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GS 2: POLITY, GOVERNANCE, SOCIAL JUSTICE, INTERNATIONAL RELATIONS/INSTITUTIONS

1. A mixed report card for the IMEC

Context: In September 2023, the ambitious transcontinental India-Middle East-Europe Corridor (IMEC) was announced on the sidelines of the G20 summit in New Delhi. The proposed corridor is expected to reduce the transit time between its eastern and western nodes by 40%, and costs by 30%, compared to transportation via the Suez Canal. These numbers may vary as the actual benefits may end up being on the lower side, but there is no denying that the new corridor, once operational, will be a game changer for the international maritime trade. Implementation on the northern part of the corridor is going to move slowly until the West Asian conflict subsides, while progress is faster on the eastern leg connecting the UAE and Indian ports.

India-Middle East-Europe Corridor (IMEC)

- **Overview:** Recently, the India-Middle East-Europe Economic Corridor (IMEC) Project was signed at the G20 Summit in New Delhi, which holds significant geopolitical and economic implications for India.
- **About:** The proposed IMEC will consist of Railroad, Ship-to-Rail networks and Road transport routes extending across two corridors; The East Corridor – connecting India to the Arabian Gulf, The Northern Corridor – connecting the Gulf to Europe. The IMEC corridor will also include an electricity cable, a hydrogen pipeline and a high-speed data cable.
 - *Signatories* - India, the US, Saudi Arabia, UAE, the European Union, Italy, France, and Germany.
 - *Ports to be Connected* - India: Mundra (Gujarat), Kandla (Gujarat), and Jawaharlal Nehru Port Trust (Navi Mumbai); Middle East: Fujairah, Jebel Ali, and Abu Dhabi in the UAE as well as Dammam and Ras Al Khair ports in Saudi Arabia; Europe: Piraeus port in Greece, Messina in South Italy, and Marseille in France.
 - *Objective* - It aims to create a comprehensive transportation network, comprising rail, road, and sea routes, connecting India, the Middle East, and Europe. It aims to enhance transportation efficiency, reduce costs, increase economic unity, generate employment, and lower Greenhouse Gas (GHG) emissions. It is expected to transform the integration of Asia, Europe, and the Middle East by facilitating trade and connectivity.
 - *Significance* - Upon completion, it would provide a “reliable and cost-effective cross-border ship-to-rail transit network to supplement existing maritime and road transports”.
- **Geopolitical and Economic Implications:** *Geopolitical* - Thwart to China's BRI, Integration Across Civilizations, Breaking Pakistan's Overland Connectivity Veto, Strategic Engagement with Arabian Peninsula, Promoting Intra-Regional Connectivity and Peace, India's Strategic Role in Africa.
Economic - Enhanced Trade Opportunities, Stimulated Industrial Growth, Job Creation, Energy Security and Resource Access, Facilitating Special Economic Zones (SEZs).
- **Challenges:** *Logistics and Connectivity Issues* - Developing a multimodal transport corridor involving rail, road, and sea routes spanning multiple countries requires complex logistical planning and coordination among stakeholders.
 - Missing Rail Links and Construction* - Significant portions of rail links are missing, especially in the Middle East, requiring substantial construction efforts and investment to complete the rail network.
 - Coordination among Multiple Countries* - Coordinating efforts, policies, and regulations among multiple countries with diverse interests, legal systems, and administrative procedures is a major challenge in realizing this cross-continental corridor.
 - Potential Opposition and Competition* - Opposition or competition from existing transport routes, especially Egypt's Suez Canal, which may see reduced traffic and revenue, could pose challenges and diplomatic hurdles.
 - Cost and Financing* - Estimating and securing adequate financing for the construction, operation, and maintenance of the corridor is a significant challenge. The costs for development are estimated to be substantial, and funding sources need to be identified.
- **Way Forward:** Achieving technical compatibility and standardisation in terms of gauges, train technologies, container dimensions, and other critical aspects across different countries is vital for seamless operations. Balancing the geopolitical interests of participating nations and addressing potential political sensitivities, especially regarding Israel, is crucial for smooth implementation.

Addressing environmental impact concerns, ensuring sustainability, and adhering to green and eco-friendly practices in construction and operation are critical aspects of the project.

GS 3: ECONOMY, ECOLOGY, SCIENCE & TECHNOLOGY, DEFENCE, SECURITY AND DISASTER MANAGEMENT

2. CO₂ emissions set to rise 0.8% this year, India's contribution to go up by 4.6%

Context: While countries have congregated in Baku, Azerbaijan to deliberate on the ways to cut carbon emissions, a peer-reviewed report by a scientist collective has found that carbon emissions are set to rise 0.8% in 2024 over last year's. This is lower than the 1.2% rise in 2023, over that of 2022. The global per-capita fossil CO₂ emissions in 2023 were 1.3 tonnes of carbon per person per year. They were 3.9 in the U.S., 2.3 for China, 1.5 for the EU-27 and 0.6 for India. Emissions from coal, oil and gas in 2024 are expected to be slightly above their 2023 levels (by 0.2%, 0.9% and 2.4%, respectively). Fossil emissions by the end of the year are expected to increase by 4.6% in India.

Key points

- **Overview:** By the year-end, China is expected to emit 12 billion tonnes of carbon dioxide, compared with India's 3.2 billion tonnes and the United States 4.9 billion tonnes, which is a 0.6% decrease over the previous year.
- **Emissions from Major Economic Sectors:** Emissions can be split into five major economic sectors, Energy supply, industry, agriculture and Land use, land-use change and forestry (LULUCF), transport and buildings.
- **Mitigation Efforts:** If current policies and pledges continue, global warming will likely reach 3°C above pre-industrial levels by the end of the century. Implementing unconditional Nationally Determined Contributions (NDCs) could limit the rise to 2.9°C, while conditional NDCs might cap it at 2.5°C.
- **Net-Zero Pledges:** Although countries have made Net-Zero Pledges, none of the G20 Countries are reducing emissions at a pace consistent with their targets. Even in the most optimistic scenario, the likelihood of limiting warming to 1.5°C is only 14%.
- **Progress and Challenges:** Policy progress since the Paris Agreement has reduced the implementation gap but is not sufficient. Nine countries updated their NDCs, potentially reducing emissions by about 9% annually by 2030. However, further reductions are essential to establish least-cost pathways for limiting global warming to 1.5°C.
- **Recommendations to Bridge the Emissions Gap:** *Low-Carbon Development* - There is a need for global, low-carbon development transformations, especially focusing on the energy transition. The extraction and planned use of fossil fuels far exceed the carbon budget for meeting temperature goals.

Support and Financing - Countries with greater capacity and responsibility for generating emissions will need to take more ambitious action and provide financial and technical support to developing nations. Low- and middle-income countries, which already account for more than two-thirds of global emissions, must meet their legitimate development needs and aspirations with low-emission growth trajectories.

Carbon Dioxide Removal - Carbon dioxide removal will be needed more in the future. However, there are many risks with new methods of carbon dioxide removal, one of the main ones being that the technology isn't in place yet. Essentially, the longer we wait, the harder it's going to be. The

world needs to lift the needle out of the groove of insufficient action and begin setting new records on cutting emissions, green and just transitions and climate finance – starting now.

- **Initiatives to Reduce Emissions in India:** Bharat Stage-IV (BS-IV) to Bharat Stage-VI (BS-VI) emission norms, UJALA scheme, International Solar Alliance, National Action Plan on Climate Change (NAPCC), Ethanol Blending in India by 2025.

Q. Discuss global warming and mention its effects on the global climate. Explain the control measures to bring down the level of greenhouse gases which cause global warming, in the light of the Kyoto Protocol, 1997. (গোলকীয় উষ্ণতা বৃদ্ধিৰ বিষয়ে আলোচনা কৰক আৰু গোলকীয় জলবায়ুৰ ওপৰত ইয়াৰ প্ৰভাৱৰ কথা উল্লেখ কৰক। 1997 চনৰ কিয়েটো প্ৰট "কলৰ পৰিপ্ৰেক্ষিতত গোলকীয় উষ্ণতা বৃদ্ধিৰ কাৰণ হোৱা গ্ৰিনহাউজ গেছৰ স্তৰ হ্ৰাস কৰাৰ নিয়ন্ত্ৰণ ব্যৱস্থাসমূহ ব্যাখ্যা কৰক।)

GS 3: ECONOMY, ECOLOGY, SCIENCE & TECHNOLOGY, DEFENCE, SECURITY AND DISASTER MANAGEMENT

3. Retail inflation rises to 14-month high, hopes of rate cut next month recede

Context: Retail inflation rate surged to a 14-month high of 6.21 per cent in October with a sharp rise in prices of food items, especially fruits, vegetables, meat and fish, and oils and fats, data released Tuesday by the National Statistical Office (NSO) showed. Separately released data by the NSO showed India's factory output, as measured by the Index of Industrial Production (IIP), improved to 3.1 per cent in September from a contraction of 0.1 per cent in August, mainly due to pick up in manufacturing, mining and electricity sectors. With the October print, the headline retail inflation rate, based on Consumer Price Index (Combined), has again breached the 4 per cent mark in the 4+/- 2 per cent band of RBI's medium-term inflation target for the second consecutive month.

Key points

- **Overview:** Previously, Retail inflation (CPI) hit a nine-month high of 5.49% in September, up from 3.65% in August, driven by rising food prices.
- **Food Inflation:** The Consumer Food Price Index (CFPI) surged to 9.24%, with rural food inflation at 9.08% and urban at 9.56%.
- **Housing and Electricity Inflation:** Housing inflation rose to 2.78% in September, while the All-India Electricity index showed a 5.45% inflation rate.
- **Factors Behind Inflation Rise:** High base effect and adverse weather conditions contributed to the inflation increase in September.
- **Decline in Specific Categories:** Inflation fell for pulses, spices, meat and fish, and sugar and confectionery in September.
- **Headline Inflation:** Headline Inflation is a measure of the total inflation within an economy, including commodities such as food and energy prices (e.g., oil and gas), which tend to be much more volatile and prone to inflationary spikes.
 - Wholesale Price Index (WPI) in India is known as headline inflation.
- **Consumer Food Price Index (CFPI):** It is a sub-component of CPI, measuring changes in retail prices of food items consumed by the population.

Focus - Tracks price changes of food staples such as cereals, vegetables, fruits, dairy, meat, etc.

Compiled by - Central Statistics Office (CSO), MoSPI (from May 2014), now under NSO (formed in 2019).

Methodology - Calculated monthly, using the same methodology as CPI.

4. AN ANCIENT OCEAN ON MARS: NEW STUDY PROVIDES FURTHER EVIDENCE

Context: With the assistance of China's Zhurong rover, scientists have gathered fresh evidence that Mars was home to an ocean billions of years ago — a far cry from the dry and desolate world it is today. Data obtained by Zhurong, which landed on the northern lowlands of Mars in 2021, and by orbiting spacecraft, indicated the presence of geological features indicative of an ancient coastline. The rover analysed rock on the Martian surface in a location called Utopia Planitia, a large plain in the planet's northern hemisphere. The reports described surface features such as troughs, sediment channels, and mud volcano formations indicative of a coastline, with evidence of both shallow and deeper marine environments.

Key points

- **Overview:** China's Zhurong rover, part of the Tianwen-1 Mars mission, has provided compelling evidence suggesting that Mars harboured an ocean billions of years ago.
- **Rover and mission details:** Rover - Zhurong (named after a mythical Chinese fire god). Mission - Tianwen-1, China's Mars exploration program. Utopia Planitia - A vast plain in Mars' northern hemisphere where geological features like troughs, sediment channels, and mud volcano formations were observed.
- **Significance of discovery:** Indicates the presence of an ancient ocean approximately 3.68 billion years ago, likely frozen in its latter stages. Supports the theory of a Martian coastline and varying marine environments, enhancing the possibility of past microbial life. Suggests Mars transitioned from a hospitable to a cold and dry planet earlier than previously thought. Furthers understanding of water's role in Mars' history and its implications for habitability.
- **Recent Discoveries:** Geophysicists have found a colossal hidden ocean beneath Mars' surface, which may contain enough water to fill oceans on Earth. NASA's InSight lander has provided seismic data indicating a massive liquid water deposit underground.
- **Implications for Life:** The presence of ancient oceans raises questions about the potential for life on Mars, as conditions may have been suitable for microbial life forms. Ongoing research continues to explore the possibility of life existing in the subsurface oceans that may still be present today.