmers 50% returns.
- Imputed cost is used to account for the opportunity cost of using resources like land, labour, and capital.
- The imputed cost of capital accounts for the interest or returns that could have been earned if the capital invested in farming were instead invested elsewhere.

- **The other demands are:**

- Full debt waiver for farmers and labourers;
- Implementation of the Land Acquisition Act of 2013, with provisions for written consent from farmers before acquisition, and compensation at four times the collector rate.
- A collector rate is the minimum value at which a property can be registered when buying or selling it. They serve as a reference point to prevent the undervaluation of properties and tax evasion.
- Punishment for the perpetrators of the October 2021 Lakhimpur Kheri killings;
- India should withdraw from the World Trade Organization (WTO) and freeze all free trade agreements (FTAs).
- Pensions for farmers and farm labourers.
- Compensation for farmers who died during the Delhi protest in 2020, including a job for one family member.
- The Electricity Amendment Bill 2020 should be scrapped.
- 200 (instead of 100) days' employment under MGNREGA per year, the daily wage of Rs 700, and the scheme should be linked with farming;
- Strict penalties and fines on companies producing fake seeds, pesticides, fertilisers; improvements in seed quality;
- National commission for spices such as chilli and turmeric.
- Ensure the rights of indigenous peoples over water, forests, and land.

- **What is the Government's Response?**

- In November 2021, after repealing the three farm laws, the Indian Government announced to

form a committee on MSP. Its purpose was to discuss MSP, promote zero-budget natural farming, and decide on cropping patterns. This committee was formed in July 2022 and hasn't yet produced any report.

- During a recent meeting between Cabinet ministers and farmer union leaders the government offered to create a new committee with representatives from agriculture, rural, and animal husbandry ministries.
- This committee would address farmers' demand for MSP for all crops. The government promised that this new committee would meet regularly and work within a set timeframe.

- **What are the Challenges with the Legalisation of MSP?**

- **Forced Procurement:**

- Mandating the government to procure all produce at MSP could lead to overproduction, causing wastage of resources and storage problems.
- It might also distort cropping patterns as farmers might prioritise crops with MSP over others, affecting biodiversity and soil health.
- If the government has to buy the produce because there are no buyers offering the MSP, it doesn't have the resources to store and sell large amounts of it.

- **Discrimination Among Farmers:**

- Such a law could create disparities between farmers growing supported crops and those growing others.
- Farmers growing unsupported crops may face disadvantages in terms of market access and government support.

- **Pressure From Traders:**

- During peak harvest times, prices for agricultural produce are typically at their lowest, benefiting private traders who buy at these times. Because of this, private traders resist any legal assurance of MSP.

- **Financial Burden:**

- The government might face financial strain due to the obligation to procure all crops at MSP, leading to payment arrears and fiscal challenges.

- **Societal Implications:**

- Distorted cropping patterns and excessive procurement could have broader societal implications, affecting food security, environmental sustainability, and overall economic stability.

- **What Initiatives can be Taken to Protect Income of Farmers instead of Legalising MSP?**

- Experts suggest giving money directly to farmers instead of just relying on MSP. This way, farmers get a stable income no matter how the market is.
- It's about fixing the bigger problem of farmers not having enough money, rather than just guaranteeing prices for certain crops.

- **Implementing direct income support could involve various strategies, such as:**

- **Direct Cash Transfers:** Providing direct cash payments to farmers to supplement their income and alleviate financial stress.
- The Government can think of Expanding the PM KISAN Scheme by rolling in the entire price support package and fertiliser subsidy and into much higher PM-KISAN payments to farmers in a revenue-neutral manner.
- This scheme currently provides farmers with Rs 6000 per year in direct cash payments.

- **Insurance Schemes:**

- Introducing insurance schemes that compensate farmers for income losses due to factors like crop failure, price volatility, or adverse weather conditions.
- Offering subsidies or grants to support agricultural inputs, equipment, technology adoption, and diversification into higher-value crops or alternative livelihoods.
- **Price-Difference Payment Option:** The government can also consider paying the price difference between the MSP and the rate at which the farmers sell.
- Haryana and Madhya Pradesh have tried this option under a scheme called Bhavantar Bharpai Yojana (price-difference compensation scheme).
- Under the MP's 'Bhavantar Bhugtan Yojana', the state government paid farmers the difference between MSP for crops and their average market rates. Farmers got money if they had to sell their produce in the open market below MSP.

- **What are the Concerns of Farmers Related to WTO and FTAs?**

- **Market Access:**

- Farmers are concerned that the FTAs and WTO regulations lead to increased competition from cheaper agricultural imports, which can undercut domestic prices and harm local producers.
- Farmers perceive these agreements as favouring multinational corporations and large-scale agribusinesses over small and medium-sized farmers.

- **Imported Goods:**

- These agreements lead to the influx of subsidised agricultural products from other countries, which can flood the domestic market and depress prices for locally produced crops.
- This can make it difficult for Indian farmers to compete and sustain their livelihoods.
- **Impact on Farming Practices:**
  - International trade agreements also impose regulations or standards on agricultural practices that Indian farmers find burdensome or incompatible with their traditional farming methods.
  - This could include requirements related to pesticide use, genetically modified organisms (GMOs), or environmental standards.
- **Sovereignty and Autonomy:**
  - Some farmers view withdrawal from WTO and freezing of free trade agreements as a way to regain sovereignty and control over India's agricultural policies.
  - They argue that such agreements limit the government's ability to implement policies that prioritise the interests of small-scale farmers and ensure food security for the population.
- **What is the Current State of MSP and Farmers Demand?**
- **Current MSP vs. Farmer Demands:**
  - The MSP for wheat set by the government for the Rabi Marketing Season 2024-25 is Rs 2,275 per quintal, which is higher than the cost demanded by farmers, i.e., C2 plus 50%.
  - However, the MSP is based on the formula A2+FL, which includes only paid-out costs incurred by farmers, resulting in a lower MSP compared to C2 plus 50%.
- **CACP Recommendations and Methodology:**
  - The Commission for Agricultural Costs & Prices (CACP) recommends MSP based on the A2+FL formula, which considers only paid-out costs and imputed value of family labour.
  - This is different from the C2 formula, which includes additional factors like rental value of owned land and interest on fixed capital.
- **Return over Cost of Production:**
  - For wheat in Punjab, the cost of production (C2) is Rs 1,503 per quintal, and the Minimum Support Price (MSP) is Rs 2,275 per quintal.
  - This means farmers receive Rs 772 per quintal more than the cost of production, which is a return of 51.36% over C2.

## 4 - Marine Heatwaves in Arctic Ocean:

### GS I

#### Geography related issues

- **Context:**
- Recently, a new study has been published in the journal Nature Communications titled- ‘Arctic marine heatwaves forced by greenhouse gases and triggered by abrupt sea-ice melt’, which shows that since 2007, unprecedented Marine Heatwave (MHW) events have occurred over the Arctic Ocean.
- **What are the Key Highlights of the Study?**
- **Arctic Marine Heatwaves (MHWs) Characteristics:**
- There have been 11 MHW events in the Arctic from 2007 to 2021, characterized by prolonged high Sea Surface Temperatures (SST).
- These events coincide with record declines in Arctic Sea ice.
- In 2022, the Arctic saw severe and extreme marine heatwaves in the Laptev and Beaufort seas from spring to autumn, according to the State of the Global Climate 2022 report.
- **Decrease in Ice Cover:**
- The perennial sea ice cover over the Arctic Ocean, known to reflect solar radiation, has seen a marked decrease in both summer and winter since the mid-1990s.
- Since 2007, there has been a pronounced regime shift from a thicker and deformed ice cover to a thinner and more uniform one.
- The thin ice is less durable and melts more quickly, allowing incoming solar radiation to warm the water’s surface.
- **Drivers of Arctic MHWs:**
- Arctic MHWs primarily occur over marginal seas, including the Kara, Laptev, East Siberian, and Chukchi seas.
- These regions are characterized by shallow mixed-layer depths and predominantly first-year ice cover, creating conditions conducive to MHW development.



- First-year ice refers to sea ice that forms and grows during a single winter season and typically melts away completely during the following summer melt season.
- Abrupt sea ice retreat is another concern as it could trigger marine heatwave events.
- **Impact of Green House Gas (GHG):**
  - Without GHGs, marine heatwaves exceeding 1.5°C couldn't happen.
  - GHGs are a sufficient cause for moderate marine heatwaves, with a 66-99% probability.
- **Long-Term Trends:**
  - There is a pronounced long-term warming trend in the Arctic, with SST increasing at a rate of 1.2°C per decade from 1996 to 2021.
  - Over the last two decades, there has been an increase in the frequency of extreme SST events in the eastern Arctic marginal seas.
- **Concerns:**
  - The study warned of dramatic consequences of Marine heatwaves like impact on food chains, fish stocks and reduction of overall biodiversity.
- **Technique Used in the Study:**
  - The study employs an Extreme Event Attribution (EEA) technique to assess the role of Greenhouse Gas (GHG) forcing in Arctic MHWs.
  - The EEA technique determines the extent to which human-induced climate change influences the likelihood and severity of specific extreme weather events.
- **What are Marine Heat Waves (MHWs)?**
  - An MHW is an extreme weather event. It occurs when the surface temperature of a particular region of the sea rises to 3 or 4 degree Celsius above the average temperature for at least five days.
  - According to the National Oceanic and Atmospheric Administration (NOAA), MHWs can last for weeks, months or even years.
- **Impacts:**
  - Impact on Ocean: An increase of 3 or 4 degrees Celsius in average temperatures can be catastrophic for marine life.

- MHWs along the Western Australian coast in 2010 and 2011 caused some “devastating” fish kills, the sudden and unexpected death of many fish or other aquatic animals over a short period and mainly within a particular area.
- MHWs destroyed kelp forests and fundamentally altered the ecosystem of the coast.
- Kelps usually grow in cooler waters, providing habitat and food for many marine animals.
- Leading to Coral Bleach: In 2005 high ocean temperatures in the tropical Atlantic and Caribbean led to a massive coral bleaching event.
- Corals are very sensitive to the temperature of the water in which they live. When water gets too warm, they expel the algae known as zooxanthellae, living in their tissues, causing them to turn entirely white. This is called coral bleaching.
- Impact on Humans: Higher ocean temperatures, which are associated with MHWs, can make storms like hurricanes and tropical cyclones stronger.
- With warmer temperatures, the rate of evaporation escalates and so does the transfer of heat from the oceans to the air. When storms travel across hot oceans, they gather more water vapour and heat.
- This results in more powerful winds, heavier rainfall and more flooding when storms reach the land — meaning heightened devastation for humans.

- **What are the other Impacts of Marine Heatwaves?**

- **Affect the Structure of Ecosystem:**

- Marine heatwaves influence the composition of ecosystems by favouring certain species while inhibiting others.
- They have been linked to widespread mortality among marine invertebrates and can compel species to alter their behaviour, potentially exposing wildlife to greater risks of harm.

- **Change Habitat Ranges:**

- Marine heatwaves can change the habitat ranges of certain species, such as the spiny sea urchin off southeastern Australia which has been expanding southward into Tasmania at the expense of kelp forests which it feeds upon.

- **Economic Losses:**

- Marine heatwaves can cause economic losses through impacts on fisheries and aquaculture.

- **Affect Biodiversity:**

- Biodiversity can be drastically affected by marine heatwaves.
- The previous marine heatwave led to the bleaching of 85% of corals in the Gulf of Mannar near the Tamil Nadu coast.

- **Increase the Risk of Deoxygenation and Acidification:**
- Often, they occur alongside other stressors such as ocean acidification, deoxygenation, and overfishing.
- In such cases, MHWs not only further damage habitats but also increase the risk of deoxygenation and acidification.

*Source → The Hindu*



Лякшья Академи®