

ECONOMY

Context: India's Steel Sector, Potential and Challenges, Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Why in News?

- The 4th "ISA Steel Conclave 2023" was held recently, encouraging steel companies to increase their production so that India can double its output of essential infrastructure input to 300 million tonnes annually by 2030.
- Discussions centered around the theme of "Steel Shaping the Sustainable Future," which highlighted the steel industry's diverse contribution to India's development and growth.

How is the Indian steel industry doing?**Current Situation:**

- India is the second-largest producer of crude steel in the world, producing 121.29 MT of finished steel and 125.32 MT of crude steel in FY23.
- Over the last ten years, India's steel industry has grown significantly, with production rising by 75% since 2008.
- In FY23, India's per capita steel consumption was 86.7 kilograms.
- The availability of inexpensive labour and raw materials like iron ore has propelled the growth of the Indian steel sector.
- India plans to produce 255 million tonnes (MT) of finished steel, have a 300 million MT crude steel capacity, and a robust 158 kg per capita consumption of finished steel by 2030–31, according to the National Steel policy, which was introduced in 2017.

Importance:

- One of the materials that is used extensively worldwide is steel. The industry that produces the most profit is the iron and steel sector.
- The steel industry is essential to many important industries, including engineering, defense, automobiles, infrastructure, and construction.
- The Indian economy depends heavily on the steel industry, which in FY 21–22 accounted for 2% of the nation's GDP.

Challenges faced by the Steel Industries:

- Obstacles to Establishing Modern Steel Plants: The substantial capital needed to set up modern steel plants is one of the main obstacles.
- Many Indian entities face difficulties due to the high cost of a 1-tonne capacity plant, which is approximately Rs 7000.00 crores.
- Dependency on debt financing raises the cost of the finished steel product and reduces its competitiveness internationally, especially when combined with India's relatively expensive financing compared to other nations.

Cycles of Demand and Monsoon Difficulties:

- Steel plants face financial difficulties due to the cyclical demand for steel in India, which is impacted by elements like monsoons that impede construction.
- Steel plants have to run on very little revenue during times of low demand, which puts a strain on their finances and, in extreme situations, forces them to close.

Low Per Capita Consumption:

- India's low steel consumption per person—86.7 kg versus the global average of 233 kg—is a reflection of economic inequality.
- The incentive to build large-scale steel plants for economies of scale decreases with low per capita income and consumption.
- China shows a stronger demand for steel due to its much higher per capita income.

Minimal Research and Technology Invested:

- India has always lagged behind other countries in terms of technology, R&D, and research for the steel industry.
- This leads to an increased reliance on foreign technology and research, which is expensive.
- The industry's lack of appeal is further enhanced by antiquated and environmentally damaging technologies.

Slow Adoption of Steel in Construction:

- The development of the steel industry is hampered by India's devotion to conventional concrete-based building techniques rather than its embrace of steel.
- India has not yet fully incorporated steel into its construction methods, in contrast to the west where it is widely used due to its strength, speed, and efficiency.

Environmental Concerns:

- One of the top three industries that produces carbon dioxide is the steel sector.
- As a result, steel companies all over the world have to deal with a growing Decarbonisation Challenge to lower their carbon footprint from an economic and environmental standpoint.

Effect of the EU's CBAM:

- The EU will begin collecting the Carbon Tax (Carbon Border Adjustment Mechanism) on every shipment of electricity, steel, aluminum, cement, fertilizer, hydrogen, and other commodities on January 1st, 2026. India's exports of metals to the EU, including iron, steel, and aluminum products, will suffer as a result of the mechanism's increased scrutiny of these goods.
- CBAM is a component of the EU's "Fit for 55 in 2030 package," which aims to comply with the European Climate Law by reducing greenhouse gas emissions by at least 55% by 2030 when compared to 1990 levels.

Government Initiatives for Steel Industry

- National Steel Policy (NSP) 2017
- Steel Scrap Recycling Policy
- Adoption of the Fourth Industrial Revolution (Industry 4.0)
- Steel Research and Technology Mission of India
- Draft Framework Policy
- PLI Scheme for Specialty Steel

The Way Ahead

- Acquiring and implementing green technology to lessen the impact on the environment and encourage environmentally friendly production methods.
- The production of green steel must be encouraged, and this can be achieved by substituting low-carbon energy sources like electricity, hydrogen, and coal gasification for the conventional, carbon-intensive coal-fired plant manufacturing process.
- The effects of CBAM can be lessened by putting policies in place to improve carbon efficiency in the steel industry. Reducing the carbon footprint of steel products requires implementing cleaner and more sustainable technologies.
- It is crucial to converse with international organizations and legislators in order to promote reasonable and equitable CBAM regulations. Working together with other sectors and nations can result in the creation of solutions that take into account the particular difficulties faced by The Indian Steel Sector

SCIENCE AND TECHNOLOGY**Context: The AI bridge, the USA, and India****Introduction:**

Artificial intelligence cooperation should be a major topic of discussion when the US and India's foreign and defence ministers meet in Delhi this week to review and develop their defence and security partnership.

How the AI conversation becomes the main topic of the 2+2 meeting?

- Two events from last week highlight how urgent it is for the US and India to have a thorough and intense conversation about AI.
- President Joe Biden issued an executive order on artificial intelligence (AI) that addresses securing the use of AI in various civilian applications.
- The publication of the Pentagon's revised plan for the US military forces to adopt AI.
- The Pentagon's strategy emphasizes how crucial it is to incorporate AI's quick advancements into military operations and doctrine.
- The two projects address the fundamental conflict between the need to keep abreast of a technology that has the potential to drastically change the balance of power in the world and the need to keep the risks associated with it from getting out of control.

USA and China's new geopolitical frontier

- The two projects also highlight the main geopolitical divide facing the modern world: the growing rivalry between China and the United States.
- It is deeply concerning to both the United States and India that Beijing may advance its use of AI for both military and economic ends.
- "New standards for safety and security, protects Americans' privacy, advances equity and civil rights, stands up for consumers and workers, promotes innovation and competition, and advances American leadership around the world" are the goals of Biden's Executive Order.

AI's importance in defence strategy

- Building on the "decision advantage" that artificial intelligence (AI) provides the country's armed forces is the primary goal of AI development for defence.
- AI-enabled systems can aid commanders in making decisions more quickly and accurately, which can be crucial in both preventing and winning a conflict, when it comes to thwarting aggression and defending against it.

China's progress in integrating AI into military planning

- As part of its ambition to make the PLA a world-class armed force in the next two decades, China has been talking about deploying AI to develop a "intelligentized" military (moving beyond the goal of "informatization" proclaimed two decades ago).
- China's industry and military have both made significant advancements in the development and application of AI.
- Beijing has a significant advantage in the AI race thanks to its ability to direct resources into particular industries and its "civil-military fusion."

The current India-US 2+2 Dialogue has four imperatives.

1. Collaboration in Advanced Technology:

- Put Your Attention Towards Critical and Emerging Technology Initiatives.
- Cooperation in AI was highlighted in a June joint statement.
- Updated cooperation is required because AI is developing so quickly.

2. Improving AI in Defence Collaborations:

- Demanding more AI collaboration for mutual defence.
- AI's expanding influence in the Indo-Pacific power dynamics.
- Favorable effects of the two-way defence innovation bridge.

3. Collaboration and the Talent Pool:

- The US lacks sufficient AI specialists.
- India's talent pool is viewed as the answer.
- Under iCET, cooperation in training, research, and education should grow.

4. Responsible AI Research:

- The Pentagon's strategy and the Biden Executive Order emphasize "responsible" AI use.
- The Indian economy, society, democracy, and defence are all pertinent topics.
- India-US cooperation in regulating AI is essential to preventing misuse.

Conclusion

The lack of scientists, technologists, and engineers is the largest barrier preventing the US from moving more quickly toward AI development. India possesses an innate talent pool to fulfil this need. As a result, the interests of the two countries naturally align.

PRELIM FACTS

1. Euclid Mission

Context

- The European Space Agency's (ESA) Euclid mission launched to investigate the mystery of dark matter and dark energy has released its first five science images.

About

- The newly launched Euclid space telescope is designed to investigate the dark matter and dark energy with contributions from The National Aeronautics and Space Administration (NASA).
 - About 95 per cent of the universe seems to be made of these units.

Dark Matter and Dark Energy

- The content of the Universe is widely thought to consist of three types of substance: normal matter, dark matter and dark energy.
- Roughly 68% of the universe is dark energy. Dark matter makes up about 27%. The rest – everything on Earth ever observed adds up to less than 5% of the universe.
- Dark Matter: Unlike normal matter, dark matter does not interact with the electromagnetic force. This means it does not absorb, reflect or emit light, making it extremely hard to spot.
 - Dark matter works like an attractive force — a kind of cosmic cement that holds the universe together. This is because dark matter does interact with gravity.
- Dark Energy: Dark energy is a repulsive force — a sort of anti-gravity — that drives the universe's ever-accelerating expansion. Dark energy is the far more dominant force than Dark matter.

2. India-United States Defence Acceleration Ecosystem (INDUS X)

Context

Innovations for Defence Excellence (iDEX) organised the maiden INDUS-X Investors Meet.

About INDUS X

- India-United States Defence Acceleration Ecosystem (INDUS X) was launched at an event in Washington DC, USA on 21 June 2023.
- The INDUS X event was co-organised by Innovations for Defence Excellence (iDEX), Ministry of Defence, and US Department of Defence (DoD) and hosted by US-India Business Council (USIBC).
- The initiative will expand the strategic technology partnership and defence industrial cooperation between the start-up ecosystems, businesses and academic institutions.
- The collaboration agenda under the Defence Innovation Bridge includes launch of Joint Challenges, Innovation Partnership Program, Academia partnership, Joint Innovation Fund, establishing of Testing & Certification facilities in India etc.

3. Operation ‘Nanhe Faristey’

Context

In October 2023, Railway Protection Force reunited over 601 children with their families under Operation ‘Nanhe Faristey’.

About

- This initiative was introduced on the Indian Railways platform.
- It aims to rescue and safeguard children in need of care and protection who encountered by the railway system.
- Trained personnel rescue the children who have come to railway stations without informing their parents, because of some family issues or in search of a better life.
- Under this program, these children were promptly rescued and transferred to the relevant authorities before being reunited with their families.

Other Initiatives by Railways

Initiative Name	Aim
Operation AAHT	Combatting human trafficking on railways
Operation Jeevan Raksha	Saving lives of passengers in vulnerable situations
Meri Saheli Initiative	Ensuring the security of women passengers
Operation Uplabdh	Cracking down on black marketing of tickets.
Operation NARCOS	Combating drug-related crimes on railways
Rail Madad Portal	Swift response to security-related passenger complaints
Operation Yatri Suraksha	Protecting passengers from offenses through collaboration with GRP/Police
Operation Sanraksha	Ensuring passenger safety by addressing stone pelting on trains
Operation Seva	Providing assistance to elderly, sick, or injured passengers
Operation Satark	Curbing illegal transportation of goods on railways

4. e-way bill

- Recently, e-way bill generation crossed 10 crore for the first time since its introduction.
- e-way Bill is an electronic document generated on a portal, evidencing the movement of goods and indicating whether tax has been paid.
 - As per CGST Rules, 2017, consignment value of more than Rs.50,000 is required to generate an e-way bill.
 - This is required for movements between the two States and within a State.
 - However, a State, can decide the threshold for the value of goods to be applicable for movement within its boundary.

5. SOFIA (Stratospheric Observatory for Infrared Astronomy)

- Scientists have detected atomic oxygen in the atmosphere of Venus through SOFIA airborne observatory.
- Venus (aka Earth’s twin) is the second planet from Sun and Earth’s nearest planetary neighbour.
 - Unlike Earth, it rotates clockwise (east to west) i.e backward.
 - It has no moons/rings and is the hottest planet due to “runaway greenhouse effect”.

- SOFIA is the world's largest airborne astronomical observatory (joint program of NASA and German Aerospace Center).
 - It flies in the stratosphere, above 99% of Earth's infrared blocking atmosphere to observe the infrared universe.

6. Phreatomagmatic eruptions

- A new island emerged Off Japan after an underwater volcano eruption.
 - It emerged after a series of eruptions near Iwoto Island, part of Ogasawara Island chain in the western Pacific.
- Scientists said it was formed due to phreatomagmatic eruptions.
 - It is a type of eruption that involves both magma and water, which typically interact explosively, leading to concurrent ejection of steam and pyroclastic fragments.
 - It is considered as most common and hazardous type of volcanic eruption on Earth.

ANSWER WRITING

Discuss the impact of globalization on the diversity and pluralism of Indian society. Give suitable examples to support your answer

Introduction

The term "globalization" describes how trade in products, services, information, ideas, and technology has made nations and their economies more interconnected and dependent on one another. The diversity and pluralism of Indian society have been impacted by globalization in a number of ways. Interaction of cultures, ideas, and values has resulted in both favourable and unfavourable outcomes.

- On a Positive note, globalization has made it possible for people to appreciate and exchange cultures. People can learn about and respect the differences between different cultures by, for instance, watching Bollywood movies and partaking in a variety of cuisines from around the globe.
- Furthermore, the dissemination of knowledge and information has been made possible by globalization, giving people the ability to access a range of perspectives and challenge accepted norms.
- However, diversity and pluralism in India have also been threatened by globalization. Indigenous cultures and traditions have been undermined by the prevalence of Western values and consumerism, particularly among young people.
- Globalization has also led to economic inequality, whereby certain groups have benefited at Multinational corporations, for example, have brought with them Western consumer choices and lifestyles, which have influenced the aspirations and consumption patterns of Indian society.
- As they are unable to compete with mass-produced goods, local artisans and craftsmen have been excluded as a result.

Conclusion:

The multiplicity and diversity of Indian society have been both strengthened and jeopardized by globalization. It has brought about challenges and inequalities even as it has promoted cross-cultural dialogue and awareness. Thus, it's critical to strike a balance between preserving India's rich cultural heritage and embracing the benefits of globalization. The expense of others, exacerbating social divides.

MCQs

1. Consider the following statements regarding QS World University Rankings: Asia 2024:
 1. Indian Institute of Science (IISc) has retained its top ranking in India and is ranked among the top 15 in Asia.
 2. India has surpassed China in the number of universities featured in the QS World University Rankings: Asia 2024.
 Which of the statements given above is/are correct?
 a) 1 only b) 2 only
 c) **Both 1 and 2** d) Neither 1 nor 2
2. Consider the following statements regarding Cheetah Reintroduction Project (CRP):
 1. The CRP in India formally commenced in September 2022, to restore the population of cheetahs, which were declared extinct in the country in 1952.
2. The project involves the translocation of cheetahs from South Africa and Namibia to Kuno National Park in Madhya Pradesh.
 3. The project is implemented by the National Tiger Conservation Authority (NTCA) in collaboration with the Wildlife Institute of India (WII).
 How many of the above statements are not correct?
 a) Only one b) Only two
 c) All three d) **None**
3. Consider the following statements:
 1. The University Grants Commission (UGC) regulation allows foreign universities, ranked among the world's top 500, to establish branch campuses in India.
 2. Foreign universities have to get permission from the union government to decide their

admission process, fee structure, and repatriation funds to their parent campuses.

Which of the statements given above is/are correct?

- a) **1 only** b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2
4. With reference to the Report State of Food and Agriculture 2023, consider the following statements:
1. Unhealthy diets, characterized by the consumption of ultra-processed foods, fats, and sugars, lead to substantial hidden costs.
 2. Decreased labor productivity is not part of the overall hidden costs of the Unhealthy diet.
 3. The majority of hidden costs were generated in upper-middle-income and high-income countries.
- How many of the above statements are correct?
- a) Only one
b) **Only two**
c) All three
d) None
5. Consider the following statements with respect to 'Composite Water Management Index (CWMI)':
1. It is launched by NITI Aayog.
 2. CWMI serves as a key indicator to evaluate the effectiveness of states and Union Territories (UTs) in managing water resources.
 3. Source augmentation and restoration of water bodies is one of the nine themes in the index.
- How many of the above statements are correct?
- a) Only one
b) Only two
c) **All three**
d) None
6. With reference to Hypertension in India, consider the following statements:
1. Hypertension prevalence in southern states exceeds the national average.
 2. Women in India are more prone to hypertension than men.
- Select the correct statements using the codes given below:
- a) **1 only**
b) 2 only
c) Both 1 and 2
d) Neither 1 nor 2
7. Consider the following:
1. Monitoring invasive species
 2. Air quality monitoring
 3. Water quality monitoring
 4. Environmental impact assessment
 5. Deep-sea environments
- Among the areas mentioned above, where is Environmental DNA (eDNA) most commonly used?

- a) 1, 2, 3 and 4 only
b) 2, 4 and 5 only
c) **1, 3, 4 and 5 only**
d) 1, 2, 3, 4 and 5
8. Consider the following statements with reference to the Tuberculosis (TB):
1. It is caused by a bacterium called Mycobacterium tuberculosis.
 2. It can be spread through air.
 3. As per the Global TB Report 2023, India accounted for the lowest number of tuberculosis (TB) cases in the world in 2022.
- Which of the statements given above are correct?
- a) **1 and 2 only**
b) 2 and 3 only
c) 1 and 3 only
d) 1, 2 and 3
9. In the context of international law, which one of the following best describes the "Doctrine of Dualism", seen in the news recently?
- a) It recognizes that states may have some discretion in implementing and interpreting international human rights standards within their domestic legal systems.
- b) It states that international law is separate from national law and it must be incorporated into national law through domestic legislation.**
- c) It refers to customary practices and norms that have evolved over time and are considered legally binding on states and acts independently of international treaty or law
- d) It refers to the international law that automatically becomes part of domestic law without the need for specific incorporation
10. In the context of international relations, the term "Principle of Reciprocity" is used for –
- a) States avoiding taking sides in conflicts and aim to remain impartial and uninvolved in the disputes of other states.
- b) The practice of mutual exchange or give-and-take between states, where one state grants certain benefits or concessions to another with the expectation of receiving similar treatment or benefits in return.**
- c) The promotion of the peaceful settlement of conflicts and disputes between states through negotiation, diplomacy, mediation, and other non-violent means.
- d) Allowing people and nations to determine their political, economic, social, and cultural status without external influence.