

**ENVIRONMENT AND CLIMATE CHANGE**

**CONTEXT: Melting of West Antarctica's Ice Sheet, Processes Driving West Antarctic Ice Sheet Melting, Actions that India has Taken Related to Antarctica, Conservation.**

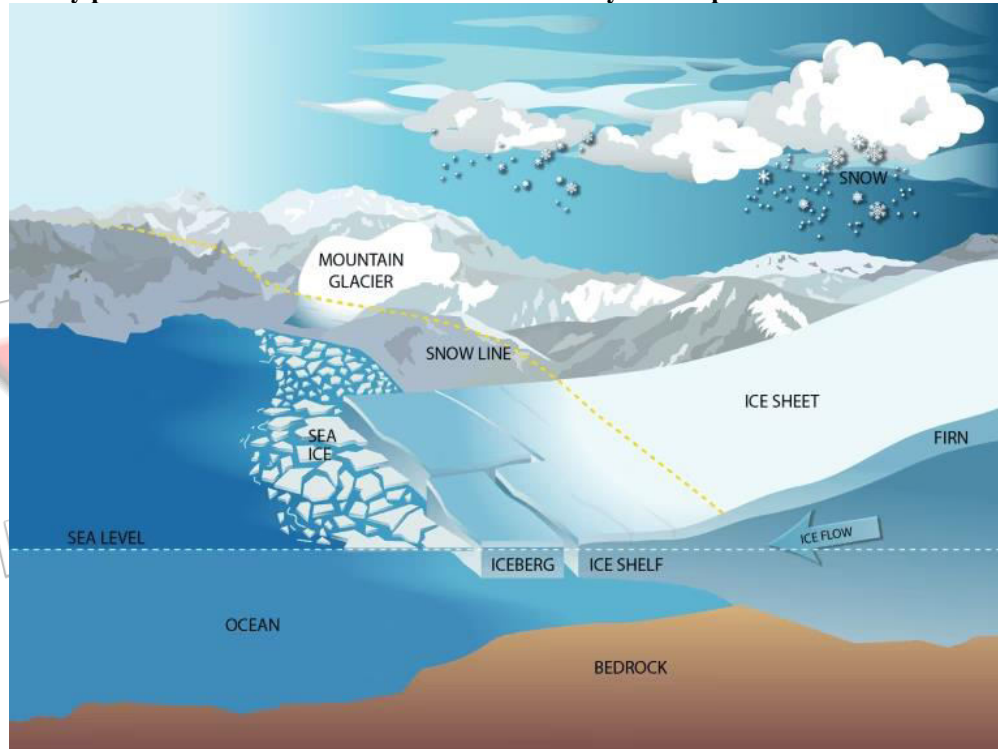
**WHY IN NEWS**

- Unsettling forecasts regarding the West Antarctic ice sheet's impending melting as a result of warming ocean waters have been revealed by a recent study.
- The consequences of this melting are immense, as it could raise the average sea level by 5.3 meters globally, which would be disastrous for millions of people living in coastal cities that are at risk across the globe, including India.

**How do ice sheets affect sea levels and what do they represent?**

- About: A mass of glacial ice that encompasses an area greater than 50,000 square kilometres is known as an ice sheet.
- Huge tracts of land are covered by an ice sheet, like the West Antarctic ice sheet, which contains a significant amount of freshwater.
- Approximately two thirds of the freshwater on Earth is contained in the two largest ice sheets in the world, Greenland and Antarctica combined.
- The global mean sea level rises or falls in direct proportion to the mass loss or gain of ice sheets.

**Ninety percent of Earth's total ice volume is currently made up of the Antarctic ice sheet.**



- The following processes drive the melting of the West Antarctic Ice Sheet: ice shelves stabilize the land-based glaciers directly behind them. The process of ice sheets melting involves multiple mechanisms.
- The eroding of ice shelves—the margins of an ice sheet floating on the ocean—is one important process caused by warm ocean waters.
- Sea level rise results from the glaciers behind them accelerating as these ice shelves thin or break apart, releasing more ice into the ocean.
- Sea ice, the free-floating ice that encircles the polar regions, is not the same as ice shelves and ice sheets. When seawater freezes, sea ice forms.

**Present Patterns and Discoveries:**

- The latest data, which show a considerable, pervasive warming of the Amundsen Sea and increasing ice shelf melting in all scenarios examined, is alarming.
- Sea level rise brought on by this anticipated melting will unavoidably have a significant effect on coastal communities around the globe.

#### **Implications for India and Vulnerable Coastal Regions:**

- India is especially vulnerable to sea level rise due to its long coastline and large population.
- If coastal communities cannot fortify against rising seas, they may be forced to relocate or become refugees due to climate change, underscoring the need for adaptive strategies like the construction of protective infrastructure.

#### **What Actions has India Taken Related to Antarctica?**

- On September 12, 1983, India obtained consultative status after ratifying the Antarctic Treaty.
- India's top research and development organization, the National Centre for Polar and Ocean Research (formerly the National Centre for Antarctic and Ocean Research), is in charge of the nation's scientific endeavours in the Southern and Polar Oceans.
- The Indian Antarctic Act of 2022 prohibits the introduction of non-native birds into Antarctica and governs travel there as well as activities. It also protects minerals and native plants.
- India currently operates Maitri and Bharati, two research stations in Antarctica.
- The first station to be constructed prior to 1985 was Dakshin Gangotri, but it is currently closed.

#### **Way Forward**

- Strict observance of the Antarctic Treaty and related agreements is necessary for the protection of the continent's distinctive ecosystems and environment.
- This entails controlling human activity, disposing of waste, and reducing environmental impact.
- Innovative Materials and Infrastructure: Creating more environmentally friendly materials and infrastructure with a minimum of impact for research stations and ships operating in the harsh polar conditions.
- Geoengineering Techniques: To possibly slow down the melting of ice, researchers are investigating how to manage solar radiation. Controlling solar radiation could be a powerful tool in the fight against ice sheet degradation in the case of moderate emissions.
- Before being used, these experimental techniques must be further examined for efficacy and environmental effects.

### **ECONOMY**

#### **Context: assessing employee productivity**

#### **Why in news?**

Last week, N.R. Narayana Murthy, the founder of Infosys, ignited a controversy by pushing young Indians to put in 70 hours a week at work. He cited Germany and Japan as examples of nations that prospered because their people put in more hours and worked harder to rebuild their countries after the Second World War. He added that one of the lowest worker productivity rates in the world is found in India.

#### **Labour productivity as opposed to worker productivity**

- The "work" in worker productivity refers to mental activities, whereas the "work" in labour productivity is primarily related to manual activities. This is the only conceptual distinction between the two.
- The amount of output value per unit of labour (time) cost is typically used to calculate an activity's productivity at the micro level. Macro economically, it is expressed as the labour-output ratio or the change in Net Domestic Product (NDP) per worker for each sector (assuming eight hours of work per day).
- However, it can be very challenging to measure the value of the output independently in some types of services, particularly those involving intellectual labour, so worker income is typically used as a proxy for efficiency

#### **When used more sophisticatedly, productivity is a skill rather than a time-related attribute.**

- Human capital, which includes things like education, training, diet, and overall health, improves workers' capacity to produce more value in the same amount of time.

- According to this interpretation, fewer working hours don't lower the value of the output generated; instead, they improve workers' real leisure and quality of life, even though nominal wages stay the same and the economy continues to add value.

#### **Relationship between economic growth and worker productivity**

- Although any sector's productivity growth is likely to have an impact on value added and the accumulation or expansion of the economy, there may be a complicated relationship between the two.
- This may or may not be true if by prosperity we mean the prosperity of the workers.
- It is observed that the productivity of the wealthiest individuals does not fully account for the rise in their incomes or prosperity.
- Conversely, this prosperity is either associated with the "super managerial" class, who seem to be setting their own outrageous compensation packages quite arbitrarily and unrelated to their productivity, or with hereditary transfers of wealth upon which the rich are earning yields (he called this patrimonial capitalism).

#### **India and labour force output**

- Given that incomes are frequently used as a stand-in for productivity, it is false to say that worker productivity in India is low.
- Indian workers are among the hardest working people in the world, according to a multinational workforce management company with headquarters in the United States.
- However, an international e-commerce platform called Picodi.com has noted that India is among the countries with the lowest average monthly wages worldwide.
- Economic reforms have led to an increase in informal employment in both the organized and unorganized sectors.
- The questionable assertion of greater formalization has been restricted to adding activities to the tax system. However, this hasn't had any effect on raising labor standards on working conditions

#### **Way ahead**

- Japan and Germany cannot be compared with respect to the quantity and calibre of their labour forces, their technological advancements, or their socio-cultural and political systems.
- Any arbitrary comparison would only result in questionable analytical conclusions and incorrect policy recommendations because India is a special case.
- The path to a more desirable and sustainable outcome is to increase social investments while concentrating on investigating domestic consumption potential for increased productivity with a human-centric assessment of development achievements.

### **PRELIM FACTS**

#### **1. The WHO Regional Committee for South-East Asia is in its 76th session.**

- During the Ministerial Roundtable Conference at the 76th session of the WHO Regional Committee for South-East Asia in New Delhi, emphasis was placed on investing in Primary Health Care (PHC) as the most inclusive, equitable, and economical way to achieve Universal Health Coverage.
- At the meeting, a declaration known as the Delhi Declaration was signed, emphasizing the importance of primary health care in the pursuit of universal health coverage.
- It was stated that India's robust health system depends on a "whole of government" and "whole of society" approach with the aim of enhancing essential health services and health systems to pre-pandemic levels, reiterating the government of India's vision of "Antyodaya" (the principle of leaving no one behind).
- It was highlighted how important Ayushman Bharat Health and Wellness Centres (AB-HWCs) are, as they are revolutionizing the provision of all-inclusive primary health care services.
- Saima Wazed Elected as WHO Regional Director for South-East Asia
- During the 76th meeting of the WHO Regional Committee for Southeast Asia, Saima Wazed, a Bangladeshi national, was chosen to serve as the organization's regional director for South-East Asia.
- The WHO's governing body in the region is the Regional Committee for South-East Asia.
- The Democratic People's Republic of Korea, Bangladesh, Bhutan, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, and Timor-Leste are the eleven member states that make up the WHO Southeast Asia Region. The eleven Member States of WHO each have country offices.
- The main office of the WHO Regional Office for South-East Asia is located in New Delhi, India.

## 2. Chinese Antarctic Fleet Departs for New Research Station Construction

- A cargo ship and two Chinese icebreaker research vessels have sailed for Antarctica.
- The main goal of the mission is to finish building China's fifth research station in the Antarctic, which is located on Inexpressible Island close to the Ross Sea.
- Off the coast of Antarctica lies the Ross Sea. It is among the world's last remaining intact marine ecosystems.
- China maintains four research stations in Antarctica: Taishan (2014), Kunlun (2009), Zhongshan (1989), and the Great Wall (1985).
- An icebreaker is a ship that is specifically built to move through ice-covered waters and give other boats a safe passage.
- India operates two research stations in Antarctica: 'Maitri' and 'Bharati.'

## 3. Culmination of Azadi Ka Amrit Mahotsav

- At the end of the 'Meri Maati Mera Desh' campaign, the Indian Prime Minister declared Azadi Ka Amrit Mahotsav to be over.
- The Dandi Yatra led by Mahatma Gandhi served as the model for the Azadi Ka Amrit Mahotsav, which officially began on March 12, 2021.
- Interestingly, the culmination of this festivity fell on October 31, 2023, which also happened to be Sardar Vallabhbhai Patel's birthday.
- The Amrit Vatika and Amrit Mahotsav Memorial's foundation stone was also ceremoniously laid at the same event.
- The "Meri Maati Mera Desh" campaign honors the brave people who gave their lives in defense of the country.
- Through cooperative efforts at different levels, the campaign includes a range of initiatives, including building monuments, collecting pledges, planting native saplings, and holding ceremonies to remember and honour freedom fighters and their families.

## 4. Japan-India Semiconductor Supply Chain Partnership

**Context: The Indian Ministry of Electronics and Information Technology and the Japanese Ministry of Economy, Trade, and Industry have signed a Memorandum of Cooperation (MoC).**

- With an emphasis on the Japan-India Semiconductor Supply Chain Partnership, its goal is to fortify bilateral collaboration in improving the semiconductor supply chain between the two nations.
- In order to create a robust semiconductor supply chain and capitalize on each nation's advantages, it promotes collaboration between governments and business
- The MoC intends to improve cooperation with Japan in the semiconductor industry and is a component of India's larger initiatives for international information technology cooperation. It's considered a step toward the "India-Japan Digital Partnership" and is regarded as a step toward improving the mutually beneficial resilience of the semiconductor supply chain.
- A substance with electrical conductivity that falls between that of an insulator and a conductor is called a semiconductor. Semiconductors can be pure elements like silicon or germanium, or they can be compounds like gallium arsenide.

### properties

- Electrical conductivity: The electrical conductivity of semiconductors lies in the middle of that of an insulator, like glass, and a conductor, like copper.
- Resistivity: As a semiconductor's temperature increases, its resistivity decreases.
- Conductivity: Chemical treatment can be used to improve the conductivity of semiconductors.

### Applications

- Computers and other electronic devices are built on semiconductors.
- Improvements in semiconductor technology have resulted in smaller, faster, and more dependable electronic devices.

## 5. Venus had Earth-like plate tectonics billions of years ago

**Context: A new study suggests that Venus, despite being a scorching wasteland, may have once had plate tectonics similar to those on early Earth.**



- Venus's current atmosphere and surface pressure can only have been the consequence of early plate tectonics, according to research that uses computer modeling and atmospheric data from Venus.
- Because plate tectonics creates habitable environments and stabilizes surface temperatures, it is vital to life.
- According to the study, Venus experienced plate tectonics between 4.5 and 3.5 billion years ago, which is comparable to Earth's plate tectonics but with less plate involvement and limited plate movement.

### Significance

- This discovery indicates that both planets were more similar than previously believed and suggests that there may have been early microbial life on Venus.
- Additionally, the study raises the possibility that planets' habitability may be impacted by shifts in and out of distinct tectonic states.
- The study offers evidence that atmospheres can reveal information about the early history and formation of a planet.
- The results of the study could affect our knowledge of other planets and moons, such as Jupiter's Europa, which exhibits plate tectonics similar to that of Earth.
- The findings pave the way for additional research into Venus's demise and its possible effects on Earth's habitability.

### ANSWER WRITING

#### Q. What role does the Preamble play in guiding the interpretation and evolution of the Constitution, especially in the context of landmark judicial decisions?

The Preamble serves as an introduction or preface to the Constitution, outlining its guiding principles and goals. It also identifies the Indian populace as the source of its power. It is crucial in directing how the Constitution is interpreted and developed.

#### The following are a few ways that the Preamble has impacted constitutional jurisprudence:

**Inspiration:** The Preamble serves as a model for interpreting the Constitution in a way that is consistent with its essential ideas. It directs judges to render decisions that uphold justice, liberty, equality, and fraternity even in cases where specific issues are not specifically addressed by the Constitution.

For example, the Supreme Court ruled in *Keshavananda Bharati v. State of Kerala* (1973) that the Preamble is a part of the Constitution and that it reflects the fundamental framework, which is unchangeable.

**Changing the Power Limit:** The Supreme Court's decision in the historic *Kesavananda Bharati* case, which established that while Parliament has the authority to amend the Constitution, its fundamental principles, which include the values expressed in the Preamble, cannot be changed or destroyed. This ruling serves as a check on any attempt to change the Constitution in a way that is inconsistent with its core principles.

**Extending Rights:** The judiciary has utilized the Preamble to enlarge the application of other constitutional provisions as well as fundamental rights. Drawing on the Preamble's emphasis on liberty and life, the Supreme Court held in the *Maneka Gandhi* case (1978) that the right to travel abroad is an essential component of the right to life and personal liberty guaranteed by Article 21.

**Social Justice and Equality:** The Preamble's dedication to these two ideals has proven to be crucial in the interpretation of numerous clauses pertaining to affirmative action, reservation policies, and the defence of underprivileged populations. Affirmative action has been upheld by landmark rulings such as the *Mandal Commission* case (*Indra Sawhney v. Union of India*, 1992), which drew support from the Preamble.

**Changing Social Values:** The way the Constitution is interpreted changes along with society. The Preamble offers a framework that is adaptable to changing society values, enabling constitutional principles to be modified. For instance, the Preamble's dedication to equality and fraternity had an impact on the expansion of LGBTQ+ rights in *Navtej Singh Johar v. Union of India* (2018).

#### Conclusion:

The Preamble is essential for directing how the Constitution is interpreted and changed over time. It serves as a guide for judges, assisting them in making sure that the Constitution upholds the goals of protecting justice, liberty, equality, and fraternity for all people despite shifting circumstances and obstacles.

**MCQs**

- Consider the following statements regarding the Bharat Stage Emission Standards.
  - The nation's fuel standard is determined by the Central Pollution Control Board.
  - The European emission standards serve as the foundation for the BS rules.
  - Fuel classified as BS-VI will reduce sulphur content from existing BS-IV limits by a factor of five.

How many of the above statements is/are correct?

a) 1 only                      **b) 2 and 3**  
c) 1 and 3                      d) 1,2 and 3
- With reference to Purchasing Manager Index (PMI), consider the following statements
  - It is a survey-based measure that asks the respondents about changes in their perception about key business variables as compared with the previous month.
  - If PMI of the previous month is higher than the PMI of the current month, it represents that the economy is expanding.
  - It is usually released at the start of every month.

How many of the above statements is/are correct?

a) 1 only                      b) 2 and 3  
**c) 1 and 3**                      d) 1,2 and 3
- The DASH diet, which has been making news lately, focuses on
  - Reducing hypertension,
  - lowering sodium intake,
  - lowering kidney-related illnesses,
  - d) all of the above**
- Consider the following statements regarding 'White Hydrogen'
  - Other names for white hydrogen include "natural," "gold," or "geologic."
  - With the use of sustainable energy sources, it is separated from snow molecules.
  - When used as a fuel, it emits zero CO<sub>2</sub>.

How many of the above statements is/are correct

a) 1 only                      b) 2 and 3  
**c) 1 and 3**                      d) 1,2 and 3
- Recently, 'Awaous Motla' was in the news. It is a species of
  - a) Fish**                      b) Amphibian
  - Butterfly                      d) Bat
- Consider the following statements regarding 'Kra-Isthmus'
  - It is in Malaysia and is the narrowest part of the Malay Peninsula.
  - It is bordered to the west by the Andaman Sea and to the east by the Gulf of Thailand.
  - The construction of the canal has started as a part of China's BRI project recently.

How many of the statements given above are correct?

**a) 2 only**                      b) 2 and 3  
c) 1 and 3                      d) 1,2 and 3
- Recently, which two cities of India have joined the UNESCO's Creative Cities Network?
  - a) Kozhikode and Gwalior**
  - Srinagar and Jaipur
  - Chennai and Varanasi
  - Mumbai and Hyderabad
- Consider the following statements with respect to 'UN Office for the Coordination of Humanitarian Affairs (OCHA)'
  - The United Nations Security Council created it to replace the United Nations Disaster Relief Coordinator (UNDRO).
  - It offers a venue for worldwide response actions to be coordinated in the immediate aftermath of a sudden-onset emergency.

a) 1 only                      **b) 2 only**  
c) 1 and 2                      d) None
- With reference to 'State Food Safety Index 2023', consider the following statements
  - Each year, the Food Safety and Standards Authority of India (FSSAI) releases the Index, an evaluation.
  - For assessment purposes, the states and UTs are divided into four categories: big states, small states, hilly states, and UTs.
  - With the exception of "Training and Capacity Building," every parameter showed a notable improvement over the previous year.

How many of the above-mentioned statement(s) are not correct?

a) 1 only                      b) 3 only  
c) 1 and 2                      **d) 2 and 3**
- Consider the following statements regarding Mewar School of painting.
  - The Mewar style of miniature painting is renowned for its complex tales, vivid colours, and immediate emotional appeal.
  - The Mewar style of art features court scenes that show the king and his courtiers.
  - Rarely did Mewari miniature painters sign their creations.

What number of the aforementioned claims is/are true?

a) Only one                      b) Only two  
**c) All three**                      d) None