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June 2023



Extraction of Groundwater Tilted Earth's Axis of Rotation



2023 Gender Social Norms Index (GSNI) 2023



Agni Prime Ballistic Missile



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GENERAL STUDIES 1

Important Geophysical Phenomena

Groundwater Extraction Has Tilted Earth's Spin; How Likely Is It To Fuel Climate Change?

Priority: High

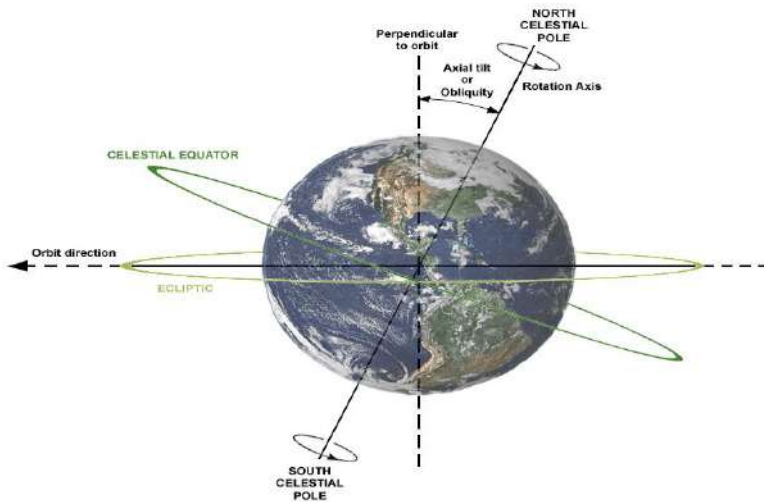


Primary Source: The Hindu

Prepp Prelims Booster: Physical Geography

Prepp Mains Booster: Important geophysical phenomena, Conservation, environmental pollution and degradation, environmental impact assessment.

Context:



- A recent research published in '*Geophysical Research Letters, the journal of the American Geophysical Union*', stated that **human activities such as the extraction and redistribution of groundwater have resulted in notable alterations in the Earth's axis of rotation.**
- Researchers analyzed changes in the drift of Earth's rotational pole and water movement.

Findings of the Study

- Polar drift:** The study found that the direction of polar drift moved from southward to eastward in 1995 and that the average drift speed from 1995-2020 was 17 times quicker than from 1981-1995.
- Earth's tilt:** Groundwater pumping has tilted the planet nearly 80 centimetres east between 1993 and 2010 alone.
- Between 1993 and 2010, people pumped 2,150 gigatons of groundwater, or more than 6 millimetres (0.24 inches), of sea level increase.

What are the Key Findings of the Study?

Earth's Tilt:

- Groundwater pumping has tilted Earth nearly 80 centimeters east between 1993 and 2010 alone.
- The water circulated across the planet determines how mass is distributed.
- Between 1993 and 2010, people pumped 2,150 gigatons of groundwater, or more than 6 millimeters of sea level increase.

Impact on Polar Drift:

- Excessive groundwater pumping has caused the Earth's pole to drift at a rate of 4.36 centimeters per year between 1993 and 2010, making it the climate-related factor with the greatest impact on polar motion.
- Redistributing water from the mid-latitudes significantly influences polar drift; therefore, the location of redistribution determines polar drift.

- During the study period, most redistribution occurred in western North America and northwestern India — both located at mid-latitudes.

Impact of Groundwater Pumping on Sea-Level Rise:

- Groundwater pumping contributed to a sea-level rise of 6.24 mm during the mentioned period.
- Pumping from mid latitude areas, such as northwest India and western North America, has the most substantial influence on Earth's axis drift.

Impact of Polar Drift:

- The rotational pole normally changes by several metres within about a year, so changes due to groundwater pumping don't run the risk of shifting seasons.
- But on geologic time scales, polar drift can have an impact on climate.

Suggestions:

Attempts to slow groundwater depletion rates need to be done, especially in those sensitive regions, can theoretically alter the change in drift, but only if such conservation approaches are sustained for decades.

Heat and State: On A Heatwave Being Only One Half Of The Issue

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Physical Geography

Prepp Mains Booster: Important geophysical phenomena; Issues related to Health; Environment and Climate Change; Disaster Management

Context:

- A recent heatwave in Uttar Pradesh and Bihar has resulted in a high number of casualties, with the district of Ballia being the hardest hit. The transfer of the medical superintendent at a local government hospital, who initially attributed the deaths to the heat, has raised concerns. Understanding heatwaves, their contributing factors, and the need for adequate response is crucial to mitigate the impacts.

Understanding Heatwaves:

- Heatwaves are characterized by prolonged periods of excessively high temperatures that can be deadly to the human body.
- They typically occur in India between March and June, with some extending into July. To be classified as a heatwave, temperatures must exceed the usual maximum by at least 5°-6°C, reaching a minimum of 40°C in the plains and 30°C in hilly regions.

Factors Contributing to Intense Heatwaves:

- Several factors contribute to the intensity of heatwaves. High temperatures above the seasonal average are the primary cause. Atmospheric conditions, such as high-pressure systems and stagnant air masses, can trap heat in a region, leading to prolonged hot weather.
- Climate change resulting from human activities has also been identified as a significant factor, along with drought conditions that exacerbate heatwave effects.

Reasons for Increased Death Rate in Affected States:

- The high death rate in Uttar Pradesh and Bihar during the heatwave can be attributed to factors such as contaminated water and insufficient means of cooling for local residents. The impact of heat-related hazards is influenced by individuals' overall health, adaptation to hot conditions, physical activity levels, existing medical conditions, and duration of heat exposure.

States' Responsibility in Heatwave Response:

- States should prioritize accurate registration of heat-related deaths and promptly issue medical certificates assigning appropriate causes of death. The Office of the Registrar General should compile and

release comprehensive annual data on these deaths, fostering transparency and enabling independent research and policymaking. It is crucial to acknowledge that not all deaths during a heatwave are directly attributable to heat, but the state shares responsibility if living conditions are inadequate.

Impacts of Heatwaves:

- Heatwaves pose serious health risks, particularly to vulnerable populations. Heat-related illnesses, dehydration, organ failure, and increased mortality rates are common during extreme heat events. Heatwaves also have economic consequences, including healthcare expenses, decreased productivity, and increased demand for cooling systems.

Recommended Actions:

- Addressing the complexity of the climate crisis in India requires enhanced literacy and access to resources. Prioritizing literacy can help people understand the deadly nature of excessive heat accumulation and the need for essential amenities. Access to clean drinking water, indoor ventilation, healthcare services, regular breaks from work, and safeguards against income loss can mitigate the impact of heatwaves. The availability of these resources should be questioned in cases where individuals succumb to heatwave effects.

Conclusion:

- The recent heatwave in Uttar Pradesh and Bihar underscores the urgent need for comprehensive measures to address heatwave impacts. Proactive efforts, including enhanced literacy, access to resources, and better living conditions, can significantly mitigate the risks posed by heatwaves.
- By prioritizing the well-being of vulnerable populations and taking swift action, the devastating consequences of heatwaves can be minimized.
- The recent **devastating heatwave in Uttar Pradesh and Bihar has resulted in a high number of casualties, with the district of Ballia in Uttar Pradesh being the most severely affected.**
- At least 96 people died in two of India's most populous States, Uttar Pradesh and Bihar, over the last several days.
- The transfer of the medical superintendent at the local government hospital, who initially attributed the deaths to the heat, has raised concerns.

Heat Action Plan (HAP)

- The Heat Action Plan (HAP) is a crucial set of guidelines and protocols that states, cities, and municipal bodies should follow to mitigate the impacts of extreme heat.
- It prescribes a number of activities, disaster responses and post-heatwave response measures to reduce the impact of heat waves.
- The primary goal of implementing a Heat Action Plan (HAP) is to prioritize the preservation of lives and minimize the occurrence of health-related issues caused by extreme heat.

Deep Ocean Currents In Antarctica Are Slowing Earlier Than Predicted

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Physical Geography

Prepp Mains Booster: Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclones etc., geographical features and their location changes in critical geographical features (including water-bodies and ice-caps)

Context:

- Scientists have detected a 30% slowdown of the deep ocean currents that form in Antarctica, with profound consequences for Earth's climate, sea level and marine life.

Deep Ocean Currents In Antarctica

- Antarctica's cold, dense, oxygen-rich water cascade off the continental shelf and sink to great depths. This Antarctic "bottom water" then spreads north along the sea floor in deep ocean currents, before slowly rising, thousands of kilometres away.
- Antarctica drives a global **network of ocean currents called the "overturning circulation"** that redistributes heat, carbon and nutrients around the globe.
- The overturning is crucial to keeping the earth's climate stable and also the main way oxygen reaches the deep ocean.
- The Atlantic Meridional Overturning Ocean Circulation (AMOC) is a large system of ocean currents that carry warm water from the tropics northwards into the North Atlantic.



Observations

- The study focused on a **deep basin south of Australia** that receives bottom water from several sources. These sources lie downstream of large meltwater inputs, so this region is likely to provide an early warning of climate-induced deep ocean changes.
- The researchers developed a new approach that combines ship data, mooring records, and a high resolution numerical simulation to calculate the strength of Antarctic bottom water flow and how much oxygen it transports to the deep ocean.
- Slowing:** Between 1992 and 2017, the overturning circulation of this region slowed by almost a third (30%) causing less oxygen to reach the deep. **This slowing was caused by freshening close to Antarctica, which reduces the density** and volume of Antarctic bottom water formed, as well as the speed at which it flows.
- The slowdown in the overturning circulation would have been more significant, but a temporary climate event caused a partial recovery in the formation of bottom water. This recovery was influenced by higher salinity levels, highlighting how sensitive bottom water formation is to changes in salinity on the Antarctic continental shelf.
- These observations show that changes predicted to occur by 2050 are already underway.

Why Deep Ocean Currents In Antarctica Are Slowing Earlier Than Predicted?

- According to a research published in the journal Nature Climate Change show the **overturning circulation has slowed by almost a third (30%)** and deep ocean oxygen levels are declining. This is happening decades earlier than predicted, even earlier than climate models predicted.
- It found **melting of Antarctic ice is disrupting the formation of Antarctic bottom water.**

- The **meltwater makes Antarctic surface waters fresher**, less dense, and **therefore less likely to sink**. This puts the brakes **on the overturning circulation**.
- The slowdown has the potential to disrupt the connection between the Antarctic coasts and the deep ocean, with profound consequences for the earth's climate, sea level and marine life.

Impact

- **Marine life:** As the flow of bottom water slows, the supply of oxygen to the deep ocean declines affecting marine life. The shrinking oxygen-rich bottom water layer is then replaced by warmer waters that are lower in oxygen, further reducing oxygen levels.
- Losses of oxygen may cause them to seek refuge in other regions or adapt their behaviour.
- **Intensification of Global warming:** Slowdown of the overturning may also intensify global warming as **the overturning circulation carries carbon dioxide and heat to the deep ocean**. As the ocean storage capacity is reduced, more carbon dioxide and heat are left in the atmosphere. This accelerates global warming.
- **Rise in sea levels:** Reductions in the amount of Antarctic bottom water reaching the ocean floor also increases sea levels because the warmer water that replaces it takes up more space (thermal expansion).
- **Reducing deep oxygenation:** Freshening of shelf waters reduces the flow of dense water and slows the deepest parts of the overturning circulation while also reducing deep oxygenation.
- Freshening of shelf waters not only reduces the flow of dense water and slows the deepest parts of the overturning circulation but also reducing deep oxygenation.
- Satellite data shows the **Antarctic ice sheet is shrinking**.
- Ocean measurements taken downstream of regions of **rapid melt show the meltwater is reducing the salinity (and density)** of coastal waters.

Way forward

- As the world warms the Ice loss from Antarctica is expected to continue and it is almost certain that 1.5°C global warming threshold would be breached by 2027.
- The consequences of a slowdown will not be limited to Antarctica and influences the pace of climate change and sea level rise. It will also be disruptive and damaging for marine life.
- The research provides yet another reason to work harder and faster to reduce greenhouse gas emissions.

Cyclone Biparjoy

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Geography

Prepp Mains Booster: Physical Geography, Disaster & Disaster Management

Context

- Recently, Cyclone Biparjoy impacted the Gujarat coast following its origin in the Arabian Sea in June 2023.
- It is the cyclone with the longest lifespan to ever be recorded in the Arabian Sea.



Origin

- Biparjoy cyclone originated in the East Central Arabian Sea from a depression that was first noted by the India Meteorological Department (IMD) on 6 June.

Path

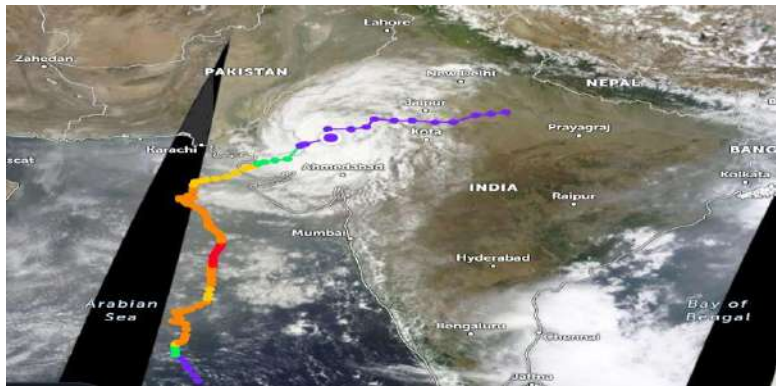
- Biparjoy followed a **north-northeast path** from its origin in the Arabian Sea but changed tracks nine times over its 2,525-km run.
- Although it was initially predicted to make landfall over Pakistan, it **made landfall over Naliya in Gujarat on June 15th after traveling nearly 1200 Km**.
- Biparjoy was observed to be **sandwiched between two anticyclonic systems**, one was aiding its northwards movement while the other was hindering it.
- The two anticyclonic systems also caused Biparjoy's trajectory to wobble, making it a **recurving tracks cyclone**.
- It moved north eastwards into Rajasthan from Gujarat after passing through the coastal parts of Gujarat including the Saurashtra-Kutch region and Southeast Pakistan.

Impact

- The coastal areas of Gujarat experienced heavy rains and strong winds with large trees being uprooted due to the strong winds.
- In the Kutch region, strong waves impacted Mandvi Beach while the Dwarka region experienced high tides.
- Maharashtra also witnessed heavy rains and high tidal waves.
- In Rajasthan, which was the worst affected, over 58,000 people were affected by floods and power outages.
- **Heavy rains and flash flooding** were experienced in the coastal areas of India and Pakistan.

Preparedness

- The IMD adopted a proactive approach and began disseminating reports regarding the cyclone's trajectory on June 8th.
- The IMD's accurate forecast regarding the change in the path of the cyclone and predicted landfall in Gujarat gave Indian states a crucial four-day advantage to make necessary preparations.
- District authorities in Gujarat initiated the evacuation of around 100,000 residents of the coastal regions and relocated them to designated shelters safely and efficiently.
- 30 central and State disaster relief teams were mobilized to respond to any emergency situations.
- Train services were canceled in the region and fishermen were cautioned to stay away from the sea.
- The effectiveness of the precautionary measures implemented by the states in its path resulted in very few reported casualties and injuries. In comparison, the 1998 cyclone that hit Gujarat reportedly caused the death of 3,000 people.
- However, the efficiency of the preparations and precautions was limited by the available coastal infrastructure, inefficient communication networks, and unique livelihood patterns.



Conclusion

Although Cyclone Biparjoy provided unique challenges as a result of its characteristics, the IMD was successful in predicting its path and enabling precautions to be taken to minimize the potential damage that could be caused by the cyclone. This will further allow India to fine-tune its cyclone strategy given the increased occurrence of Arabian Sea cyclones.

Population and Associated Issues

Global Trends: Forced Displacement Report: 2022 Saw The Sharpest Rise In People Forcefully Displaced Due To Violence, Climate Crises

Priority: Medium



Primary Source: Down to Earth

Prepp Prelims Booster: Human Geography

Prepp Mains Booster: Population and Associated Issues; Disaster and disaster management

Context:

- The recently published **Global Trends on Forced Displacement Report**, sheds light on the concerning statistical trends surrounding forced displacement.
- It has revealed a **significant and unprecedented increase in the number of individuals compelled to leave their homes due to a combination of social and climate-related crises in 2022**.
- Compared to the previous year, **the report indicates a staggering 21 percent surge in forced displacement**, marking the most substantial rise on record.

About Global Trends Report

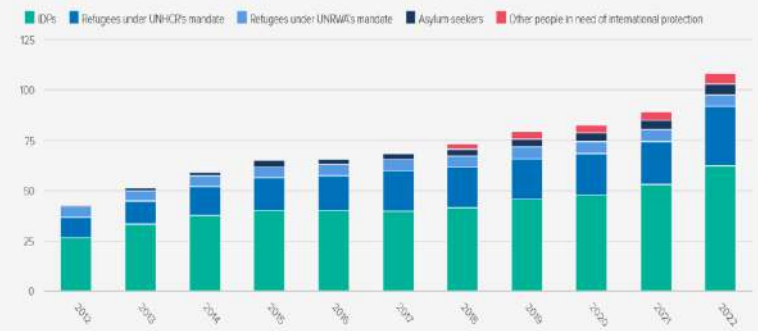
- The Global Trends report by the United Nations High Commissioner for Refugees (UNHCR) serves as a vital resource that provides essential statistical insights and the most up-to-date official figures regarding refugees, asylum-seekers, internally displaced persons (IDPs), and stateless individuals worldwide.
- It also encompasses data on the numbers of refugees and IDPs who have returned to their countries or regions of origin.
- The Global Trends report is published once a year and reflects on the previous year. The figures are based on data reported by governments, non-governmental organizations and UNHCR.

Findings of the Report

- At the end of 2022, **108.4 million people worldwide were forcibly displaced** as a result of persecution, conflict, violence, human rights violations and events seriously disturbing public order.
 - Of these, 35.3 million were people who had to move to another country for safety (refugees).
- A large share of refugees were from Ukraine, pushed out by the full-blown war in their country.** The displacement of Ukrainians also was the global fastest since World War II, growing from 27,300 at the end of 2021 to 5.7 million at the end of 2022.

- The total number of people displaced across the world increased to 110 million by May 2023, **driven by the fresh conflict in Sudan.**

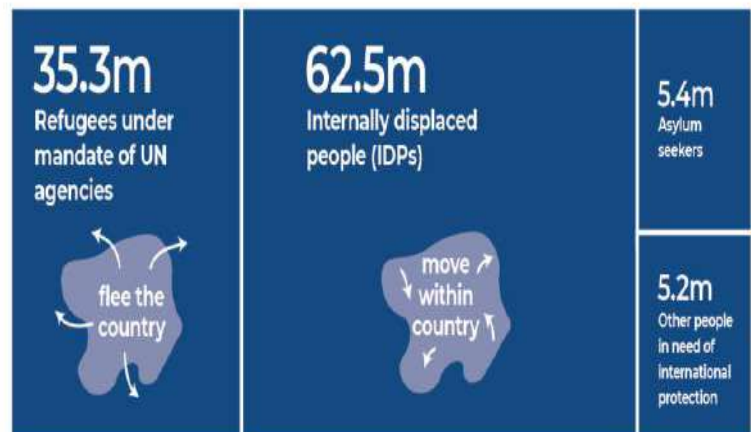
People forced to flee worldwide (2012 - 2022)



REFUGEES

Forcibly displaced people worldwide

At the end of 2022, **108.4 million people** were forcibly displaced as a result of persecution, conflict, violence, human rights violations and events seriously disturbing public order.



If forcibly displaced people formed a country, it would be the **14th** most populated in the world.



Wars in Sudan and Ukraine, as well as the Afghanistan crisis, have forced millions to flee in search for safety.



Source: UNHCR | June 14, 2023

@AJILabs ALJAZEERA

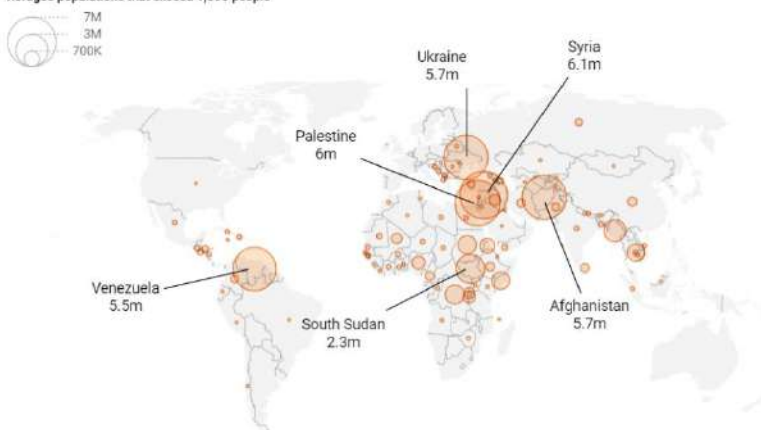
Number of Refugees in the World

- According to UNHCR's statistics on forced displacement, there was a notable increase in the number of refugees from **27.1 million in 2021 to 35.3 million by the end of 2022**.

- The surge in the number of refugees was primarily driven by the international armed conflict in Ukraine, which led many individuals to flee their homes and seek refuge in other countries.
- Among all the countries experiencing forced displacement, three nations accounted for the majority of refugees and individuals in need of international protection.
- These three countries were the Syrian Arab Republic, with approximately 6.5 million refugees; Ukraine, with around 5.7 million refugees; and Afghanistan, also with approximately 5.7 million refugees.

Where do refugees come from?

Refugee populations that exceed 1,000 people



Causes of Displacement

- **Climate Disaster:** In 2022, the world experienced a significant number of climate-related disasters, resulting in a staggering 32.6 million individuals being internally displaced. By the end of the year, approximately 8.7 million of these displaced individuals were unable to return to their homes. Alarmingly, more than half (54 percent) of all new displacements during that year were directly attributed to climate-related events.
- **New and ongoing conflicts** continue to force people to flee in 2023, including as a result of conflict in the Democratic Republic of the Congo and Sudan, widespread violence in Myanmar and persistent insecurity and drought in Somalia.
- **Ukraine Crisis:** In February 2022, the Russian invasion of Ukraine triggered a major displacement crisis, one of the largest since World War II. By the end of 2022, approximately 11.6 million Ukrainians were displaced, with 5.9 million displaced within Ukraine and 5.7 million seeking refuge in neighboring countries and beyond.
- **Internally displaced people (IDPs)** make up 58% of all forcibly displaced individuals, often staying within their own countries. Syria has the highest number of internally displaced individuals, with 6.8 million people affected.
- **Stateless people:** Statelessness adds a complex dimension to the refugee crisis. Stateless individuals are not recognized as citizens by any government, making it challenging for them to access basic necessities such as healthcare, education, and employment in the countries where they seek asylum. This is due to their lack of nationality documents.

Who had to bear the biggest burden of the humanitarian crisis?

- **Poorer countries had to bear the biggest burden of this humanitarian crisis.** Not only did 90 per cent of the displaced population come from low- and middle-income countries, these nations also hosted 76 per cent of the world's refugees in 2022.

- Low-income countries, which have limited resources to adapt to the situation and account for only 0.5 per cent of global gross domestic product, hosted 16 per cent of the refugees.
- The 46 countries with the poorest development indicators or the Least Developed Countries hosted 20 percent of the global refugee population.
- This includes Bangladesh, Chad, the Democratic Republic of the Congo, Ethiopia, Rwanda, South Sudan, Sudan, Uganda, the United Republic of Tanzania and Yemen.
- The share has, however, decreased over last year's because a large number of people displaced from Ukraine settled in neighbouring countries in Europe.

About UNHCR

- The UN Refugee Agency (UNHCR) is an organization established by the United Nations in 1950 to provide protection and assistance to refugees around the world.
- It was created in response to the large number of people who were displaced or became refugees as a result of World War II.
- The primary goal of UNHCR is to safeguard the rights and well-being of refugees and ensure that they are able to find safety, receive proper care, and rebuild their lives.
- During the 1960s, the process of decolonization in Africa led to the emergence of numerous refugee crises on the continent, requiring UNHCR's intervention.
- In the subsequent two decades, UNHCR's efforts extended to addressing displacement crises in Asia and Latin America.

Conclusion

- The UNHCR has **emphasized the urgent need for collective action in response to the escalating challenges of armed conflict and climate-induced disruptions**, which have resulted in a growing number of displaced individuals worldwide.
- These statistics serve as a stark reminder that some individuals and nations tend to resort to conflict hastily, while the search for viable solutions is often protracted and inadequate.
- Consequently, this pattern of behavior leads to devastating consequences, including widespread devastation, forced displacement, and immeasurable suffering for the millions of people who are forcibly uprooted from their homes.
- The **upcoming Global Refugee Forum 2023 will be an opportunity to demonstrate that this solidarity remains solid**, as States and other stakeholders showcase good practices and make new commitments in support of refugees and their host communities.

Refugees As Assets To Their New Countries

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Human Geography

Prepp Mains Booster: Population and associated issues; Indian Diaspora

- The World Refugee Day is celebrated on June 20 and celebrates the strength and courage of people who have been forced to flee their home country to escape conflict or persecution. It is an occasion to build empathy and understanding for their plight and to recognize their resilience in rebuilding their lives.

How do refugees contribute to society?

- According to migration policy research, there are three main categories through which migrants contribute to their communities:

- **Sociocultural:** It refers to social and cultural factors, such as habits, traditions, and beliefs. Some of the sociocultural contributions of migrants to host communities include increasing **food diversity, the creation of new music, and sporting achievements.**
- **Civic-political:** It relates to solving problems in the community through volunteering, and engaging with political processes or government offices. Diaspora communities also have the potential to engage in political processes in their countries of origin, including by promoting peacebuilding efforts.
- **Case study:** Ahmed, a young Afghan immigrant who sought refuge in India out of fear of persecution in his home country. He is currently teaching refugee and local children after completing a distance learning program at the National Institute of Open Schooling. He hopes to give back to the community that helped him transition from "a nobody" to an important member of society. Institutional assistance enabled him to achieve his potential and become a valued member of his community and society.
- **Economic:** It describes any activities involving trade, industry or money. Immigration has been shown to stimulate economic growth and contributes to the global gross domestic product (GDP). Research shows that both low- and high-skilled migrant workers have filled labor shortages thereby facilitating increased productivity in certain sectors.
- Studies also suggest that migrants are more likely to become entrepreneurs due to their resilience and 'growth mindset', developed as a result of overcoming the challenges involved in moving to a new country.
- **Case study:** Ayesha, an Afghan refugee, is slowly making her way towards pursuing a career as an artist-designer. She designed a line of swimwear recently for an up-and-coming brand, which is now on sale through an online store.

What are the challenges faced by refugees?

- **Housing:** Refugees are sent to live in places far away from cities or their countryside, where the houses' structures lack the main factors to become a decent home to live in.
- **Access to service:** The refugees face obstacles in obtaining government-issued documents, which hinder their access to essential services, including financial support and health care.
- **Cultural barriers:** Refugees face challenges in adapting to a new cultural and social environment, including language barriers, discrimination, and social exclusion.
- **Employment opportunities:** Lack of employment opportunities is another common challenge faced by refugees. Their lack of opportunity can adversely affect their mental health. Refugees often report experiencing anxiety and insomnia.
- **Deportation:** Many refugees live in fear of being sent home as their documentation or status is questioned.

What is the Global Compact on Refugees?

- The Global Compact on Refugees (GCR) is a framework for more predictable and equitable responsibility-sharing, recognizing that a sustainable solution to refugee situations cannot be achieved without international cooperation.
- It provides a blueprint for governments, international organizations, and other stakeholders to ensure that host communities get the support they need and that refugees can lead productive lives.

Its four key objectives are to:

- Ease the pressures on host countries
- Enhance refugee self-reliance
- Expand access to third-country solutions

- Support conditions in countries of origin for return in safety and dignity.



How Global Compact on Refugees strengthen the international response to refugees?

- **Acknowledgment:** The Global Compact on Refugees acknowledges the magnitude of the displacement crisis and calls for solidarity through a whole societal approach.
- **Responsibility:** It is built on the understanding that the responsibility towards the forcibly displaced is not limited to governments but extends to each one of us including individuals, the private sector, non-government organizations, and community-based organizations.
- **Recognition:** It also recognizes that the Global South is disproportionately affected and that host communities need assistance.
- The Global Compact on Refugees strives to enhance the international response, support host countries, promote self-reliance, and explore long-term solutions such as resettlement and safe returns.
- **Deportation:** Many refugees live in fear of being sent home as their documentation or status is questioned.

Conclusion

- An inclusive society should prioritize the needs of refugee youth. By engaging and including them, especially in the Sustainable Development Agenda, we can work towards India's vision of 'Viksit Yuva Viksit Bharat'

1951 Refugee Convention and its 1967 Protocol

- The 1951 Refugee Convention and its 1967 Protocol are the **only global legal instruments explicitly** covering the most important aspects of a refugee's life.
- The 1951 Convention contains a number of rights and also highlights the obligations of refugees towards their host country.
- The cornerstone of the 1951 Convention is the principle of **nonrefoulement**. According to this principle, a refugee should not be returned to a country where he or she faces serious threats to his or her life or freedom.
- India is not signatory to either the 1951 United Nations Refugee Convention nor its 1967 Protocol.

Salient Features of Indian Society

Gender Social Norms Index (GSNI) 2023: Prejudices Against Women Didn't Reduce In Last Decade; 90% People Still Hold Gender Bias: UN

Priority: High



Primary Source: Down to Earth

Prepp Prelims Booster: Gender Social Norms Index

Prepp Mains Booster: Salient features of Indian Society; Effects of globalization on Indian society; Social Empowerment;

Context:

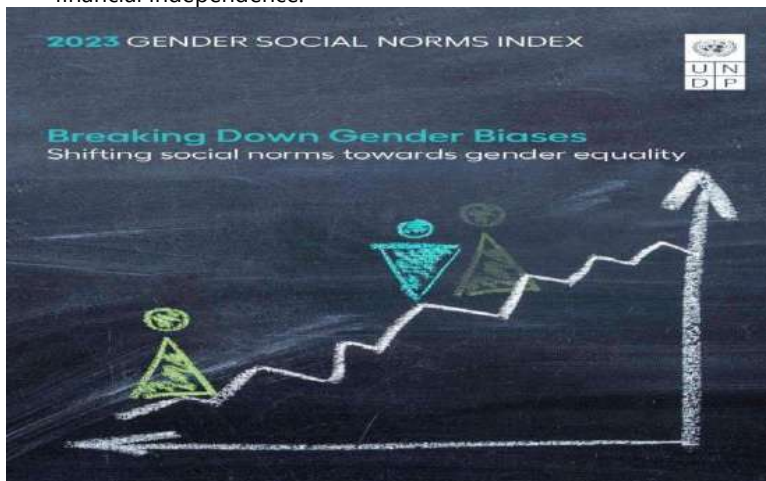
- Recently, the **Gender Social Norms Index (GSNI) 2023** was released by the United Nations Development Programme (UNDP).
- Biased gender social norms act as significant barriers to attaining gender equality**, impeding progress and infringing upon fundamental human rights.

What is Gender Social Norms Index (GSNI)?

- The **Gender Social Norms Index (GSNI)** is a measure that examines societal attitudes and beliefs regarding gender equality in terms of capabilities and rights.
- It was first introduced in the 2019 Human Development Report; it differs from achievement-based objective measures of gender equality, which assess gender gaps in terms of outcomes.
- It utilizes data from the World Values Survey (WVS) to calculate the index, encompassing four crucial dimensions: **political, educational, economic, and physical integrity**.
- By highlighting areas where women and girls experience systematic disadvantages and discrimination, the GSNI provides a comprehensive understanding of the challenges they face.

Key findings of GSNI 2023

- Approximately **90% of both men and women worldwide hold deep-seated biases against women**, indicating pervasive gender inequality.
- A quarter of the global population believes that domestic violence is justified**, perpetuating harmful attitudes towards women.
- Countries with **higher levels of gender bias in social norms tend to have lower representation of women in parliament**, indicating a correlation between biased attitudes and political underrepresentation.
- Indigenous women, migrant women, and women with disabilities face additional barriers to political participation, exacerbating existing biases and limiting opportunities for these marginalized groups.
- Despite advancements in education, **women still face significant challenges in accessing economic opportunities** and achieving financial independence.



Hopeful Signs and Breakthroughs

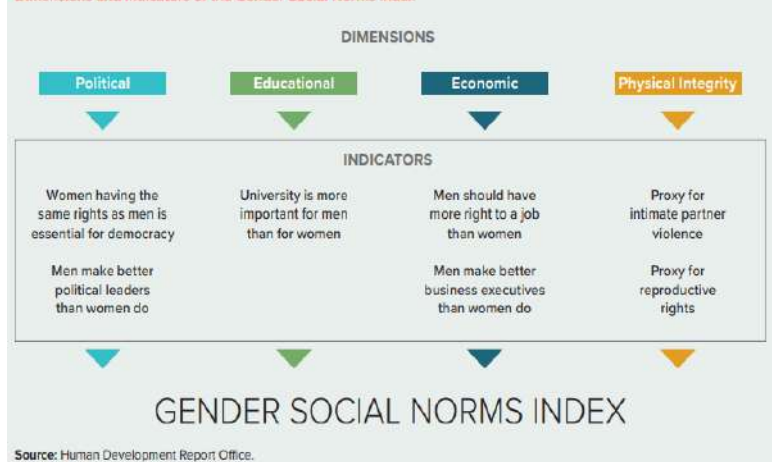
- There have been encouraging signs and remarkable breakthroughs in various countries regarding bias reduction and gender equality.
- Despite some limitations in overall progress, a recent survey of 38 countries revealed promising developments, particularly in 27 of them.

- Notably, **Germany, Uruguay, New Zealand, Singapore, and Japan have witnessed substantial improvements in combating bias across multiple indicators**.
- These positive outcomes can be attributed to a combination of effective policies, regulatory measures, and scientific advancements aimed at challenging and transforming gender social norms.
- The concerted efforts of governments, organizations, and individuals have contributed to these breakthroughs, fostering greater inclusivity and equality in society.

Major Challenges Related to Gender Equality in India

- Gender-based violence:** Gender-based violence, including domestic violence, sexual assault, harassment, and dowry-related crimes, is a pervasive issue in India. Victims often face societal stigma, inadequate legal support, and a lack of effective mechanisms for reporting and addressing such violence.
- Discriminatory cultural norms:** Deep-rooted cultural norms and traditional practices continue to perpetuate gender inequalities in India. Practices such as child marriage, female infanticide, son preference, and dowry-related abuses contribute to the marginalization and subjugation of women.
- Limited access to education:** While efforts have been made to improve access to education for girls, disparities remain. Factors such as poverty, social norms, early marriage, and lack of infrastructure contribute to girls' lower enrollment rates and higher dropout rates compared to boys, particularly in rural areas.
- Gender gap in the workforce:** Women in India face significant barriers to workforce participation and career advancement. There is a significant gender pay gap, limited opportunities for leadership positions, and widespread occupational segregation, with women often concentrated in lower-paying and informal sectors.
- Limited political representation:** Despite constitutional provisions and affirmative action policies, women's political representation in India remains low. Women are underrepresented in legislative bodies at all levels, which hampers their ability to influence decision-making processes and policies.
- Social attitudes and stereotypes:** Prevailing gender stereotypes and social attitudes reinforce gender inequalities in India. Traditional gender roles, cultural expectations, and biased attitudes towards women limit their freedom, choices, and opportunities.

Dimensions and indicators of the Gender Social Norms Index



Government Schemes related to Women Empowerment

- Beti Bachao, Beti Padhao (BBBP):** Launched in 2015, this scheme aims to address the declining child sex ratio and promote the education and empowerment of girls. It focuses on preventing

gender-biased sex-selective practices, improving the girl-child ratio, and enhancing access to education and healthcare.

- **Pradhan Mantri Ujjwala Yojana (PMUY):** Started in 2016, this scheme aims to provide free LPG connections to women from economically weaker sections of society, thus replacing traditional cooking fuels like firewood. It ensures better health, time savings, and economic empowerment for women.
- **Pradhan Mantri Matru Vandana Yojana (PMMVY):** It is a maternity benefit program launched in 2017. It provides financial assistance to pregnant and lactating women for their healthcare and nutrition needs during pregnancy and for the first six months after childbirth.
- **National Rural Livelihoods Mission (NRLM):** NRLM, also known as Aajeevika, was launched in 2011 to reduce poverty among rural women by promoting self-employment and entrepreneurship. It provides access to credit, skill development, capacity building, and market linkages to enhance income-generating activities for women.
- **Sukanya Samridhi Yojana (SSY):** Introduced in 2015, this scheme encourages parents to open a savings account for the girl child, with a focus on her education and marriage expenses. It offers a higher interest rate and tax benefits, ensuring long-term financial security for the girl child.
- **Support to Training and Employment Program for Women (STEP):** This scheme aims to provide vocational training and employment opportunities to women, particularly from marginalized sections of society. It helps them develop skills and enhances their employability.
- **One Stop Center:** This initiative, launched in April 2015, is a centrally sponsored scheme specifically aimed at combating violence against women. It operates as a subscheme under the broader umbrella scheme known as the National Mission for Empowerment of Women, which also encompasses the Indira Gandhi Matritrav Sahayog Yojana.

GENERAL STUDIES 2

Indian Constitution

An Ordinance, Its Constitutionality, And Scrutiny

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Indian Polity

Prepp Mains Booster: Polity and Governance; Constitution; Functions and responsibilities of the Union and the States, issues and challenges pertaining to the federal structure

Context:

The promulgation of the Government of National Capital Territory of Delhi (Amendment) Ordinance, 2023 by the President of India has sparked significant controversy. This ordinance, issued while Parliament was in recess, overturned a recent Supreme Court verdict and granted the Lieutenant Governor of Delhi more control over services in the National Capital Territory.

Background:

The central government, on May 19, passed the ordinance, contradicting the unanimous decision of a five-judge Constitution Bench of the Supreme Court. The court had previously granted the Aam Aadmi Party (AAP) government of Delhi authority over the transfer and posting of officials, except in matters of public order, police, and land.

Key Features of the Ordinance:

The Government of National Capital Territory of Delhi (Amendment) Ordinance, 2023 granted the Lieutenant Governor power over services and established a "National Capital Civil Service Authority" (NCCSA). The NCCSA, chaired by the Chief Minister and comprising two senior IAS officials, holds authority over civil service officers in Delhi government departments, except those related to public order, police, and land. The decisions of the NCCSA are determined by majority voting, potentially allowing the elected Chief Minister's viewpoint to be overruled by bureaucrats. In case of a difference of opinion, the Lieutenant Governor's decision becomes final.

Criticism:

- The ordinance has faced criticism on several fronts. Firstly, the NCCSA's existence raises concerns about bureaucrats potentially vetoing the Chief Minister's decisions, undermining government accountability and collective responsibility.
- Secondly, the creation of the NCCSA bypasses the Supreme Court's emphasis on the "triple chain of command," compromising the governance structure of Delhi. Additionally, the ordinance deviates from the President's own Transaction of Business Rules of the Government of National Capital Territory of Delhi, 1993.

Understanding Ordinance and Article 123 of the Constitution:

- Article 123 of the Indian Constitution grants the President the power to promulgate ordinances when Parliament is not in session. Ordinances have the same force and effect as an Act of Parliament but require approval within six weeks of Parliament's reassembly.
- They can be withdrawn by the President at any time but must be suggested by the prime minister-led council of ministers.
- An ordinance can be retroactive and has the authority to amend or revoke acts of Parliament or other decrees.

Conclusion:

The promulgation of the Government of National Capital Territory of Delhi (Amendment) Ordinance, 2023 has raised concerns about the balance of power between the elected government and bureaucrats. It remains to be seen how this ordinance will shape the governance structure of Delhi and its repercussions on the functioning of the government.

Amend Law To Make Necrophilia An Offence, High Court Of Karnataka Tells Union Government

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Indian Polity

Prepp Mains Booster: Indian Constitution; Ethics and Human Interface: Essence, determinants and consequences of Ethics in human actions; dimensions of ethics;

Context:

- Recently, the Karnataka High Court has recommended that the Union government amend the **Indian Penal Code (IPC)** to bring **necrophilia** under the **definition of an offense of unnatural sex or introduce** a new provision in IPC to make necrophilia an offense.
 - Necrophilia is derived from the Greek words philios (attraction to/love) and nekros (dead body) and involves the sexual attraction to a dead body.
- It observed that the attendants appointed to guard the bodies in mortuaries of many government and private hospitals indulge in "sexual intercourse" on the bodies.

What did the court say?

- Earlier, the trial court in Tumakuru had convicted Rangaraju of murder and sexually assaulting, a 25-year-old woman after murdering her. .

- A Division Bench comprising Justice B. Veerappa and Justice Venkatesh Naik T. upheld the conviction for murder but set aside the sentence on the charges of rape stating that the **act of sexual assault on the dead body cannot be termed as rape** under **Sections 377 (unnatural sex)** and 376 (rape) the IPC. As these provisions of the **IPC do not include the term 'dead body'**.
- The Bench pointed out that sexual assault on dead bodies does not attract the provision of rape under Section 376 of IPC.
- The court noted that in India, **there is no specific legislation**, including under the provisions of the **Indian Penal Code** for the purpose of upholding dignity and protecting rights and crime against the dead body of the woman unlike the United Kingdom, Canada, New Zealand, and South Africa where necrophilia is an offense.'



Suggestions by court

- The High Court recommended the Union government **amend the provisions of Section 377 (unnatural sex) of IPC** to include the dead body of any man, woman or animal or to introduce a separate provision as offence against dead woman as necrophilia or sadism in order to **preserve the dignity of the deceased**.
- **Mortuary monitoring:** The Bench directed the State government to ensure installation of CCTV cameras in the mortuaries of all the government and private hospitals to prevent offence against dead bodies, particularly of women, within six months.
- **Maintenance:** The Bench directed the government to ensure mortuaries are **regularly cleaned** so that dead body is preserved in a proper manner to maintain its dignity and **sensitise staff of mortuary to handle dead bodies with care**.
- The Bench said the postmortem room should not come under the direct line of sight of the general public/visitors for maintaining privacy; and **mortuaries should have all basic infrastructure** as per the Indian Public Health Standard guidelines for the district hospitals for management of the dead bodies.

Right To Change One's Name Is Part Of The Right To Life: What Two HCs Have Ruled

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Indian Polity

Prepp Mains Booster: Indian Constitution—historical underpinnings, evolution, features, amendments, significant provisions and basic structure, Structure, organization and functioning of the Executive and

the Judiciary—Ministries and Departments of the Government; pressure groups and formal/informal associations and their role in the Polity

Context:

- Recently, the Allahabad and Delhi High Courts ruled in separate judgments that the right to change one's name is a part of the Right to Life under Article 21.
- The right to change one's name or maintain it is a fundamental right through Articles 19 and 21 but is not an absolute right and is subject to reasonable restrictions.

What were the petitions before the courts?

- The High Court of Delhi was hearing a petition filed by two brothers in the "**Sadanand & Anr. Vs CBSE & Ors.**" seeking directions to set aside a letter issued by the CBSE refusing to change their last names from Mochi to Nayak on their Xth and XIIth standard certificates.
- Their father had changed his surname on account of the caste atrocities suffered by him. This was published in the Gazette of India and in the newspaper as required and the change was reflected in his public documents such as his Aadhar card, Voters ID, and PAN card.
- However, the CBSE refused to update the brothers' certificate with the father's new surname.
- The second petition "**Md. Sameer Rao vs. State of U.P.**" was filed before the High Court of Allahabad.
- It dealt with an order passed by the Regional Secretary, Madhyamik Shiksha Parishad, Regional Office, Rae Baraeli rejecting Shanawaz's request to change his name to Md. Sameer Rao on his Intermediate and High School Certificates.
- The petitioner had changed his name for a higher sense of self-worth.
- The Board refused to update the petitioner's name on the certificates despite him having published the change in a popular daily and the Gazette.

Why were the name changes rejected by the Government?

- In the first case, the **CBSE claimed that the change in surname by the petitioners could entail a change in their caste which could then be misused**.
- The CBSE also stated that it was not permissible to seek a change in the father's name beyond the school records.
- In the second case, the **state argued that a change in one's name is not an absolute right and is subject to reasonable restrictions imposed under the law**.
- The state also claimed that the Board's rejection of the name change request was right as the Board was barred by limitation.

What has the High Court of Delhi ruled?

- In its May 19th verdict, the High Court of Delhi observed that the father of the petitioners had decided to change his surname to overcome the social stigma and disadvantages faced by his sons.
- The Court ruled that the denial of the application to the CBSE to change the name in the petitioner's certificates was unjustified.
- According to the court, the surname **Mochi is a caste name within the cobbler community for people handling leather, particularly footwear**. The petitioners were given the surname Mochi on account of the profession practiced by their father's family.
- The Court permitted the petitioners' father Lakshman Mochi to change his name to Lakshman Nayak.
- The Court reasoned that the petitioners were entitled to change their names and identity to obtain respectability in the social structure given that they had been subjected to disadvantages of social prejudices by virtue of their surname.

What was the decision of the Allahabad High Court?

- In its ruling on May 25th, the **Allahabad High Court** noted that the **decision of the authorities to reject the application for the change of name was arbitrary.**
- The court's ruling in "Md. Sameer Vs. U.P." stated that the **authorities' action violated the fundamental rights of the petitioner under Articles 14, 19(1)(a), and 21** and allowed Shanawaz to change his name to Md. Sameer Rao.
- The Court observed that name changes made in the High School or Intermediate education certificates issued by the educational boards have to be simultaneously incorporated in all documents of identity issued by various authorities like Aadhar, PAN, ration card, etc.
- The High Court justified its ruling by reasoning that it was necessary to have congruence in all identity-related documents.
- According to the Court, allowing a person to carry documents with different names could lead to confusion in identity and the potential for mischief, and it was the responsibility of the state to prevent any such misuse.

- **Art 14:** Article 14 of the Indian Constitution deals with Equality before law. It states that the State shall not deny any person equality before the law or equal protection of the law within the territory of India.
- **Art 19(1)(a):** Article 19(1)(a) is related to the right to Freedom of Speech and Expression.
- **Art 21:** Article 21 is related to the protection of life and personal liberty and states that no one can be deprived of his life or personal liberty except by procedure established by law.



What have the Courts ruled on Article 21?

- The verdicts of both the Allahabad and Delhi High Courts have cited the provisions of Article 21.
- The Allahabad High Court observed that a person's right to keep a name or change it according to their personal preference falls under the wide ambit of Article 21 of the Constitution.
- The Allahabad High Court also cited the ruling of the Kerala High Court in the "**Kashish Gupta vs. Central Board of Secondary Education**" case.
- The Kerala High Court had found that it is part of a person's Right to freedom of speech and expression (Art 19(1)(1)) to have a name and to express it in the manner he wishes, and a part of the Right to liberty (Article 21).
- **The Court reasoned that the State or its instrumentalities cannot object or prevent an individual from using a name or changing it as per his choice except by the restrictions provided for under Article 19(2) or by a just, fair, and reasonable law.**

- The Allahabad High Court's decision also relied on rulings delivered by the Delhi High Court in "**Rayaan Chawla vs. University of Delhi**" (2020) and the Supreme Court in "**Jigyada Yadav vs. CBSE**" (2021).
- In Rayaan Chawla the Court argued against adopting a technical approach to changing names and included the right to change names under Art 19(1)(a) and Art 21.
- In Jigyada Yadav, the Supreme Court stated that an individual's name is an intrinsic element of their identity and ruled that one must be in complete control of their name and that the law must enable them to retain and exercise control over it freely and forever.
- The High Court of Allahabad also referred to the opinion offered by **UN Human Rights Committee** in the **Coeriel and Aurik v. The Netherlands** and said that a name is an indispensable component of an individual's identity and was covered by the right to privacy.
- The Delhi High Court held that the **Right to Identity is an intrinsic part of the Right to Life under Article 21 of the Constitution.**
- According to the Court, the **Right to Life includes the Right to Live with Dignity**, under which a person can not be tied down by casteism faced by them due to their caste.
- Therefore, the Court ruled that it was permissible for anyone to change their surname so as not to be identified with any caste that may cause them to suffer any form of prejudice.

To know more about Article 21, click the [link](#).

Are there any restrictions on the right to change names?

- The High Court of Allahabad has clarified that **the right to change or retain one's name is not an absolute right and is subject to various reasonable restrictions.**
- The Court also observed that the restrictions imposed by law on fundamental rights must be fair, just, and reasonable.
- The Court also cited the Supreme Court's verdict in the "**K. S. Puttaswamy vs. Union of India**," (2017) as per which, there is a multi-faceted inter-relationship between the guarantee against arbitrariness and the protection of life and personal liberty.
- The court highlighted the **principle of proportionality** as an essential facet of the right against arbitrary state action which ensures that the nature and quality of any encroachment is proportionate to the purpose for which the law was enacted.
- The High Court cited the test of reasonableness evolved in the Supreme Court ruling in "**Jeeja Ghosh vs. Union of India**" (2016) and stated that the value of human dignity plays an important role in determining the proportionality of a statute that imposes a limit on a constitutional right.

Governors Cannot Indefinitely Hold Back Bills

Priority: : High



Primary Source: The Hindu

Prepp Prelims Booster: Indian Polity

Prepp Mains Booster: Parliament and State legislatures—structure, functioning, the conduct of business, powers & privileges and issues arising out of these; Appointment to various Constitutional posts, powers, functions and responsibilities

Context:

- Recently issues have arisen in various States between Chief Ministers and Governors, with regard to the passing of Bills.
- Chief Ministers feel that Governors have not acted for an unduly long period of time on bills presented for their assent.

Why Governors Cannot Indefinitely Hold Back Bills?

- **Article 200** states that when the Governor is presented with a Bill, he can **either give his assent or withhold it or return the Bill** with certain suggestions.
- The first provision of Article 200 states that after a Bill is presented to him, the Governor may, **as soon as possible, return the Bill if it is not a Money Bill** with a message to reconsider the Bill as a whole or any part thereof.
- The House has **six months to decide whether or not to accept this request**.
- Once the House returns the Bill to the Governor, he has no choice but to give his assent whether or not his recommendations have been accepted.
- The second **provision of Article 200 gives the Governor discretion to refer a Bill to the President** if he is of the opinion that the Bill, if passed, would take **away the powers of the High Court**.
- The procedure to be followed when presidential assent for such a Bill is required is set out in **Article 201 of the Constitution**.
- The discretion of the Governor **does not contemplate an indefinite withholding of assent to a Bill**.
- Such an action would cause a breakdown of the constitutional machinery.



Supreme Court Judgements about the Governor's discretion

- **Purushothaman Nambudiri v State of Kerala:** In Purushothaman Nambudiri v. State of Kerala, the Court evaluated the provisions of Articles 200 and 201 to hold that a Bill that was awaiting the Governor's assent would not expire following the dissolution of the House.
- The court ruled that since there is no deadline set forth in Articles 200 and 201 for the Governor or the President to give their assent—in contrast to the House, which has six months to decide the Governor's or President's recommendations, as the case may be.
- It suggests that the Constitution's framers did not want a bill that was awaiting the Governor's assent to be in danger of lapse following the dissolution of the House.
- Though the Constitution prescribes no express time limit, the first proviso mentions that the Governor ought to either give his assent or send the Bill back to the House as soon as possible.
- **Shamsher Singh:** Although not stated specifically, the Court found in the Shamsher Singh case that the Governor **only had discretion decision-making authority with regard to the second proviso**.

- It held that the Governor's power, to reserve Bills for the President's consideration, is one such discretionary power. The Court also emphasized the unique circumstances that allowed the Governor to act without consulting the Council of Ministers.
- **Nabam Rebia and Bamang Felix vs Dy. Speaker:** In Nabam Rebia and Bamang Felix v. Dy. Speaker, the Court concluded that, with regard to Article 200, the Governor's discretion **extends only to the decision of whether or not a Bill should be reserved for the President's consideration**.
- This is significant because the Court also ruled that **Article 163(2) must be interpreted in light of Article 163(1)**, which states that only situations in which the Constitution specifically authorizes the Governor to act independently cannot be challenged before a court of law.
- The judgment in Nabam Rebia has been referred to a larger bench of the Court with regard to the issue of whether a Speaker is barred from proceeding with deciding matters under Schedule X while a motion for his removal is pending before the House.

Conclusion

- The Governor, therefore, has no discretion to indefinitely withhold assent to a Bill. If a Bill is presented to him, it has to be returned with recommendations or given assent as soon as possible.
- If it takes away the power of the High Court, the Governor has the discretion to refer it for the President's consideration. Refusing to act on a Bill is in violation of the Constitution, and a Governor's action or inaction in this regard would be susceptible to judicial review.
- If an elected government cannot legislate, it could lead to a breakdown of parliamentary democracy.

80 Castes To Be Added To Central OBC List

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Indian Polity

Prepp Mains Booster: Appointment to various Constitutional posts, powers, functions and responsibilities of various Constitutional Bodies, Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes; mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections.; Salient features of Indian Society, Diversity of India, Social empowerment, communalism, regionalism & secularism.

Context:

- Recently, the chairperson of the National Commission for Backward Classes stated that 80 more castes from 6 states are likely to be added to the Central List of Other Backward Classes (OBCs).
- The Commission considers additions to the Central OBC list based on social, educational, and economic indicators suggested by the Mandal Commission.

Addition of communities to the OBC list

- **According to a report released by the Union Ministry of Social Justice and Empowerment, the government has facilitated the addition of 16 communities to the Central list of OBCs.**
- The OBC communities belonged to the states of Madhya Pradesh, Bihar, Himachal Pradesh, Bihar, Jharkhand, and the UT of Jammu and Kashmir.
- The National Commission on Backward Classes is processing the approval for the addition of 80 more castes from the states of Maharashtra, Telangana, Andhra Pradesh, Himachal Pradesh, Punjab, and Haryana.

- The Telangana government has requested the addition of 40 castes, presently listed under the State OBC list to the Central list.
- Andhra Pradesh and Himachal Pradesh have asked for the addition of the Turup Kapu and Manjhra communities respectively.
- Punjab has sought the inclusion of the Yadav community while Haryana has sought the addition of the Gosain/Gosai community.
- Maharashtra on the other hand has asked for the addition of the Lodhi, Lingayat, Bhoyar Pawar, and Jhandse communities.

The procedure of addition

- **Articles 15(4) and 16(4)** of the Constitution consist of special provisions for the socially and educationally backward classes of citizens (SEBC) which includes the SCs and STs.
- At present, there are two OBC lists - one for the state and the Centre.
- A caste included in the state OBC list enjoys reservation benefits in state government jobs and educational institutions, but not in central government jobs or educational institutions.
- **As per the Procedure for Addition mentioned in the NCBC Act, 1993, the Commission is mandated to constitute a Bench to examine such proposals and then forward their decision to the Union government including dissent, wherever applicable.**
- The Cabinet must then approve the additions and bring legislation to this effect. Following this the President is empowered to notify the change.
- At present, there are over 2,650 different communities listed in the Central OBC list for all States and Union Territories.
- The Union government introduced the **105th Amendment to the Constitution to reaffirm the right of the individual states to maintain their own OBC list.**
- The Amendment was required after the Supreme Court interpreted in the Maratha Reservation case, that the **102nd Amendment that gave the NCBC constitutional status** had effectively saved 671 State OBC communities from being deprived of benefits.
- Under **Article 342(A), Parliament's approval is necessary before adding or removing any community from the backward list.**



NCBC

- The **National Commission for Backward Classes** was established in 1993 under the Union Ministry of Social Justice and Empowerment following the Supreme Court's directions in the [Indira Sawhney case](#).

- The 102nd Constitutional Amendment (2018) granted the NCBC constitutional status.
- **Objective:** The primary objective behind the establishment of the Commission was to evaluate the conditions and challenges faced by the socially and economically backward communities and provide suggestions as necessary for their betterment.
- **Structure:**
 - The Commission consists of five members i.e. a Chairperson, Vice-Chairperson, and three other members
 - The members are nominated by the President by warrant under his hand and seal.
 - The service conditions and terms of office of the members are determined by the President.
- **Functions:**
 - The NCBC has been tasked with redressing backward-class grievances.
 - The NCBC has been mandated to investigate and monitor all matters pertaining to the safeguards granted for the socially and educationally disadvantaged under the Constitution and other laws
 - It advises the government on the socio-economic development of socially and educationally disadvantaged groups and assesses their progress.
 - The commission must perform other tasks related to the protection, welfare, development, and progress of the socially and educationally disadvantaged that the President may designate by regulation subject to the rules of any law passed by Parliament.
 - **Article 338B has granted the NCBC the jurisdiction to investigate complaints and welfare measures related to the socially and educationally disadvantaged.**
 - **It has all the powers of a civil court when hearing cases.**
 - The commission presents an annual report to the president and can also submit a report as and when necessary.

Concerns:

- According to critics, the National Commission for Backward Classes is not likely to produce a credible and effective social justice infrastructure.
- The NCBC is not responsible for defining backwardness and its recommendations are not binding on the government.
- The new NCBC's composition does not include the Supreme Court-mandated features of an expert body.
- The unbalanced representation of SC/ST and OBC groups has meant that constitutional status alone is insufficient to alleviate the challenges faced by disadvantaged communities at the grassroots level.
- Critics have questioned the scope of a body like the NCBC when public-private partnerships and privatization of public-sector undertakings are being promoted.

SC and ST list additions

- Since the last Census (2011), while four communities have been added to the Scheduled Caste list as main entries and 40 have been added as sub-entries, four communities have been dropped from the list or moved to other lists.
- According to government data, as of March 2023, there were around 1,270 communities in the SC list.
- Since 2011, five communities have been added to the Scheduled Tribes List as main entries, 22 were added as sub-entries, and 13 were added as substitute terms for existing tribes. In the same period, one community has been dropped from the list.

- Government data indicates that as of March 2023, there were around 748 communities in the ST list.
- **While the addition of communities to the SC or ST List requires the concurrence of the Office of the Registrar General of India, neither this nor the approval of any other authority is required for an addition to the Central OBC List**

Conclusion

- Many states have not implemented the 27% reservation provided to OBCs. As a result, there is a skewed representation of OBCs in various committees, commissions, boards, and other government bodies.
- Increased access to benefits such as reservations in educational institutions and government jobs for less dominant OBCs can be made possible by adding communities to the Central List.
- Proper representation of the backward classes is necessary if they are to join the national mainstream and contribute to the country's development.

Mandal Commission:

- The Mandal Commission, chaired by B.P. Mandal was established in 1979 to determine the criteria for defining India's "socially and educationally backward classes".
- The Commission found that approximately 52% of India's population is OBC, hence recommended that 27% of government positions should be designated for them.
- The panel created a list of 11 indicators of social, educational, and economic backwardness.
- It has identified backward classes among non-Hindus and developed a list of 3,743 other backward classes (OBC) castes across India, as well as a list of 2,108 "depressed backward classes" castes.

Issues Relating To Development And Management of Social

Sector/Services Relating To Health, Education, Human Resources

India's Child Wasting Rate 18.7% As Per Latest UN Inter-Agency Estimates

Priority: High



Primary Source: Down to Earth

Prepp Prelims Booster: Health

Prepp Mains Booster: Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources. Issues relating to poverty and hunger, Important International institutions, agencies and fora- their structure, mandate.

Context:

- Recently, the Levels and trends in child malnutrition: Joint Child Malnutrition Estimates prepared by UNICEF, WHO, and the World Bank revealed that children suffering from severe wasting require early detection and timely treatment.
- In 2020, around 18.7% of Indian children were affected by wasting due to poor nutritional intake and/or recurrent illnesses.
- The Joint Child Malnutrition Estimates (JME) released by the UNICEF-WHO-WB- JME inter-agency group provides updates on global and regional estimates in prevalence and the actual number of indicators such as stunting, wasting, overweight, etc.

What are the findings of the Joint Child Malnutrition Estimates?

- According to estimates, around **45 million children under 5 (6.8%) suffered from wasting of which 13.6 million (2.1%) suffer from severe wasting.**
- **Asia is considered to be home to three-fourths of all children with severe wasting while 22% of children with severe wasting are believed to live in Africa.**

- The report also highlighted that **India had a stunting rate of 31.7% in 2022, down from 41.6% in 2012.**
- **148.1 million children, which is equal to 22.3% of children under five worldwide, were affected by stunting in 2022. Of this, 52% lived in Asia and 43% lived in Africa.**
- The Estimates noted that there are **now 37 million children under 5 who are overweight across the globe, a rise of around 4 million since 2000.**
- **India's overweight percentage in India rose from 2.2% in 2012 to 2.8% in 2022.**

Assessment by the Estimates

- Additionally, the report found that insufficient progress had been made in regard to achieving the **2025 World Health Assembly global nutrition targets and SDG 2.2 (End all forms of malnutrition).**

WHA global nutrition targets 2025

- In 2012 the World Health Assembly Resolution 65.6 approved a Comprehensive plan on maternal, infant, and child nutrition.
- It listed a set of six global nutrition targets to be achieved by 2025.
 - 40% reduction in the number of children under 5 who are stunted;
 - 50% reduction in anemia among reproductive-age women
 - 30% reduction in low birth weight;
 - No increase in incidence of childhood overweight;
 - Increase the rate of exclusive breastfeeding in the first 6 months to at least 50%;
 - Lower and control childhood wasting at less than 5%.
- **Only one-third of countries are on track to achieve the goal of halving the number of children affected by stunting by 2030.** However, an assessment of progress has not been possible for around one-fourth of countries.
- **Fewer countries were projected to achieve the target of 3% prevalence for the overweight indicator as just 1 out of 6 countries were on target as of now.**
- The Estimates also concluded that a proper assessment of progress on wasting is not possible for around 50% of the world's countries.




Schemes to tackle malnutrition

- Poshan Abhiyan
- Integrated Child Development Services
- Mid-Day Meal Scheme
- National Food Security Mission
- National Nutrition Mission
- National Nutrition Strategy
- Anemia Mukt Bharat Abhiyaan

- Pradhan Mantri Matru Vandana Yojana

Amplify The Subject Of Adolescent Girl Nutrition

Priority: Medium 

Primary Source: The Hindu

Prepp Prelims Booster: Economic and Social Development – Sustainable Development, Poverty, Inclusion, Demographics, Social Sector initiatives, etc.

Prepp Mains Booster: Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes; Government policies and interventions for development in various sectors and issues arising out of their design and implementation

Context:

- This article is written by Gaurav Gogoi, Member of Parliament, Kaliabor, Assam.
- In this article, the author discussed the importance of prioritizing health and nutrition in adolescent girls to unlock the full potential of India's future.



Why is Adolescent Girl Nutrition Important?

- Opportunity of growth:** Adolescence is an important period of **cognitive development** and **access to nutrition** during Adolescence, **compensates** for any nutrient deficiencies acquired during **early developmental** stages in the girl child.
- Labor force participation:** Better nutrition improves every young girl's prospect to participate in productive activities, as adolescent health is a significant **indicator of women's labour force participation** in India in the long term.
- Academic performance:** Poorly balanced and insufficient diets can lead to cognitive impairments that affect one's academic performance. This can result in lower educational attainment, which can limit opportunities for employment and economic self-sufficiency later in life.
- Higher risk of chronic diseases:** Undernourished adolescent girls are at a higher **risk of chronic diseases and pregnancy complications**, which can lead to a higher healthcare burden on both families and communities, potentially leading to financial instability and increased poverty.

Concerns

- Undernutrition and Anaemia:** Adolescent girls are particularly vulnerable to undernutrition and anaemia due to the onset of menstruation.
- According to the **National Family Health Survey-5 (2019-21)** about 59.1% of adolescent girls were found to be anaemic and **NFHS-4** reported over 41.9% of school-going girls as underweight.
- Other factors:** A range of factors, from environmental conditions to cultural norms that **lack a gender-neutral environment within a**

household, affects the nutrition uptake in adolescent girls and makes the situation more complex.

Suggestions

- life-cycle approach:** While there have been improvements in health indicators through government initiatives, it is important to acknowledge that current interventions do not specifically address the nutritional needs of adolescent girls.
- Therefore, it is crucial that the interventions are not only centered around good nutrition but also **adopt a life-cycle approach**, ensuring that no girl gets left behind.
- Investing:** The investment can help break the intergenerational cycle of poverty, as well-nourished girls are more likely to have healthy babies and provide better care for their families.
- Therefore, investing in girls' nutrition is not only a moral obligation of the state but also an economic one, with potential returns in the form of greater and more sustainable economic growth of the nation.
- Strategic modifications to existing interventions:** The convergence of various government initiatives such as the Scheme for Adolescent Girls (SAG) within the umbrella of the **Prime Minister's Overarching Scheme for Holistic Nutrition Program (POSHAN) 2.0** is a step in the right direction, provided it is implemented effectively.
- Targeted adolescent-oriented schemes** such as the **Rashtriya Kishor Swasthya Karyakram (RKSK)** could include even stronger awareness and nutrition education programs that would help sustain beneficiary compliance.
 - Rashtriya Kishor Swasthya Karyakram was launched by the Ministry of Health & Family Welfare in January 2014. **It is to target adolescents** in the age group of 10-19 years.
 - It focuses on age groups 10-14 years and 15-19 years with universal coverage, i.e. males and females; urban and rural; in school and out of school; married and unmarried; and vulnerable and underserved.
 - The six strategic priorities being nutrition, sexual and reproductive health, Non-Communicable Diseases, substance misuse, injuries & violence and mental health.
- Targeted and regionally contextualized **Social and Behaviour Change Communication (SBCC)** efforts around adolescent girls' nutrition are sure to generate greater demand and the adoption of good practices.
- For improved outcomes, it is very crucial for effective convergence and collaborations among all the relevant departments, in a way that fosters a collective endeavor.
- Training of health workers:** Routine training of health workers for effective implementation and monitoring of various schemes, and to adapt to an evolving landscape.
- Use evidence and data:** There is a need for a comprehensive narrative on adolescent girls' nutrition that **highlights its connections to mental and physical well-being, individual productivity**, and the overall economic growth of the country.
- This narrative should be supported by evidence and data that can resonate with a broad audience, including those outside the technical community, and should be framed in a way that inspires actionable steps. In order to achieve this, it is essential to have disaggregated data that allows for effective interpretation and analysis.

Conclusion

- The adolescence period is the second window of opportunity for growth, the country beholds a colossal opportunity to add to its

nation's demographic dividend by investing in nutrition interventions in adolescent girls.

- If our girls are less healthy and less educated, they are unlikely to participate fully in society, whether through work, politics, or community involvement.

Muslims Lag Behind Scheduled Castes And Scheduled Tribes In Higher Education

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Ministry of Education's AISHE Survey 2020-21

Prepp Mains Booster: Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.

Context:

- According to the Ministry of Education's AISHE Survey 2020-21, **the Muslim community's enrollment in higher education declined at a time when the enrolment of SCs, STs and OBCs improved.**
- The **findings of the survey came five months after the Ministry of Minority Affairs scrapped the Maulana Azad Fellowship for Muslim students pursuing higher education.**
- The erstwhile BJP government in Karnataka had done away with 4% reservation for Muslims before the Assembly election.

About All India Survey on Higher Education (AISHE)

- It has been conducted by the Ministry of Education since 2011.
- It includes all higher education institutions situated in Indian Territory that provide higher education in the nation.

Objectives:

- Identify and collect all institutes of higher learning in the nation.
- Collect data from all higher education institutions on many elements of higher education.
- The survey collects thorough information on several aspects such as student enrolment, instructor data, infrastructure information, financial information, and etc.
- Calculating indicators like Institution Density, Gross Enrolment Ratio, Pupil-teacher ratio, Gender Parity Index, and Per Student Expenditure from AISHE data informs policy decisions and aids educational sector development research.

Key findings regarding enrollment in higher education

- The enrolment of Scheduled Castes, Scheduled Tribes, and Other Backward Classes (OBC) in higher education increased by 4.2%, 11.9%, and 4%, respectively, compared to 2019-20.
- The Muslim community's enrollment decreased by 8%, totaling roughly 1,79,000 students.
- This unprecedented decline, caused in part by the COVID-19 pandemic, reflects the community's relative economic impoverishment, which forces its talented students to pursue earning opportunities after completing schooling rather than enrolling in higher education, beginning at the graduation level.
- **The most drastic decline was reported from Uttar Pradesh (36%), followed by Jammu & Kashmir (26%), Maharashtra (8.5%), and Tamil Nadu (8.1%).**
- In Delhi, after passing the Senior School Certificate Examination, every fifth Muslim student did not enroll in further study.
- In Uttar Pradesh, where Muslims make up roughly 20% of the population, the community's enrollment in higher education is just 4.5%, despite the state reporting a considerable rise in the number of institutions throughout the year.

- **Kerala is the only state that defies the pattern of Muslims** languishing at the bottom of the educational ladder. In this city, 43% of Muslims pursue higher education.

Data in terms of teaching staff

- The low number of Muslims seeking higher education at the entrance level is matched by the low number of Muslim professors in higher education institutions.
- Teachers in the General Category account for 56% of all teachers in India.
- OBC, SC, and ST teachers account for 32%, 9%, and 2.5% of all teachers, respectively. Muslims make up just around 5.6% of all teachers.

Data in terms of gender

- In terms of gender, there are 75 female teachers for every 100 male teachers. In this regard, female instructors from the OBC, SC, and ST groups outperform their Muslim colleagues.
- While there are 71% female OBC teachers and 75% female ST teachers, there are only 59 female Muslim teachers for every 100 male Muslim teachers.
- According to the report, the number of females per 100 males among non-teaching employees from Other Minority Communities is 85. Muslims have the lowest share, with 34 females for every 100 males.
- The overall expected enrolment in higher education is 4,13,80,71, according to the AISHE survey. Universities and component entities have almost 91 lakh students.
- Female students make up 48.67% of all students enrolled, while male students make up 51.33%.

Issues related to India's Higher Education System

- Significant variation in the quality of education across institutions in India
- Limited access to higher education, particularly for marginalized and rural students
- Outdated curriculum that does not align with industry requirements
- Low focus on research and innovation in higher education institutions
- Shortage of qualified and experienced faculty members
- Gap between graduates' skills and job market demands
- Complex regulatory framework hindering institutional growth and development

Way Forward

- Emphasis should be placed on improving the quality of education and making it more relevant to the needs of the industry and society. This can be achieved by updating curricula, promoting interdisciplinary learning, and incorporating practical training and skill development programs.

Government Policies & Interventions; Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections, Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources

Tackling The Human-Dog Conflict

Priority: Low



Primary Source: The Hindu

Prepp Prelims Booster: Human animal conflict

Prepp Mains Booster: Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context:

- In this article, Alokparna Sengupta, an animal advocate with over 15 years of experience and Managing Director of Humane Society International/India has discussed the **issue of conflicts between humans and dogs**, highlighting the need for effective measures to address this problem.
- In recent years, the issue of escalating street dog populations has become a pressing concern for municipalities and cities nationwide.
- To address this challenge, the **Prevention of Cruelty (Animal Birth Control) Rules 2023** has emerged as a compassionate and well-rounded approach that effectively addresses both the welfare of dogs and the concerns of human communities.

Animal Birth Control Rules, 2023

- The Animal Birth Control Rules 2023 require stray dogs to be caught, vaccinated, neutered, and released back.
- This approach aims to control the dog population without cruelty.
- The Rules aim to provide guidelines for the sterilization and immunization of stray dogs through Animal Birth Control (ABC) programmes.
- These programmes should be conducted by the local bodies, municipalities, municipal corporations, and panchayats.
- ABC and the anti-rabies programmes should be carried out jointly by these bodies.
- The Rules provide guidelines on resolving human-dog conflicts without relocation of the animals.

Issues with Animal Birth Control Rules

- The Animal Birth Control Rules 2023 transform “stray dogs” into “community animals,” but this classification is unclear.
- The Rules ask residents’ welfare associations to care for and feed the dogs away from children and the elderly, which could lead to more homelessness and susceptibility to disease and injury.
- The Rules do not address improper disposal of solid waste and casual feeding of dogs, which could lead to more conflicts between humans and dogs.
- The local authorities will be responsible for any violation during birth-control procedures and animal-human conflicts, but they lack funds, staff, and infrastructure for this.

Stray Dog Population in India

- **India has one of the largest stray dog populations in the world.** Estimates suggest that there are tens of millions of stray dogs in the country.
- Stray dogs have become a part of India's urban and rural landscape, with some communities having a long-standing tradition of coexisting with them.
- Historically, India has faced challenges in implementing effective animal birth control (ABC) programs. Inconsistent implementation, inadequate resources, and a lack of standardized processes have hindered the success of sterilization campaigns.
- **Stray dogs are often associated with rabies cases in India.** Rabies is a significant public health concern, and stray dogs are one of the primary sources of transmission to humans. It is estimated that India accounts for a large portion of the global rabies burden.
- The National Rabies Control Program reported 6644 clinically suspected cases and deaths of human rabies between 2012 and 2022.
- Conflicts between humans and stray dogs are not uncommon, and dog bites pose a significant public safety concern. Instances of dog bites and attacks, sometimes resulting in fatalities, have led to public outcry and calls for effective management strategies.

- In 2001, the Animal Birth Control (Dogs) Rules were introduced in India to guide the implementation of sterilization and vaccination programs for stray dogs.

What are the alternatives to animal birth control?

- **Awareness campaigns:** One alternative to animal birth control is education and awareness campaigns focused on responsible pet ownership. By educating pet owners about the importance of spaying and neutering their pets and providing information on proper pet care and management, we can reduce the number of unwanted litters and stray animals. This approach addresses the root cause of the problem by preventing overpopulation from occurring in the first place.
- **Shelter:** Another alternative is promoting adoption and fostering programs to provide homes for existing stray animals. By encouraging the adoption of homeless animals from shelters and rescue organizations, we can reduce the number of animals on the streets and prevent further breeding.
- Community-based programs that involve trap-neuter-return (TNR) initiatives can also be effective. These programs involve trapping stray or feral cats, sterilizing them, and then returning them to their original locations. This approach helps stabilize feral cat populations without resorting to euthanasia or culling.
- Implementing stricter regulations and enforcement against pet abandonment and irresponsible breeding can help address the issue. This can include penalties for irresponsible pet owners, mandatory microchipping, and licensing requirements to ensure accountability.

Way Ahead

- Addressing the street dog conflict and population issue requires a comprehensive approach that combines scientific methods with social marketing and human behavior change strategies.
- Rather than engaging in conflicts, it is essential to bring together our collective expertise and dedication to tackle this multifaceted societal problem.
- It is crucial to allocate resources towards researching the benefits of Animal Birth Control (ABC) on dogs, even if such studies are currently lacking.
- Additionally, funding should be provided for research on dog bite mitigation, and the development of model programs that can be scaled up.
- In instances where ABC programs are not effectively implemented, organizations should take responsibility and enhance their standards through comprehensive training initiatives.

This Pride Month, Let's Count The Wins For Queer And Trans Rights**Priority: Medium****Primary Source:** Indian Express**Prepp Prelims Booster:** Indian Polity**Prepp Mains Booster:** Government policies and interventions for development in various sectors; Issues relating to development and management of Social Sector/Services.**Context:**

- In this article, Aqsa Shaikh, associate professor, Department of Community Medicine, Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, Delhi and director, Human Solidarity Foundation, has discussed about the **significance of Pride Month and highlights the progress and achievements in terms of queer and trans rights.**



Key Highlights

- As Pride Month arrives once again, there is eager anticipation surrounding the Supreme Court's verdict on the marriage equality case, which has become a significant milestone in the history of queer rights in India.
- However, amidst this anticipation, it is crucial not to overlook other noteworthy events that have unfolded over the past year since June.
- This period provides an opportunity to reflect on the progress that has been achieved and acknowledge any missed opportunities.
- Moreover, it serves as a catalyst for planning a future that prioritizes justice and inclusivity, ensuring that strides forward continue to be made in the pursuit of equality for all.

What are queer and trans rights?

- Queer and trans rights refer to the advocacy and fight for equal rights and protections for individuals who identify as queer or transgender.
- This includes ensuring legal recognition and protection of gender identity, the right to live authentically, protection against discrimination in various areas of life (such as employment, housing, healthcare, and education), access to gender-affirming healthcare, and the right to marry or form families without discrimination.
- It also encompasses efforts to challenge and dismantle societal prejudices, stereotypes, and stigmas associated with queer and transgender individuals, promoting acceptance, understanding, and inclusivity.
- The goal is to create a society where queer and transgender individuals can live freely, with dignity, and without fear of discrimination or marginalization.

What are the achievements?

- **Medical Termination of Pregnancy Act:** The landmark expansion of the Medical Termination of Pregnancy Act to include transgender persons and their entitlement to abortion services was a significant judicial milestone. They are now legally entitled to avail of abortion services.
- In light of the increasingly restrictive abortion legislation in countries like the US, this was a judicial benchmark.
- **Gender Sensitisation and Internal Complaints Committee:** The apex court also implemented measures for a queer-inclusive judicial system, such as expanding its internal committee to include queer non-binary lawyers, introducing sensitization modules on the LGBTQIA+ community, and establishing universal restrooms in the court complex.
- **Health of transgender people:** The Government of India extended Ayushman Bharat to include transgender persons through the TG Plus card, granting them access to health and gender-affirming services. Additionally, more health insurance companies now provide spouse benefits to same-sex couples. Furthermore, efforts

have been made to make medical curricula more inclusive of queer individuals.

- **Political representation of transgender:** Significant strides were achieved in the political representation of transgender individuals. Bobi Kinnar made history as Delhi's first transgender municipal councillor, winning from Sultanpuri on an AAP ticket. Similarly, Sonu Kinnar became the president of the Nagar Palika Panchayat of Chandauli, Uttar Pradesh, marking another landmark moment.
- **Accessing public spaces:** The recent decision by the Karnataka government to grant transgender people free bus travel addresses the challenges they often encounter when accessing public spaces. This move is a much-needed step towards promoting inclusivity and ensuring equal access to transportation for transgender individuals.

What are the concerns?

- In India, there is still no central law banning conversion therapy, despite its unscientific, inhuman, and traumatising nature. The regulation of sex-normalising surgeries for intersex children remains unaddressed. The demand for horizontal reservations by the transgender community requires sincere deliberations and actions.
- The Transgender Persons Act, which introduced rules over two years ago, has several provisions yet to be realized, such as establishing transgender welfare boards and protection cells.
- The Ministry of Social Justice and Empowerment, responsible for initiatives like the SMILE scheme and Garima Grehs shelter homes, has faced criticism for restricting funding to existing shelters.

What are the challenges faced by the LGBTQ community?

- **Stigma and Social Rejection:** Deep-rooted social stigma and discrimination persist, leading to social exclusion, harassment, and violence against LGBTQIA+ individuals. This often results in mental health issues and a lack of acceptance within families, educational institutions, workplaces, and communities.
- **Lack of Healthcare Access:** LGBTQIA+ individuals frequently face barriers to accessing adequate healthcare. Many healthcare professionals lack awareness and sensitivity towards their specific needs, leading to inadequate healthcare services and reluctance to seek medical help.
- **Employment Discrimination:** Discrimination in the workplace remains a significant challenge for the LGBTQIA+ community. Individuals may face prejudice, harassment, and even job loss due to their sexual orientation or gender identity. Limited job opportunities and unequal treatment hinder their professional growth and economic empowerment.
- **Inadequate Representation:** The representation in media, politics, and other influential positions is limited. This leads to a lack of visibility and voice in decision-making processes, making it challenging to address the community's unique concerns effectively.
- **Isolation and Drug Abuse:** They develop low self-esteem and low self-confidence over time, and they separate themselves from friends and family. These individuals become addicted to drugs, alcohol, and tobacco in order to reduce stress, rejection, and discrimination.

Way Forward

- There is a need to push for the enactment of comprehensive anti-discrimination laws that protect LGBTQIA+ individuals from discrimination in all areas of life, including employment, housing, education, and healthcare.
- Advocate for legal recognition of same-sex marriages and adoption rights for LGBTQIA+ individuals, providing them with the same rights and responsibilities as any other citizen.

- Healthcare Access should be strengthened by promoting sensitivity training for healthcare professionals to ensure LGBTQIA+ individuals have access to non-discriminatory and inclusive healthcare services.
- Implementing inclusive curricula in schools and educational institutions that cover LGBTQIA+ issues, history, and rights. This can help combat stereotypes, promote understanding, and create safer environments for queer students.
- Advocate for workplace policies that protect LGBTQIA+ employees from discrimination, harassment, and unequal treatment. Encourage companies to adopt inclusive practices and create safe spaces for queer individuals to thrive professionally.
- Promote increased representation of LGBTQIA+ individuals in media, politics, and other influential positions. This can help challenge stereotypes, raise awareness, and amplify queer voices.

Conclusion

It is important to remember that Pride is inherently political. While there may be instances of rainbow washing, it is crucial to acknowledge that the fight for equal rights for the queer community is far from over. As the queer community celebrates its existence and resilience, society as a whole must work towards ensuring that every citizen enjoys the full spectrum of rights. Only through collective efforts can we truly celebrate Pride as a nation.

Union Govt Moots New HDI for 28 lakh Particularly Vulnerable Tribal Groups

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Economic and Social Development – Sustainable Development, Poverty, Inclusion, Demographics, Social Sector initiatives, etc.

Prepp Mains Booster: Government policies and interventions for development in various sectors; Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes

Context:

- The Union government is currently undertaking the task of developing a survey to assess the **Human Development Index (HDI) for a targeted population of approximately 28 lakh individuals belonging to the Particularly Vulnerable Tribal Groups (PVTGs)**.
- These groups reside in more than 22,000 villages spread throughout the country.

Background

- In the Union Budget 2023-24, Finance Minister Nirmala Sitharaman unveiled a significant allocation of **₹15,000 crore for the Pradhan Mantri Primitive Vulnerable Tribal Groups (PM-PVTG) Development Mission**.
- Over the course of the next three years, this expenditure outlay aims to facilitate the integration of all 22,544 PVTG villages with essential government services, including communication, electricity, public education, healthcare, water supply, and connectivity.
- As part of this comprehensive program, the Tribal Affairs Minister Arjun Munda has announced the **implementation of a survey that will assess and create a Human Development Index (HDI) specifically tailored for PVTGs**.

Who are Particularly Vulnerable Tribal Groups (PVTGs)?

- In India, a particularly vulnerable tribal group, or PVTG (previously known as a Primitive tribal group), is a sub-classification of a

Scheduled Tribe or section of a Scheduled Tribe that is considered more vulnerable than a regular Scheduled Tribe.

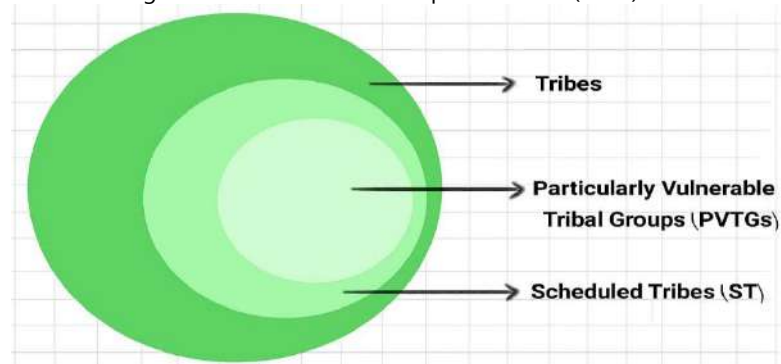
- PVTGs are among the most vulnerable tribal communities. They face unique challenges and require special attention for their development.
- Due to these factors, more developed and assertive tribal groups often receive a significant portion of the tribal development funds.
- In 1973, the Dhebar Commission created Primitive Tribal Groups (PTGs) as a separate category, which are less developed among the tribal groups. In 2006, the Government of India renamed the PTGs as PVTGs.
- PVTGs have some basic characteristics - they are mostly homogenous, with a small population, relatively physically isolated, absence of written language, relatively simple technology and a slower rate of change etc.

Selection Criteria for PVTGs

- Pre-agriculture level of technology.
- Stagnant or declining population.
- Extremely poor literacy
- Subsistence level of the economy.

Highlights of the initiatives taken by the Tribal Ministry

- **Sickle-Cell Disease (SCD):** The government is conducting a mass testing drive to reduce the prevalence of Sickle-Cell Disease (SCD) among tribal populations. Their goal is to screen approximately 90 million people by 2025-26. The program is progressing quickly and aims to "eliminate" SCD from India by 2047, which is considered achievable.
- **Eklavya Model Residential Schools (EMRSs):** The PM Modi-led government's swift sanctioning of Eklavya Model Residential Schools (EMRSs) for tribal students was highlighted. The number of sanctioned schools has increased from 167 to 690 since 2014, with over 3 lakh students enrolled. However, only 401 schools are operational, often housed in non-owned buildings.
- **National Education Society for Tribal Students (NESTS):** The government has addressed teacher shortages at EMRSs by establishing NESTS, a central monitoring and recruitment body. They plan to hire 38,800 teachers and support staff for EMRSs in the near future.
- **Pradhan Mantri Adi Adarsh Gram Yojana:** The success of the Pradhan Mantri Adi Adarsh Gram Yojana, which aims to develop 36,000 tribal villages into model villages was emphasized. There was a significant increase in budget allocation for tribal affairs over the past nine years, reaching a record high of over ₹1.3 lakh crore, including the Scheduled Tribe Component Fund (STCF).



Constitutional Provisions related to Tribes in India

- The Constitution of India recognizes certain tribes as Scheduled Tribes, based on criteria such as their distinctiveness, primitive traits,

geographical isolation, and socio-economic backwardness. Article 342 of the Constitution empowers the President to notify Scheduled Tribes in consultation with the Governor of the concerned state.

- **Protection from Discrimination:** Article 15(4) of the Constitution allows for special provisions to be made for the advancement of socially and educationally backward classes, including Scheduled Tribes.
- **Political Representation:** Article 330 reserves seats for Scheduled Tribes in the Lok Sabha (the lower house of the Parliament of India), while **Article 332** provides for the reservation of seats in state legislative assemblies for STs. This ensures political representation for tribes at both the national and state levels.
- **Protective Measures:** Article 46 of the Constitution directs the state to promote the educational and economic interests of the weaker sections of society, including Scheduled Tribes, and protect them from social injustice and exploitation.
- **Cultural and Educational Rights:** Article 29(1) and Article 30 of the Constitution protect the cultural and educational rights of all citizens, including Scheduled Tribes.
- **Fifth Schedule:** The fifth Schedule contains provisions as to the Administration and Control of Scheduled Areas and Scheduled Tribes.
- **Sixth Schedule:** To protect the rights of tribal people, the Sixth Schedule allows the formation of Autonomous District Councils in Assam, Meghalaya, Tripura, and Mizoram.

G20 Countries Including India Are Fuelling Modern Slavery, Says New Report

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Global Slavery Index

Prepp Mains Booster: Mechanisms, laws, institutions, and Bodies are constituted for the protection and betterment of these vulnerable sections. Important International institutions, agencies and fora- their structure, mandate.

Context:

- The prevalence of modern slavery has witnessed a disturbing increase, according to a report released by Walk Free, an international human rights organization.
- The study reveals that the number of people living in conditions of modern slavery has risen by 25% over the past five years, reaching a staggering 50 million individuals worldwide.
- Factors such as climate change, armed conflict, weak governance, and health emergencies like COVID-19 contribute to the rise in modern slavery.
- Among the G20 nations, India tops the list with 11 million people working as forced laborers. Urgent action is needed to address this alarming trend.

Details of the Report

Factors Contributing to the Rise in Modern Slavery:

- The report highlights that climate change, armed conflict, weak governance, and health emergencies play a significant role in the increase of modern slavery.
- These factors disrupt social and economic structures, leaving vulnerable populations at higher risk of exploitation and forced labor.

G20 Nations and Modern Slavery:

- Among the G20 nations, India leads in the number of forced laborers, with 11 million people trapped in modern slavery.
- China, Russia, Indonesia, Turkey, and the United States also have significant numbers of individuals subjected to forced labor.
- The motivation to reduce costs and meet global demand has led to the exploitation of workers, worsening forced labor conditions.

Recommendations to Combat Modern Slavery:

- The Walk Free report puts forth crucial recommendations to address modern slavery effectively.
- Stronger measures and legislation are needed to prevent governments and businesses from sourcing goods and services linked to forced labor. Anti-slavery measures should be embedded in climate change sustainability plans.
- Additionally, providing primary and secondary education to children and tightening regulations on forced and child marriages are essential steps.

Steps Taken by India Against Modern Slavery:

- India has implemented measures to combat modern slavery, including Article 23 of the Constitution, which prohibits human trafficking and forced labor.
- The Bonded Labour Abolition Act of 1976 was the first legislation in South Asia to prohibit bonded and forced labor.
- The National Human Rights Commission (NHRC) plays a pivotal role in monitoring the implementation of anti-slavery laws.

Concerns and Challenges:

- Despite these measures, concerns persist regarding the implementation of laws due to corruption, legal loopholes, and lack of political will.
- The rehabilitation of bonded laborers faces challenges related to documentation and insufficient financial aid.
- Critics argue that India's new labor codes may inadvertently sanction forced labor by diluting social security and extending work hours for workers.

Addressing the Way Forward:

- Strong legislation and accountability of G20 nations must go hand in hand with empowering vulnerable communities.
- Transparent value chains, social security provisions, and holding corporations accountable through multilateral and bilateral free trade agreements are crucial steps in preventing forced labor and ensuring access to basic rights.

What Is The Contention Between Coal India and CCI?

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Regulating Bodies

Prepp Mains Booster: Polity and Governance, Statutory, regulatory and various quasi-judicial bodies; Government policies and interventions for development in various sectors and issues arising out of their design and implementation

Context:

- In a recent judgment, the **Supreme Court held that the Competition Act applies to Coal India Limited (CIL)** regardless of its status as a Public Sector Undertaking (PSU).

Background

- **Coal India was initially fined Rs 1,773.05 crore by the CCI** for imposing unfair and discriminatory conditions in its Fuel Supply Agreements with power producers, pertaining to the supply of non-coking coal.
- However, following the intervention of the Competition Appellate Tribunal, **the penalty was reduced to Rs 591 crore.**

- Reason: CIL was found to be supplying lower quality of the essential resource at higher prices and placing opaque conditions in the contract about supply parameters and quality.

What is the Competition Commission of India (CCI)?

- The Competition Commission of India, **under the Ministry of Corporate Affairs, enforces the Competition Act, 2002.**
- It replaced the Monopolies and Restrictive Trade Practices Act, 1969, based on the recommendations of the Raghavan committee.
- Members:** The Commission consists of a Chairperson and up to 6 Members appointed by the Central Government.
- Its statutory duty is to eliminate anti-competitive practices, promote competition, protect consumer interests, and ensure freedom of trade in Indian markets, as outlined in the Act's Preamble and Section 18.
- The Commission is also required to provide its opinion on competition matters to the government or a statutory entity, as well as to engage in competition advocacy to raise understanding of competition law.
- Effective competition regulation is built on advocacy. CCI, which has been charged with enforcing the legislation, has always thought that effective enforcement should be accompanied with facilitative advocacy.
- It functions as a quasi-judicial body.**



Ruling of Coal India Limited (CIL)

- Coal India Limited (CIL), a public sector monopoly accused of abusing its dominant position in coal production and delivery, argued that the **Competition Act should not apply to them due to their operation under the Coal Mines (Nationalisation) Act 1973.**
- They claimed that nationalization grants state ownership for equitable distribution, making CIL non-commercial.
- The Competition Commission of India (CCI) countered by citing the Raghavan Committee's findings, stated that state monopolies must operate efficiently and adhere to competitive forces.

About Competition Act, 2002

- The Competition Act, 2002 was enacted by the Parliament of India and governs Indian competition law. It **replaced the archaic The Monopolies and Restrictive Trade Practices Act, 1969.**
- Under this legislation, the **Competition Commission of India was established to prevent the activities that have an adverse effect on competition in India.**
- The Competition Act, 2002 acts as a crucial tool **for implementing and enforcing competition policy in India.**
- It aims to prevent and punish anti-competitive practices carried out by firms while also minimizing unnecessary government interference in the market.

- The Competition Act, 2002 was amended by the Competition (Amendment) Act, 2007 and again by the Competition (Amendment) Act, 2009.

MONOPOLY VS COMPETITION

Coal India's arguments:

- Nationalisation Act was to monopolise the operation of coal mines
- Operations of coal mines outside the purview of the Competition Act

CCI's arguments:

- No conflict between the Nationalisation Act and the Competition Act
- State monopoly could not be allowed in case of inefficiency

What does the ruling mean?

- The Competition Act applies to PSUs and private enterprises alike
- This principle of competitive neutrality would apply across sectors in which PSUs have significant market power

Observations made by the Supreme Court

- The court rejected the notion that the Competition Act does not pertain to CIL (Coal India Limited) because of its governance under the Nationalization Act. It firmly asserted that such an interpretation would contradict the principles of the Competition Act.
- The court emphasized that the fundamental purpose of the Act would be undermined if state monopolies, government companies, and public sector units were exempted from adhering to competition laws.
- Moreover, the court stressed that entities cannot engage in arbitrary actions or unfairly discriminate against similar entities.

Coal Mines (Nationalisation) Act, 1973

- The Coal Mines (Nationalisation) Act, 1973, was passed by the Indian Parliament with the aim of acquiring and transferring the ownership rights of coal mines listed in the Schedule.
- The primary objective of the Act was to facilitate the rational, coordinated, and scientific development and utilization of coal resources in line with the nation's increasing demands.
- Consequently, the Act reserved the exclusive right for coal mining to the public sector.
- It was amended on 9th June 1993 to introduce private sector participation in captive coal mining. This amendment allowed the private sector to engage in coal mining for specific purposes such as power generation, coal washing, and other end uses as determined by the government from time to time.

International Relations

Economics That Looks At The Lower Half Of The Pyramid

Priority: Medium

Primary Source: The Hindu

Prepp Prelims Booster: International relations

Prepp Mains Booster: Bilateral, regional and global groupings and agreements; GS3 - Mobilization of resources

Context:

- Divisions between the wealthy and less privileged are reshaping the global political landscape.
- Support for both left-wing and right-wing ideologies is on the rise.
- Centrist economic liberals face confusion regarding political power accumulation and wealth concentration.

Historical Shifts in Economic Ideologies:

- Reforms in the past century aimed to rebalance income and wealth, with European countries adopting a socialist model.

- Communism brought revolutionary changes in Eastern countries, while the United States implemented social security measures and supported labor unions.
- The 1980s witnessed a shift towards free markets championed by leaders like Thatcher and Reagan.
- International financial institutions imposed reforms that undid earlier socialist measures, hindering social safety nets.

New Concept of Reforms:

- Reagan's philosophy favored capital markets and downsizing government.
- The private sector was seen as more efficient than the public sector, leading to increased economic instability.
- Globalization allowed the rise of a global elite and tax-evading multinational corporations.

Critique of GDP as a Development Measure:

- GDP became the dominant measure of development in the twentieth century, focusing solely on economic activity.
- The equilibrium-based economic paradigm disregards social equality and political forces.

Way Forward:

- The existing economic development paradigm fails to produce healthy democracies.
- Urgent economic transformation is needed for universal well-being.
- Indian political parties must prioritize the economy, and economists should prioritize the needs of the marginalized population.
- A shift in economic ideologies and the reevaluation of development metrics like GDP are essential for steering development towards universal social and environmental well-being.

U.S. Intensifies Diplomatic Pressure As Serbs Rally In North Kosovo

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Currents events of International Importance

Prepp Mains Booster: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

Context:

- Recently, the US Secretary of State Antony Blinken called on both Kosovo and Serbia to take immediate steps to de-escalate tensions, warning they were putting aspirations of European integration at risk.
- Unrest in North Kosovo has intensified since ethnic Albanian mayors took office in the region's Serb-majority area after April elections boycotted by the Serbs.

What is the reason behind recent clashes in Kosovo?

- In April 2023, local elections were held in **northern Kosovo**, the **Serbs who are in the majority boycotted** the vote as they still want to be reunited with Belgrade.
- This left **only ethnic Albanians and other small minorities elected** to mayoral and assembly posts.
- When they came to take office last week, Serbs protested in front of municipal buildings to stop them from getting in.
- They clashed with **NATO peacekeepers and the local police**, who used tear gas.

Origin of the conflict

- Kosovo is a **mainly ethnic Albanian-populated territory** that was formerly a province of Serbia. **It declared independence in 2008.**

- Serbia has refused to recognize Kosovo's statehood and still considers it part of Serbia, even though it has no formal control there.
- Kosovo's independence has been recognized by about 100 countries, including the United States. Russia, China and five EU countries, most of them with **separatist regions of their own, have sided with Serbia.**
- The deadlock has kept tensions simmering and prevented full stabilization of the **Balkan region after the bloody wars in the 1990s.**
- The dispute over Kosovo is centuries old. Serbia considers the region the heart of its statehood and religion.
- Numerous **medieval Serb Orthodox Christian monasteries are in Kosovo.** Serb nationalists view a 1389 battle against Ottoman Turks there as a symbol of its national struggle.
- Kosovo's majority ethnic Albanians view Kosovo as their own country and accuse Serbia of occupation and repression. Ethnic Albanian rebels launched a fight to rid the country of Serbian rule in 1998.
- Belgrade's brutal response prompted a NATO intervention in 1999, which forced Serbia to pull out and cede control to international peacekeepers.




What Is NATO Doing In Kosovo?

- 3,800 NATO troops were stationed in Kosovo up until last week, largely **performing peacekeeping operations but also guarding the borders**, particularly the one with Serbia, where Belgrade has recently increased its troop presence.
- Jens Stoltenberg, the secretary-general of NATO, announced that the alliance had sent 700 extra troops to Kosovo **to assist in putting an end to violent protests** and had placed another battalion on alert in case the unrest escalated.

Concerns

- There have been constant international efforts to find common ground between the two former wartime foes, but there has been **no final comprehensive agreement so far.**
- EU officials have mediated negotiations designed to normalize relations between Serbia and Kosovo.
- Numerous **agreements have been reached** but were **rarely implemented** on the ground. Some areas have seen results, like introducing freedom of movement within the country.

Using Buddhism As A Tool Of Soft Power

Priority: Medium 

Primary Source: The Hindu

Prepp Prelims Booster: Buddhism

Prepp Mains Booster: India and its neighborhood- relations, Effect of policies and politics of developed and developing countries on India's interests; Indian Heritage and Culture, Art Forms, literature and Architecture from ancient to modern times

Context:

India and China have strategically employed Buddhism as a soft power tool to enhance their global influence. Both countries recognize the appeal of Buddhism and its potential to shape public perception, cultural identity, and international relations. This article examines how India and China have utilized Buddhism in their respective soft power strategies.

India's Use of Buddhism as Soft Power

Establishing an Identity of Peace:

- During the formation of the Indian Republic, Buddhism provided India with a sense of peace and tranquility amid religious conflicts.
- Symbolic representation of Buddhism in national symbols, such as the Ashoka pillar and the wheel in the national flag, aimed to escape the complex realities of the time.

Global Buddhist Council and Geopolitical Motives:

- India convened the Global Buddhist Council in 2023, focusing on contemporary challenges and promoting Tibetan Buddhism and the Dalai Lama.
- Geopolitical considerations, particularly in relation to China, may have influenced India's motivation to showcase Tibetan Buddhism.

Center for Buddhist Culture and Heritage:

- India plans to establish the India International Centre for Buddhist Culture and Heritage in Lumbini, Nepal.
- This initiative has been seen as a counter to the Chinese-backed Gautam Buddha International Airport in Nepal.

Challenges and Friction:

- Criticism arose due to the lack of Nepali representation in India-hosted Buddhist events.
- India's exclusion of key stakeholders in Buddhism discussions may lead to increased friction with China.

II. China's Utilization of Buddhism as Soft Power

Promoting Chinese Buddhism:

- China has a significant Buddhist population and numerous monasteries, temples, and religious practitioners.
- Buddhism plays a vital role in China's soft power toolkit.

Multifaceted Approach:

- China tailors its strategies for promoting Chinese Buddhism based on the target country's religious and geopolitical context.
- China sees Nepal as a source of Buddhism and emphasizes its cultural ties with Nepali temples.

Buddhist Narratives and Infrastructure Investments:

- China combines Buddhist narratives with infrastructure investments, as observed in Sri Lanka and Southeast Asian nations.
- Chinese Buddhist temples serve as cultural and religious centers, contributing to China's soft power and national integration efforts.

Conclusion:

India and China have incorporated Buddhism into their soft power strategies to enhance their global influence. India seeks to reclaim Buddhism as part of its identity, while China promotes Chinese Buddhism through various diplomatic and cultural means. Geopolitical tensions between the two countries are reflected in their competition for influence over Buddhist sites and narratives in Nepal. As India and China

continue their soft power initiatives, caution should be exercised to prevent the commodification of Buddhism and the transformation of religious sites into mere tourist attractions.

UN Recommends New Treaty To Ensure Peace & Security In Outer Space

Priority: Medium 

Primary Source: Down to Earth

Prepp Prelims Booster: New Outer space treaty

Prepp Mains Booster: Important International institutions, agencies and fora- their structure, mandate. GS3 - Space

Context:

- Recently, The United Nations (UN) has recommended a new treaty for ensuring peace and security as well as preventing an arms race in outer space.
- According to a UN policy brief, **For All Humanity —The Future of Outer Space Governance**, the recommendations should lead to the development of international norms, rules and principles to address threats to space systems.

Why there is a need for a New Treaty?

- **Rise in satellite launches:** The number of satellite launches has grown exponentially in the past decade after it stayed consistent from 1957-2012.
- In 2013, there were 210 new launches, which increased to 600 in 2019 and 1,200 in 2020 and 2,470 in 2022.
- **Participation of Private sector:** Increase in the active participation of the private sector. Though the private sector is more active in the United States, China, India, and Japan are catching up.
- **Space resource exploration, exploitation & utilization:** Minerals on the Moon, asteroids and planets can be attractive for countries. For instance, Moon has rich deposits of helium-3, which is rare on Earth.
- Similarly, asteroids contain abundant deposits of valuable metals, including platinum, nickel and cobalt. Some countries are in favor of the exploitation of space resources.
- Currently, there is **no agreed international framework** on space resource exploration, exploitation & utilization.
- The absence of consensus on international principles for the exploration, exploitation, and utilization of space resources **may result in conflicts** and could potentially lead to lead to environmental degradation and cultural loss.
- **Manned missions:** NASA, through its Artemis mission, is planning to land the first woman and first person of color on the Moon, marking the return of humans to outer space after more than 50 years.
- Europe, India and Japan are also making progress in developing heavy rockets and human-rated vehicles.
- **Lack of coordination among countries:** At present, space traffic is coordinated by national and regional entities. Each has its own standards, best practices, definitions, languages, and modes of interoperability.
- A lack of coordination among the entities could impact countries with less space capacity. They might find it hard to operate with limited space assets.
- **Space debris:** More than 24,000 objects which are 10 centimeters or larger have been recorded. Any satellite is capable of maneuvering purposefully into another and destroying it. This would significantly increase the potential for space debris and the compromising of critical civilian infrastructure, disrupting communications,

observation and navigation capabilities vital to the global supply chain.

What are the recommendations by UN?

- The UN recommended “**a combination of binding and non-binding norms**” to address emerging risks to outer space security, safety and sustainability.
- These recommendations come ahead of the **UN Summit of the Future**, which will be held on September 22-23, 2024, in New York.
- At the Summit of the Future, member states will agree on multilateral solutions for a better tomorrow and to strengthen global governance.
- In addition to a new treaty, the UN recommended an **effective framework for coordinating space situational awareness**, space object manoeuvres and space objects and events.
- They also urged member states **to develop norms and principles for space debris removal** that consider the legal and scientific aspects of space debris removal.
- As for space resource activities, they propose an effective framework for sustainable exploration, exploitation and utilisation of the Moon and other celestial bodies.



Existing treaties

- In 1959, the United Nations established the **Committee on the Peaceful Uses of Outer Space** to review and enable international cooperation in the peaceful uses of outer space.
- In 1963, countries agreed **to prohibit testing nuclear weapons in outer space**;
- In 1977, the prohibition of altering the space environment as a weapon was agreed upon.
- More recently, member states have set up a series of guidelines, frameworks and recommendations on issues such as mitigation of space debris, nuclear power source safety, the long-term sustainability of outer space activities and transparency and confidence-building measures in outer space activities.

Conclusion

- Over the past decade, the world has witnessed fundamental changes in outer space. It is our shared responsibility to ensure that effective governance is in place to propel innovation and mitigate risks

Another Low: On The Latest Provocation By Canadian Sikh Separatist Groups In Canada

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: International Relations

Prepp Mains Booster: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora, Security

challenges and their management in border areas - linkages of organized crime with terrorism.

Context:

- Recently, a tableau glorifying the assassination of former Indian Prime Minister, Indira Gandhi, was organized in Canada as part of Khalistani protests against Operation Bluestar.
- The Minister of External Affairs, Government of India has criticized the incident and stated that it could pose a clear challenge to India-Canada relations.

Background

- A float taken out in Brampton, Canada during the annual Khalistani protests against **Operation Bluestar** depicted the assassination of former Indian Prime Minister Indira Gandhi by her security guards.
- The parade also included a sign which claimed that the assassination was revenge for the attack on the Darbar Sahib.

How has India responded?

- Political parties in India have criticized the incident and demanded an apology from Canada and cautioned Canada to acknowledge the dangers associated with the rise of anti-Indian separatist and extremist forces in the country.
- According to the Union Minister for External Affairs, the incident was part of a broader pattern. He also warned that the rise of separatist forces was a danger to Canada as well as continued healthy ties with India.
- The Minister further claimed that the lack of action against these extremist groups was due to the desire to cater to vote banks of the 8,00,000-strong diaspora of Sikhs in Canada.
- According to the Minister, the culture of validating violence as an acceptable form of protest should be a concern for the Canadian authorities, particularly given past incidents such as the Air India flight bombing in 1985.

India-Canada relations

- India and Canada established bilateral relations in 1947, with the relationship being elevated to the level of a **Strategic Partnership in 2015**.
- Canada provided aid to India since 1951, which grew substantially under the **Colombo Plan** as a part of which Canada provided food aid, project financing, and technical assistance to India.
- India-Canada relations are based on the principles of
 - Shared democratic values
 - Growing economic linkages
 - Security cooperation
 - Strong people-people ties
 - Mobility of students and professionals
- **Commercial Relations:**
 - In 2021, **India was Canada's 14th-largest export market and 13th-largest trading partner overall**.
 - The Trade Ministers of the two countries have been meeting annually as part of a Dialogue to review trade and economic relations.
 - The two countries are also in negotiations for a **Comprehensive Economic Partnership Agreement** that would cover trade in goods and services, investment, and trade facilitation and a **Foreign Investment Promotion and Protection Agreement (FIPA)**.
 - Indian exports to Canada consist majorly of medicines, garments, diamonds, chemicals, gems and jewelry, petroleum oils, made-up, seafood, engineering goods, marble and granite, knitted garments, rice, electric equipment, plastic products, etc.

- Indian imports from Canada include pulses, fertilizers, newsprint, aircraft & aviation equipment, diamonds, copper ores and concentrates, bituminous coal, wood pulp, nickel, unwrought aluminum, asbestos, gold, cameras, lumber, ferrous waste, etc.
- **Security:** India and Canada have a robust partnership on security and counter-terrorism and have also cooperated at international fora like the G20 and the Commonwealth. In 2021, Canada joined the QUAD nations in the **Sea Dragon Exercise 2021** in the Pacific Ocean. The two countries signed a **Mutual Legal Assistance Treaty in 1994** and an **Extradition Treaty in 1987**.
- **Science and Technology:** Science and Technology form an integral part of India-Canada relations, although it is focused on promoting Industrial R&D. As part of the **India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability (IC-IMPACTS)** implements joint research projects in healthcare, biotech, and waste management.
- **Space:** India and Canada have had a successful cooperative and commercial relationship in the Space sector since the 1990s. Two MOUs have been signed between the ISRO and the Canadian Space Agency (CSA) on the exploration and utilization of outer space. ANTRIX has launched several nanosatellites from Canada while the 100th flight of the PSLV also held the first Canadian LEO satellite.
- **Education:** India is the largest source of foreign students to Canada while a MOU on Higher Education signed between the two countries was renewed in 2018. The Shastri Indo-Canadian Institute (SICI) was founded in 1968 to promote academic relations mainly through funding research and linking academic institutions in the two countries
- **People-People ties:** The Indian diaspora in Canada accounts for more than 4% of the country's population with members in politics, law, medicine, and all other sectors.
- **Cultural Ties:** Multi-sectoral events such as cultural shows, writers' festivals, film festivals, food festivals, trade shows, education summits, innovation summits, lecture series, installation of Gandhi statues, the celebration of Tagore's anniversary, etc are some of the aspects of the cultural ties between the two countries.

Challenges to India-Canada Relations

- In addition to Sikh extremism, India-Canadian relations face numerous other challenges.
- The India-Canada relationship was impacted following India's **Smiling Buddha nuclear test in May 1974** when the Canadian government severed bilateral nuclear cooperation with both India and Pakistan.
- India's structural impediments as the country has to overcome structural impediments like complex labor laws, market protectionism, and bureaucratic regulations.
- India has protested vandalism and anti-India and anti-Modi graffiti drawn on temples and community centers in Canada.
- The remarks of Canadian Prime Minister Justin Trudeau critical of the Union Government's treatment of Punjab farmers protesting against the 2020 Agriculture Bill were also a sore point in relations between the two countries.
- India had previously called off high-level engagements and halted communications between New Delhi and Ottawa for several months before they were restored.



Khalistan Movement

- The **Khalistan movement is a Sikh separatist movement** that operated with the goal of establishing a sovereign state in modern-day Punjab which would serve as a Sikh homeland, both in India and Pakistan.
- The demand for a separate Khalistan state increased in the 1980s during the height of the insurgency in the state of Punjab.
- The movement has been popular among the Sikh diaspora although it has lost support from the Sikh community in India when normalcy was restored in Punjab.
- India has charged Pakistan with aiding and funding Khalistani rebels as part of its strategy to undermine India and weaken it.
- The Khalistan movement stagnated with the neutralization of the domestic threat and the end of the Punjab insurgency in the early 1990s.

Way Forward

- Experts have expressed concern that the latest provocation could lead to a similar downturn in India-Canada ties. They have recommended that the two governments must adopt a diplomatic approach to resolve problems between the two countries.
- Although the Canadian government is within its rights to protect free speech and expression, it must recognize India's concerns that the glorification of the assassination of an Indian Prime Minister could lead to inflammatory speeches and radicalism.
- Simultaneously, it would be more productive if India instead of attempting to shut down legal protests and issuing demarches over vandalism cooperated with other nations and shared evidence of extremist activity and terrorism.
- The rise of Khalistani protests in the U.K., U.S.A., Australia, and other parts of Europe has necessitated the development of a broader strategy for dealing with the issue.
- The G-20 Summit and other meetings to be held in India in 2023 under India's Presidency are a great opportunity to develop consensus among countries in tackling the threat.

A Pragmatic Approach, For Better India-Nepal Ties

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: India-Nepal

Prepp Mains Booster: India and its neighborhood- relations. Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests, Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

Context:



The relationship between India and Nepal is characterized by shared geography, history, culture, and economic ties. Despite occasional challenges, both countries have made significant progress in strengthening bilateral cooperation across various sectors. This article summarizes the key aspects of India-Nepal relations, including recent developments, economic integration, payment and technology cooperation, challenges, and the broader ties between the two nations.

Progress in Bilateral Relations:

Leadership Role of Nepal's Prime Minister:

Political experts credit Nepal's Prime Minister Prachanda for reorienting the India-Nepal bilateral relationship, despite his politically unstable position domestically.

Overcoming Differences:

- Both countries displayed maturity and sensitivity in resolving differences during the 2023 meeting, indicating progress in the relationship.
- The Indian Prime Minister assured the Nepali delegation of resolving the border dispute in a mutually satisfactory manner.

Economic Integration:

Game-Changing Projects:

- The focus on game-changers in the relationship includes hydropower projects, infrastructure development, river transport access, innovative tourism circuits, and enhanced connectivity.
- The Mahakali Treaty, with the Pancheshwar Multipurpose Project as a key initiative, has received cross-party consensus and parliamentary ratification.

Power Sector Cooperation:

- Efforts are underway to facilitate power transactions between Nepal, India, and Bangladesh, with agreements to increase the quantum of power exported from Nepal to India.
- Other bilateral projects in the power sector indicate a promising future for Indo-Nepal relations.

Payment and Technology Cooperation:

An MOU between the National Payments Corporation of India and the Nepal Clearing House Ltd. facilitates cross-border digital payments. India has offered assistance in creating a ground station and supplying user terminals to Nepal, promoting regional cooperation in the space sector.

Challenges and Future Focus:

Depoliticizing Cooperation:

- Nepal faces the challenge of depoliticizing cooperation, especially regarding water resource sharing.
- It must also address issues of governance, democracy, and corruption.

Perception and Ownership:

- India needs to counter the perception in Nepal that it is no longer a foreign policy priority.
- Efforts are required to ensure a sense of ownership, equality, and credit for major developments among the political spectrum.

India-Nepal Ties:

Trade and Economy:

- India is Nepal's largest trade partner, source of investments, and transit provider.
- Both countries have significant trade relations and depend on each other economically.

Connectivity:

- India plays a crucial role in Nepal's connectivity as a landlocked country.
- Initiatives like rail tracks and inland waterways aim to enhance connectivity and promote economic growth.

Defense and Humanitarian Assistance:

- Bilateral defense cooperation includes modernization of the Nepalese Army and joint military exercises.
- India provides significant humanitarian assistance to Nepal during natural disasters.

People-to-People Ties and Multilateral Partnership:

- Migration of professionals between the two countries and initiatives in art, culture, academics, and media promote people-to-people contacts.
- India and Nepal share membership in various multilateral fora, fostering broader regional cooperation.

Conclusion:

India and Nepal have made notable progress in their bilateral relations, focusing on economic integration, payment and technology cooperation, and various other sectors. Despite challenges, both countries share a close bond based on historical, cultural, and economic ties. By addressing the challenges and further strengthening cooperation, India and Nepal can foster a prosperous and mutually beneficial relationship for their citizens and the region as a whole.

China Could Potentially Have As Many ICBMs As U.S. Or Russia By Turn Of Decade: SIPRI

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: International Relations

Prepp Mains Booster: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora. Important International institutions, agencies and fora- their structure, mandate; Achievements of Indians in science & technology; indigenization of technology and developing new technology.

Context:

- Recently, SIPRI estimated in its annual Yearbook that China's nuclear arsenal increased from 350 warheads in January 2022 to 410 warheads in January 2024.
- SIPRI also estimated that India's nuclear arsenal grew from 160 warheads in 2022 to 164 in 2023 while Pakistan's grew from 165 warheads to 170 in the same period.

What is SIPRI?

- The **Stockholm International Peace Research Institute (SIPRI)** is an international institute that is dedicated to conducting research into conflict, armaments, arms control, and disarmament across the world.
- It was established in 1966 in Stockholm as an independent institute to commemorate 150 years of unbroken peace in Stockholm.

- The Institute is funded partially by the Swedish government in the form of an annual grant and funds from other organizations.
- **It conducts scientific research on conflict and cooperation for international peace and security and establishing conditions necessary for the peaceful resolution of international conflicts.**
- **Structure:** SIPRI comprises a Governing Board and Director, supported by a Deputy Director, the Research Staff Collegium, and other support staff.
- **Vision:** SIPRI aims to ensure the identification and understanding of the sources of insecurity, the prevention and resolution of conflicts, and the achievement of sustainable peace.
- **Mission:**
 - Conduct research and other activities related to security, conflict, and peace
 - Provide recommendations and analysis on policy
 - Encourage dialogue and capacity building
 - Ensure transparency and accountability
 - Provide authentic information to policymakers, researchers, media, and the public.



What are SIPRI's findings about China?

- **In its annual assessment - The SIPRI Yearbook 2023, SIPRI warned that China could potentially have as many nuclear weapons as the U.S.A. or Russia by the end of the decade depending on how it decides to structure its armed forces.**
- SIPRI attributed the increase in the number of operational nuclear weapons to the countries' long-term plans for modernization and expansion.
- According to the SIPRI, China has begun to expand its nuclear arsenal significantly, which is in contrast to the country's official position of having only the minimum nuclear weapons necessary to maintain its national security.

India and Pakistan's Nuclear Arsenal

- **The Yearbook found that India and Pakistan were expanding their respective nuclear arsenals with both countries introducing and developing new nuclear delivery system types in 2022.**
- The assessment stated that Pakistan was the main focus of India's nuclear deterrence policy.
- However, India was observed to be placing more emphasis on long-range weapons which included those capable of striking targets across China.

- SIPRI stated that India has completed its nuclear triad by fielding two new ballistic missile nuclear submarines and is upgrading its ballistic missiles.
- India's nuclear expansion includes
 - A submarine-launched intermediate-range ballistic missile that is under development
 - A new generation ballistic missile **Agni Prime** which is capable of a range of 1000-2000 km is close to being inducted into the arsenal. The Agni Prime is expected to replace the older Agni missiles in this range.
 - India has also inducted the **Agni-5** which has a range of over 5000 km.

Global Nuclear Inventory



- According to SIPRI, the **nine nuclear-armed states - U.S.A., U.K., Russia, France, China, India, Pakistan, the Democratic People's Republic of North Korea, and Israel** - were continuing to modernize their nuclear arsenals.
- Several of the nuclear states also deployed new nuclear-armed or nuclear-capable weapons systems in 2022.
- **Around 9,576 of the total estimated 12,512 estimated warheads in the global inventory were in military stockpiles for potential use.**
- An increase of 86 warheads was observed between January 2022 and January 2023.
- **90% of all the warheads in the world were accounted for by the U.S.A. and Russia** although the sizes of their respective arsenals have remained relatively stable in 2022.

How has the Invasion of Ukraine affected nuclear arsenals?

- However, SIPRI also cautioned that there was a **decline in the transparency related to nuclear warheads possessed by both Russia and the U.S.A. in the aftermath of the war in Ukraine.**
- After Russia invaded Ukraine in February 2023, the U.S.A. suspended its bilateral strategic stability dialogue with Russia.
- In response, Russia suspended its participation in the **New START Treaty (2010)**, which is the last remaining nuclear arms control treaty that imposed limits on the nuclear strategic forces of the U.S.A. and Russia.
- Discussions between the two countries regarding a follow-up treaty to New START, which will expire in 2026, have also been suspended.
- However, SIPRI concluded that as of January 2023, the deployed strategic forces of both the U.S.A. and Russia remained within the limit of the New START treaty.

How India Can Lead Multilateralism At WTO

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: WTO

Prepp Mains Booster: - Important International institutions, agencies and fora- their structure, mandate, Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests, Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora,

Context:

- The author, Prabash Ranjan has discussed the need for WTO reform and India's role in leading the change in the article titled "How India Can Lead Multilateralism At WTO" published in the Indian Express on 17th June 2023.
- India has a greater role to play in WTO reform as a weak WTO is ideal for the U.S.A. in terms of its strategic rivalry with China.

What is the WTO?

- The **World Trade Organization (WTO)** is an international organization that regulates and supports international trade and is the sole organization dealing with international trade rules.
- The WTO commenced operations in 1995 after the **Marrakesh Agreement (1994), replacing the General Agreement on Tariffs and Trade (GATT), 1948.**
- The WTO is headquartered in Geneva, Switzerland, and consists of 164 countries.
- Objectives:**
 - Establish and enforce international trade rules
 - Provide a forum for negotiating and monitoring trade liberalization
 - Resolution of trade disputes,
 - Improve transparency in decision-making
 - Collaborate with other international economic institutions
 - Assist developing countries in benefiting from the global trading system
- Functions:** The WTO aims to make trade flow smooth, free, and reliable by
 - Administering trade agreements
 - Acting as a trade negotiation forum
 - Settling trade disputes
 - Reviewing national trade policies
 - Building trade capacity of developing economies
 - Cooperating with other international organizations



Structure:

- The Ministerial Conference is the highest authority of the WTO and is required to meet at least once every two years.
- The daily work of the WTO between two Ministerial Conferences is undertaken by three bodies - the General Council, the Dispute Settlement Body, the Trade Policy Review Body.
- Although the three bodies have similar membership, they differ in terms of the terms of reference of creation of the bodies.
- The General Council is the WTO's highest-level decision-making body and meets regularly to carry out the WTO's functions.
- The **Council for Trade in Goods (Goods Council)**, the **Council for Trade in Services (Services Council)**, and the **Council for Trade-Related Aspects of Intellectual Property Rights (TRIPS Council)** report to the General Council.
- The **Trade Policy Review Body (TPRB)** undertakes trade policy reviews of Members under the TPRM and considers the Director-General's regular reports on trade policy development.
- The **Dispute Settlement Body (DSU)** was established to deal with disputes between WTO members and is authorized to
 - establish dispute settlement panels,
 - refer matters to arbitration,
 - adopt reports from panels, the Appellate Body, and arbitration bodies
 - monitor the implementation of recommendations and rulings
 - authorize the suspension of concessions.

Evolving scope of the WTO

- The recently concluded meeting of the **G20 Working Group** on trade and investment has focussed on the issue of WTO reform which is a matter of concern for G20 members, who are key members of the WTO.
- Around fifty years ago at a time when the world valued economic interdependence in the belief that it would deter military confrontation, Harvard professor Richard Cooper argued that **trade policy is foreign policy.**
- The WTO was established in this era with the aim of legalizing and policing economic interdependence.
- However, the world has evolved and is now dominated by geoeconomic concerns and characterized by an increased securitization of international economic relations.
- Developed countries like the U.S.A. are increasingly adopting a strategy of pursuing unilateralism with little regard for WTO law.**
- Economic policies like industrial subsidies and local content requirements have become increasingly popular along with forgotten WTO rules like security exceptions.
- According to experts, this is part of deliberate efforts to weaken trade multilateralism in favor of external plurilateral alignments while preparing for the potential confrontation between the big powers.

Reform

- Jeffrey Schott of the Peterson Institute has stated that it is a naive approach to consider that the developed G20 countries are interested in WTO reform as a weaker WTO is better suited to their individual national interests.
- He claims that the **WTO reform must be driven by the G20's middle powers namely India, Indonesia, Brazil, and South Africa whose interests can be better served by a stronger WTO.**

What are the major areas of WTO reform?

- There are four critical areas of reform that developing countries must focus on in their attempts to reform the working of the WTO.

Special and differential treatment:

- Special and differential treatment (SDT) is one of the cardinal pillars of the international trading regime.
- SDT provisions grant special rights to developing countries and mandate developed countries to treat them more favorably.
- According to experts, **only 21% of the SDT provisions in WTO Agreements oblige developed countries to provide differential treatment to developing countries.**
- SDT provisions are expressed in terms of best-endeavor language i.e. it places a stricter obligation on the parties to fulfill the terms of the agreement.
- Therefore, SDT provisions have to be made more effective and efficient and efforts to weaken this right in the name of WTO reform should be opposed by the developing countries.

Appellate Body:

- The Appellate Body is the second level in the WTO's two-tiered dispute settlement framework.
- However, the body has been paralyzed since 2019 because of the U.S.A.'s unwillingness to cooperate.
- The dilution of the WTO dispute resolution framework is part of the U.S.A.'s strategy to dilute the WTO's policing in order to ensure that it can pursue its strategy of unilateralism without being subject to the WTO's checks.
- Therefore, the developing countries and other members of the G20 will have to convince the U.S.A. to alter its position or attempt to revive the Appellate Body without the U.S.A.

Consensus-based decision-making:

- Since 2017, there has been a shift towards a **plurilateral approach** in various issues such as investment facilitation.
- The shift has been attributed to the slowness of the consensus-based decision-making process.
- According to Bernard Hoekman, the plurilateral approach is a positive development, but a multilateral governance framework is necessary.
- The governance framework should be based on the **key principles of non-discrimination, transparency, and inclusivity** and it must be ensured that the results of plurilateral negotiations are in accordance with the rules of the WTO.
- One of the major concerns associated with plurilateral agreements is that coercion of non-willing members will lead to a worsening of the trust deficit between developed and developing countries.

Transparency:

- There is a lack of transparency in the WTO particularly in terms of notification requirements.
- WTO member countries are obliged to notify all laws and regulations affecting trade.
- However, compliance with this obligation is poor. This increases the cost of trade, especially for developing countries leading to an increase in the cost of trade for developing countries

Appellate Body


- The Appellate Body was established in 1995 under Article 17 of the Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU).
- It is a seven-member standing body that hears appeals from reports issued by panels in disputes raised by WTO Members.
- The Appellate Body can uphold, modify or reverse the legal findings and conclusions of a panel.

- Appellate Body Reports, once adopted by the Dispute Settlement Body (DSB) must be accepted by the parties to the dispute.

Conclusion

- Although trade multilateralism has fallen in popularity it still remains vitally important for countries like India.
- As President of the G20, India should work with the other members to advance the reforms of the WTO in order to make trade multilateralism inclusive for all.

The Path To A New And Imminent U.S.-Iran Nuclear Deal

Priority: Medium 

Primary Source: The Hindu

Prepp Prelims Booster: International Relations

Prepp Mains Booster: Effect of policies and politics of developed and developing countries on India's interests

Context:

- Recently, the Foreign Minister of the Sultanate of Oman, Sayyid Badr Albusaidi, told the media that **Iran and the United States were finalizing a deal** on the **release of American prisoners in Iran** and that there was "seriousness" on the part of the two countries to come to a **fresh deal on the nuclear issue.**
- U.S. interactions with Iran **began last year** when the U.S. Special Envoy for Iran, Robert Malley, met the Iranian Permanent Representative to the United Nations in New York.
- After that, the White House Coordinator for the Middle East and North Africa, Brett McGurk, visited Oman in February, March and May, where he met Iran's chief nuclear negotiator on the nuclear issue, Ali Bagheri-Kani, in "proximity" talks.

What does the nuclear arrangement entail?

- According to reports, the proposed agreement is expected to be finalized in a few weeks and will **be informal and unwritten.**
- Israel's Prime Minister Benjamin Netanyahu has called it a "**mini-agreement**", while Iranian officials see it as a "political ceasefire".
- The proposed arrangement focuses on widespread concerns relating to Iran's **uranium enrichment program that had reached 84%** and its stockpile of thousands of installed centrifuges.
- Under the arrangement,
 - Iran will freeze its nuclear enrichment at 60%;
 - it will not attack U.S. military contractors in Syria and Iraq,
 - will improve cooperation with the IAEA's inspectors, and
 - will not provide ballistic missiles to Russia.
- Iran will also release the three U.S. citizens in its custody.
- The U.S. has pledged to **avoid new harsh sanctions on Iran,**
- Not to seize oil tankers in the Gulf waters, and not pursue anti-Iran resolutions in the United Nations.
- The U.S. is also expected to **defreeze Iran's bank accounts of about \$80 billion** in various banks outside the country, and will immediately allow the **release of \$7 billion in South Korea and \$2.7 billion in Iraq.**

Global Impact

- **American Interest:** In the U.S., there were now demands for a broader agreement that would address Iran's development of ballistic missiles, its "malign" role in the region and support for terrorism, matters on which there would be no headway with Iran.
- Since this is an unwritten agreement, the Joe Biden administration will not have **to seek Congressional approval.**

- Since it does not call for easing of existing U.S. sanctions, the Republicans will find it difficult to attack the deal in the forthcoming presidential campaign.
- U.S. officials had also recognised that sanctions were no longer effective in influencing Iran's responses to American pressures.
- **Iranian Interest:** The proposed agreement between the U.S. and Iran is expected to release **billions of dollars for Iran which could be utilized by Iran** to improve the challenging living conditions faced by millions of its citizens.
- **Moderate oil prices:** It will also enable Iran to sell some of its oil in world markets; these sales may help in moderating oil prices to the extent possible.
- **Regional Stability:** The arrangement will facilitate further improvement in Iran's ties with Saudi Arabia. As a result, the possibility of Saudi Arabia normalizing relations with Israel will likely be put on hold.
- Another positive implication from the U.S. and Israeli perspective is that the deal with Iran could **end Saudi Arabia's own nuclear aspirations.**

How will it Impact India?

- **Connectivity:** Apart from Chabahar, India's interest in the **International North-South Transit Corridor (INSTC)**, which passes through Iran and will improve connectivity with five Central Asian republics, may be boosted.
- **Counter China:** May revive India's interest in the Chabahar port, the Bandar Abbas port, and other regional connectivity plans. This will enable India to further neutralize China's presence in Pakistan's Gwadar port.
- **Energy Security:** The restoration of relations between the United States and Iran will assist India in procuring cheap Iranian oil and will aid in energy security.



At The Heart Of Indo-US Ties: Economics & Strategy

Priority: Medium



Primary Source: Indian Express

Prepp Prelims Booster: International Relations

Prepp Mains Booster: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests. Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora

Context:

- India and the U.S.A. share a strong economic relationship with bilateral trade between the two countries worth \$191 billion at present.
- The Indo-U.S. strategic partnership, with more than 50 bilateral dialogue mechanisms, has focused on diversifying and deepening supply chains with trusted countries while reducing strategic dependencies on others like China.

India-U.S. Economic Engagement

- The Indo-U.S. strategic partnership is based on the **shared goals of deepening economic engagement and elevating the relationship to a global strategic partnership.**
- The relationship between the two countries has evolved from the difficult phase of 25 years ago when sanctions were imposed on India by the U.S.A. to the present relationship founded on shared democratic values and the increasing convergence of interests in the regional and global agenda.
- **The U.S.A. is at present India's largest trading partner and India is the U.S.A.'s ninth largest trading partner.**
- **Balance of Trade:** India also has an advantage of a favorable **balance of trade** with the U.S.A. despite its adverse balance of trade position with respect to the majority of its other trading partners.
- **Investments:** American companies have invested \$60 billion in India in sectors such as manufacturing, telecommunications, aerospace, and consumer goods.
 - Indian companies have invested \$40 billion in sectors such as green energy, IT, and pharmaceuticals, thereby generating around 425,000 jobs in the U.S.A.
 - Air India's purchase of 200 aircraft from Boeing is expected to generate nearly 1 million jobs across the U.S.A.



Strategic Partnership

- The relationship between India and the U.S.A. has been dominated by the strategic aspect, especially as both countries have shared concerns about China.
- As part of their relationship, the two countries are members of numerous international fora.
- **QUAD:** The **Quadrilateral Security Dialogue** was initiated as a broad partnership in the aftermath of the Indian Ocean tsunami (2004) but has evolved into the flagbearer of the Indo-U.S. strategic relationship.
 - The grouping, which also includes Japan, and Australia was repurposed in 2017 to act as a counter to the growing Chinese

influence in the Indian Ocean rim and address the Indo-Pacific concerns of the members.

- **I2U2:** The I2U2, is a grouping consisting of India, Israel, the U.S.A., and the U.A.E that was founded in 2021 following the **Abraham Accords**.
 - It is focused on joint investments and new initiatives in sectors such as water, energy, transportation, space, health, and food security.
 - Initially called the International Forum for Economic Cooperation, it is also known as the **West Asian Quad**.
- **iCET:** The **Initiative on Critical and Emerging Technologies** was launched in 2022 and is implemented by the National Security Councils of India and the U.S.A. The six areas for cooperation under the iCET are :
 - Scientific research and development
 - Quantum and artificial intelligence
 - Defense innovation
 - Space
 - Advanced Telecom
 - Semiconductors
- In March 2023, India and the U.S.A. established a partnership under the iCET to ensure that the semiconductor supply chain is more resilient through private-sector cooperation. The partnership has three major advantages for India
 - **A more central role for India in the global electronics supply chain** and a potential convergence between India's chip manufacturing incentive scheme and other countries.
 - A commitment to mainstream India's \$10 billion incentives by **integrating component manufacturing projects from foreign chip firms and industry leaders**.
 - **A potential realignment of the regional collaborative efforts fostered by the U.S.A. would help diversify the supply base for semiconductor chips and prevent duplication of initiatives**.
 - For example, the U.S.A. is a part of the '**Chip 4**' alliance with Taiwan, Japan, and South Korea while India, Japan, and Australia had announced a plan to establish a semiconductor supply chain initiative.
 - The U.S.A.'s adoption of a fostering role would help avoid overlaps and lead to a larger role for Indian players through convergences between regional partners.
- **IPEF:** India has signed up for three pillars of the **Indo-Pacific Economic Framework (IPEF)**
 - Building more resilient supply chains,
 - Tapping clean energy opportunities,
 - Combating corruption.
 - However, India has not joined the fourth pillar i.e. trade over concerns related to the environmental, labor, digital trade, and public procurement commitments.
- Another major sector of Indo-U.S. strategic cooperation is in the defense sector with the bilateral cooperation framework between the two countries to serve as a basis for other pacts on armored vehicles, ammunition, and air combat.
 - This could include a deal for India to manufacture GE's F414 turbofan jet engine to power the indigenous Tejas Mk2 light combat aircraft that is under development.

Challenges in the relationship

- The **export controls imposed on India by the U.S.A. after the 1998 nuclear tests are still in place, inhibiting the free transfer of technology**. Therefore deals like the one for the F414 engine would require clearance by the U.S. Congress.

- One of the outstanding trade issues between the two countries is the delay in visa approval and the **revoking of India's trade benefits under the Generalised System of Preferences (GSP) in 2019**.
- The U.S.A. has claimed that **India's trade policy is overly protectionist** with unsteady legal rules and entry barriers for foreign investment. The U.S.A. has also raised concerns regarding India's recent policy of raising tariffs.
- The U.S.A. has expressed concerns over the **procurement of discounted crude oil from Russia** which accounts for almost half of India's total crude imports, with state-owned oil utilities buying more Russian oil than private companies.
 - The G7 countries imposed price controls on Russian oil to restrict Moscow's access to funds while also incentivizing the country to continue international supplies.
- The U.S.A. is likely to encourage India to join the trade pillar of the US-led IPEF as there is little appetite for a full-scale free trade agreement (FTA) with India. However, the **Trade Policy Forum Working Group on Resilient Trade** which was launched in January 2023 is expected to act as a primer for an FTA.
- India has expressed concerns about not being included in the **Minerals Security Partnership (MSP) which is a U.S.A.-led partnership that aims to secure supply chains of critical minerals and reduce dependency on China**.
 - The partnership, which was established in 2022 consists of Australia, Canada, Finland, France, Germany, Japan, Korea, Sweden, the United Kingdom, the United States and the European Union. Italy was recently allowed membership.
 - The MSP has shortlisted a dozen projects including fostering a critical minerals and metals cooperation forum for sharing expertise, developing battery materials, and jointly developing a minerals processing facility in South America.

INDIA-US BILATERAL TRADE

| <i>in US\$ billion</i> | 2018 | 2019 | 2020 | 2021 |
|----------------------------------|--------------|--------------|--------------|---------------|
| INDIA'S EXPORTS TO THE US | | | | |
| Merchandise | 54.28 | 57.69 | 51.19 | 73.37 |
| Services | 28.87 | 29.74 | 25.84 | 28.98 |
| Total | 83.16 | 87.43 | 77.03 | 102.35 |
| US EXPORTS TO INDIA | | | | |
| Merchandise | 33.19 | 34.29 | 27.39 | 39.94 |
| Services | 25.20 | 24.33 | 17.42 | 16.72 |
| Total | 58.39 | 58.62 | 44.82 | 56.66 |
| TOTAL BILATERAL | | | | |
| Merchandise & Services | 141.55 | 146.05 | 121.85 | 159.01 |

Source: US Dept of Commerce, US Bureau of Census, Indian Embassy in Washington

Why The US Wants To Rejoin UNESCO After Years Of Disputes Over Israel And Palestine

Priority: Medium



Primary Source: Indian Express

Prepp Prelims Booster: UNESCO

Prepp Mains Booster: Important International institutions, agencies and for- their structure, mandate. Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

Context:

The United States' decision to leave UNESCO in 2017 and its recent willingness to rejoin the organization has been driven by various factors.

This article explores the reasons behind the US's initial withdrawal from UNESCO and its current intention to return, highlighting the significance of these developments in the international arena.

I. US Withdrawal from UNESCO

Palestine's Inclusion and Funding Cessation:

In 2011, UNESCO admitted Palestine as a member, leading the US to halt its funding to the organization.

Despite not being recognized as a sovereign state by the UN, Palestine was included as a non-member observer state.

The US, closely aligned with Israel, objected to the politicization of international organizations like UNESCO through Palestine's inclusion.

Israel's Concerns and Anti-Israel Bias:

Israel supported the US's decision to halt funding, emphasizing the anti-Israel bias within UNESCO.

UNESCO's criticism of Israel's occupation of East Jerusalem and the classification of Jewish sites as Palestinian heritage sites contributed to this perception.

Legal Restrictions and Close Ties with Israel:

US law prohibits funding to agencies implying recognition of Palestinian statehood due to its strong alliance with Israel.

Unpaid Dues and Withdrawal:

The US accrued \$600 million in unpaid dues to UNESCO, which influenced President Trump's decision to withdraw in 2017.

Israel also cut its funding and owed an estimated \$10 million.



II. US Willingness to Rejoin UNESCO

China's Growing Influence:

The US's decision to return to UNESCO is prompted by China's increased influence in the organization's policy-making.

China has taken on a leading role in areas such as global standards for artificial intelligence and technology education.

Strengthening US Competitiveness:

The US believes its absence from UNESCO has strengthened China and aims to compete with China in the digital age.

Returning to UNESCO would allow the US to actively participate in shaping global standards and initiatives.

China's Expectations and Israeli Response:

China hopes the US's decision to rejoin UNESCO reflects its acknowledgment of the organization's goals and mission.

The Israeli government has not yet provided an immediate response to the US's intention to return.

Conclusion: The US's withdrawal from UNESCO in 2017 was driven by concerns over Palestine's inclusion and perceived anti-Israel bias. Unpaid dues and legal restrictions also played a role in the decision. However, the US now aims to rejoin UNESCO to counter China's growing influence and strengthen its competitiveness in the digital age. The US's return to UNESCO holds implications for global policy-making and cooperation in areas of education, science, and culture.

GENERAL STUDIES 3

Economy

Unboxing The 'Export Turnaround' In India's Toy Story

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Indian Economy

Prepp Mains Booster: Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment, Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth; Indian Heritage and Culture, Art Forms, literature and Architecture from ancient to modern times.

Context:

- Recently, India ended decades of import dominance in toys by becoming a net exporter of toys in 2020-21 and 2021-22.
- However, India's toy industry remains miniscule with exports accounting for just 0.5% of the global total.

India's Toys exports

- According to official data, **India's toy exports rose from ₹812 crores (\$109 million) to ₹1,237 crores (\$177 million) while imports declined from ₹2,593 crores (\$371 million) to ₹819 crores (\$110 million) in the period between 2018-19 and 2021-22.**
- These trade achievements can be verified by cross-checking the data available from corresponding importing and exporting countries.
- India's achievements in toys exports have been attributed to the **"Make in India"** initiative which was launched in 2014 by the Government of India in order to boost domestic production.
- In 2020, the Prime Minister had discussed promoting the domestic manufacturing of toys on his Mann ki Baat show.
- Critics have expressed concerns about the sharp turnaround in trade and whether the sustained rise in investment, output, and efficiency is nurtured by policy reforms.
- Others have described the growth in exports as a short-term consequence of **protectionism** and COVID-19-related global disruptions.

Imports vs Exports

- According to the latest available figures for the organized and unorganized sectors, the **Indian toy industry was composed of around 15,000 enterprises and produced toys worth ₹1,688 crores using fixed capital of ₹626 crores at current prices. The sector also employed around 35,000 workers.**
- Registered factories, which are those employing 10 or more workers on a regular basis, accounted for 1% of the total factories and establishments and employed 20% of workers.
- They also utilized 63% of the fixed capital and produced 77% of the output value.
- Between 2000 and 2016, industry output was halved in real terms i.e. net of inflation along with job losses.

- **Imports, which accounted for nearly 80% of domestic sales until recently, grew nearly three times as much as exports.**
- The Indian toy industry experienced negative productivity growth between 2014 and 2019.
- Imports contracted as the basic customs duty on toys (HS-Code 9503) tripled from 20% to 60% in February 2020.
- In addition to numerous non-tariff barriers, other restrictions such as production registration orders and safety regulation codes were imposed, contributing to import contraction.
- Critics have raised questions about whether net exports represent sustainable improvements in industrial capability and performance, thereby leading to import contraction.
- Questions have also been raised about toy-making, which is a labor-intensive industry, and its vital and outsized role in policy discourse.



Comparison between Asian and Indian toy industries

- **Industrializing nations in Asia have historically promoted toy exports as a suitable avenue for employment generation**, which was first seen in Japan in the early 20th century. This was later seen in China during the 1980s and in Vietnam at present.
- However, **India followed an inward-oriented industrial policy during the Planning-era**. This safeguarded domestic production by granting **double protection - import tariffs and reservations for exclusive production by small-scale industries, also known as the reservation policy**.
- As a result, toy manufacturing in India has stagnated, and become fragmented and archaic while imports of modern, safe, and branded toys boomed.
- Critics of Indian industrial policy have contended that the toy industry symbolized all the problems in India's misguided industrial policy.
- In the aftermath of the liberal reforms of the Indian economy, the reservation policy was abolished and new firms entered the organized sector and witnessed a growth in productivity.
- However, the unorganized sector, which employed a majority of workers continued to suffer from job losses.
- A recent study conducted by the Economic and Political Weekly on the export performance and outputs of the Indian toy industry found that the **annual value of output and fixed investment at constant prices (net of inflation) have trended downwards with considerable fluctuations, except in 2019-2020, after peaking in 2007-08**.
- The study also considered the influence of recent policy initiatives such as "Make in India" on the Indian toy industry.

- It found that there is no clear evidence of the "Make in India" initiative affecting the output and investment of the toy sector on a sustained basis.
- Despite popular perception and official claims, the **Make in India initiative has had a negligible effect on the sustained strengthening of exports and production of toys in India**.
- The study concluded that the output of the informal and unorganized sector has shrunk although it still accounts for the majority of establishments and employment.
- De-reservation of the toy sector, which helped formalize the sector, has failed to sustain output, investment, and productivity growth since 2008, despite positive early trends.



Traditional toys of India

- **Channapatna (Karnataka):** Wooden toys manufactured using ivory wood.
- **Kondapalli (Andhra Pradesh):** Wooden toys made from soft wood called Tella Poniki in the Krishna district.
- **Etikapokka (Andhra Pradesh):** Wooden and lacquer toys made in the Vishakhapatnam district.
- **Natungram dolls (West Bengal):** Wooden dolls made in the Purba Burdwan district.
- **Thigda Dingla (Gujarat):** These are dolls made from rag fabrics by women from Kutch families.
- **Choppu Saman (Tamil Nadu):** These are small toys with bright and polished edges and resemble miniature kitchen utensils made of eucalyptus wood.
- **Sikki toys (Bihar):** These are handicrafts made from Sikki or Golden grass found in Madhubani district.
- **Sawantwadi (Maharashtra):** These are handmade wooden models of fruits and other toys made by people of Sindhudurg district.
- Other prominent toys of India are the **Thanjavur dancing dolls (Tamil Nadu), Nirmal soft wood toys (Telangana), Lacquer toys of Madhya Pradesh, Galar Putul and Babu Putul from West Bengal, and wooden toys of Varanasi (Uttar Pradesh)**.

Figure 1: International trade in toys (INR crores)

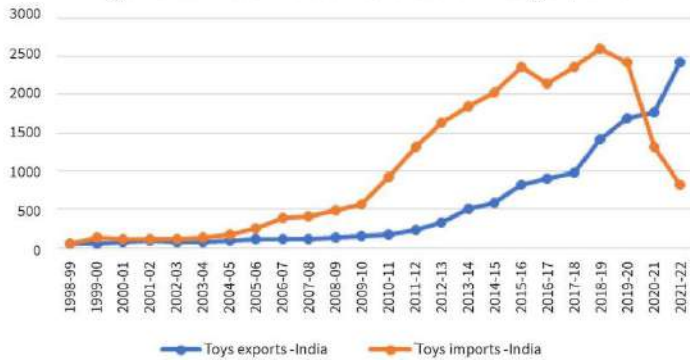
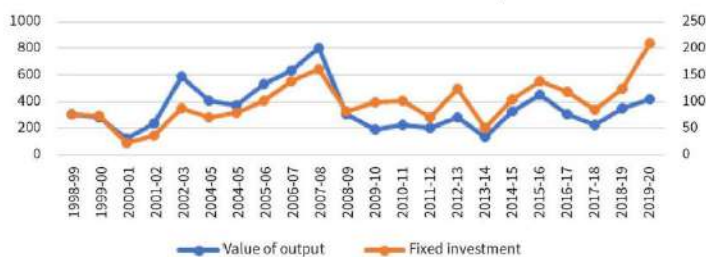


Figure 2: Toys industry - value of output and fixed investment at constant 1998-99 prices (INR crores)



Conclusion

- It is premature to claim that the policy has been successful as the available data was related to the two recent years and the pandemic.
- The potential for sustaining net exports was extremely low as the industry has made little investment in boosting production and exports.
- India's export surplus in toys during 2021-22 and 2022-23 seems to be driven by protectionism and the unique circumstances caused by the pandemic.
- The turnaround does not seem to be the outcome of strengthening domestic investment and production on a sustained basis.
- From 2000 to two years ago, the industry had shrunk while imports rose.**
- The study found that neither the **reservation policy nor its abolition post-liberalization boosted the performance of the domestic industry.**
- Therefore policies should be tailored to suit industrial locations and clusters in a manner that nurtures them while looking beyond simplistic binaries like planning versus reforms.

At The Root Of India's Manufacturing Challenge

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Indian Economy

Prepp Mains Booster: Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment, Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth, Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context:

- The author, Pulapre Balakrishnan, an economist, has discussed the role of the manufacturing sector, its prospects, and challenges faced

by it in the article titled "At The Root Of India's Manufacturing Challenge" published in the Hindu on 2nd June 2023.

- The Government has introduced several corporate-favoring reforms but it is insufficient to expect the industry to achieve a manufacturing push on its own.
- India's workforce is considered unemployable by leading employers with only 5% of youth receiving any technical training according to the Planning Commission.



Economic reforms and the Manufacturing sector

- The **economic reforms of 1991**, which included the **dismantlement of the license raj and the downscaling of the tariff system**, focused exclusively on the manufacturing industry.
- Although this did not lead to an increase in the share of manufacturing in the economy, it did bring about a qualitative change as a result of which the range and quality of products manufactured in India improved.
- The rising quality and range of products produced sans an associated increase in manufacturing has raised concerns about **inequality of income** in the country.
- In the early 2000s, numerous policy experts questioned whether the services sector was better suited to driving the Indian economy forward than the manufacturing sector.
- This particular model challenged the established economic convention that industrial development preceded service sector development in all developed economies.

How has the sector performed post the reforms?

- Following the economic reforms of 1991, the next government initiative specifically targeting the industrial sector was the **"Make in India"** initiative in 2014.
- The Scheme emphasized **Foreign Direct Investment** in industrial manufacturing and the role it could play in the growth of the economy.
- In 2020, the **Production Linked Incentives Scheme (PLI)** was introduced by the Government in order to subsidize the production of certain products.
- An analysis of the performance of the Initiative by experts has shown that its performance has not been satisfactory.
- According to the first advance national income estimates for 2023, manufacturing growth is 1.3%, which is lower than that of agriculture and services.**
- The data pointed out that **demonetization (2016) played a role in the slowing of the manufacturing sector, and persistent low growth rates in policy initiatives focused on manufacturing reveal the presence of a structural impediment to growth in the Indian economy.**

- At a private event attended by the Union Minister of Finance, there was an agreement among corporate leaders on the need for a manufacturing push for employment generation and growth.
- Among the numerous policy initiatives of the Union Government favoring the corporate sector are the **decision to lower the tax rate substantially in 2019 and other steps to raise the ease of doing business in the country.**
- Another factor behind the manufacturing push is **public investment. Capital expenditure was raised by 18.5%**, an unusually high increase, in the last Union Budget with the aim of aiding the private sector by raising aggregate demand.

Food Prices

- Demand is a crucial factor that affects the manufacturing sector in the country. It is largely independent of the supply side which was targeted by government policies.
- **Household demand for manufactures is based on the satisfaction of the essential demands of life such as food, housing, health, and education** which cannot be postponed.
- As food occupies a large share of the demand of the majority of India's households, there is a much lower scope for manufactures.
- The **relation between the per capita income and the share of food in household expenditure is strongly negative globally**, especially in the U.S.A. and Singapore, where it is very low.
- India has the largest share of food among the large economies and the lowest GDP per capita.
- The industry has no control over the demand side of the economy but the potential opportunity for exports helps the manufacturing sector avoid the worst effects of a narrow market.
- This is evidenced in the **performance of the East Asian countries which would not have been able to grow their manufacturing bases solely on the basis of their domestic markets.**
- However, in order for a country to adopt the export-oriented outlook, the manufactures of its economy must be globally competitive in terms of price and quality.

What is necessary for a country to become a strong exporter?

- A comparison of the performance of the East Asian countries reveals the characteristics necessary for an economy to become a successful exporter
 - **Infrastructure.**
 - **Skill level of the workforce.**
- These two factors determine the cost of production in the economy and the nature of the products produced in the economy.

Infrastructure

- The export of manufactures is largely conducted via the sea route. Companies in North India face a significant challenge in transporting their products to the seaports from their facilities located in the hinterland.
- Goods have to be transported via road to the coasts and then deal with the relatively poor infrastructure and practices in place at Indian ports.
- The **higher turnaround time** experienced at Indian ports in comparison to others like Singapore is a significant disadvantage for Indian exporters.
- Ports are a critical factor in the exports of an economy. Some traders have claimed that they are forced to use ports outside their home state due to the lower costs associated with them.
- The availability of **inexpensive power, space, and industrial waste disposal services** are all crucial factors in the growth of exports in an economy.


Education and Skill

- In terms of education, India has been found to lag behind the more successful manufacturing economies of the world.
- In an assessment of 75 countries conducted by the Programme for International Student Assessment, India was close to the bottom while the nations of East India were on the top.
- Another assessment conducted by the Indian NGO, Pratham, to assess learning outcomes in the country's schools revealed a **very low reading and numeracy ability among Indian schoolchildren.**
- There are no standardized tests of a similar nature for the higher education sector including Universities.
- Indian universities have expanded to meet the aspirations of the country's middle class who aspired to avoid manual work.
- However, skilled workers such as carpenters, plumbers, mechanics, etc who do not aspire to attend universities have been ignored by policymakers so far.
- There are **no formal assessments available to ascertain the performance of the country's vocational training institutes.** Despite this, it is known that vocational training institutes are limited in number across the country.
- The Planning Commission, had during its existence, released data indicating that only 5% of Indian youth received technical training. In comparison, South Korea saw 85% of its youth receive technical training.
- In such a situation, India would not be able to significantly improve its manufacturing industry given the lack of trained workers.

Conclusion

- The economic reforms of 1991 were meant to raise the presence of manufacturing in the economy.
- The trade and industrial policy regime was overhauled as a part of the reform but it overlooked the need for an entire ecosystem consisting of schooling, training, and infrastructure which is essential for manufacturing to flourish.
- The ecosystem has to be built but this cannot be achieved merely through legislation as liberalizing reforms have run their course in India.

How India Has Become Relatively Atma Nirbhar In Pulses Compared To Edible Oil

Priority: Medium 

Primary Source: Indian Express

Prepp Prelims Booster: Indian Economy

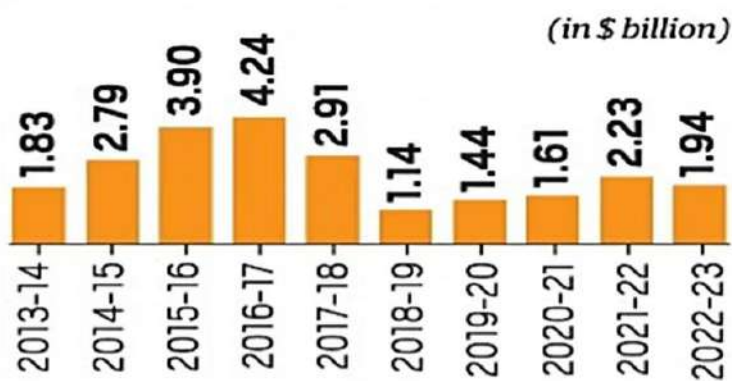
Prepp Mains Booster: - Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment, Major crops-cropping patterns in various parts of the country, - different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers. Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System- objectives, functioning, limitations, revamping; issues of buffer stocks and food security; Technology missions; economics of animal-rearing

Context:

- Recently, the value of imports of pulses increased marginally from \$1,828.16 million to \$1,943.89 million between 2013-2014 and 2022-2023 while the value of edible oil imports increased from \$7,249.85 million to \$20,837.70 million in the same period.

- India's imports of Chana have dropped significantly as a result of key government initiatives incentivizing farmers to increase the area under pulse cultivation.

IMPORTS OF PULSES



How has India performed in pulses versus edible oils?

- Since 2013-14, the value of India's imports of pulses has grown marginally with the value of pulses imports growing from ₹11,036.75 crores to ₹15,780.56 crores.
- The import of pulses peaked during 2016-17 with the value rising as high as ₹28,523.18 crore or \$4,244.13 million but falling thereafter.
- In terms of quantity, India's imports doubled from 3.18 million tonnes (mt) to 6.61 mt between 2012-14 and 2016-17 and then dropped to 2.7 mt in 2021-22 and 2.52 mt in 2022-23.
- In comparison, the value of vegetable oil imports grew from ₹44,038.04 crores to ₹167,269.99 crores in the same period.
- In terms of quantity, edible oil imports rose from 7.94 mt to 15.67 mt between 2013-14 and 2022-23.
- The reduction in the import of pulses can be attributed to the increased domestic production of pulses in the country.
- The Union Ministry of Agriculture claimed that the country's output of pulses rose from 19.26 mt in 2013-14 to 27.50 mt in 2022-23. However, private estimates have projected production estimates to be around 23-24mt.
- Assuming production of 23 mt and imports of 2.5 mt, this scenario indicates an **atmanirbhara or self-sufficiency ratio of more than 90% for pulses compared to less than 40% for edible oils.**

IMPORTS OF VEGETABLE OILS

(in \$ billion)



Trends in Chana production

- An analysis of the imports of pulses into India reveals a dramatic **decline in the imports of two crops - yellow or white peas, also known as matar, and chickpea or chana.**
- The main reason behind the decline of chana and matar imports to nearly negligible levels is the increase in the production of chana domestically.
- Yellow or white peas are mainly imported from Canada, Russia, Ukraine, and Lithuania and are seen as a substitute for chana.**

IMPORTS OF MAJOR PULSES (in thousand tonnes)

| | Peas (Matar) | Chickpea (Chana) | Lentil (Masoor) | Pigeonpea (Tur/Arhar) | Urad & Moong |
|---------|--------------|------------------|-----------------|-----------------------|--------------|
| 2014-15 | 1951.97 | 418.88 | 816.47 | 575.22 | 622.89 |
| 2015-16 | 2245.39 | 1031.49 | 1260.19 | 462.71 | 581.6 |
| 2016-17 | 3172.76 | 1080.63 | 829.44 | 703.54 | 574.52 |
| 2017-18 | 2877.03 | 981.32 | 796.62 | 412.95 | 346.97 |
| 2018-19 | 851.41 | 185.95 | 248.97 | 530.67 | 574.24 |
| 2019-20 | 666.7 | 370.67 | 854.46 | 449.78 | 381.52 |
| 2020-21 | 46.33 | 294.53 | 1116.17 | 442.62 | 416.63 |
| 2021-22 | 0.85 | 202.1 | 667.43 | 840.46 | 807.17 |
| 2022-23 | 0.86 | 62.92 | 858.44 | 894.42 | 556.71 |

Source: Department of Commerce

- The prices of chickpeas in India rose substantially on account of the dip in production of chana from 9.53 mt in 2013-14 to 7.33 mt and 7.06 mt in the following years.
- As a result, chana was replaced by matar in most recipes while some makers of besan or chickpea flour resorted to adulteration by adding yellow or white peas.
- The imports of chickpeas from Russia and Australia rose significantly during this period.
- After 2016-17, chana production in the country rose from 11.38 mt in 2017-18 to 13.54 mt in both 2021-22 and 2022-23.**
- Although estimates by traders claim this value is around 11-12 mt, it is still a significant increase when compared to the production levels during the 2013-14 and 2014-15 periods.
- The increase in the production of Chana has been attributed to two major policy decisions of the Union Government which incentivized farmers for the expansion of the area under pulse cultivation during the [rabi](#) season.
- Since March 2018, **an import duty of 60% has been levied on the import of chana.** A 50% import duty has been imposed on white/yellow peas along with a minimum price of ₹200/kg below which imports are prohibited since December 2019.
- The second intervention was the **procurement of chana at Minimum Support Prices (MSP) by the government.** Government procurement in the rabi season amounted to 2.14 mt in 2020, 0.63 mt in 2021, 2.56 mt in 2022, and 2.23 till May 2023. Between 2013-14 and 2022-23, the MSP of chana has been raised from ₹3,100 to ₹5,335 per quintal.
- The first intervention was found to have led to a near-complete halt of imports of pulses.

Trends in other pulses

- The success observed in chana was not observed in other pulses such as arhar, also known as tur or pigeon pea.
- The **domestic production of arhar was erratic rising from 3.17 mt in 2013-14 to 4.87 mt in 2016-17 and later declining to 4.22 mt in 2021-22 and 3.43 mt in 2022-23.**

- According to traders, the estimated crop production of arhar in 2023 is around 2.5 mt.
- For Urad or black gram, a prominent kharif crop like arhar, the average output over the last four years was 2.42 mt, down from 3.49 mt in 2017-18 and 3.06 in 2018-19.
- The estimated production of Moong or green gram (3.74 mt) exceeded arhar (3.43 mt) for the first time in 2022-23.
- Over the last four years, **Moong has risen from fourth place behind urad, arhar, and chana to second place behind chana.**
- Although moong is mainly cultivated during the Kharif season, the recent gain in output has been from the spring-sown and summer-harvested crop.

What are the implications for imports?

- As a result of the erratic production of most non-chana pulses, imports have stayed high.
- The **imports of arhar from Mozambique, Tanzania, Myanmar, Malawi, and Sudan** hit a record high of 0.9 mt in 2022-23.
- In some years, the imports of **masoor (red lentil) from Canada and Australia** were found to have crossed 1.1-1.2 mt due to it having become a substitute for arhar.
- Masoor dal is being used in place of arhar for making sambar in hotels, restaurants, and canteens. This was economically viable as arhar was estimated to cost more than ₹120/kg while masoor cost ₹90/kg on average.
- According to experts, a **sub-normal monsoon can lead to a potential inflation in pulses, but two buffers have been put in place to minimize the hazardous implications** associated with this.
- The **ample stocks of government-procured chana** including the 2.23 mt procured during 2023 and the 1.47 mt carryover from the 2022 crop.
- The **landed price of raw masoor (₹56,000-57,000/tonne) in India is below its MSP of ₹60,000 and wholesale mandi rates of arhar (₹ 98,000-100,000/tonne)**. Arhar, masoor, and urad imports are also not subject to any import duties at present.
- In addition to the low buffer, the Union government has in the last week introduced **stock limits on the trade of arhar and urad** which are **applicable to wholesalers, retailers, and dal millers as part of efforts to prevent hoarding and unscrupulous speculation.**

India's Internet Economy To Reach \$1 Trillion By 2030

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Indian Economy

Prepp Mains Booster: Changes in industrial policy and their effects on industrial growth. Indian Economy, Growth and Development

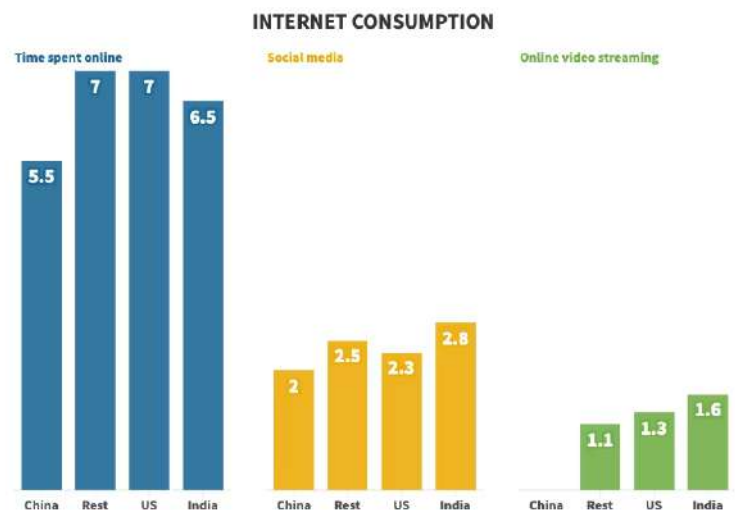
Context:

- According to a joint report '*The e-Economy of a Billion Connected Indians*' by Google, Temasek and Bain & Company India's internet economy is projected to grow to \$1 trillion by 2030 from \$175 billion in 2022.

Reason behind growth in India's Internet Economy

- According to the report the **continued shift in consumer behavior and the evolution of the business ecosystem** will underpin the growth of India's Internet economy.
- Digital consumption is driving growth in key internet economy sectors, such as e-commerce, online travel, food delivery, and ride hailing.

- The report said that the confluence of three crucial forces —
 - **digital-seeking behaviors** among Internet users in Tier 2+ locations,
 - **digitisation** of large, traditional businesses along with a growing start-up ecosystem, and
 - the success of India's homegrown digital public goods or '**India Stack**' — has positioned the Internet economy for acceleration.
- India Stack refers to the Indian government's ambitious project to create a unified software platform aimed at bringing the country's population into the digital age.
- It is a collective name for a set of open APIs (application programming interface) and digital goods that will allow governments, businesses and other organizations to leverage identity, data and payments infrastructure at scale.
- Key services like Aadhaar, United Payments Interface (UPI), and Digilocker have been instrumental in facilitating the growth of India's internet economy.



Source: India e-Economy Report by Google, Bain & Company, and Temasek - Data represented is in hours/day per user

Significance

- **GDP:** The report claimed that by 2030, the internet economy's contribution to India's technology sector will grow to 62% from 48% in 2022. It will also account for 12-13% of India's GDP, up from 4-5% in 2022.
- **Sectors:** The report projects that **B2C e-commerce** (business-to-consumer ecommerce) will continue to maintain a leading share of digital services, growing 5-6 times to \$350-380 billion by 2030.
- HealthTech and InsurTech, both currently sized at or less than \$2 billion at present, will demonstrate the largest expansion, to the tune of 9-15x.
- SaaS [Software as a Service] will continue to drive momentum for India's digital exports, with edtech and e-commerce offerings getting a global footprint.
- **Investments:** In this period, investors may well turn to established startups, given the growing emphasis on profitability, growth and late-stage startups will receive more investor attention than earlier stage ones.
- **Online shoppers:** India's online shoppers are expected to double by 2030, with currently over 60 per cent of new shoppers located in smaller towns, and increasingly attracted to the Direct-to-Customers (D2C) offerings and accessibility features of digital platforms.
- **MSMEs:** As traditional businesses and MSMEs increase investments in digitization and startups play a stronger role in driving the

internet economy, the pace of digital disruption is expected to accelerate.

- Digital financial services like online payments, lending, and investments will play an important role by catering to the credit and capital requirements of both Tier 2+ consumers and MSMEs, ensuring their continued growth and accessibility.

Challenges

- **Digital divide:** Despite the rising adoption of digital technologies and the IT industry, India's digital divide is creating economic disparities between those who can afford technology and those who cannot, thereby affecting the country's overall digital growth.
- **Accessibility:** Many people in rural areas still lack access to digital services. The digital economy has also created new forms of inequality, with some people benefiting more than others.
- **Data Privacy:** The growth of the digital economy has raised concerns about data privacy and security, with many people worried about the misuse of their personal information.

Way forward

- Drawing the line between personalization and data privacy.
- Businesses balance the drive for profitability and growth with innovation.
- Harnessing the power of artificial intelligence in a responsible manner.
- Ensuring that India's growing entrepreneurial ambitions remain undeterred.
- Upskilling and reskilling India's talent pool to maintain relevance.

Conclusion

- India is fast emerging as a leader in the global digital economy, due to a range of factors like investments by private players, digital initiatives of the government like Make in India, and Digital India programs, and the Indian population's eagerness to adapt quickly.
- The growth of the digital economy has had a significant impact on India's economy and society.
- As India continues on its digital journey, it is important to consider the impact of the digital economy on all sections of society and to work towards creating an inclusive and sustainable digital ecosystem

An Atmanirbhar Move

Priority: Medium



Primary Source: Indian Express

Prepp Prelims Booster: The Hindu

Prepp Mains Booster: Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment., Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth.; Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context:

- The author, Mansukh Mandviya, the Union Minister for Health and Family Welfare and Chemicals & Fertilisers, has discussed the Atmanirbhar initiative of the Union Government in the article titled "An Atmanirbhar Move" published in the Indian Express on June 14th 2023.
- The self-reliant model, especially in crucial sectors such as fertilizers, has helped the country tide over a difficult period and reflects the government's commitment to food security.

Self-reliance

- According to Prime Minister Narendra Modi, India must endeavor to make the 21st century India's century and the path towards achieving this is **self-reliance**.
- This statement by the Prime Minister reflects the essence of Modinomics and the various milestones achieved by the government during its term.
- According to analysis, the government's management of the Covid crisis and the subsequent challenges that emerged in its aftermath have emphasized the need to concentrate, recalibrate, and advance without excessive indulgence.
- This strategy for the progress of the country was the basis of the idea of a **self-reliant India or Atmanirbhar Bharat**.

Atmanirbhar Bharat Abhiyan

- The **Atmanirbhar Bharat Abhiyan was announced during the Covid-19 pandemic with funds worth ₹20 lakh crore or \$ 268.74 billion amounting to approximately 10% of India's GDP allocated to the Abhiyan.**
- The Mission aimed to provide a stimulus package to help the economy revive from the impacts of the pandemic and the consequent lockdown by incentivizing domestic production.
- The goal of the Atmanirbhar Bharat scheme is to **reduce imports by improving the quality and quantity of products manufactured within the country.**
- The key objectives of the mission include:
 - To develop India as a global supply chain hub.
 - To build government trust in the capabilities and prospects of the private sector.
 - To establish good force multipliers for the Indian manufacturing sector.
 - To promote the export of goods such as agriculture, textiles, clothing, and jewelry in foreign markets.
 - To determine each sector's adequacy in terms of achieving self-reliance.
- The Atmanirbhar Abhiyaan comprises themes including '**Local for Global: Make in India for the World**' and '**Vocal for Local.**'
- The five pillars of the Atmanirbhar Bharat Abhiyaan are:
 - **Economy:** Build an economy that takes a quantum leap instead of growing incrementally
 - **Infrastructure:** To create modern infrastructure to meet the demands of an evolving India.
 - **System:** To upgrade and create a technology-based system that can fulfill the needs and aspirations of the 21st century.
 - **Demography:** India's vibrant and ambitious demography and its position as the country with the largest population in the world ensures that it is well placed to become a developed country.
 - **Demand:** Atmanirbhar Bharat aims to create a cycle of demand and supply within the economy that is capable of meeting the needs of the country

Atmanirbharta in the Fertilizer Industry

- The **Vocal for Local Initiative** is aimed at the creation of a self-sustaining and self-generating economy instead of the narrow-minded perspective of it as an import substitution strategy.
- India's fertilizers department has made substantial progress toward achieving the goal of self-reliance.
- In a foresight move, the Union Government secured stocks of **fertilizers** during the crisis caused by the invasion of Ukraine.
- The government has been successful in setting up long-term agreements and the creation of joint ventures with resource-rich

nations despite numerous challenges like the scarcity of raw materials, gas, oil, rock phosphate, and potash.

- **The government has supported industries in identifying opportunities across the value chain through a strategy involving the strengthening of domestic operations, building long-term relationships, investment in resource-rich geographical territories in order to secure raw materials, and promoting alternate fertilizers and natural farming.**
- The Fertilizers Industry has been encouraged to establish overseas joint ventures to secure raw materials and joint venture plants in some countries with buy-back agreements and assured off-take agreements for the supply of 10 LMT (lakh metric tonnes) of rock phosphate and 6.55 LMT of phosphoric acid.
- **This has resulted in strategic partnerships between India and countries such as Jordan, Saudi Arabia, Oman, Canada, Russia, Morocco, Israel, Senegal, Tunisia, and South Africa.**
- The strategic partnerships have allowed India to secure supplies of various fertilizers amounting to 157 LMT for three years and 32 LMT for four years.
- The government has also encouraged the domestic industry and Public Sector Undertakings (PSU) to adopt long-term agreements to import raw materials and intermediates such as ammonia, phosphoric acid, and sulfur.
- As a result of the government's initiatives, India has been able to diversify its product portfolio and develop NPK complexes.
- This gives Indian farmers a wider variety of choices and also ensures balanced nutrition.
- **Significant improvements have been observed in the opening stocks of Diammonium Phosphate (DAP), Muriate of Potash (MOP), and other NPK fertilizers improving from 7.73 LMT, 2.47 LMT, and 13.8 LMT in Kharif 2022 to 27 LMT, 14 LMT, and 31.2 LMT respectively.**



Other Government Initiatives in the Fertilizer Sector

- **The Urea Policy (Pricing and Administration):** It is a Central Sector Scheme, under which urea is provided to farmers at a notified MRP by the government.
- **Nutrient-Based subsidy (NBS):** Under the NBS policy, a fixed rate of subsidy on a ₹/Kg basis is announced for Nitrogen (N), Phosphate (P), Potash (K), and Sulphur (S) on an annual basis by the government.
- **Space Technology in the Fertiliser Sector:** The Department of Fertilizers has commissioned a three-year Pilot Study on Resource Mapping of Rock Phosphate using Reflectance Spectroscopy and

Earth Observations Data to be conducted by the National Remote Sensing Centre under ISRO.

- **Policy on Promotion of City Compost:** The Policy on the Promotion of City Compost notified by the Department of Fertilizers in 2016 grants market development assistance of ₹1500 to scale up the production and consumption of city compost. Compost manufacturers were allowed to sell city compost in bulk directly to farmers and fertilizer companies marketing city compost are covered under the Direct Benefit Transfer scheme for Fertilizers.

Conclusion

- The Atma Nirbharta-based strategy of the Department of Fertilizers has positioned India as a key player in the global fertilizer supply chain.
- The shift towards self-reliance in government strategy is further proof of the government's commitment to ensuring food security and the creation of a Bharat that is not dependent on other nations.



On Defaulters, RBI Prioritises Public Interest

Priority: Medium



Primary Source: Indian Express

Prepp Prelims Booster: Indian Economy

Prepp Mains Booster: Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment, Statutory, regulatory and various quasi-judicial bodies.

Context:

- Recently, the RBI has set out a new framework for bank settlements with defaulters which has raised concerns for including wilful and fraudulent defaulters within its ambit.
- As two-thirds of the Indian banking system is owned by the government, other concerns such as regulatory governance and public ownership of banks have also been raised.



What does the June 8th Circular mention?

- According to the [RBI Circular](#) (June 8th), banks can file cases against fraudulent or wilful defaulters.
- **Banks have also been directed to undertake settlements or technical write-offs without prejudice to any criminal proceedings ongoing against such defaulters.**
- The RBI also directed banks to fix a **minimum cooling period of at least 12 months before issuing fresh loans to borrowers who had undergone compromise settlements.**
- Therefore, the circular does not condone crime as claimed by critics but separates the commercial aspect from the criminality of a default.
- It aims to ensure that commercial judgment is not suspended just because criminal action is being pursued.

Why should banks settle with defaulters?

- The primary objective of a bank in case of a loan default is to recover as much of the loan amount as possible.
- The bank chooses the best strategy out of the numerous options available to recover the money based on its commercial judgment.
- For example, in some cases, the bank may invoke the provisions of the [Insolvency and Bankruptcy Code, 2016](#) against the borrower while in some other cases, it may negotiate with the borrower for a **compromise settlement.**
- The June 8th circular of the RBI aimed to establish a formal regulatory structure to the settlement-related activities of the bank and safeguard public interests.
- The bank should not distinguish between willing, fraudulent, or other defaulters and should decide, irrespective of the nature of the default, whether a settlement is more profitable and quicker than the IBC or other strategies.
- The bank's aim is to recover the maximum possible amount as quickly as possible and at the lowest expense so as to unlock banking capital stuck in the wilful or fraudulent default categories.
- Debt recovery is an important activity that aims to protect the interest of depositors and other stakeholders who will suffer if Non Performing Assets (NPAs) are not recovered.

What are the major concerns raised about the circular?

- **Ownership:**
 - One of the major concerns raised by the circular is the **government's control over the boards of public sector banks.**
 - According to experts, there is a risk of the settlement process being misused to favor politically-connected defaulters at the cost of the bank's commercial interests.
 - The RBI must ensure that decisions taken by the banks are commercially motivated rather than being the result of political pressure.
 - Private sector banks have previously settled with wilful defaulters and the RBI has also issued instructions related to this in the past.
 - However, the actions of public sector banks, which make up the majority of the Indian banking system, are more likely to be subjected to scrutiny by investigative agencies.
 - **In a narrow sense, the RBI circular aims to level the playing field and give public sector banks regulatory cover for settlement-related decisions.**
 - **In a wider sense, the circular raises questions about the distortions in the banking system due to the government ownership of banks as such a circular would be unnecessary in a completely private-owned banking system.**
- **Governance:**

- In 2022, the **RBI's Regulations Review Authority 2.0** recommended that the RBI display all draft instructions on its website for stakeholder comments and finalize decisions after considering the feedback, with exceptions only in special circumstances.
- However, the RBI Circular (June 8th) was not associated with any special circumstances such as financial stability, fiduciary duty, confidentiality, or other pressing concerns.
- The draft, which is of great public concern, should have been placed on the RBI website along with an explanation for the rationale behind it.
- This would have allowed stakeholders to express their concerns, allowing the RBI to address these concerns before notifying the circular.

Why has the circular been criticized?


- In the **Prudential Framework for Resolution of Stressed Assets (2019)**, the RBI stated that fraudulent and wilful defaulters would be ineligible for debt restructuring.
- Experts have warned that the RBI's decision to include wilful defaulters in resettlement could lead to an erosion of public trust and undermine the confidence of depositors.
- There are concerns that restructuring is misused by banks and corporates for **'evergreening'** problem accounts to maintain low levels of reported NPAs.
- Even though evergreening has declined with the enactment of the bankruptcy code, debt recovery has remained abysmally low.

Conclusion

- Banks are commercial enterprises that should be allowed to operate as such without political interference.
- Although the decision to separate commercial decisions such as loan recovery from criminal proceedings against wilful defaulters is a step forward, the process is complicated because of government ownership of commercial enterprises and gaps in regulatory governance.
- Therefore, public discourse on the banking system in the future should focus more on the commercial aspects and less on the moral role.

Agriculture

Paddy And The Price Of Water

Priority: Medium 

Primary Source: Indian Express

Prepp Prelims Booster: Agriculture

Prepp Mains Booster: Major crops-cropping patterns in various parts of the country, - different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers

Context:

- The author has discussed rice cultivation in India and the advantages of using direct seeding of rice in the article "Paddy And The Price Of Water" published in the Indian Express on 19th June 2023.
- Direct seeding involves the direct sowing of rice without nursery preparation, puddling, or flooding and is comparatively more effective against weeds, and is water-efficient.

What is direct seeding?

- **Direct seeding of rice (DSR)** or the **broadcasting seed technique** is a method of paddy sowing that is relatively more water-saving than conventional methods.

- Here, seeds are directly drilled into the fields instead of transplanting seedlings from a nursery to waterlogged fields.
- Farmers using this technique only need to level their land and give it one pre-irrigation sowing.

What are the advantages of DSR?

- **Labor:**
 - In comparison to other methods like transplanting, the DSR method involves less human labor as there is no need to transport the seedlings from the nursery to the fields.
 - While it may take around 4-5 laborers one day to transplant one acre of paddy costing the farmer around ₹4000-5000, the same area can be covered by a DSR machine in just 1.25 - 1.5 hours.
 - The DSR method is more cost-effective as it requires around 3 liters of diesel at ₹90 per liter and around ₹1,600-1,700 per acre in herbicide costs.
- **Groundwater:**
 - The DSR method prevents the formation of the hard crust beneath the plow layer and thereby allows for easier recharging of groundwater reserves.
 - The second irrigation is required only 18-20 days after sowing, following which water is given every week just like transplanted paddy.
 - **The lack of puddling and flooding of fields in the first 1-3 weeks leads to water saving.**
 - The DSR method requires only 21-22 irrigations for a 155-160 days crop as compared to the 28 irrigations required in transplanting.
 - Unlike other methods, DSR does not require standing water at 2 inches height, just moist fields.
 - According to the Director of the **IARI**, the water consumption per hectare under DSR is around 1.5 hectare-cm or 150,000 liters as compared to the 5 hectare-cm and 15 hectare-cm for transplanting and puddling respectively.
- **Maturity:**
 - **Under DSR, crops mature 7-10 days faster** than in traditional methods, allowing farmers to better manage paddy straw.
- **Yield:**
 - Studies conducted by researchers and field surveys of farmers have revealed that the **DSR technique produces one to two quintals more rice per hectare than traditional methods.**



What are the methods to implement DSR?

- The report mentions the methods implemented by two farmers in Haryana.
- In the first method, the land is plowed and a laser leveler machine is used to smoothen and level the surface of the soil.

- This is followed by pre-sowing irrigation and 2 or 3 rounds of planking to compact the soil and prevent moisture loss.
- The sowing is performed using a DSR machine once the field has sufficient workable soil moisture (around 4-5 days).
- The **pre-emergent herbicide Pendimethalin** which is sprayed within 24 hours of sowing kills the weeds whose small seeds in the soil germinate quickly once irrigation is done.
- In the second method, plowing is followed by laser leveling and planking.
- The farmer first sows and then irrigates. Following this, pendimethalin is sprayed about 72 hours later.
- The second method is more effective in terms of germination and crop establishment but less efficient in controlling weeds when compared to the first method.

Challenges in implementing DSR

- **Climate:**
 - High temperatures and deficient rainfall have affected the quality and quantity of output from rice cultivation.
 - Farmers whose crops had suffered due to adverse climatic conditions were hesitant to choose DSR.
- **Governance:**
 - Lack of support from governments in the form of a good variety of seeds, and the interruptions in electricity supply during the sowing season make using machines and motors more expensive and unreliable.
 - Other challenges include higher costs of seeds, the risk of non-uniform crop establishment, exposure of seeds to birds and pests, weed management, lack of suitable varieties for various agro-climatic conditions, and a lack of awareness and knowledge among farmers and laborers.

Why has DSR not become more popular?

- One of the major reasons for the low popularity of the DSR technique is that the **availability of subsidized or free electricity** for irrigation disincentivizes farmers from adopting water-saving technology.
- Farmers have also cited a **lack of good machines** to implement the DSR technique. The recommended spacing for paddy is 20cm row-to-row and 15 cm plant-to-plant, which allows plant populations of 33 per square meter.
- However, the DSR seed drill machines mostly sow row-to-row and are not able to seed as per the recommended dimensions.
- The Haryana and Punjab governments are offering incentives of ₹4,000 and ₹1,500 per acre respectively to adopt the DSR technique instead of transplantation.
- According to experts, the reduced prices of water and labor and not sops were more likely to motivate farmers to adopt the DSR model.

Transplantation

- In the transplantation method, the cultivation of rice involves the preparation of nurseries, where the seeds are raised into young plants.
- These seedlings are then uprooted and re-planted in the main field after a month.
- The plants receive one round of irrigation during the nursery stage.
 - Each irrigation consumes roughly 5 hectare-cm or 500,000 liters of water. One hectare-cm refers to one cm of standing water in one hectare area and is equal to 100,000 liters.
- The field in which the seedlings are transplanted is usually irrigated once before being "**puddled**" or **tilled in standing water**.

- **Puddling churns the soil to make it softer for transplanting. This breaks its capillary pores through which the water percolates down. This operation consumes around three irrigations worth of water.**
- In the first two to three weeks after transplanting, farmers need to irrigate every 1-2 days, following which irrigation takes place once a week.
- The irrigation during the initial weeks ensures that a water depth of 4-5 cm is maintained thereby preventing weed growth during the early stage of the crop.
- **The flooded fields in transplanting deny oxygen to the weed seeds in the soil and prevent their germination. Therefore, water acts as a natural herbicide in transplanting while chemical herbicides are needed in the DSR method.**
- Overall, transplanting requires around 28 irrigations which can increase if temperatures rise and decrease in case rainfall is sufficient.
- **The southwest monsoon season has registered 37.2% deficient rain so far and most global weather agencies have predicted [El Niño](#) to set in by the end of June, indicating a weak monsoon that could adversely impact the country's rice crop.**

Why The Draft Livestock And Livestock Products Bill Was Withdrawn?

Priority: Low



Primary Source: Indian Express

Prepp Prelims Booster: Agriculture

Prepp Mains Booster: Economics of animal-rearing; Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context:

- Recently, the Centre has withdrawn the proposed draft of the Live-stock and Live-stock Product (Importation and Exportation) Bill, 2023. The Bill frames guidelines for the import and export of live animals, which has raised concerns among animal lovers.



What is the draft livestock and livestock products Bill?

- The Bill is meant to **replace the Live-stock Importation Act, 1898, and the Live-stock (Amendment) Act, 2001.**
- It is different from the existing law in three key aspects — **it allows export of live animals**, it widens the **scope of animal import-export (including cats and dogs among 'live-stock')**, and **takes away some powers of state governments** to regulate this area.
- The Government drafted the bill to bring the law in order to **align it with the contemporary requirements and prevailing circumstances** related to sanitary and phytosanitary measures, and its extant Allocation of Business Rules, 1961.

Criticism of the bill

- The proposed Livestock and Livestock Products [Importation and Exportation] Bill has faced significant backlash from various stakeholders, particularly animal rights organizations.
- Animal rights organizations have said that the draft Bill will **open a "Pandora's Box" of cruelties on animals** and allowing the live export of animals from India, is **a blanket free pass for the abuse of millions of animals** farmed for food and other uses.
- The Ministry of Fisheries, Animal Husbandry and Dairying has withdrawn a draft Live-stock and Live-stock Products (Importation and Exportation) Bill 2023, after it got representations expressing concerns involving sensitivity and emotions related to animal welfare.

Previous amendment

- In 2001, the then NDA government, headed by Prime Minister Atal Bihari Vajpayee, had amended the 1898 law which made provision for the **inclusion of the import of livestock products**. The earlier law dealt with only the import of live-stock.
- The Vajpayee government first promulgated an ordinance—**The Live-Stock Importation (Amendment) Ordinance, 2001**. Later, the ordinance was replaced by the Live-Stock Importation (Amendment) Bill, 2001.
- According to the ordinance, the "live-stock products" included meat and meat products of all kinds including fresh, chilled and frozen meat tissue; organs of poultry, pig, sheep, goat; egg and egg powder; milk and milk products; bovine, ovine (the sheep family) and caprine (the goat family) embryos, ova and semen; pet food products of animal origin and any other animal product which may be specified by the Central Government by notification in the Official Gazette."
- The 2001 amendment also empowered the Centre to "regulate, restrict or prohibit" the trade of any live-stock product that may be liable to affect human or animal health.

What is proposed in the Livestock And Livestock Products Bill draft?


- It is different from the existing law in three key aspects —
 - allows export of live animals,
 - widens the scope of animal import-export (including cats and dogs among 'live-stock'), and
 - takes away some powers of state governments to regulate this area.

| Earlier law | Proposed by |
|--|--|
| <ul style="list-style-type: none"> • The earlier law regulates only importation of live-stock. • The Live-stock Importation Act, 1898, in force till date, has only 5 Sections: Section 1 (Short title and local extent); Section 2 (Definitions); Section 3 (Power to regulate importation of live-stock), Section 3A (Power to regulate Importation of live-stock products); Section 4 (Power of State Government to make rules); and Section 5 (Protection to persons acting under Act). | <ul style="list-style-type: none"> • The proposed draft Bill has provisions to regulate live-stock exports of live-stock and live-stock products. • The proposed draft of the Live-stock and Live-stock Product (importation and Exportation) Bill, 2023 has 10 Sections, and has expanded the definition of live-stock to include feline and canines also. • The proposed draft Bill defines the live-stock as all equines (all live |

- According to the definition given in the existing law (The Live-stock Importation Act, 1898), "live-stock" includes horses, kine, camels, sheep and any other animal which may be specified by the Central Government by notification in the Official Gazette."
- equine irrespective of purpose including donkey, horses, mule, assess, hinnies), bovines (all bovine animals including cattle, buffaloes, bullocks or any animals falling in the category of bovidae), caprines, ovines, swines, canines, felines, avian, laboratory animals, aquatic animals and any other animal which may be specified by the Central Government by notification in the Official Gazette from time to time, except those prohibited in any other act."
 - The Centre has defined the **live-stock and live-stock products as commodities** in the proposed draft Bill.

*Click here, to Read about [Animal Welfare Board of India](#)

Subsidies Don't Help Fight Climate Change, World Bank Report Finds

Priority: High 

Primary Source: Down to Earth

Prepp Prelims Booster: Environment

Prepp Mains Booster: Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System-objectives, functioning, limitations, revamping; issues of buffer stocks and food security; Technology missions; economics of animal-rearing, Conservation, environmental pollution, and degradation, environmental impact assessment.

Context:

- Recently, a report released by the World Bank has highlighted the adverse consequences of inefficient subsidization of the agricultural, fishing, and fossil fuel sectors.
- The implicit and explicit subsidization, under which trillions of dollars have been spent has exacerbated climate change and inefficient resource utilization.

What has the new World Bank Report revealed?

- The **Detox Development: Repurposing Environmentally Harmful Subsidies Report published by the World Bank** has discussed the scope of subsidy reform in terms of safeguarding the **world's natural assets consisting of air, land, and oceans**.
- These assets are crucial for human health and nutrition and form the basis of the global economy.
- However, the present model of subsidies for fossil fuels, agriculture, and fisheries is leading to degradation and causing harm to people, the planet, and the economy.

- According to the report, **subsidies in the three sectors exceeded \$7 trillion which amounted to 8% of the global gross domestic product.**
- Explicit subsidies i.e. direct government expenditures in the three sectors amounted to \$1.25 trillion (equal to the size of a big economy like Mexico).**
- Implicit subsidies i.e. a measure of the subsidies' impact on people and the planet amounted to over \$6 trillion per year with the poor experiencing the larger burden.**
- Subsidies are generally intended to bail out economies in distress and can be repurposed to finance just transition activities or provide improved quality of life.
- However, the authors of the report have claimed that these subsidies could have significantly far-reaching impacts on the environment.
- According to the report, **countries spent \$577 billion to actively lower the price of polluting fuels such as oil, gas, and coal in 2021.**
- These measures were incentivizing the overuse of fossil fuels which leads to air pollution in the industrializing middle-income countries which already suffered from a high health burden.
- The report found that the **money spent on subsidizing fossil fuel consumption in most countries is six times the financial commitments made by countries under the Paris Agreement.**
- According to the report, an increase in the average annual retail price of common transport fuels (petrol, diesel) by \$0.10 per liter could be associated with a decrease of 2.2 µg/m³ in the average annual concentration of PM_{2.5} in capital cities.
- It also mentioned that reducing the incentives to use polluting fuels had limited effectiveness. The report states that the demand for energy is sluggishly responsive to prices due to the lack of accessible and affordable cleaner alternatives.



Agricultural and Fisheries sector

- In the agricultural sector, explicit subsidies in countries with accessible data were estimated at \$635 billion per annum while some other estimates calculated it to be around \$1 trillion.**
- Agriculture subsidies are believed to have **led to the loss of 2.2 million hectares of forest per year, which is 14% of global deforestation.**
- The subsidies are targeted at farmers for buying specific inputs or cultivating certain crops, but the report claims that these subsidies have been found to favor wealthy farmers despite being designed to benefit the poor.
- The Report cites the case of Malawi and Tanzania, where input subsidy programs that are designed to target the poor pay \$5 to the

top income quintile for every \$1 paid to the bottom income quintile, indicating that the rich benefit more from the subsidy program.

- However, these subsidies constituted a significant portion of the income of the bottom quintile, so elimination of the subsidies without appropriately sufficient compensation could be harmful.
- According to estimates, **the fisheries sector receives \$35.4 billion per annum in subsidies of which \$22.2 billion is believed to lead to overfishing.**
- The report found that subsidies are a key driver behind conditions such as excess fishing capacity, dwindling fish stocks, and lower fishing rents.
- As a result, fisheries that are already severely depleted and managed unsustainably suffer a greater level of negative impact due to these subsidies.
- The Report has stated that **inefficient subsidy usage is responsible for up to 17% of all nitrogen pollution in water in the last three decades.**
- This is believed to have had a large **impact on reducing labor productivity in terms of health by up to 3.5%.**
- **Subsidy-incentivized fossil fuel usage is a primary factor in the 7 million premature deaths that occur annually on account of air pollution.**

Recommendations

- The Report has claimed that the diversion of the subsidies can result in the unlocking of substantial funds which can be used for more sustainable initiatives.
- Some of the suggestions for effective subsidy reform mentioned in the report are:
 - Making cleaner alternatives to fossil fuels more accessible and affordable
 - Addressing information and capacity constraints related to environmentally friendly processes
 - Addressing behavioral biases
- In order to preserve the existing stock of fish, the report recommends the repurposing of subsidies without incentivizing increased fishing capacity.
- The report has recommended compensation for the most severely affected in the form of measures like direct cash transfers.
- The report cites the example of such schemes from the Middle East and North Africa, where cash transfers and in-kind assistance were successful in mitigating the harshest impacts on the poor while energy subsidy reforms were taking place.



Conclusion

As countries are struggling with tight budgets, growing public debts, increasing inequalities, and worsening environmental degradation,

governments should prioritize comprehensive subsidy reforms which aims to develop public acceptance, provide protection to the most vulnerable, and ensure transparency in terms of expenditure.

Changes In Industrial Policy And Their Effects On Industrial Growth, Infrastructure And Energy

Industry Eyes Access To Gati Shakti Portal To Boost Capex In Connectivity, Allied Sectors

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: PM Gati Shakti

Prepp Mains Booster: Infrastructure And Connectivity

Context:

- Recently, **Confederation of Indian Industry (CII)** president and TVS Supply Chain Solutions managing director R. Dinesh has suggested that government could share information from **PM Gati Shakti portal** after blocking out 'sensitive' data to **facilitate greater private capital investments in infrastructure projects**

PM Gati Shakti platform

- The PM Gati Shakti digital platform brings **together 16 ministries**, including Railways and Roadways, to spur an **integrated and coordinated approach** to planning and implementing infrastructure connectivity projects across the country.
- Currently, access to the portal's data, which includes detailed maps with existing economic and social infrastructure as well as upcoming projects, is restricted to **Central and State government agencies and departments.**
- The plan is to **give limited access to private sector companies** which would share information on the availability of land and clearances required to take projects forward.

Significance

- India's logistics sector is **largely unorganized and fragmented**, making logistics costs in the country as high as 14-15% of the GDP compared with 7-8% in Singapore and the US.
- Access to the portal's information **would assist logistics firms in planning operations and encourage** fresh capital investments across related sectors.
- **Concerns:** PM Gati Shakti National Master Plan **has a lot of sensitive data, strategically important data** and if it lands in the wrong hands, it can threaten the security of the country itself.

PM Gati Shakti National Master Plan (NMP)

- **PM Gati Shakti National Master Plan (NMP)** is a **transformative approach** for **integrated and holistic planning** across concerned Ministries/Departments to **improve multimodal connectivity**, and logistics efficiency and to address critical infrastructure gaps for the seamless movement of people and goods, with a focus on minimizing disruptions and ensuring timely completion of projects.
- The NMP aims at facilitating the development of **multi-modal connectivity infrastructure** to various economic zones including the Ports and shipping sector.
- PM Gati Shakti will incorporate the infrastructure schemes of various Ministries and State Governments like Bharatmala, Sagarmala, inland waterways, dry/land ports, UDAN etc.
- Economic Zones like textile clusters, pharmaceutical clusters, defence corridors, electronic parks, industrial corridors, fishing clusters, agri zones will be covered to improve connectivity & make Indian businesses more competitive.
- It will also leverage technology extensively including spatial planning tools with ISRO (Indian Space Research Organisation) imagery

developed by BiSAG-N (Bhaskaracharya National Institute for Space Applications and Geoinformatics).



Semiconductor Fab: The Unfinished Agenda

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Semi conductors

Prepp Mains Booster: Government policies and interventions for development in various sectors and issues arising out of their design and implementation; GS 3 - Changes in industrial policy and their effects on industrial growth

Context:

- Recently, the Indian cabinet has given its approval to US chipmaker Micron Technology's plan to invest \$2.7 billion to set up a semiconductor testing and packaging unit in Gujarat. The article highlights the challenges and possible approaches for India to establish a semiconductor fabrication plant.
- Semiconductors are solids whose conductivity lies between the conductivity of conductors and insulators. Semiconductors are used to make a variety of electrical appliances such as diodes, transistors, and integrated circuits.



Earlier attempts

- Special Incentive Package (SIP):** The first attempt was made in 2007, however, it was unsuccessful.
- The second attempt, made in 2012 as a **Modified SIP**, performed better. India was on the verge of having a fab after more than two years of intensive outreach with essentially every major fab company in the world.
- The Cabinet gave its approval to two consortiums with an attractive set of incentives. One was managed by **Jaiprakash Associates in collaboration with IBM and the Israeli firm TowerJazz, and the**

other by Hindustan Semiconductor Manufacturing Corporation and ST Microelectronics.

- Together, the two fabs required an investment of \$10 billion, and the government provided incentives in the form of cash payments and tax breaks totaling about \$5 billion.
- Land was allocated and finalised locations for the fabs. However, both ultimately failed to mobilise resources.

Significance of Semiconductor

- Electronics:** Semiconductor chips play a crucial role in the production of electronic devices like smartphones, laptops, and televisions. The demand for these chips is expected to skyrocket, especially with the emergence of e-vehicles. The COVID-19 pandemic has further highlighted the growing need for electronic devices in the future. As a result, the semiconductor industry presents an attractive opportunity for early entry.
- In India, the consumption of semiconductors is projected to surpass \$80 billion by 2026 and \$110 billion by 2030.
- It creates **employment opportunities**, attracts investments, reduces imports, **promotes technological self-reliance**, and fosters innovation.
- The growth of the semiconductor industry has a **multiplier effect on various sectors**, including electronics, telecommunications, healthcare, automotive, and defense, leading to sustainable economic development.
- Currently, a handful of countries including the United States, Taiwan, South Korea, Japan, and the Netherlands dominate the semiconductor manufacturing industry, with Germany also emerging as a growing player in integrated circuit production.

Challenges

- Investment Risk:** Investing in a semiconductor fabrication plant (fab) is highly risky due to the large amount of capital that needs to be recovered before the technology becomes outdated.
- Substantial production volumes are necessary to achieve economic viability. Consequently, it is challenging to envision a fab solely focused on the domestic market.
- Lack of interest in setting up Green field projects:** The advantage of semiconductors having a small freight-to-price ratio and a **zero-custom duty regime under the Information Technology Agreement, 1996**, facilitates production in a single location and global sales.
- ITA-1 was signed in 1996 with initially 29 participants (EU as one member), where the signatories agreed to **eliminate custom duties and other duties and charges on selected IT products on a Most-Favoured-Nation basis**. The ITA-1 products cover broadly many high-technology IT physical products including computers, telecom equipment, semiconductors, semiconductor manufacturing and testing equipment, software and scientific instruments and a significant number of other products.
- India is a signatory to the Information Technology Agreement (ITA)
- This is why companies are not interested in establishing greenfield fabs, as the existing advantages of semiconductor production **make it more attractive to operate in established locations rather than starting from scratch**.
- Complexity:** The semiconductor adheres to Moore's law, which predicts the doubling of transistors in a unit area every 18 months.
- However, miniaturization progress comes with increased complexity and costs, resulting in a decline in the number of participants in the industry.

- Developing an ecosystem for chip manufacturing in a greenfield location is a major challenge as hundreds of chemicals and gases are required for chip fabrication, **people need to be trained, and abundant clean water** be made available. Despite the best of equipment, poor quality and low yields can make fabs fail.
- **Analog vs logic fab:** There are additional considerations when deciding whether to establish a logic/processor, memory, or analog fab.
- The functionality of electronic equipment is characterized by logic chips, which are strategically important and generate higher profits, however, require the most advanced technologies and utilize the most advanced feature nodes, and are the most expensive to set up.
- On the other hand manufacturing Analog chips have less strategic importance. Analog fabs can have larger feature sizes, potentially reaching up to 130 nm, and are the least expensive to set up.
- **Competition:** The U.S. enacted the CHIPS and Science Act in 2022, with nearly \$40 billion in subsidies, in an effort to bring back semiconductor manufacturing to the country. The European Union sanctioned €7.4 billion for a new fab in France.
- India will have to contend with these countries in what has become an intense chip warfare.

Way forward


- **Lessons from China:** China, despite having started late in the semiconductor fab industry with massive government financial support over the last two decades, was able to acquire hundreds of loss-making fabs from around the world and built its fab industry.
- With lower costs and market dominance in rare earth, China has become a major chip producer.
- Over the last year, the U.S. and its Western allies have blocked the transfer of the latest fab-related technology to China.
- **Acquiring existing fabs has many advantages as** they are reasonably priced, have stabilised technology, a supply chain ecosystem, an established product line, and market.
- They will enable India to build a fab ecosystem and train human resources. Much lower subsidies would be required, and the funds saved could be used for advanced R&D in fab technologies which will help build state-of-the-art fab in next few years.
- **Assembly, Testing, Packaging, and Marking (ATMP):** A relatively easier option is Assembly, Testing, Packaging, and Marking (ATMP), to get the fab ecosystem developed before the full-fledged fab is set up. But ATMPs have little value in terms of actual chip-making. Tessolve, now acquired by Tatas, had set up an ATMP in 2013-14. This ATMP is successfully packaging chips upto 7 nm feature size. China has over 100 ATMPs.
- As the Chinese saying goes, ***the best time to plant a tree was 20 years ago, but the second best time is now.***

India Semiconductor Mission

- The India Semiconductor Mission is driven by the **Indian government** in collaboration with various industry associations, research organizations, and educational institutions.
- It operates under the guidance of the **Ministry of Electronics and Information Technology (MeitY)** and other relevant government bodies.
- Its aim is to enhance semiconductor design and manufacturing capabilities within the country, fostering innovation, employment, and economic growth.

Science and Technology

How Are Indian Languages Faring In The Age Of AI And Language Models?

Priority: Medium 

Primary Source: The Hindu

Prepp Prelims Booster: Science and Technology

Prepp Mains Booster: - Science and Technology- developments and their applications and effects in everyday life. Awareness in the field of IT, computers

Context:

- This article discusses about the state of Indian languages in the field of Artificial Intelligence. While language technology has significantly improved for English and a few languages, Indian languages are lagging behind.



How does Chatbot work?

- A chatbot is a computer program that uses artificial intelligence (AI) and natural language processing (NLP) to understand customer questions and automate responses to them, simulating human conversation.
- Algorithms and data manipulation techniques play a crucial role in creating **intelligent chatbots and art-making computers.**
- These techniques **convert linguistic and visual data** into mathematical objects, such as vectors, and combine them in specific ways to generate the desired output.
- ChatGPT utilizes these methods to provide responses to user questions.
- When working with a language, a machine first has to break a sentence or a word down into **little bits in a process called tokenisation.**
- These are the bits that the machine's data-processing model will work with. For example, "there's a star" can be tokenized to "there", "is", "a", and "star".
- There are several tokenization techniques such as **trebank tokenizer** which **breaks up words and sentences based on the rules that linguists use to study them.**
- On the other hand, the **subword tokenizer** allows the model to learn some **common word and modifications to that word separately**, such as "dusty" and "dustier"/"dustiest".
- OpenAI, the maker of ChatGPT and the GPT series of large language models, uses a type of the subword tokenizer called byte-pair encoding (BPE).

Challenges- English Vs Hindi

- In 2022, Amazon released a parallel database of 1 million utterances in 52 languages, called MASSIVE. 'Parallel' means the same utterance is presented in multiple languages. An utterance can be a simple query or phrase.

- AI researcher Yennie Jun combined the OpenAI API and MASSIVE to analyse how BPE would tokenise 2,033 phrases in the 52 languages.
- **Increased operational cost:** It was found out Hindi phrases were tokenised on average into 4.8x, the tokens for Urdu phrases were 4.4x longer and for Bengali, 5.8x longer than their corresponding English phrases .
- Running a model with more tokens increases its operational cost and resource consumption.
- Both GPT and ChatGPT can also admit a fixed number of input tokens at a time, which means their ability to parse English text is better than to parse Hindi, Bengali, Tamil, etc.
- Ms. Jun highlighted the **importance of understanding tokenization nuances to ensure equitable language processing** across diverse linguistic communities when using ChatGPT in various applications. Understanding these nuances is essential to ensure fair and accurate language processing for users of different linguistic backgrounds.
- **Adaptation:** It is “fairly difficult” for a model trained to work with English to be adapted to work with a language with different grammar, like Hindi.
- Sentences in different languages are thus tokenised in different ways, even if they have the same meaning.
- The amount of training data for English is much larger than that for Indian languages. ChatGPT was trained on text scraped from the internet – a place where some 55% of the content is in English. The rest is all the other languages of the world combined. C

What is AI4Bharat?

- AI4Bharat was set up as an initiative of IIT Madras to build open-source language AI for Indian languages.
- It is “**building open-source language AI for Indian languages, including datasets, models, and applications**”.
- It has a corpus called IndicCorp with 22 Indian languages, and its CommonCrawl website crawler can support “10-15 Indian languages”.
- In December last year, AI4Bharat researchers reported a new benchmark for Indian languages called “IndicXTREME”.
- They wrote that **IndicXTREME** has nine NLU tasks for **20 languages in the Eighth Schedule of the Constitution**, including nine for which there aren’t enough resources with which to train language models.
- It allows researchers to evaluate the performance of models that have ‘learnt’ these languages.
- One part of natural language processing is natural language understanding (NLU) – in which a model works with the meaning of a sentence.
- Natural language processing (NLP) refers to the branch of computer science—and more specifically, the branch of artificial intelligence or AI—concerned with giving computers the ability to understand text and spoken words in much the same way human beings can.
- For example, when asked “What’s the temperature in Chennai?”, an NLU model might perform three tasks: identify that this is a weather-related (1) question in need of an answer (2) pertaining to a city (3).
- The process of developing language tools is a labor-intensive task.
- AI4Bharat publicly released ‘Bharat Parallel Corpus Collection’, the largest publicly available parallel corpora for Indic languages containing 23 crore text-pairs; of these, 6.44 lakh were “manually translated”.

- These tools also need to account for dialects, stereotypes, slang, and contextual references based on caste, religion, and region.
- **Computational techniques** can help facilitate the development of language tools. Recently, AI4Bharat explored machine translation from **low-resource languages to English** by leveraging cross-lingual transfer from closely related high-resource languages.

Way forward

- GPT-like models still need some customisation to make sure they can follow natural language instructions, carry out conversations, align with human values, etc. Data for this customisation, called ‘fine-tuning’, needs to be of high quality and is still available mostly in English only. Some of this exists for Indian languages, [while] data for most kinds of complex tasks needs to be created.
- **Amazon’s MASSIVE** is a step in this direction. Others include Google’s ‘**Dakshina**’ dataset with scripts for a dozen South Asian languages; and the **open-source ‘No Language Left Behind’ program**, to create “datasets and models” that narrow “the performance gap between low- and high-resource languages”
- The availability of data for training modest-sized models for Indian languages provides a promising foundation for experimentation and innovation.
- The increasing activity around open-source models in English indicates the potential for building successful models for Indian languages, serving as a catalyst for further advancements.

How Genome Sequences Tracked Down An Ancient Disease

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Science and Technology

Prepp Mains Booster: Science and Technology- developments and their applications and effects in everyday life.

Context:

- This article is written by Sridhar Sivasubbu and Vinod Scaria, scientists at the CSIR Institute of Genomics and Integrative Biology (CSIR-IGIB).
- In this article, they discussed how the emergence of **genome-sequencing** technologies has allowed scientists to trace the **trail of infectious diseases that aided people in prehistoric times**.

How genome sequences tracked down an ancient disease?

- Historical archives suggest the **Plague of Justinian** in the sixth century A.D. was possibly the first to be documented.



- The Plague of Justinian, also known as the Justinianic Plague, was a pandemic of bubonic plague that struck the Byzantine Empire and surrounding regions in the sixth century AD. The plague is named after the Byzantine emperor Justinian I, who reigned from 527 to 565 AD.
- The genetic data from a Swedish tomb dating to 3000 BC implies that plague epidemics may have been frequent in Asia and Europe as early as the Late Neolithic–Early Bronze Age (LBNA).
- According to estimates, the LBNA era lasted between 5,000 and 2,500 years in the past.
- Researchers from the Francis Crick Institute in London reported sequencing genetic material from burial sites in the United Kingdom in a recent work that was published in Nature Communications on May 30.
- The remains were estimated to be around 4,000 years old, overlapping with the LBNA period. They discovered the **Yersinia genetic material** in three people, indicating the existence of epidemics in Britain in the LBNA and extending the geographic reach of illnesses much beyond Eurasia.
- The genome sequences lacked the yapC and ymt genes, reinforcing the previous findings that the plague in that **period was possibly not transmitted through fleas**.
- It is possible that samples from Russia and Spain, which are thought to be 3,800 years and 3,300 years old, respectively, are where the earliest isolates of Yersinia pestis with the ymt gene and hence adapted for flea transmission originated.
- The migration of people from the Eurasian grasslands is thought to have carried the LBNA lineage of Yersinia to Europe.
- The broad geographical spread over a long timespan also suggests that the plague was possibly quite transmissible in the past, though we know very little of its severity.

Significance

- **Valuable insights of past:** The emergence of **genome-sequencing technologies** has allowed scientists to trace the trail of **infectious diseases that ailed people in prehistoric times**.
- Through deep-sequencing, scientists can analyze genetic material obtained from well-preserved human remains, aided by sophisticated computational analysis.
- Deep-sequencing involves sequencing the genomic material multiple times to retrieve even small amounts of DNA, since the material is likely to degrade over time.
- **Evolution and adaptation of human pathogens:** In recent years, scientists have also traced the prehistoric trail of many major human pathogens, providing an unparalleled view of the evolution and adaptation of human pathogens.
- **Efficient diagnosis of outbreaks:** Democratization of genome-sequencing has resulted in applications that are increasingly enabling fast, efficient diagnosis of outbreaks, in routine clinical settings as well, quickly replacing the traditional approaches in microbiology.
- **Identification and molecular characterisation:** Sequencing provides **significant advantages over conventional approaches** because it can contribute to identification and molecular characterisation, and open windows into virulence, antimicrobial and antibody resistance, and clues into the evolution, adaptation, and introduction of species in new settings.
- The ambit of such technologies **is also expanding to include studies of animal and plant diseases**, along with human diseases,

contributing to the unified understanding of our well-being called 'One Health'.

What is the 'black death'?

- The 'black death', or the Great Plague, of the 14th century, was one of the deadliest epidemics in human history.
- The 'black death' is believed to have killed more than 25 million people in Europe and possibly up to 40-50% of the population in some of the continent's major cities.
- It was caused by a **bacterium called Yersinia pestis**, which infects mammals.
- This bacteria's discovery has been attributed separately to Alexandre Yersin, a Swiss-French physician, and Kitasato Shibasaburō, a Japanese physician and microbiologist during the plague outbreak in Hong Kong in 1894.
- **Transmission:** Humans typically get infected through fleas or through close handling/contact with an infected human or animal.
- The significant scale of the outbreak may be attributed to human-to-human transmission.
- While the plague remains a serious disease today, it's also quite treatable. After the discovery of antibiotics, in fact, its modern mortality is quite small.
- **India:** India has experienced plague epidemics of varying intensities from as early as 1896 in Bombay to outbreaks in Karnataka (1966) and Surat (1994) and to a more recent isolated outbreak (2004) in a village in Uttarakhand.
- The plague vaccine was developed by Waldemar Haffkine in 1897 during the outbreaks in Bombay;
- India also initiated mass vaccination programmes, with at least 20 million doses estimated to have been administered to date.

Is India Missing The Graphene Bus?

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Science and Technology

Prepp Mains Booster: Science and Technology

Context:

- **Graphene, often hailed as a revolutionary material**, has the potential to bring about significant disruptions to various industries, **similar to the impact of Artificial Intelligence (AI) on software and quantum computing on computers**.
- Although India has made considerable strides in the field of AI and holds promising prospects in quantum computing, it currently faces the challenge of catching up in the domain of graphene technology.



Background

- Materials define an age – the stone age, iron age, plastic age, and silicon age. According to Grand View Research, the **worldwide**

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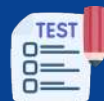
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graphene market was valued at \$175.9 million in 2022 and is predicted to increase at a CAGR of 46.6% between 2023 and 2030.

- Although graphene was discovered in 2004, it proved difficult to make high-quality large-scale graphene. However, things are changing quickly.
- According to one report, at least one graphene-enhanced product would be introduced every week in 2022. Graphene and its derivatives are being produced by over 300 companies.

Which are the leading countries?

- **China and Brazil have emerged as global frontrunners in the commercial production of graphene**, while countries like the U.S., the U.K., Japan, South Korea, Russia, and Singapore have also been actively involved in graphene research.
- Historically, the United States dominated graphene-related patent filings until 2012, but from 2013 to 2016, South Korea and China caught up with the U.S.
- In recent years, China has surged ahead, filing a significant number of patents compared to other leading countries.
- In 2018, China alone filed 218 patents, while the combined filings of other leading countries amounted to 79. India, on the other hand, had only eight patent filings.
- Notably, China's advancements in graphene production have been significant, and Brazil also boasts a strong presence in commercial graphene manufacturing.
- The establishment of the Beijing Graphene Institute in 2018 has facilitated the production of industry-grade graphene products by various companies.
- In contrast, **India's production of graphene lags behind**, accounting for roughly one-twentieth of China's output and one-third of Brazil's output.

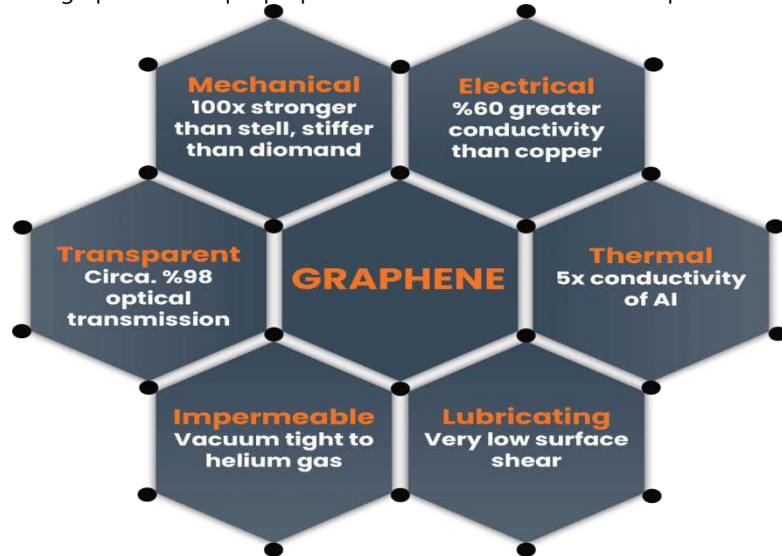
What is Graphene?

- Graphene, a remarkable material, possesses a range of extraordinary properties that make it highly versatile and potentially transformative across various industries.
- It stands out as the **thinnest substance known**, boasting exceptional strength and unmatched **conductivity for both electricity and heat**.
- Surpassing copper, it demonstrates superior electrical conductivity, while being remarkably lightweight, weighing only a fraction of steel despite being 200 times stronger.
- Another notable feature is its remarkable transparency, allowing the passage of almost all light with minimal absorption of just 2%.
- Additionally, graphene exhibits an impermeability to gases, even those as light as hydrogen and helium. These exceptional qualities hold the potential to revolutionize numerous fields, including electricity, conductivity, energy generation, batteries, and sensors.
- Furthermore, when integrated into other materials, even in small quantities, graphene can dramatically enhance their properties, resulting in composite materials with unprecedented qualities.

What are the uses?

- Graphene, a versatile material, finds applications across various industries such as aerospace, automotive, sports equipment, and construction.
- **In aerospace and defense**, graphene composites offer exceptional strength and can be used for armor and ballistic protection. Its ability to absorb and dissipate electromagnetic waves makes it valuable for developing stealth coatings, reducing radar signatures, and minimizing electromagnetic interference.

- **Environmental changes:** Graphene's sensitivity to environmental changes makes it an excellent candidate for sensing chemical and biological agents, explosives, radiation, and other hazardous substances, which is crucial for defense and security purposes. Additionally, graphene-based materials can provide protection against chemical and biological attacks.
- Graphene's superior energy storage and electronics properties make it highly desirable in both defense and aerospace, as well as in civil and commercial applications. It is used in high-performance batteries, supercapacitors, touchscreens, and conductive inks.
- Graphene-based sensors play a crucial role in environmental monitoring, healthcare, and wearable devices.
- **Water Purity:** Graphene oxide membranes have been developed for water purification and desalination, addressing critical needs in water scarcity and ensuring access to clean drinking water.
- **Graphene-based masks:** Moreover, during the COVID-19 pandemic, graphene-based masks were produced, leveraging graphene's unique properties for enhanced filtration and protection.



What is India's progress?

- India has made significant progress in the field of graphene-based technology, surpassing many other nations.
- One notable achievement was the collaboration between the Centre for Nano Science and Engineering at IISc Bangalore and KAS Tech, which produced a graphene-based system several years ago.
- Additionally, several start-ups and foreign subsidiaries have initiated the use of graphene or its derivatives in India.
- Tata Steel, in particular, has accomplished the growth of graphene with approximately 50-micrometer large domains by using annealing techniques and extracting atomic carbon from steel surfaces.
- Moreover, Tata Steel has successfully mixed graphene with used plastic products, enabling their recycling into new materials.
- India's forte lies in utilizing graphene for innovation, as evidenced by its discovery that graphene oxide-based wrappers, loaded with preservatives, can enhance the shelf life of fruits and vegetables.
- Furthermore, Indian institutes have incubated and patented advanced graphene technologies. For instance, **Log 9, incubated at IIT Roorkee**, holds a patent for graphene-based ultracapacitors. **RF Nanocomposites, incubated at IIT Kanpur**, has developed EMI shielding and stealth technology using graphene-based nanotubes.
- To further accelerate progress in this domain, it is crucial to convert the existing trickle of innovations into a torrent.

- A commendable step in this direction was the establishment of the India Innovation Centre for Graphene in Kerala.
- This center, implemented by the Digital University Kerala in partnership with Tata Steel and C-MET, Thrissur, has the potential to become the focal point for large-scale innovation activities centered around graphene.

Way Forward

- India's national graphene mission is an imperative step that can help the country establish itself as a global leader in this emerging technology.
- To effectively pursue a national graphene mission, it is crucial for India to designate a nodal Ministry to oversee and coordinate the efforts in this area.
- Without a centralized authority, the subject may lack focused attention and coordination, leading to missed opportunities and limited progress.
- By entrusting a specific Ministry with this responsibility, India can ensure that graphene research, development, and commercialization efforts are streamlined and receive the necessary support.
- The potential of graphene is immense, and it is expected to revolutionize various industries due to its exceptional properties.
- India experienced a scenario with semiconductors, where it missed out on becoming a key player in the mid-1990s.
- To avoid a repeat of this situation, India should act swiftly and proactively to position itself among the leaders in graphene production and application.
- By investing in research and development, infrastructure, and collaborations with academia and industry, India can work towards developing cost-effective and scalable methods for graphene production.

Conclusion

The time is ripe for India to focus on graphene and capitalize on its potential. By establishing a national graphene mission and providing adequate resources and support, India can ensure that it remains at the forefront of this transformative technology. This will not only benefit the country's economy but also contribute to scientific advancements and innovation on a global scale.

What Is The Status Of Transgenic Crops In India?

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: GM crops

Prepp Mains Booster: Science and Technology, Major crops-cropping patterns in various parts of the country, - different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers; Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context:

- Recently, a proposal by the Genetic Engineering Appraisal Committee (GEAC) to test a new kind of transgenic cotton seed with resistance to pink bollworm was deferred by the governments of Telangana, Maharashtra, and Gujarat.
- Out of the four states where the GEAC recommended testing, only Haryana approved indicating the lack of consensus regarding the adoption of GM crops in India.



What is the status of Transgenic crops in India?

- Although there are numerous crops developed using transgenic technology such as tomato, brinjal, maize, and chickpea under various stages of trials, cotton is the only transgenic crop that is commercially cultivated in India.
- The **GEAC is the apex technical body under the Ministry of Environment, Forests, and Climate Change that is mandated with the responsibility to evaluate proposals for testing genetically modified (GM) crops.**
- In October 2022, the GEAC approved the environmental release of Mustard hybrid **DMH-11** and its parental lines for seed production and testing.
- However, the GEAC is not the final arbiter in the case of GM crops. A Long-standing litigation in the Supreme Court is considering the permissibility of allowing transgenic crops in farmer fields following a petition filed by the NGO Gene Campaign and activist Aruna Rodrigues.
- In 2022, the petitioners approached the Supreme Court requesting a stay on the GEAC order on DMH-11 as it would encourage farmers to use herbicides banned in India. Hearings in this petition are still ongoing.
- GM mustard was accorded clearance by the GEAC in 2017, but later reversed its decision and imposed additional tests.
- Similarly, the GEAC had approved GM Brinjal in 2010 but the decision was placed on an "indefinite moratorium" by the United Progressive Alliance government.

What is the process of transgenic crop regulation in India?

- **In order to develop transgenic crops, transgenic genes are inserted into the plants in order to elicit a sustained and protective response.**
- Committees conduct multiple safety assessments before the transgenic crops are cleared for tests in open plots controlled by the Indian Council for Agricultural Research (ICAR) or those attached to agricultural universities.
- Under the current rules, **transgenic seeds must be tested in open fields before being cleared by the GEAC for commercial development.**
- A transgenic plant can apply for commercial clearance only once it has proven to be demonstrably better than other comparable non-GM variants on claimed parameters such as drought tolerance or insect resistance while not posing any threat to other species that may be cultivated in the vicinity of the GM crop.
- The open-field trials are conducted over multiple crop seasons and geographical conditions in order to assess their suitability for use in multiple states.

Transgenic Cotton

- **The transgenic cotton seed has been developed by Hyderabad-based Bioseed Research India.**
- It has been developed with **Cry2Ai, a gene that makes it resistant to pink bollworm.**
- The first generations of transgenic cotton had been developed to immunize cotton against the American bollworm, which was considered a more widespread pest.
- The seed has passed preliminary trials following which the GEAC recommended that it be tested in farmer's fields at Janwada (Telangana); Jalna and Akola (Maharashtra); Junagadh (Gujarat); and Barwala-Hisar (Haryana).

What was the reason for Gujarat, Telangana, and Maharashtra rebuffing the GEAC?

- The GEAC has recommended testing the Cry2Ai seed in farmer's fields at Telangana, Maharashtra, Gujarat, and Haryana after it passed preliminary, confined trials.
- **Since agriculture is under the State List companies interested in testing their seeds require approvals from the respective states to conduct these tests.**
- However, only Haryana has given permission for such tests.
- In October 2022, the GEAC sent letters to all the states to communicate their views on the proposal within a period of two months.
- Telangana requested a 45-day extension to consider the proposal and on May 16th 2023, Telangana responded to the GEAC communication by claiming that trials would not be conducted in the current cropping season.
- Haryana replied that the proposal was unacceptable but has not explained its reasons. The other states have not responded to the proposal.
- In response, the GEAC has written to Telangana seeking its reasons for not taking up the trial in the current season and Gujarat asking why the proposal was deemed unacceptable, and Maharashtra seeking its response within 30 days
- Activist groups have objected to the GEAC asking States to furnish reasons for disapproval and claimed that it was equal to a biased lobbying approach.
- The GEAC has asked the Department of Biotechnology and the ICAR to jointly organize capacity-building activities regarding GM crops in order to appraise the State or UT governments about the technology involved and the regulatory framework instituted to examine the GM crops.

Changes in structure

- **The Department of Biotechnology has proposed to declare certain areas of India as notified testing sites in order to counter the refusal of the states to approve testing because of contrasting attitudes to GM crops.**
- 42 such sites have been proposed, where companies and institutions wanting to conduct trials of GM crops can do so without the prior permission of the States.

GEAC

- The **Genetic Engineering Appraisal Committee was established under the Environment Protection Act, 1986 to regulate GM crop research, testing, food safety, and release of organisms.**
- **Composition:**
- The GEAC is chaired by the Special Secretary/Additional Secretary of the Ministry of Environment, Forest, and Climate Change,

- The Representative of the Department of Biotechnology acts as the co-chair of the GEAC.
 - Members include representatives from the Ministry of Industrial Development, the Department of Biotechnology, the Department of Atomic Energy, and experts such as the Director General of the Indian Council of Agricultural Research, the Director General of the Indian Council of Medical Research, the Director General of the Council of Scientific and Industrial Research, the Director General of Health Services, the Plant Protection Adviser, the Directorate of Plant Protection, Quarantine and Storage, the Chairman of the Central Pollution Control Board, and three outside experts.
 - **Functions:** As per the **Rules for the Manufacture, Use/Import/Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells 1989**, the GEAC is responsible for
 - The environmental appraisal of activities involving the large-scale use of hazardous microorganisms and recombinants in research and industrial production.
 - The appraisal of proposals related to the release of genetically engineered organisms and products into the environment including in experimental field trials.
 - The committee or other persons authorized by it are empowered to take punitive action under the Environment Protection Act.
- To know more about GM crops, click the [link](#).

Are Phonons, Particles Of Sound, Quantum Too?

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Phonons

Prepp Mains Booster: Science and Technology, IT & Computers

Context:

- **Quantum Computers and Artificial Intelligence are two of the emerging areas** of interest in the realm of computing.
- Recently, **IBM published a groundbreaking achievement in the realm of quantum computing.** The paper showcases a practical problem successfully solved by a quantum computer, which **surpasses the capabilities of traditional computers.**
- This significant advancement addresses concerns regarding the potential unreliability of complex computations in quantum systems.

What did the new study find?

- **Researchers developed a tiny acoustic beam-splitter** resembling a comb with 16 metal bars, placed in a 2-mm-long lithium niobate channel.
- Superconducting qubits at each end of the channel emitted and detected individual phonons.
- **Phonons represented the "collective" vibration of approximately one quadrillion atoms, but their frequency was too high for human hearing.** The entire setup operated at an **ultra-low temperature.**
- It was found that these phonons interacted with the comb just like photons interact with an optical beam-splitter.
- When a phonon was emitted from the left side of the channel, it was reflected half of the time and transmitted to the right side the other half.
- When phonons were emitted simultaneously from the left and the right sides, they both ended up on one side.

What is Quantum Computing?

- Quantum computing is a **field of computing that utilizes principles from quantum mechanics to perform certain types of calculations** more efficiently than classical computers.
- One of the key features of quantum computing is superposition, which allows **qubits to exist in multiple states simultaneously**. This property enables quantum computers to perform parallel computations on a vast number of possibilities, leading to exponential speedup in certain algorithms.

Classical computing vs. quantum computing

| Classical computing | Quantum computing |
|--|--|
| Used by large-scale, multipurpose computers and devices. | Used by high-speed, quantum mechanics-based computers. |
| Information is stored in bits. | Information is stored in quantum bits. |
| There is a discrete number of possible states: 0 or 1. | There is an infinite, continuous number of possible states. |
| Calculations are deterministic, meaning repeating the same input results in the same output. | Calculations are probabilistic, meaning there are multiple possible outputs to the same input. |
| Data processing is carried out by logic and in sequential order. | Data processing is carried out by quantum logic at parallel instances. |
| Operations are defined by Boolean algebra. | Operations are defined by linear algebra over Hilbert space. |
| Circuit behavior is defined by classical physics. | Circuit behavior is defined by quantum mechanics. |

About Qubits

- A Quantum bit (Qubit) is the **smallest unit of quantum information, which is used in the field of Quantum Computing**.
- Quantum computers rely on qubits as their fundamental units of information. A **qubit can take various forms, such as a particle (e.g., electron), a group of particles, or a specially engineered quantum system** emulating particle-like behavior.
- Unlike classical computers that operate based on the principles of classical physics, particles in the quantum realm can exhibit extraordinary characteristics.
- In quantum computing, information is encoded in certain attributes of particles, such as the spin of an electron.
- By harnessing these peculiar quantum abilities, quantum computers have the potential to perform complex calculations that are currently beyond the capabilities of even the most powerful supercomputers.
- Other forms of quantum computing use other units of information. For example, linear optical quantum computing (LOQC) uses photons, the particles of light, as qubits.

What are Phonons?

- Phonons, similar to photons in the realm of light, are packets of **energy associated with vibrations**.
- The term "phonon" finds its origins in the Greek word "phone," which signifies sound or voice. This connection arises from the fact that the generation of sound is associated with long-wavelength phonons.
- Phonons have characteristics similar to particles, such as momentum and energy. They can be created or destroyed during interactions and can scatter or propagate through the crystal lattice.
- The behavior of phonons determines various thermal and mechanical properties of materials, such as thermal conductivity, specific heat capacity, and acoustic properties.
- Phonons play a crucial role in understanding and describing the behavior of solids, especially at low temperatures
- Phonons, which are the essential quantum vibrations within materials, encompass the combined motion of an enormous number of atoms. Researchers are actively exploring the potential of harnessing these mechanical vibrations as a foundation for quantum computing, much like their optical counterpart, photons.

Phonons are quasiparticles that exhibit certain properties:

- They can be affected by gravity.
- They have a negative mass and negative energy.
- Phonons travel faster in denser materials, with a higher velocity.

Environment

Why Is The 1.5 Degree Celsius Target Critical?

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Environment

Prepp Mains Booster: Conservation, environmental pollution and degradation, environmental impact assessment, Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context:

- Recently, the World Meteorological Organization predicted that the annual mean global surface temperature between 2023 and 2027 will be 1.1 to 1.8° higher than pre-industrial levels.
- This is in excess of the 1.5° target set to prevent the Earth from slipping into further climate crises.
- The associated increase in climate hazards has an adverse impact on humans and the ecosystem based on exposure, vulnerability, and adaptive capacity.



WMO predictions

- The **World Meteorological Organization (WMO)** recently released two reports - the **Global Annual to Decadal Climate Update 2023-2027** and the **State of Global Climate 2022**.
- The **decadal predictions of the WMO projected a 1.1-1.8° rise in baseline temperatures from the 1850-1900 period or pre-industrial levels**.
- In 2022, annual mean global surface temperatures were 1.15° above the baseline and are expected to rise beyond 1.5° by 2027.

What is the 1.5° target?

- The **1.5°C temperature limit aims to limit warming to within the 1.5° target by 2100**.
- For years, 2° was considered the standard or an acceptable level of warming as 1.5° was seen as unrealistic and unachievable.
- However, small island countries, which are most at risk of climate change, claimed that the 2° target is unacceptable as it could compromise their survival.
- At the **2010 COP in Cancún, Mexico**, countries agreed to limit average global warming to within 2° while parties to the [Paris Climate Agreement in 2015](#) agreed to limit warming to well below 2° while actively attempting to achieve the goal of 1.5° below pre-industrial levels.

- In 2018, the [International Panel on Climate Change](#) (IPCC) endorsed the goal espoused by the Paris Agreement, following which it has been pursued in all subsequent climate summits.

How important is the 1.5° limit?

- The IPCC released a special report on the impact of global warming beyond the 1.5° threshold in 2018 which drew a comparison between the impact of warming beyond 2°.
- It estimated that **anthropogenic activities would have already caused a rise of 1° in temperatures, which is expected to reach 1.5° at the current rate between 2030 and 2052.**
- The report mentioned **regular and intense heat waves, droughts, intense precipitation, an additional 10cm rise in sea level, destruction of ecosystems, and other irreversible changes** as some of the impacts of warming at and above the 2° level.
- However, the current trends of warming are not uniform across the planet with experts finding that the Arctic is experiencing warming higher than the global average.
- Regional differences in warming and other vulnerability factors have made the adoption of climate action that can limit the global average warming to within 1.5° a pressing requirement.

Why is the target not yet achieved?

- Developed countries, which have contributed a majority of the world's historical emissions are expected to assume greater responsibilities for climate risks and implementing climate action.**
- However, an assessment of the Climate Change Performance Index has shown that this is not the case.
- Developed states like Australia, the U.S.A., Japan, Russia, and Canada have made little progress on their commitments while large present-day polluters like China, Iran, and Saudi Arabia rank quite low in terms of their performance on climate assessment indicators.**
- Countries that are recovering from the socio-economic crisis inflicted by the pandemic had pledged to build back but little to no initiative has been shown by the larger nations to do so sustainably.
- The progress towards the world's climate goals has been worsened by geopolitical crises such as the Ukraine crisis which led to an energy crisis in Europe and the rest of the world.

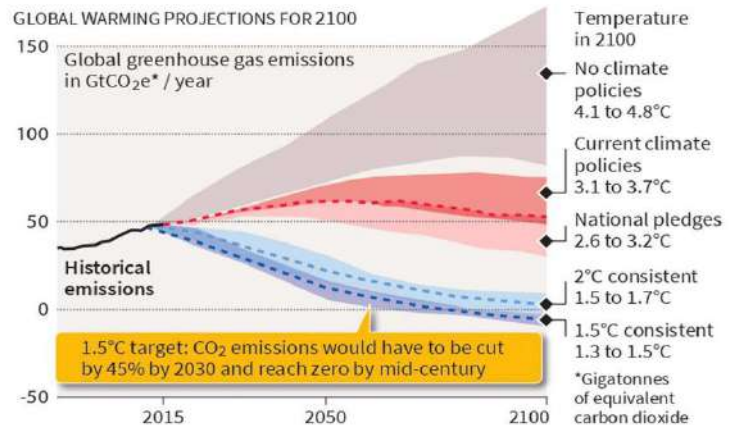
How are extreme weather conditions related to global warming?

- The two reports of the WMO have highlighted the **occurrence of precipitation anomalies and an increase in marine heat waves compared to marine cold waves.**
- The **El Nino**, which is presently forming, is expected to strengthen further in 2023 leading to a **98% higher possibility of temperatures higher than 2016 in at least one year between 2023 and 2027.**
- The **cryosphere** is shrinking and there is a massive drop in glaciers in the high mountains of Asia, Western North America, and South America.
- The **excessive warming of the Arctic Ocean and the resultant melting of the Greenland ice sheet** has contributed to an increase in sea level.
- Climate risks have exacerbated **food insecurity, population displacement, and deaths and negatively affected crop yields, and increased the risk posed by agricultural pests and diseases.**
- Ethiopia, Nigeria, South Sudan, Somalia, Yemen, and Afghanistan have been impacted by acute food shortages leading to malnutrition and hunger which demand immediate humanitarian aid.

- Food insecurity in these countries was not just due to climatic risks such as droughts and cyclones but political and economic instability as well.
- Heatwaves in Pakistan and India in 2022 have resulted in a decline in crop yields while floods in Pakistan have affected croplands in the south and central parts of the country leading to the displacement of around 8 million people.**
- Countries such as Ethiopia, Kenya, and Somalia in the **Horn of Africa** have been experiencing intense droughts since 2020 while Western African nations are experiencing floods and heavy rainfall.
- As a result, millions of people living in both regions have been subjected to acute food insecurity. The food shortage has also led to a mass displacement of people within and across national borders.
- People in Syria and Yemen have been displaced from their homes on account of floods, storms, and heavy snowfall.
- Terrestrial and aquatic ecosystems have also been affected by the changes in climate patterns** while phenologic shifts and mismatches due to climate change have also been noted. (Phenology is the study of the timing of recurring biological events, and their causes due to climate and habitat factors)
- Migratory species have declined in Sub-Saharan Africa while coral reefs which are already prone to bleaching have been affected by temperature rises above 1.5°.**
- The WMO has claimed that extreme weather anomalies have led to the deaths of around two million people and caused **damages worth nearly \$4.3 trillion over the last fifty years with 22,608 disaster-related deaths recorded globally in 2020-21.**

The threat of rising temperatures

In 2018, the IPCC released a report on the impact of global warming when temperature reaches 1.5 degree Celsius above the baseline temperature of pre-industrial levels. It also drew a comparison with the effects of 2 degree Celsius warming



| CLIMATE IMPACTS | Rise of 1.5°C | Rise of 2°C |
|---|--|--|
| Arctic: Sea ice-free summer | Once per century | Once per decade |
| Sea level rise: Exposure to flooding in 2100 | 31-69 million people worldwide | 32-80 million people worldwide |
| Extreme heat: Exposure at least once every five years | About 14% of global population | About 37% of global population |
| Severe drought: Increase in urban population | +350 million people worldwide | +411 million people worldwide |
| Status of coral reefs | 70-90% lost | 99% lost |
| Plants and animals: Species losing more than half of their range | 6% of insects, 8% of plants, 4% of vertebrates | 18% of insects, 16% of plants, 8% of vertebrates |

Sources: IPCC, The New York Times, Reuters, The Conversation

© GRAPHIC NEWS

How has India been impacted?

- India has been facing the increasingly severe consequences of climate change.

- **February 2023 was identified as the hottest month on record** since records began to be kept in 1901.
- **India experienced extreme weather events on 80% of the days during 2022.** Indian monsoons were wetter than usual with extreme heat recorded during the pre-monsoon period leading to wildfires in Uttarakhand and subsequently acute food shortages.
- The **Climate Change Performance Index 2023 ranked India in the eighth position** with Denmark (4th), Sweden (5th), Chile (6th), and Morocco (7th) being the only small nations ranked above India.
- As an emerging economy with development needs, India needs to balance its development goals with climate action at the domestic and international levels.
- Domestic initiatives such as the [Green Hydrogen Mission](#) and the [Green bonds scheme](#) are key to India's good performance.
- India's performance is impressive as the country contributed very little to cumulative GHG emissions.
- On the global scale, India-led initiatives such as the [International Solar Alliance](#) and Coalition for Disaster Resilient Infrastructure can highlight India's role as a responsible climate player although it has a long way to go and very little time to achieve its ambitions.

Cabinet Approves CITIIS 2.0 For Integrated Waste Management And Climate Oriented Reform

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: CITIIS, Smart City Mission

Prepp Mains Booster: Conservation, environmental pollution and degradation, environmental impact assessment GS2 - Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context:

- Recently, the Union Cabinet approved the second phase of the City Investments to Innovate, Integrate and Sustain (CITIIS) project to promote integrated waste management and climate-oriented reforms under the Smart Cities Mission.
- The first phase of CITIIS was launched in July 2018 with projects in 12 cities at an outlay of ₹933 crore.

CITIIS

City Investments To Innovate, Integrate and Sustain

What is CITIIS 2.0?

- The second edition of the **City Investments To Innovate, Integrate and Sustain (CITIIS 2.0)** aims to support competitively selected projects promoting a **circular economy**.
- The selected projects will focus on **integrated waste management at the city level, climate-oriented reforms at the state level, and the strengthening of institutions and dissemination of knowledge at the national level.**
- The initiative will be implemented over a four-year period between 2023 and 2027.
- It has been conceived and implemented jointly by the **Union Ministry of Housing and Urban Affairs, Agence Francaise de Development or French Development Agency (AFD), Kreditanstalt für Wiederaufbau (KfW), the European Union (EU), and the National Institute of Urban Affairs (NIUA).**

- The Initiative will be implemented in 18 cities selected through a competition.
- Funding for CITIIS 2.0 will be contributed through a loan of ₹1760 crores, split equally between the AFD and KfW, and a technical assistance grant from the European Union.
- **Components:** the CITIIS 2.0 Initiative has three major components
 - Financial and technical support for developing projects focused on building climate resilience, adaptation, and mitigation in the selected 18 smart cities.
 - Support to all states and UTs on a demand basis
 - Center, state, and district-level interventions to further climate governance in urban India through capacity building, knowledge dissemination, and institutional strengthening.

CITIIS 1.0

- Under the first edition of **CITIIS, which was launched in 2018 through projects in Agartala, Amaravati, Amritsar, Bhubaneswar, Chennai, Dehradun, Hubballi-Dharwad, Kochi, Puducherry, Surat, Ujjain, and Visakhapatnam.**
- CITIIS consisted of three components:
 - 12 city-level projects were selected under a competitive process.
 - Capacity-development activities Odisha.
 - Promoting integrated urban management at the national level.
- As part of the initiative, technical assistance was provided at all three levels through domestic, international, and transversal experts.
- The initiative has contributed to the **mainstreaming of innovative, integrated, and sustainable urban development techniques through a challenge-driven financing model based on competitive and cooperative federalism.**



Ministry of Housing and Urban Affairs
Government of India

Smart Cities Mission

- The [Smart Cities Mission](#) was launched in 2015 by the **Union Ministry of Housing and Urban Affairs.**
- Under the mission, cities were directed to submit proposals to improve municipal services and raise and maintain standards of living.

- 100 cities were selected under the Mission between 2015 and 2018. The deadline for the Mission was 2021, but it was later extended to June 2023.

Objective:

- Manage complexities, increase efficiencies, and improve quality of life in cities in light of the rapid expansion of urban areas and increase in urban population.
- Monitor and integrate urban infrastructure to optimize resources and maximize service delivery to citizens.
- Promote sustainable and inclusive cities that provide core infrastructure to ensure a decent quality of life, and a clean and sustainable environment through the application of smart solutions.
- Smart solutions to urban problems include intelligent lighting, and data-driven traffic management systems.

Core infrastructure elements of the Mission include:

- Adequate water supply
- Assured electricity supply
- Sanitation including solid waste management
- Efficient urban mobility and public transport
- Affordable housing, especially for the poor
- Robust IT connectivity and digitalization
- Good governance, especially e-governance, and citizen participation
- Sustainable environment
- Safety and security of citizens, particularly women, children, and the elderly
- Health and Education
- The Mission aims to achieve its objectives through three strategies of area-based development, namely **retrofitting, redevelopment, and greenfield operations**.
- In order to implement the projects, a **Special Purpose Vehicle (SPV)** has been formed in each city. The SPVs are empowered to perform activities related to decision-making, planning, project design, and implementation of projects.

Financing:

- The Mission is a **Centrally Sponsored Scheme**.
- The Mission's total funds are estimated to be ₹2.05 Lakh Crore.
- Central and State Governments contribute 45% of the total funds.
- Convergence and PPP will contribute 21% of the funds.
- Debts and loans account for 5%.
- 1% is obtained through the own funds of the cities and 7% from other sources.

Challenges:

- **Urban bodies are not self-reliant** and the functioning of the Mission has been compromised by the **lack of coordination between the Union and the states**.
- The SPVs formed to implement the Mission have not been functioning efficiently. There is also a **lack of coordination between government departments**.
- The creation of energy-efficient buildings and green energy infrastructure is **expensive and long-term**.
- Smart cities involve **large volumes of data which leaves them vulnerable to security concerns** such as hacking, cyberterrorism, etc.
- Another challenge faced is the **heterogeneous nature of Indian cities** which means the technology cannot be used to create one-size-fits-all solutions to the problems faced by the urban bodies.
- The **lack of expertise and technical knowledge among bureaucrats and politicians** at the urban level and political

pressure faced by officials is another major challenge faced in the implementation of the Mission.

India Should Receive \$57 Trillion In Compensation From Global North For Climate Damages: Study

Priority: Medium



Primary Source: Down to Earth

Prepp Prelims Booster: Environment

Prepp Mains Booster: Conservation, environmental pollution and degradation, environmental impact assessment. Disaster and disaster management.

Context:

- Recently, a new study published in Nature Sustainability has estimated that the global north owes India \$57 trillion in compensation for climate-related damages through 2050.
- Concurrently stakeholders have held talks at the Bonn Climate Change Conference, which are expected to inform the decisions of the COP28 to be held in the UAE.

What does the study say?

- According to the study published in the Nature Sustainability journal, **India has not contributed historically to climate change and has consumed less than a quarter of its fair share of the remaining 1.5° carbon budget**.
- The remaining carbon budget refers to the carbon emissions that can be emitted while limiting anthropogenic global warming to within the 1.5° limit.
- The study claimed that **India was entitled to fair compensation as the country had sacrificed more than 75% of its share to balance the excess emissions of over-emitting countries**.
- The atmospheric levels of carbon dioxide are estimated to be around 415 parts per million while global temperatures have risen 1.1° over pre-industrial levels.
- However, the researchers found that not all countries have contributed to this rise, and so each country was entitled to its fair share of the carbon budget.
- The researchers expressed hope that the results of the study would be discussed at the ongoing **Bonn Climate Change Conference** and **COP 28**, particularly in terms of reaching an agreement on the **Losses and Damage Fund**.



Bonn Conference

- The Bonn Conference, held in Bonn, Germany aims to take forward the outcomes from COP27 in Egypt and conduct

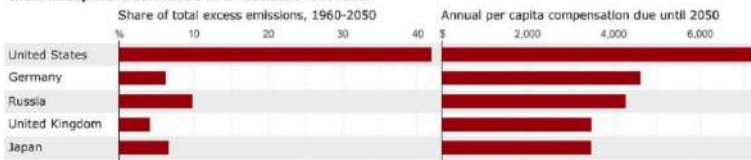
discussions on topics such as adaptation, transition, mitigations, and loss and damages.

- The goal of the Conference is to discuss these matters and develop draft decisions which can then be discussed and agreed upon at COP 28, UAE.
- The Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of the UNFCCC meet to discuss these issues.

Methodology

- According to the authors, the study focuses only on the compensation that is owed for atmospheric appropriation. They claimed that this should be considered in addition to the broader questions about the costs of transition, adaptation, and damages in the global environmental discourse.
- The researchers calculated the fair share of the carbon budget of 168 countries on the basis of their population.
- The team then compared each country's fair share with their historical emission since 1960. The researchers also included a scenario where countries either carry on as usual or adopt decarbonization strategies to reach **Net Zero** by 2050.

The top 5 overemitting countries would be liable to pay \$131tn for appropriating excess shares of the atmospheric commons in a 'net zero' scenario



The top 5 low-emitting countries would be entitled to receive \$102tn for sacrificing their fair shares of the atmospheric commons in a 'net zero' scenario



Compensation

- The study provides a proportional compensation scheme, which was expected to help low-emitting countries decarbonize their economies and sacrifice parts of their fair shares in order to achieve the wider goal of keeping global temperatures below 1.5°C.
- According to this analysis, **all the countries of the Global North had breached their 1.5°C share and are together responsible for 91% of the cumulative overshoot between 1960 and 2019.**
- The U.K. has overshoot its share by more than two and a half times its fair share while the U.S.A. did so by four times its fair share.
- The researchers found that in a scenario where the world achieves Net Zero between 2020 and 2050, the **countries which overshoot their fair share owe \$192 trillion in compensation to the undershooting countries.**
- The estimated compensation would amount to around \$6.2 trillion per year.
- Overall the overall compensation owed by the U.S.A. would amount to \$80 trillion, while the EU and the U.K. would owe \$46 trillion. The other countries of the Global North would owe a cumulative compensation of \$44 trillion in 2050.
- The findings of the study revealed that these countries together owed two-thirds of the total financial compensation owed.
- In comparison, **India and countries in Saharan Africa were entitled to \$57 trillion and \$45 trillion of the compensation i.e. almost half of the total compensation.**

- The study found that China was entitled to a compensation of \$15 trillion.

Conclusion

- The study highlights the impact of the emissions emitted by historical polluters and how it has affected developing and least developed countries and their ability to decarbonize their economies.
- A compensatory mechanism, which is unlikely to be agreed on by the countries of the global north, would help the less-emitting countries access technology and best practices while recognizing that the more developed countries must pay to mitigate the consequences as they enjoyed the benefits.

SDG 7: World Still Off-Track From Achieving Universal Energy Access To All

Priority: Medium



Primary Source: Down to Earth

Prepp Prelims Booster: Environment and Sustainable development

Prepp Mains Booster: Environment; Inclusive Growth

Context:

- The **recent release of the Tracking SDG7: The Energy Progress Report 2023 highlights several challenges that are hindering the world's progress towards achieving Sustainable Development Goal 7 (SDG 7) by 2030.**
- SDG 7 aims to ensure universal access to affordable, reliable, sustainable, and modern energy for all.
- The **Energy Progress Report is a product of close collaboration among the five SDG 7 custodian agencies** in the form of a specially constituted in a Steering Group:
 - International Energy Agency (IEA)
 - International Renewable Energy Agency (IRENA)
 - United Nations Statistics Division (UNSD)
 - World Bank
 - World Health Organization (WHO)



Background

- As we reach the halfway point towards achieving the Sustainable Development Goal 7 (SDG 7) by 2030, which focuses on ensuring access to affordable, reliable, sustainable, and modern energy, it becomes evident that current efforts are falling short of meeting the targets.
- The 2023 edition of Tracking SDG 7: The Energy Progress Report serves as a warning, highlighting the insufficient progress made so far.

- While there have been notable advancements in certain aspects of the SDG 7 agenda, such as the increased adoption of renewable energy sources in the power sector, overall progress remains inadequate.
- The goal encompasses crucial objectives like achieving universal access to electricity and clean cooking, doubling historical levels of efficiency improvements, and significantly increasing the proportion of renewables in the global energy mix.
- Fulfilling SDG 7 is vital for safeguarding people's health and well-being by mitigating environmental and social risks, including air pollution and ensuring access to primary healthcare and services.
- However, the current pace of action and implementation efforts is not commensurate with the urgency and scale required to attain the SDG 7 targets by the designated timeline of 2030.

What are Sustainable Development Goals (SDGs)?

- The Sustainable Development Goals (SDGs) are a set of 17 global goals established by the United Nations in 2015.
- The goals are intended to be a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity by 2030.
- The SDGs cover a broad range of interconnected issues, including poverty eradication, quality education, gender equality, clean energy, sustainable cities, climate action, responsible consumption, and many others.
- They provide a framework for governments, organizations, and individuals to work towards sustainable development and address the world's most pressing social, economic, and environmental challenges.

Overview of the report






- Several major economic factors are impeding the realisation of SDG 7 globally, like uncertain macroeconomic outlook, high levels of inflation, currency fluctuations, debt distress in many countries, lack of financing, supply chain bottlenecks, tighter fiscal circumstances and soaring prices for materials.
- Certain policy responses to the global energy crisis appear likely to improve the outlook for renewables and energy efficiency, the report said. However, other necessary policy actions, as well as financial flows, continue to lag.
- This particularly concerns lacking universal access to electricity and clean cooking in developing economies, with projections indicating that SDG 7 will not be reached by 2030.
- The uptake of renewable energy (target 7.2) has grown since 2010, but efforts must be scaled up substantially.
- The rate of improvement in energy efficiency (target 7.3) is not on track to double by 2030, with the current trend of 1.8 per cent falling short of the targeted increase of 2.6 percent each year between 2010-2030.

Findings of the Report

- **Access to electricity:** From 2010 to 2021, global access to electricity increased by an average of 0.7 percentage points annually, reaching 91% of the world's population. The number of people without electricity decreased by almost half, from 1.1 billion in 2010 to 675 million in 2021. However, the growth rate slowed to 0.6 percentage points between 2019 and 2021.
- **Clean cooking solution:** The global population lacking access to clean cooking fell from 2.9 billion in 2010 to 2.3 billion in 2021, but the goal of universal access by 2030 remains elusive. Some 1.9 billion people would still be without access to clean cooking in 2030.

If current trends continue, almost six out of ten people without access to clean cooking in 2030 would reside in Sub-Saharan Africa.


- **Renewable energy:** In 2020, renewable energy accounted for only 19.1% of total final energy consumption (or 12.5% without traditional biomass use), slightly higher than the 16% recorded a decade earlier. It is crucial to prioritize the expansion of renewable electricity supply in developing nations.
- Although there is no specific target, meeting international climate and energy objectives would necessitate annual investments of USD 1.4-1.7 trillion in renewable electricity generation and associated infrastructure until 2030.

| | INDICATOR | 2010 | LATEST YEAR |
|--|--|---|--|
|  | 7.1.1 Proportion of population with access to electricity | 1.1 billion people without access to electricity | 675 million people without access to electricity (2021) |
|  | 7.1.2 Proportion of population with primary reliance on clean fuels and technology for cooking | 2.9 billion people without access to clean cooking | 2.3 billion people without access to clean cooking (2021) |
|  | 7.2.1 Renewable energy share in total final energy consumption | 16% share of total final energy consumption from renewables | 19.1% share of total final energy consumption from renewables (2020) |
|  | 7.3.1 Energy intensity measured as a ratio of primary energy and GDP | 5.53 MJ/USD primary energy intensity | 4.63 MJ/USD primary energy intensity (2020) |
|  | 7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems | 11.9 USD billion international financial flows to developing countries in support of clean energy | 10.8 USD billion international financial flows to developing countries in support of clean energy (2021) |

What is the way ahead?

- Governments need to demonstrate stronger political will and commitment to prioritize and invest in universal energy access.
- Adequate financial resources must be mobilized to support the development and deployment of energy infrastructure, particularly in low-income countries.
- There is a need to significantly increase the deployment of renewable energy sources to improve energy access, reduce reliance on fossil fuels, and mitigate climate change.
- Promoting energy efficiency measures can help optimize energy use and reduce energy demand, making energy access more affordable and sustainable.
- International collaboration and partnerships among governments, development organizations, and the private sector are crucial for sharing knowledge, technologies, and resources to accelerate progress towards universal energy access.

What Will It Take For An Indian City To Become Low Carbon?

Priority: Medium 

Primary Source: The Hindu

Prepp Prelims Booster: Environment

Prepp Mains Booster: - Conservation, environmental pollution and degradation; Urbanization and associated issues.

Context:

- This article is written by Stuti Halder, a postdoctoral researcher at the Indian Institute for Human Settlements, Bengaluru, and an Affiliated researcher at CIRCLE (Centre for Innovation Research), Lund University, Sweden.
- In this article, she discussed how low-carbon cities are crucial to mitigate the effects of climate change.
- Low carbon city is a sustainable urbanization approach that centers on curtailing the anthropogenic carbon footprint of cities by means of minimizing or abolishing the utilization of energy sourced from fossil fuels. It combines the features of low carbon society and low carbon economy while supporting partnerships among governments, private sectors, and civil societies.

**Why low-carbon cities are crucial to mitigate the effects of climate change?**

- It is projected that by 2050, seven billion people will be living in cities.
- In 2020 alone, cities contributed a staggering 29 trillion tonnes of carbon dioxide emissions.
- These emissions, combined with other greenhouse gases, pose significant health risks and contribute to extreme weather events, resulting in the loss of lives, livelihoods, assets, and overall social well-being.
- Therefore, cities have a significant impact on the environment, and low-carbon cities are crucial to mitigate the effects of climate change.

How energy-system transitions can be achieved?

- **Sector-coupling approach:** Achieving low-carbon or net-zero cities necessitates the integration of mitigation and adaptation measures across various sectors, such as energy, buildings, transportation, industry, and urban land-use. This approach, known as the 'sector-coupling approach,' is crucial for effectively decarbonizing urban systems.
- **Reduce carbon dioxide emissions:** Implementing an energy-system transition has the potential **to reduce urban carbon dioxide emissions by approximately 74%**.
- The transition must be implemented both on the **demand and the supply sides**.
- The use of carbon capture and storage (CCS) technology as well as the **phase-out of fossil fuels and an increase in the proportion of renewable energy sources in the energy mix are supply-side mitigation strategies**.
- Utilising the '**avoid, shift, improve**' concept would mean lowering the demand for resources and energy and replacing them with **renewable energy sources instead of fossil fuels**.

- **Enhancing efficiency:** Existing cities have the potential to enhance energy efficiency and promote sustainable transportation by retrofitting and repurposing their infrastructure. Additionally, electrifying public transportation and establishing district cooling and heating networks based on renewable energy sources contribute to energy efficiency.
- **Promoting public and active modes of transport:** By prioritizing **walkability and encouraging public and active modes of transport such as cycling and walking**, energy demand can be significantly reduced.
- **Co location:** In the case of rapidly growing cities, a strategic approach involves colocation of housing and job opportunities, which reduces the energy demand for transportation by bringing workplaces closer to residential areas.
- **Energy-transition policies:** Energy-transition policies that are **socially and environmentally fair** should be made after considering the city's spatial form, land-use pattern, level of development, and the state of urbanization.
- **People-centric urban design:** New and emerging cities have the most potential to reduce emissions by using energy-efficient services and infrastructure, and a people-centric urban design.
- They can also implement building codes that mandate net-zero energy use and retrofit existing buildings while gradually shifting to low-emission construction materials.

How can an energy transition be just?

- **Customised planning:** Transitioning to renewable energy sources can disproportionately impact certain groups and sectors in developing economies dependent on fossil fuels.
- **Balanced approach:** Factors such as fast-growing energy demand, energy security, and the reliance on coal for livelihoods need to be balanced.
- Justice concerns include land dispossession, concentrated poverty, marginalized communities, gendered impacts, and the need to address the needs of energy exports.
- For example, **developing economies** like Nigeria, Angola, and Venezuela rely **heavily on fossil-fuel exports**. Transitioning away from these industries could devastate their economies.
- Similarly, **developed countries experience energy poverty and inequity**, where communities face high energy costs, low incomes, and inadequate infrastructure.
- In the United States, energy bill expenses consume a considerable portion of the income for low-income households, leaving fewer resources for essential needs like healthcare and nutrition.
- **Focus on vulnerable communities:** Furthermore, Low-income communities and communities of color in the United States, for instance, bear a disproportionate burden of fossil fuel pollution and climate change impacts.
- Limited access to renewable energy options further amplifies existing inequalities in these communities.

Way forward

- A comprehensive approach to address the root causes of energy and environmental injustices includes mitigation and adaptation responses that engage multiple stakeholders in energy governance and decision-making, promoting energy-efficiency, scaling up investments, and capturing alternate knowledge streams (including indigenous and local lived experiences).
- A transition to low-carbon energy systems in cities at different stages of urbanisation requires strategic and customised efforts. They must be directed at governance and planning, achieving

behavioural shifts, promoting technology and innovation, and building institutional capacity.

- In essence, transitioning to low-carbon cities represents a commitment to social equity and justice. Therefore, it is essential to consider the complex and varied issues in different regions and contexts, and adopt a wholesome approach that is attentive to multiple voices and experiences.

India's NDC

- India is a Party to the United Nations Framework Convention on Climate Change, its Kyoto Protocol and Paris Agreement.
- Under the Paris Agreement in 2015, India had submitted its Nationally Determined Contribution (NDC) balancing the concerns and priorities of climate change, sustainable development including poverty eradication, and economic growth of the country.
- In August 2022, India updated its NDC according to which India has an enhanced target to reduce emissions intensity of its GDP by 45 percent by 2030 from 2005 level, and achieve about 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.
- Further, in November 2022, India has submitted its Long-Term Low-Carbon Development Strategy.
- India's long term strategy rests on seven key transitions to low-carbon development pathways.
- One of these transitions will focus on promoting Adaptation in Urban Design, Energy and Material-Efficiency in Buildings, and Sustainable Urbanisation.

The Net Zero Challenge

Priority: Medium



Primary Source: Indian Express

Prepp Prelims Booster: Environment

Prepp Mains Booster: Conservation, environmental pollution and degradation

Context:

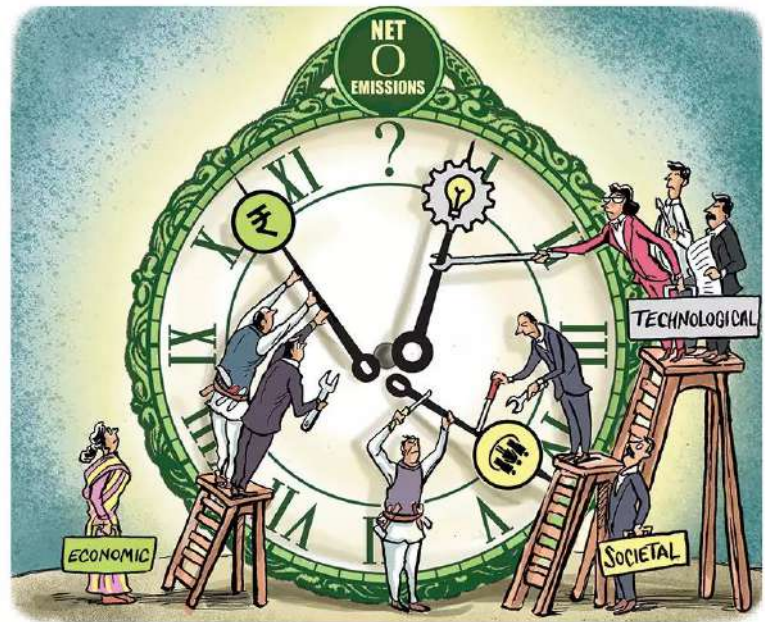
- Recently, the RBI released the ***Currency and Finance Report for 2022-23 — "Towards a greener cleaner India"***. The report highlights the importance of climate goals as a policy priority and examines the macro-financial implications of climate change for India in the medium to long term. The report covers an expansive set of issues, and conveys the central bank's future course of action.

India's Commitments and Challenges

- **Advanced economy status Vs Net Zero status:** India is committed to achieving net zero status by 2070 at CoP26 and India has set a goal to achieve advanced economy status by 2047.
- However, there is a conflict between **India's ambition to achieve an advanced economy and lowering its emissions.**
- An annual GDP growth rate of 9.6 percent would raise net Green House Gas emissions by 10.5 times levels in 2021-22.
- **Economic output:** The report raises concerns about the potential negative impacts of India's nationally determined contributions (NDCs) on economic output. It states that the current NDC could reduce economic output by up to 9% by 2049.
- **Inflation:** The report compares the existing quo's inflationary effects to the option of reaching net zero by 2050. The latter will result in price increases over three years but in the long run, will tame the effects of persistent inflation. Therefore, it is evident from the

empirical data that a global transition to net zero by 2050 could be preferable.

- **Risks to the financial system:** The transition to green energy will shorten the productive life of fossil fuel-based assets which in turn will impact the banking sector (through loans).
- However, the financial risks are not just limited to conventional energy, **non-conventional energy registered an increase in share of industry bad loans.**
- **Transition cost:** The report highlights the anticipated risks to the financial system due to the annual estimated investment cost of 5-6% of GDP associated with the transition to a net-zero economy.
- These investment costs pose potential challenges to the stability of the financial sector. Additionally, the report acknowledges the risks to assets and the banking system arising from the increasing frequency of extreme weather events.



Recommendation

- The losses from extreme weather events and decarbonization could only be reduced to 3% by 2049 with a more ambitious approach of achieving net zero by 2050.
- **Green energy:** In order to achieve dual objectives, it would have to increase the **share of green energy in primary energy consumption to 82 percent by 2070** and reduce emission intensity by 5.4 percent annually.
- **Carbon tax:** It suggests fiscal intervention in the form of a carbon tax or an emission trading system. It finds that a carbon tax of \$25 per tonne and \$50 per tonne of Co2 under different scenarios can be effective, alongside other policy interventions.
- The importance of a carbon tax is indisputable, especially given the G7's commitment to trade-based tax measures. However, its distributional consequences are not addressed at all. It remains unclear from the analysis the level of carbon tax most compatible with different growth outcomes. It is also unclear which tax redistribution mechanisms can mitigate the distributional consequences.
- The report highlights the importance of **developing sectoral pathways aligned with net-zero goals**, particularly for energy-intensive sectors like fisheries, textiles, land transport, and services. It emphasizes the need for fiscal policy and regulatory measures to meet the challenges of the transition effectively.

Conclusion

- India is committed to achieving net zero status by 2070 at CoP26. The report sets the tone for monetary policy in the coming years.
- The road to net zero will not be smooth, as is reflected in the report. The RBI report provides a much-desired framework for thinking about the trade-offs between growth, inflation, and efforts to transition to a net zero economy.

A Summit For A New Global Financing Pact

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: International Relations

Prepp Mains Booster: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests; Important International institutions, agencies and fora- their structure, mandate.

Context:

- A Summit for a **New Global Financing Pact will take place in Paris** on June 22 and 23, the aim of this Summit is to concurrently tackle the challenges of climate change, biodiversity protection, and the fight against inequality in order to achieve the **Sustainable Development Goals (SDGs)**.
- The Summit is **co-organized by France and India**, with the latter holding the presidency of the G20 this year.
- French President Emmanuel Macron said that the agenda is to increase **"financial solidarity with the [Global] South"**.



Why there is a need for concrete steps for sustainable finance?

- **To reduce the gap between commitment and payment:** According to *One Planet Lab's white papers* released for the Summit, meeting the United Nations' Sustainable Development Goals (SDGs), climate objectives set at COP21, and biodiversity objectives set at COP15 would require an **additional investment of \$4 trillion annually**.
- This includes \$2 trillion to meet the objectives of the Paris Agreement and another \$2 trillion to achieve the UN SDGs.
- **Only \$204 billion of official development assistance** was provided last year, which falls significantly short of the required investment.
- **Poorly structured:** This gap between promises and payment shows that international funding is unpredictable and poorly structured, and does **not address the liquidity challenges of developing countries**.
- For example, **only 25% of global climate investment goes to South Asia, Latin America, and Africa**, despite these regions being highly vulnerable.

- Additionally, global funds impose conditions that restrict the fiscal independence of these countries.
- Internally, developing countries face challenges due to tax structures, including institutional weaknesses, illicit financial flows, and higher risk perceptions. As a result, limited public funds are used for their own development transitions.

What is needed for the transformation of international financial and development architecture?

- The summit will be successful if it can serve as a critical point for the transformation of international financial and development architecture. It can be achieved through three key components: a pact, a platform, and a pathway.
- **Pact:** A pact for global flows of finance should be established that covers two levels of social contracts — domestic and international.
- Emerging countries **face fiscal limitations due to high debt levels**, necessitating modernization and standardization of tax systems, curbing illicit cross-border money transfers, strengthening tax administrations, and reducing ineffective fossil fuel subsidies.
- These efforts should be accompanied by proportionate taxation of actors and goods involved in emission-intensive global flows.
- At the international level, finance is required on a **global scale for both adaptation and the loss and damage** brought on by climate change.
- The global social contract should be **based on international solidarity rather than empty commitments**. By harnessing global flows, such as through taxes on fossil fuel production, goods shipping, and fuel transportation, new resources can be mobilized.
- For example, a one-dollar tax on each barrel of oil could generate approximately \$30 billion annually. This approach separates funding for vulnerable populations from the political resistance of taxpayers in rich countries.
- **Global Platform:** Establish a global platform to **derisk financing and mobilize substantial amounts of private capital** for environmentally friendly infrastructure.
- Blended finance is necessary for vulnerable nations' scaling of renewable energy, use of clean technology for livelihoods, transition away from fossil fuels, and joint development of new clean technologies.
- These require innovative financing methods, like a **Global Clean Investment Risk Mitigation Mechanism**, to reduce costs and pool risks across geographies. Hedging against risks associated with currency fluctuations that raise the cost of financing should receive special consideration.
 - Global Clean Investment Risk Mitigation Mechanism (GCI-RMM), works on the principle of risk pooling across projects and countries. The GCI-RMM would help to ease access to non-project risk management tools and reduce transaction costs, particularly in emerging markets.
- **Political pathway:** Map a political trajectory that results in time-bound climate finance deliverables.
- The summit needs to **lay out the delivery systems, and the financial calculations**, and build momentum for actual investment over the following two years.

Conclusion

- **Reformed financing for sustainable development** should serve as the foundation for a revitalised and relevant multilateralism by the time the UN celebrates its 80th anniversary in 2025. The Global South, which is expected to drive the majority of global growth

should have influence in decision-making so that the outcomes are beneficial and relevant to their specific circumstances.

Tax Super Rich To Pay Global South For Climate Damages: Open Letter To World Leaders By Economists Ahead Of Paris Talks

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Environment

Prepp Mains Booster: Conservation, environmental pollution and degradation, environmental impact assessment, Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context:

- Recently, a letter signed by over 140 economists recommended a special tax on the wealth of the world's richest which could be used to fund initiatives to tackle climate change in poorer countries.
- A 2020 study published in the Lancet claimed that developed countries were responsible for 90% of excess emissions leading to climate change.

What has the letter said about a super tax?

- A letter signed by 140 prominent economists recommending measures to transform the international financial system to tackle climate change and loss and damage was published three days ahead of the **Summit for a New Financing Pact** to be held in Paris on June 22nd and 23rd 2023.
- The economists stated that the **world's wealthiest have captured two-thirds of new global wealth created in the last two years, while the world witnessed the largest increase in poverty and global inequality since World War II.**
- According to the economists, **a 2% tax on extreme wealth could generate \$2.5 trillion each year, rising to \$3.6 as the tax slabs are increased progressively.**
- This amount could be used to pay climate reparations to the poor and less developed countries that had contributed the least to climate change but suffered the most from its impact.
- The signatories have suggested that the Global North could start with a tax of 1.5% on extreme wealth for 1.5°C.

What are the other recommendations and why should developed countries accept them?

- **The impact of climate change was the most intense on the inhabitants of the countries with the poorest human development indices, particularly the island nations which are most vulnerable to the climate crisis.**
- In contrast, the developed countries had contributed nearly 90% of the excess emissions and according to a study published in the Nature Journal in 2023, **owed countries like India with low emissions around \$170 trillion in compensation.**
- The economists also suggested two other steps be adopted by the Global North at the Summit for a New Financing Pact:
 - Canceling illegitimate debts of the Global South
 - Withdrawing support for fossil fuel projects
- The economists explained that the industrial development of the Global North was founded on the resources amassed from the lower-income Global South countries in Asia, Africa, and Latin America through exploitation during colonial rule.




- A report by Al Jazeera found that the **value of the wealth extracted from the Global South since 1960 would have contributed \$152 trillion to their development today.**
- The report also claimed that the countries of the **Global North continued to extract \$2 trillion each year from the lower-income countries through unequal exchange.**
- The economists, therefore, urged the leaders of the Global North to unconditionally cancel all public external debt for lower-income countries for at least the next four years (\$300 billion per year) as it was draining public funds required to deliver vital social services and climate action.
- These debts have been termed unfair because they were incurred through the neo-colonial global financial system or during colonization.
- **They also recommended that the Global North withdraw support for all fossil fuel projects and ensure that polluting industries pay for damages.**
- According to the International Institute for Sustainable Development, the governments of G-20 countries provided \$584 billion on average each year between 2017 and 2019 via direct budgetary transfers and tax expenditures, price support, public finance, and state-owned enterprise investment for the production and consumption of fossil fuels at home and abroad.
- The economists claimed that halting fossil fuel handouts in the high-income G-20 countries alone would raise around \$500 billion a year.
- The economist's letter cited a research paper proposing a Climate Damages Tax on the fossil fuels industry which could generate around \$300 billion per year in revenues for loss and damage. This could help vulnerable nations recover and recuperate from the climate crisis.
- The letter also states that false notions are being propagated by the major polluters and large economies claiming that they do not have sufficient funds to pay for climate reparations and to meet climate finance objectives.
- They cite the example of the United States Climate Envoy John Kerry, who attempted to mislead the audience at an event in 2022 by claiming that no country has the necessary funds worth trillions of dollars to build the loss and damages fund required.
- However, the global pledge for 2022 was \$100 billion with the pledge amount expected to rise to \$300-600 billion per year by 2030 and \$1.2 trillion by 2050.
- Moreover, this amount reflects the global pledge not that of any individual country, which means that it would be shared amongst all countries reducing the individual burden.

Similar recommendations

- French economist Jean Pisani-Ferry suggested a new green wealth tax in 2022.
- The proposal suggested that an exceptional tax imposed on the financial assets of 10% of the wealthiest taxpayers could contribute significantly to the \$70 billion per annum required by France to address the climate crisis and reduce greenhouse gas emissions.
- However, this proposal was rejected by the Government of France.

At Bonn Climate Meet: Old Conflicts and Some Forward Movement

Priority: High 

Primary Source: Indian Express

Prepp Prelims Booster: Bonn Climate Meet

Prepp Mains Booster: Regional and global groupings and agreements involving India and/or affecting India's interests; Conservation, Environmental Pollution and Degradation; Climate Change

Context:

- Recently, the **Bonn Climate Change Conference concluded**. It was anticipated to serve as a crucial turning point, offering an opportunity to redirect efforts towards addressing climate change.
- The **conference fell short of expectations, highlighting persistent disagreements between developed and developing nations on key climate issues**.

Bonn Climate Change Conference

- The recent Bonn Climate Change Conference **took place at the World Conference Center Bonn (WCCB) in Bonn, Germany, from 5 to 15 June 2023**.
- This year's Bonn Climate Change Conference aimed to lay the foundation for crucial political decisions to be made at the **upcoming UN Climate Change Conference (COP28) in Dubai, United Arab Emirates**, scheduled for December.
- However, following the conclusion of the conference, there was widespread disappointment expressed by observers regarding its outcome.
- The meeting brought together more than 4,800 participants from around the world from June 5th to 15th, 2023, with the intention of preparing for COP28.
- At the Bonn meeting, **progress was made on issues of critical importance, including the global stocktake, climate finance, loss and damage, and adaptation**, among many others.

COP28 will take place in Dubai, United Arab Emirates, from the 30th November to the 12th December, 2023. It will be preceded by four Regional Climate Weeks:

- Africa Climate Week.
- Middle East and North Africa Climate Week.
- Latin America and Caribbean Climate Week.
- Asia-Pacific Climate Week, in Johor, Malaysia.

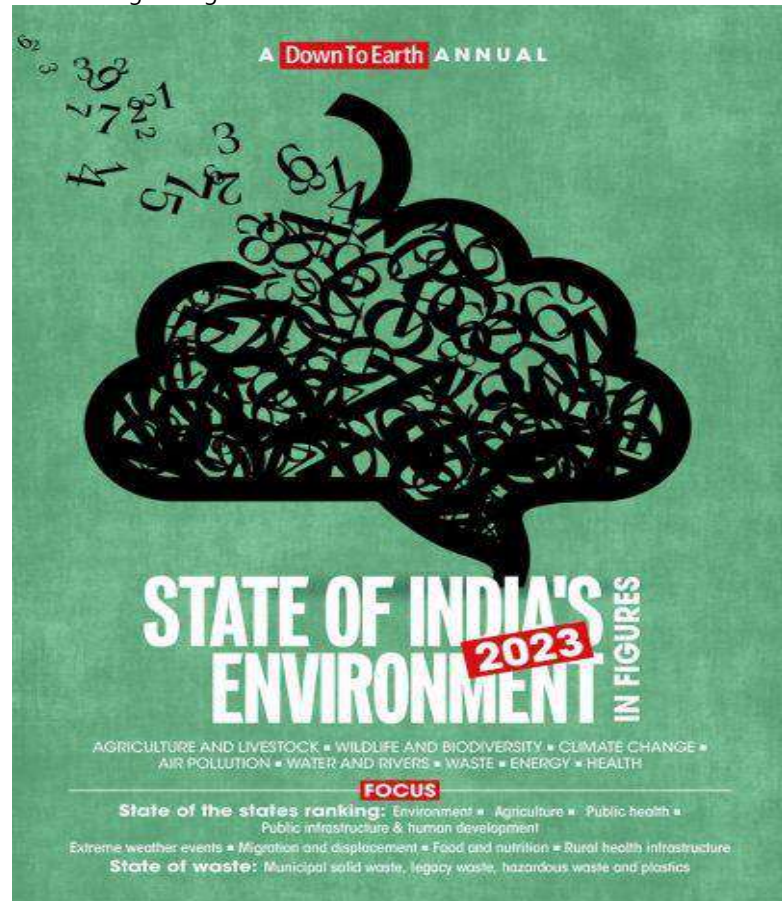
Key Takeaways from the Conference

Global Stocktake Dialogue

- Despite the challenges faced, countries successfully concluded the third and final round of technical discussions on the global stocktake (GST).
- The GST, which was established under the 2015 Paris Agreement, serves as a comprehensive evaluation of the efforts made to combat climate change.
- It aims to identify areas for improvement and determine strategies to enhance global action, thereby bridging the gap in effectiveness.
- The Paris Agreement says **GST must be conducted every five years, starting in 2023**.

Glasgow Dialogue on Loss and Damage

- The second Glasgow Dialogue on Loss and Damage contributed valuable insights to support the Transitional Committee's efforts in implementing funding arrangements and a new fund for addressing loss and damage.
- Discussions emphasized the optimization of existing funding mechanisms through coherence, complementarity, and coordination.
- The Transitional Committee will propose recommendations at COP28 on how to effectively operationalize the new fund and funding arrangements.



Climate Finance

- The Bonn Climate Conference revealed that only 10 out of 26 industrial nations have specified climate finance targets in their recent biannual reports.
- **These countries include Canada, Denmark, France, Japan, the Netherlands, New Zealand, Norway, the United Kingdom, the USA, and the European Commission.**
- However, their combined commitments of approximately €13.3 billion per year for adaptation finance fall significantly short of the agreed €46 billion (or \$50 billion) target.

Tussle between Developed and Developing Countries

- It was highlighted that since 1992, a majority of emissions have come from non-developed countries.
- A bulk of the accumulated greenhouse gas emissions, the reason for global warming, have come from a group of about 40 rich and industrialized countries.
- Such countries are referred to as Annex I countries because they were mentioned in Annexure I of the 1992 UN Framework Convention on Climate Change, or UNFCCC.

- Australia pointed out that since 1992, about 57% of the carbon dioxide emissions and 70% of the incremental warming since 1992 due to emissions from carbon dioxide, methane and sulphur dioxide had come from non-Annex I countries.

What are the challenges ahead?

- The Intergovernmental Panel on Climate Change (IPCC) has emphasized the **urgent need to reduce global emissions by 43% from 2019 levels by 2030** in order to maintain hopes of achieving the 1.5-degree Celsius target.
 - Unfortunately, current trends show that emissions are still increasing, and in 2021, they exceeded the levels recorded in 2019.
- Developed countries are under an obligation to support the implementation of climate action plans of developing countries through money and tech transfers. But money has been in perennial short supply.
- According to an assessment, **developing countries require up to US\$ 6 trillion between now and 2030** to effectively implement their climate action plans.
- The **estimated annual cost for loss and damage experienced by developing countries is approximately US\$ 400 billion.**
- In addition to these needs, there is a requirement for substantial funds for various other purposes related to combating climate change, which collectively amount to trillions of dollars each year.
- In contrast, the commitment made by developed countries to raise a seemingly small amount of US\$ 100 billion per year from 2020 onward has not been fully realized.

Significance of Bonn Conference

- The Bonn Conference aims to make progress on the collaborative efforts among countries to effectively meet their nationally determined contributions in tackling climate change.
- It serves as a vital platform for fostering global collaboration and addressing the technical intricacies associated with mitigating climate change and effectively implementing Nationally Determined Contributions (NDCs).
- It offers a valuable opportunity for nations to engage in discussions and collectively device regulations and frameworks pertaining to carbon trading and collaborative efforts.

Way Forward

- Paris is set to host a momentous two-day meeting, as leaders from various nations convene for the **Summit for a New Global Financial Pact.**
- This groundbreaking event aims to revolutionize the allocation of financial resources worldwide, channeling substantial funding towards combating climate change, as well as addressing pressing issues such as biodiversity loss and poverty.
- By reframing the focus of global financial flows, this summit offers an unprecedented opportunity to mobilize substantial resources and forge a transformative path towards a sustainable future.

Disaster Management

Canada Wildfires: How Bad It Is, Which Regions Are Hit, And Why?

Priority: Medium



Primary Source: Indian Express

Prepp Prelims Booster: Environment

Prepp Mains Booster: - Conservation, environmental pollution and degradation, environmental impact assessment. Disaster and disaster management.

Context:

- Recently, smoke from wildfires in Canada spread as far as New York City causing authorities to declare air quality alerts for Toronto and Ottawa.
- 2023 is set to be the worst wildfire season ever recorded with about 3.3 million hectares already burnt.



Background

- **Intense smoke blanketed the air over the northeastern United States of America with the air turning a yellowish gray.**
- The smoke was flowing in from dozens of wildfires that were raging in provinces of Canada.
- The condition arrived in the afternoon of 6th June and worsened with the views of New Jersey across the Hudson River from New York obstructed by the smoke and soot.
- According to the Environmental Protection Agency, **the majority of the air in the region between the mid-Atlantic through the Northeast and parts of the Upper Great Lakes was in the unhealthy or worse category.**
- Air quality alerts have been issued by the U.S. authorities in multiple areas as the smoke was expected to persist for multiple days.
- Officials advised the residents of New York, where the airborne soot was at hazardous levels, to remain indoors.
- People have been advised to keep their doors, windows, and fireplaces shut as well. Although air conditioning with the recirculation setting activated can help filter out some particles, air filters can remove many more.



What are the origins of the smoke?

- According to experts at the Cooperative Institute for Research in Environmental Science at the University of Colorado and the National Atmospheric And Oceanic Administration, the month of **May recorded record-high temperatures in Canada.**
- The unusually warm and dry temperatures which wouldn't stop are believed to be the primary cause for the wildfires in Canada.

- The **warming of the planet will lead to hotter and longer waves, producing bigger and smokier fires.**
- Fires in the Quebec area are big and relatively close, about 500 to 600 miles, to Rhode Island and followed fires in Nova Scotia.
- According to experts, the Quebec fires were larger in scale than any in the last ten years.
- Although the smoke from the forest fires in western Canada has been drifting into the U.S.A. for weeks, the recent fires in Quebec were responsible for the dangerous haze on the east coast.

Why is the smoke flowing so far away?


- **Strong winds in the higher regions of the atmosphere can help transport smoke over long distances.**
- It is common for large, violent fires to result in unhealthy conditions even as far as hundreds of miles away from where the fires are burning.
- **A dry, hot spring** in the major cities of the U.S.A. helped create ideal conditions for the smoke to spread aided by the weather.
- In Canada, the air is circulating counterclockwise around a low-pressure system near Nova Scotia.
- This has resulted in the air over the fires in Quebec flowing south where the air picks up smoke, and then turns east over New York. As a result, the smoke is carried to the eastern seaboard.
- According to experts, the trajectory of the smoke follows the path of the wind. Although, such a wind pattern isn't very rare the combination of events is.
- The timing of these weather patterns has coincided with a situation that is suitable for large fires.
- Weather patterns change constantly, which means that the hazardous conditions may last only for a couple of days, but experts cautioned that the smoke could linger for a week or more.

What is smoke and what are the concerns associated with it?

- The smoke is actually made up of a complex mixture of shapes ranging from round to corkscrew-shaped when examined under the microscope.
- It is not made up of just one sort of chemical but could have gases and carbons and toxic metals as part of its composition, according to an expert in air quality and exposure science at the University of California.
- The composition of the smoke also changes and can contain ozone.
- The **majority of smoke seen in the air and measured is made up of small particles also known as PM 2.5.**
- A major concern associated with PM2.5 is that its small size enables them to enter deep into the lungs where oxygen enters the circulation.
- This could lead to inflammation in the lungs from the high levels of pollution present in the air.
- However, climate change has led to an increase in the frequency and magnitude of fires.
- This has raised the risk of a larger number of people being exposed to less extreme smoke for weeks or months.
- The EPA advisory claims that most healthy adults and children will recover quickly from smoke exposure and not have any long-lasting health effects.
- However, this is not the case for a large category of people including children with still developing lungs, senior citizens, and people with lung diseases such as asthma and chronic obstructive pulmonary disease.

Defense Technology, Cyber Security

India's Jet Engine Deal With The US And Why It Matters

Priority: Medium 

Primary Source: Indian Express

Prepp Prelims Booster: International Relations

Prepp Mains Booster: Defence Technology and Security Related Issues ; Bilateral, regional and global groupings and agreements involving India and/or affecting India's

Context:

- A landmark agreement to facilitate the transfer of at least 11 critical jet engine technologies is likely to be announced during Prime Minister Narendra Modi's ongoing official State Visit to the United States.
- The agreement will include a deal between the U.S.A.'s General Electric and India's Hindustan Aeronautics Limited for the manufacture of GE's F414 engine under license in India for the indigenous Light Combat Aircraft (LCA) Tejas Mk2.



What is the F414 Engine?

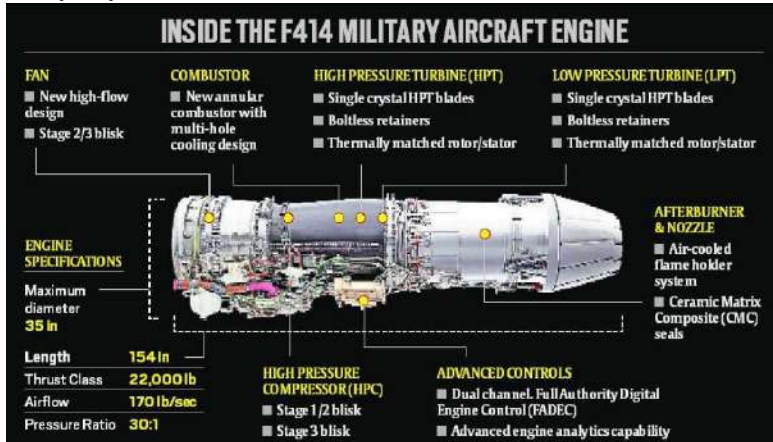
- The **F414 engine is a turbofan engine** that is part of General Electric's (GE) suite of military aircraft engines which the U.S. Navy has been using for the last thirty years.
- Over the years, the company has delivered more than 1600 F414 engines that have a combined 5 million flight hours on a variety of missions.
- The engines belong to the 98kN or 22,000 lb class and feature advanced technologies such as **FADEC or Full Authority Digital Electronic Control**, which has been described by GE as the latest aircraft ignition and engine control system that is capable of controlling engine performance digitally.
- According to GE, the engine's components have an **extended lifetime and improved performance** due to the use of advanced materials and cooling techniques.
- GE has stated that F414 engine-powered aircraft are either in operation or on order in 8 countries.
- These include the F414-GE-400 engines that power the US Navy's Boeing F/A-18E/F Super Hornet and EA18G Growler electronic attack aircraft and the single-engine variant F414G which powers Saab's Gripen E/F fighters.
- The F414 engines could also power emerging platforms such as the KF-X, a South Korea led-programme for fighter aircraft development.

Where will the F414 be used In India?

- The **Aeronautical Development Agency** of the Defense Research Development Organization (DRDO) selected the F414-INS6 engine i.e. the India-specific version of the F414 for use in the **LCA Tejas Mk2.**
- The LCA Tejas is powered by the GE-404-IN20 engine which was developed in the 1970s.
- The basic design of the GE-404-IN20 is replicated in the F414 engine which could also power the prototypes and initial batches of India's

fifth-generation fighter aircraft - the **Advanced Medium Combat Aircraft (AMCA)**.

- However, Safran SA (France) which co-developed the Shakti engine with HAL is a potential alternative for the AMCA project.
- The **Shakti engine** is used to power the indigenous **Advanced Light Helicopter (ALH) Dhruv** and **Light Combat Helicopter (LCH) Prachand**.



What are the other technologies mentioned in the agreement?

- According to experts, the F414 INS6 engine will be manufactured in India with around 80% of value and technology being transferred to HAL.
- The agreement will also include at least 11 other major manufacturing technologies which are not readily available in India including special coatings for corrosion, erosion, and thermal barrier for hot end; machining and coating for single crystal turbine blades.

What is the importance of the deal?

India's Quest For Self Reliance:

- Only the UK, USA, France, and Russia possess the capability to manufacture engines for combat aircraft. India has not yet achieved the capacity to build combat aircraft engines despite its focus on self-reliance in critical technologies.
- The agreement has the potential to enhance India's jet-producing capacity and enable it to handle a simultaneous two-front war.

Geopolitical Implications & Countering China:

- The deal to manufacture engines in India for its Tejas Mk2 and AMCA combat aircraft is unprecedented and aims to reduce India's reliance on Russia for military supplies.
- The agreement between GE and HAL represents a significant advancement in the defense and strategic partnership between India and the USA.
- The US seeks to counter China by strengthening India's military capacity and reducing its dependence on Russian military aid.
- The deal is expected to provide India with an advantage in its geopolitical contest with China, as China relies on Russia for engines despite its military prowess.

Has India attempted to indigenously develop its engines?

- The **DRDO's Gas Turbine Research Establishment (GTRE)** first worked on developing the GTX-37 engine for the LCA while the **Kaveri engine project** was sanctioned in late 1989.
- India has developed nine full prototype engines and four core engines with 3,217 hours of engine testing and Altitude Tests and Flying Test Bed (FTB) trials having been completed.
- However, the engines developed so far have not been suitable for use in fighter aircraft as they have not been able to meet prescribed standards.

- In 2011, the Comptroller and Auditor General (CAG) had criticised the GTRE for its lack of success in producing the engine for the LCA despite heavy cost overruns.
- In 2021, the Union Government told Parliament that the LCA Tejas was integrated with the GE-404 engine and that technologies developed under the Kaveri project would be utilized in other projects, including as derivatives in drones.

Conclusion

- The pact will end India's pursuit of advanced combat jet engine technology and allow it to develop its technological capacities in line with its Make in India ambitions.
- The agreement would also allow India to build better relations with the U.S.A. while preparing itself to meet the threats faced by the country on both fronts.



HAL Tejas Mk2

Security Challenges, Cyber Security

CoWIN Vaccination Data Out, Centre Denies Breach

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Cyber security

Prepp Mains Booster: Cyber Security Challenges

Context:

- The **CoWIN portal**, a widely utilized platform by millions of Indian citizens for COVID-19 vaccination registration, has gained significant attention due to concerns surrounding a **reported data breach involving a Telegram bot**.
- The Health Ministry has asked **CERT-In to look into this issue and submit a final report**.

News Summary

- A significant data breach has come to light, involving the leakage of information pertaining to hundreds of thousands of individuals who received the COVID-19 vaccine in India.
- The reports indicate that sensitive details, including phone numbers, gender, identification card information, and dates of birth, were exposed on a Telegram channel.
- This confidential information was allegedly accessible through a Telegram bot, where individuals' names could be used to retrieve the leaked data.
- In 2021, there were initial reports suggesting a potential security breach in the CoWIN portal, which raised concerns about the safety of the data of 15 crore individuals. However, cyber security researchers denied the claim.

What is CoWIN and how does it work?

- CoWIN is a digital platform developed by the Union Ministry of Health and Family Welfare in India to streamline the registration and verification process for COVID-19 vaccinations.
- It serves as a centralized system integrated with the Aarogya Setu app. The primary purpose of CoWIN is to enable individuals to easily book vaccination slots, obtain vaccination certificates, and access relevant information related to COVID-19 vaccination.
- The CoWIN site provides vaccination certificates to the beneficiaries, which acted as 'Vaccine Passports' during the COVID-19 pandemic for the beneficiaries and can be stored in DigiLocker.
- To register on the CoWIN platform, users are required to provide their mobile number and a valid identity proof, such as Aadhaar, PAN card, passport, voter ID, or driving license.
- Additionally, users need to enter their year of birth and gender during the registration process.
- Once registered, users receive a one-time password (OTP) on their mobile number to verify their identity and gain access to their personal dashboard.
- A single mobile number can be used to register up to four beneficiaries, simplifying the process for families or individuals responsible for multiple individuals.

In safe hands?

The CoWIN portal, according to the Health Ministry, has adequate safeguards for data privacy

Vaccinated beneficiary data for CoWIN app is available at three levels, as below:

■ Beneficiary dashboard:

A vaccinated person can have access data using registered mobile number with OTP authentication

■ CoWIN authorised user:

The vaccinator can access data of vaccinated beneficiaries using authentic login credentials, though CoWIN system logs every authorized access



■ **API based access:** Third-party apps with authorised access of CoWIN APIs can access data of beneficiaries through beneficiary OTP authentication

What was the Government's response?

- In response to the allegations regarding a potential data leak in the CoWIN portal, the government has strongly refuted these claims, describing them as "mischievous in nature."
- They have reassured the public that the data stored in the CoWIN portal is "completely safe" and emphasized the implementation of robust safeguards for data privacy.
- The government highlighted that the portal only provides access to data through OTP authentication, further ensuring secure access.
- They also emphasized that all necessary measures have been taken and continue to be taken to uphold the security of the data within the CoWIN portal.

Significant Implication of Data Leak

- **Privacy and Security Threats:** The leaked personal information, such as names, phone numbers, and vaccination details, can be exploited for various malicious purposes.

- This includes identity theft, where sensitive data can be used to impersonate individuals, commit financial fraud, or gain unauthorized access to accounts.
- The leaked data can be leveraged for targeted phishing attacks, spamming, or harassment, compromising the privacy and security of CoWIN users.
- **Potential for Fraud and Scams:** The exposed data can enable scammers to create convincing fraudulent schemes, preying on individuals who have registered on CoWIN.
- **Impact on Public Trust:** The data leak undermines public trust in the CoWIN system, as users may become apprehensive about sharing their personal information or using the platform for vaccination appointments.
- **Potential Discrimination and Targeted Attacks:** The leaked data, particularly vaccination status and location information, can be exploited to target individuals for discrimination or malicious purposes.
- **Reputational Damage:** The data leak can also have a detrimental impact on the reputation of the CoWIN system, as well as the organizations responsible for its security. It raises concerns about the adequacy of the data protection measures in place, potentially eroding trust in the system's overall security posture and the ability of authorities to handle sensitive information.

Previous Data breaches

- There have been other breaches of data from the public sector like the breach in the Employees' Provident Fund Organisation (EPFO) in August 2022 and the ransomware attack on the All-India Institute of Medical Sciences (AIIMS) in November 2022.
- The Computer Emergency Response Team (CERT-In) is mandated to conduct such investigations. However, the agency has not released any of its technical findings to the public, which has adversely affected popular trust.
- A draft of the National Cyber Security Strategy was put out for public consultation in December 2019 but has not yet been finalized.
- India does not have a data protection law that requires impacted users to be notified of any breaches while the proposed Draft Digital Personal Data Protection Bill, 2022 would by notification exempt government entities from compliance.
- The lack of legal accountability is considered a key reason behind repeated data breaches, even within the same entity or platform. An example of this is the reported breaches of the RailYatri portal in 2020, 2022, and 2023.

Challenges faced by Digital Public Infrastructure

- Digital public infrastructure (DPI) refers to platforms such as digital identification, payment infrastructure, and data exchange solutions that allow countries to deliver essential services to citizens.
- DPI aids countries in empowering their citizens and enabling digital inclusion which leads to an improvement in their quality of life.
- DPIs mediate the flow of three specific categories:
 - people through a digital ID System,
 - money through a real-time fast payment system
 - personal information through a consent-based data-sharing system.
- As a result, the citizen is empowered and can exercise control over data.
- The DPI framework is more than just the UPI, it includes, parts of the India Stack such as Aadhaar, Aarogya Setu, CoWIN, the Government E-Marketplace (GEM), and the Open Network for Digital Commerce (ONDC).
- The three major challenges faced by the DPI are

- **Weak governance processes:** Excluding Aadhar, none of the others have had their responsibilities, functions, and roles legally defined by an Act of Parliament and have been developed as joint ventures allowing them to bypass audit mechanisms such as the CAG and RTI.
- **Operational inefficiency:** Although the services have been developed to ensure efficiency, glitches have been observed in the Aadhar including exclusion errors, while the CoWIN platform was not completely successful in eliminating infections, and the GEM has been the subject of numerous complaints leading to the government floating a tender for its overhaul.
- **Data security:** The services have been criticized as being “data guzzlers” with personal information over the technical requirement being collected from Indians. This has resulted in multiple individual and social risks, including data breaches.

Conclusion

The recent incident involving the CoWIN portal has sparked significant apprehension regarding the privacy and security of an individual's personal information. Although the Ministry of Health asserts that there was no direct breach of the CoWIN app and database, the fact that sensitive data was accessible through a Telegram bot raises doubts about the system's integrity.

China Constructing Model Villages Opposite The LAC, Say Sources

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: India-China

Prepp Mains Booster: Security challenges and their management in border areas; GS 2 - India and its neighbourhood- relations.

Context:

- According to official sources, China is continuing to expand the network of model **villages or 'Xiaokang' (moderately prosperous) villages** opposite the Line of Actual Control (LAC) in the **Middle sector and Eastern sectors**. In addition, new posts are also coming up about 6 or 7 km from the LAC in the Middle sectors and, in some areas, the frequency of patrolling has gone up significantly.

Chinese activity at LAC

- **Building Villages:** China is building villages, opposite **Barahoti, Uttarakhand** which has seen face-offs in the past, at a rapid pace, as many as 300-400 houses in multi-storey blocks within 90-100 days. **Construction of a border settlement village** was observed northwest of Tholing area and a military complex in nearby area.
- Opposite **Kameng area in Arunachal**, two **villages have come up** in Cuna country consisting of 41 dwelling units, greenhouses and solar-lighting and there are about 200 inhabitants from the Menba ethnic community.
- **Increased frequency of patrols:** PLA patrols occurring every 15 days compared to once every three or four months in the past. Small patrols are also being seen in Mana, Neeti and Thangla areas.
- **Military complex:** In Arunachal Pradesh like in several other places, there is a military complex adjacent to the village consisting of **multi-storey buildings** secured by a perimeter wall with CCTVs and watch towers.
- A large number of 'Xiaokang' villages are under construction all along the LAC, including at Chumbi Valley facing the strategically crucial 'Siliguri corridor'.
- **Chinese transgressions:** The People's Liberation Army (PLA) has increased its force since the standoff with China in eastern Ladakh in April 2020, and there have also been violations in other regions along the LAC.

- At Barahoti in Uttarakhand in August 2021, more than 100 Chinese forces crossed into Indian territory for four or five kilometres before returning a short time later.
- Although Chinese violations in the Middle sector are not new, the number of PLA troops coming in is increasing.
- The 3,488-km-long LAC is divided into the Western (Ladakh), Middle (Himachal Pradesh and Uttarakhand), and Eastern (Sikkim and Arunachal Pradesh) sectors
- **High tech Weapons:** PLA has deployed an Unmanned Aerial Vehicle (UAV) or helicopter drone in the Middle sector, which was spotted across the LAC.
- According to Chinese state media reports in May 2020, China's first unmanned aerial vehicle (UAV) designed for high-altitude regions successfully conducted its first flight. This UAV, known as the AR-500C unmanned plateau helicopter, has the potential to be deployed along China's borders with India.
- The AR-500C is specifically designed for surveillance purposes, capable of taking off at altitudes of up to 5,000 meters, reaching a ceiling of 6,700 meters, operating for up to five hours, and having a maximum take-off weight of 500 kg.

Steps taken by India

- **Infrastructure:** India has made significant progress in terms of roads and other infrastructure in the Middle sector.
- **Augmenting capacity:** There has also been major induction of new technology by the Indian Army along the LAC to augment surveillance and capacity.
- The Indian Army has signed a series of agreements for high technology equipment, which are currently in the process of being inducted in the forward areas.
- Animal transport will be soon replaced with New autonomous vehicles for transporting rations and utilities to soldiers in forward locations and snow scooters, laser dazzlers and new-generation sniper rifles have also been inducted.

India China dispute

- The India-China border dispute covers the 3,488-km-long Line of Actual Control. China claims Arunachal Pradesh as part of southern Tibet while India contests it. Aksai Chin is a vast area in Ladakh which is currently under Chinese occupation.
- The militaries of the two sides disengaged from a number of friction points following a series of diplomatic and military talks.
- However, there has been no progress yet on resolving the standoff in the Demchok and Depsang regions.
- India has been consistently maintaining that peace and tranquillity along the LAC are prerequisite for the overall development of the bilateral ties.

Implications

- The rising tension between the world's most populous countries poses risks for **global security and the world economy**.
- The militarisation of the region has a **negative ecological impact**.
- The risk of escalation can be devastating given both sides are established **nuclear powers**.

Way forward

- A resolution of the conflict would be of great benefit for international security, world economy, and for the preservation of the unique ecology of the Himalayas.



Tamil Nadu Withdraws General Consent For CBI Within State

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Indian Polity

Prepp Mains Booster: Functions and responsibilities of the Union and the States, issues and challenges pertaining to the federal structure

Context:

- Recently, the DMK-led government in Tamil Nadu announced that it had **withdrawn the general consent given to the Central Bureau of Investigation (CBI)**, under Section 6 of the Delhi Special Police Establishment (DSPE) Act, allowing the agency to investigate cases without its permission in the State.
- The move came after Tamil Nadu's Electricity Minister V. Senthilbalaji was arrested by the Enforcement Directorate (ED).

What does general consent to CBI mean?

- According to **Section 6 of the Delhi Special Police Establishment (DSPE) Act, 1946**, the CBI needs consent from the state governments for conducting an investigation in its jurisdiction.
- In other words, without the general consent from these states, CBI cannot exercise its power in the respective states. This distinguishes the agency from the National Investigation Agency (NIA) which has authority across states.
- The Tamil Nadu government has joined nine other states in India that have withdrawn their consent to an investigation by the Central Bureau of Investigation (CBI).
- The other nine states which had withdrawn their general consent to the CBI to probe cases include Chhattisgarh, Jharkhand, Kerala, Meghalaya, Mizoram, Punjab, Rajasthan, Telangana, and West Bengal.

Implications

- A general consent to CBI granted by State governments enables the central agency to carry out investigations without such hindrances.
- Many offices of the CBI network, including that of the Joint Director and Head of Chennai Zone, Anti-Corruption Bureau, Special Crime Branch, Economic Offences Branch, Special Unit, and Scientific Aid Unit are located in Chennai and Madurai of Tamil Nadu
- As per the DPSE Act, the central government can authorize CBI to probe a case in **a state but only with the consent of the concerned state government**. However, the Supreme Court and

high courts can order a **CBI probe in any state even without its consent**.

- The **withdrawal of general consent is limited to any new case** that will come up. the central investigative agency can continue probing older cases unless the Tamil Nadu government specifically removes consent on specific cases.
- Further, the probe agency **can also continue to investigate cases** that were given to it by a court order.



Central Bureau of Investigation

- The CBI is not a statutory body. It derives its powers from the Delhi Special Police Establishment Act, 1946.
- According to a specific provision of the **Delhi Special Police Establishment Act, 1946 (Central Act XXV of 1946)** the CBI has to secure prior permission from the state government concerned before going there to conduct a probe.
- The Central Bureau of Investigation (CBI), **functioning under the Dept. of Personnel, Ministry of Personnel, Pension & Public Grievances**, Government of India, is the premier investigating police agency in India.
- It is an elite force playing a major role in the preservation of values in public life and in ensuring the health of the national economy.
- It is also the nodal police agency in India, which coordinates investigations on behalf of Interpol Member countries.

Chinese Hackers Attacking Infrastructure, Warns US

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Cyber Security

Prepp Mains Booster: Cyber Security; Challenges to internal security through communication networks

Context:

- Recently, the **US State Department has warned that China is capable of launching cyberattacks against critical United States infrastructure**, including oil and gas pipelines as well as rail systems, after researchers discovered a Chinese hacking group had been spying on such networks.
- The US State Department's warning is a reminder of the growing threat of cyberattacks against critical infrastructure.

Background

- The stealthy attack, carried out by a China-sponsored actor called "Volt Typhoon" since mid-2021, permitted long-term spying and was likely targeted at hindering the US if there was conflict in the region.
- The espionage group "**Volt Typhoon**" was the subject of an alert issued by cybersecurity and intelligence agencies in the US, Australia, Canada, New Zealand and the United Kingdom
- Microsoft believes that the Volt Typhoon effort is seeking the development of technologies that might impair crucial

communications infrastructure between the United States and Asia during future crises.

- In this campaign, the affected organizations span the communications, manufacturing, utility, transportation, construction, maritime, government, information technology, and education sectors.

What is Cyber Attack?

- Cyberattacks refer to deliberate actions aimed at compromising the security and integrity of computer systems, networks, or digital devices.
- These attacks are carried out by individuals or groups with malicious intent, commonly known as hackers or cybercriminals.
- Cyberattacks can cause significant harm, including unauthorized access to sensitive information, disruption of critical services, financial losses, and damage to an organization's reputation.

Impact of Cyber Attack

- **Loss of Integrity:** Unauthorized changes made to data or IT system can result in inaccuracy, fraud or erroneous decisions that bring integrity of the system under suspicion.
- **Loss of Availability:** An attack on a mission-critical IT system makes it unavailable to the end users.
- **Loss of Confidentiality:** Consequence of unauthorized disclosure of information ranges from loss of public confidence to national security threats.
- **Physical Destruction:** Ability to create actual physical harm or destruction using IT systems.
- **Impact on Critical Information Infrastructure:** Presently, most sectors are critically dependent on use of ICT to carry on their operations. Cyber-attacks on these critical information infrastructures can bring the entire country to a grinding halt.
 - For example, the recent Chinese cyber-attack on the power system in Mumbai brought the entire city to a halt. The local trains, which are considered Mumbai's lifeline, stopped functioning and people got stranded. Similarly, Stuxnet worm attack on Iranian Nuclear facilities led to destruction of equipment which were controlled by the computers.
- **Financial loss:** According to Data Security Council of India, India has been the second most cyber- attacks affected country between 2016 to 2018.
- It also affects National Security and peace and stability in a country.
- **Operational disruption:** A cyber attack can disrupt a company's operations in a number of ways. For example, hackers may disable a company's website or computer systems, making it impossible for the company to do business.
- **Legal liability:** In some cases, companies may be held legally liable for the consequences of a cyber attack. For example, if a company's customer data is stolen and used to commit fraud, the company may be held liable for the financial losses suffered by its customers.

India's Cyber Security Initiatives

- **CERT-In:** It is a Ministry of Electronics and Information Technology organization dedicated to protecting Indian cyberspace.
- **Cyber Surakshit Bharat program:** This is a Ministry of Electronics and Information Technology (MeitY) program aimed at developing a robust cybersecurity ecosystem in India. This effort was in collaboration with the National e-Government Division (NeGD).
- **National Cyber Security Policy 2013:** Policy document drafted by the Department of Electronics and Information Technology. Established National Critical Information Infrastructure Protection

Centre (NCIIPC) to improve the protection and resilience of the country's critical infrastructure information.

- **National Critical Information Infrastructure Protection Centre:** NCIIPC is a central government organization designed to secure our country's critical information, which has a significant influence on national security, economic growth, and public healthcare.
- **Indian Cyber Crime Coordination Centre (I4C):** The MHA established the I4C Indian Cyber Crime Coordination Centre initiative to tackle cybercrime in India in a coordinated and effective manner.
- **Cyber Swachhta Kendra:** It is an installation of the Ministry of Electronics and Information Technology (MeitY).
- **Information Technology Act, 2000:** On June 9, 2000, India's IT Act of 2000 went into force. The goal of the IT Act, according to its preamble, is to offer legal status to electronic transactions.
- **National Cyber Security Coordinator (NCSC)** under National Security Council Secretariat (NSCS) coordinates with different agencies at the national level for cyber security matters.
- **Information Security Education and Awareness Project (ISEA):** Training of personnel to raise awareness and to provide research, education and training in the field of Information Security.



GENERAL STUDIES 4

Same-Sex Marriage: Morality Vs Equality

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Indian Polity

Prepp Mains Booster: Ethics, Integrity, Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections

Context:

- The article titled 'Same-sex marriage: Morality vs Equality' which was published in 'The Hindu' on 13/06/23 has discussed the ongoing debate surrounding same-sex marriage, focusing on the clash between moral considerations and the principle of equality.

Supreme Court's Neutrality

- Sandel's critique of contemporary liberalism raises a challenge in addressing the issue of same-sex marriage within a framework of individual rights.
- **Neutrality:** If the Supreme Court were to decide on the right to marry, it would have to abandon its neutrality on moral questions surrounding marriage, which goes against its jurisprudence of equal concern for all regardless of social or personal morality.
- **Constitutional Morality:** Constitutional morality encompasses the approach of interpreting the Constitution in a manner that upholds

and reflects its core values and principles. The Court has often relied on the concept of constitutional morality to maintain neutrality on moral issues.

- **Equality:** However, by mandating the recognition of a particular kind of marriage based on equality, the Court would be pronouncing on the moral worth of marriage and violating the principle of neutrality.
- Even proponents of same-sex marriage acknowledge that state intervention in the matter is a second-best option, suggesting that it would be preferable for the state to withdraw from regulating marriage altogether.
- Sandel refers to this idea as "**bracketing**" moral issues, assuming that individuals can detach themselves from their social and historical roles and perspectives.

Concept of Bracketing on Moral Issue

- Bracketing moral issues, as proposed by philosopher Michael Sandel, involves temporarily setting aside personal or societal moral beliefs during public discourse or decision-making.
- It promotes fairness and inclusivity by adopting a neutral stance that prioritizes equal rights, about same-sex marriage where individuals suspend personal moral views to prioritize equality and fairness for all.

What is India's stand on same sex marriage?

- India does not currently recognize same-sex marriage. In 2013, the Supreme Court of India ruled that Section 377 of the Indian Penal Code, which criminalized same-sex sexual activity, was unconstitutional.
- However, the court did not specifically address the issue of same-sex marriage. As a result, same-sex couples in India are not legally able to marry.
- There is a growing movement in India to legalize same-sex marriage.
- In 2018, the Naz Foundation, an LGBTQ+ rights organization, filed a petition with the Supreme Court of India seeking to legalize same-sex marriage. The petition is still pending.
- The issue of same-sex marriage is a complex one in India. There is a strong religious and cultural opposition to same-sex marriage in many parts of the country.

What should be the role of the state in regulating personal relationships and defining moral norms?

- **Minimal Intervention:** The state should play a minimal role in regulating personal relationships and defining moral norms. State should not interfere in the private lives of individuals, and that people should be free to make their own choices about their relationships and their morality.
- **Protecting Individual Rights:** The state has a responsibility to protect individual rights, even when those rights conflict with traditional moral norms. The state should not discriminate against individuals on the basis of their race, religion, sexual orientation, or other personal characteristics.
- **Public Morality:** The state should promote public morality by fostering an inclusive and pluralistic society. It can do this by creating an environment that respects diverse personal relationships and moral perspectives, while also discouraging actions that harm individuals or infringe upon their rights.
- **Nurturing Cultural and Democratic Values:** The state has a responsibility to nurture cultural and democratic values within society. This involves encouraging open dialogue, public deliberation, and democratic decision-making processes that allow

citizens to collectively shape moral norms and personal relationship regulations that reflect the changing needs and values of the society as a whole.

Conclusion

It was argued that sustainable and radical advancements in gay rights have been achieved through citizens' assemblies and initiatives, rather than through imposed court decisions. Indian society, historically, has not exhibited the same level of intolerance towards homosexuality as other societies. Hence, the decriminalization of homosexuality in India aligned with the prevailing shared values, resulting in a lack of social resistance.

Code of Conduct For Civil Servants

Priority: Medium



Primary Source: Indian Express

Prepp Mains Booster: Ethics, Integrity, Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections

Why in the news?

- This article titled "Code Of Conduct For Civil Servants: A Review" published in The Indian Express on 26th May 2023 has discussed the civil services and the code of conduct governing civil servants in India.

What are the Rules governing the Civil Services?

- **Article 312** of the Indian Constitution governs the All India Services.
- Additionally, there are two sets of rules for the All India Services and Central Civil Services which govern the behavior and conduct of officers.
 - **All India Services Conduct Rules, 1968**
 - **Central Civil Services Conduct Rules, 1964**
- The two rules were framed on the basis of the recommendations of a committee constituted by then Minister of Home Affairs Lal Bahadur Shastri in 1962.
 - The **Committee on Prevention of Corruption was headed by K Santhanam**, a Member of the Rajya Sabha.
- These rules cover a wide range of issues and are mostly similar.

What are some of the areas covered by the Rules?

Restriction on Political Participation

- **Rule 5(1)** restricts civil servants from supporting or participating in political activity or joining political organizations.
- **Rule 5(4)** prohibits members from canvassing, interfering, or participating in elections to any legislative authority or local body.
- The rules thus restrict members from acting on their personal political beliefs.

Restriction on Expressing their opinion

- **Rule 7 of the AIS Rules** states that no member shall make public statements or publish documents anonymously, or otherwise that adversely criticize any government policy or could affect Centre-State relations or India's foreign relations.
- They may express their opinion on official documents and address the media when on field postings, but must not air their personal beliefs on matters.

Gifts and Dowry

- According to **Rule 11 (1)**, civil servants are expected to report gifts received by them, if their value is in excess of ₹25,000 even if made by family or friends with whom they have no official dealings.

- **Rule 11 (1-A)** of the AIS Rules explicitly prohibits members from giving, taking, or abetting dowry as well as demands from parents or relatives for any dowry.

Are the Rules updated?

- The Rules are not static and are updated regularly.
- Under **Rule 5(1)**, the government periodically determines whether an organization is political or not, thus impacting the participation of civil servants.
- In 1979, the government mandated that the direction of a superior officer must always be in writing, and if not possible it must be confirmed in writing immediately.
- In 1998, the Government added to the rules to prevent members from employing anyone below the age of 14.
- In August 2014, the Union government introduced new sub-rules.
 - All members are to maintain high ethical standards, integrity, and honesty; political neutrality; accountability and transparency; responsiveness, courtesy, and good behavior with the public
 - Members should take decisions solely in the public interest, and use public resources efficiently, effectively, and economically.



Coverage and Penalties

- The Rules become applicable from the time the civil servants join the training as part of their probation.
- Some Rules continue to apply to civil servants even in their retirement.
- The **Prevention of Corruption Act (POCA)** acts as a complement to the Rules in addressing corruption and unethical practices of the officers.
- Minor and major penalties including dismissal from office are some of the penalties imposed on those found to be violating the Rules.

Concerns associated with the Rules

Vagueness

- The Rules of Conduct are vague on some provisions such as personal integrity while specific on others.
- As per **rule 3(1)**, each member of the service shall maintain absolute integrity and devotion to duty and do nothing unbecoming of a civil servant.
 - This rule is purposefully vague and can be applied even if the allegations are not covered under more specific rules.
 - While the promotion of casteism is not covered under any specific Conduct Rules, casteist behavior can be interpreted as unbecoming under Rule 3(1)
- **Rule 4(1) of the AIS Conduct Rules** specifically states that No member of the Service should use his position or influence directly or indirectly to secure employment for any family members with private enterprises or NGOs.

Enforcement

- Action on corruption in India is based on complaints of which anonymous complaints are not entertained.
- Complaints can be made to fora such as the CVC, and other investigation agencies.
- However, the enforcement of these rules and acting on these complaints has been challenging.

Way Forward

- A Transparent and effective system for complaints and resolving grievances with civil servants should be instituted.
- Training and sensitization programs must be conducted for civil servants periodically to enhance awareness and performance.
- Regular updation of the Rules to address emerging issues in society.
- A culture of accountability and integrity in administration can be achieved through the joint efforts of civil society, the public, and the government, thereby ensuring that civil servants can effectively serve the public.

All India Services

- These include the three All India Services, whose members are selected by the Central Government and allotted to various state cadres, of which a certain percentage of work directly for the Union on deputation from their cadres.
 - Indian Administrative Service (IAS)
 - Indian Police Service (IPS)
 - Indian Forest Service (IFS)

Central Civil Services

- The other services are called the Central Civil Services and operate directly under the Center without any state-wise cadre allocation.
- These services include the India Foreign Services, Indian Revenue Service, Customs, Central Excise Service, etc.

PRELIMS

India Climbs Eight Places To 127 In Global Gender Index: WEF Report

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Global Gender Index

Prepp Mains Booster: Issues relating to development and management of Social Sector/Services; Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes; Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections.

Context:

- The **World Economic Forum** recently released the annual **Gender Gap Report for 2023**.
- **India has made progress by moving up eight places to rank 127** out of 146 countries in terms of gender parity.

What is the Global Gender Gap Index?

- **Gender Gap is the disparity between men and women in terms of their social, political, intellectual, cultural, or economic empowerment, achievements or developments.**
- It is the longest-standing index which tracks progress on closing these gaps since its inception in 2006.
- It also explores the impact of recent global shocks on the gender gap crisis in the labour market.
- Global Gender Gap Index is the benchmark index released by the World Economic Forum in 2006, evaluates and compares nations'

advancements toward gender parity and equality over four key dimensions with sub-parameters.

Key Dimensions:

- Economic Participation and Opportunity
- Educational Attainment
- Health and Survival
- Political Empowerment

India's Performance

- India has made some progress in terms of gender parity. It has moved up eight positions compared to the previous year and is **now ranked 127th out of 146 countries**. In the 2022 edition, India was ranked 135th.
- India has improved by 1.4 percentage points and eight positions since the last edition, marking a partial recovery towards its 2020 parity level.
- India has achieved parity in enrolment across all levels of education, which is a positive development.
- India has closed 64.3% of the overall gender gap.
- However, when it comes to economic participation and opportunity, India still lags behind, with only 36.7% parity in this area.
- In comparison to its neighboring countries, India ranks higher than Pakistan (142), but lags behind Nepal (116), Sri Lanka (115), Bhutan (103), Bangladesh (59) and China (107).
- The **most gender-equal country in the world is Iceland**. Iceland has held this position for 14 consecutive years and has managed to close more than 90% of its gender gap.

Gender gap

India jumped eight spots to rank 127 in the Global Gender Gap Index, 2023. A look at how select countries fared

| Rank | Country | Score | Rank change |
|------------|--------------|--------------|-------------|
| 1 | Iceland | 0.912 | - |
| 2 | Norway | 0.879 | +1 |
| 59 | Bangladesh | 0.722 | +12 |
| 103 | Bhutan | 0.682 | +23 |
| 107 | China | 0.678 | -5 |
| 115 | Sri Lanka | 0.663 | -5 |
| 116 | Nepal | 0.659 | -20 |
| 127 | India | 0.643 | +8 |
| 142 | Pakistan | 0.575 | +3 |



India's stand on different indices

- **Slight Decrease in representation of women in senior positions:** In India, although there has been an increase in wage and income parity, there has been a slight decrease in the representation of women in senior positions and technical roles compared to the previous report.
- **Regarding political empowerment:** India has made progress with a parity rate of 25.3%, and women now account for 15.1% of parliamentarians. This is the highest percentage recorded for the country since the inaugural report in 2006.
- **Local governance:** In terms of women's representation in local governance, out of the 117 countries with available data since 2017,

- 18 countries have achieved over 40% women's representation, including Bolivia (50.4%), India (44.4%), and France (42.3%).
- This positive development in recognizing women's participation in local government bodies in India's Gender Gap Report can be attributed to the efforts made by the Women and Child Development Minister, Smriti Irani. The government raised this issue with the World Economic Forum (WEF) in Geneva.
- **Sex Ratio:** India has seen a 1.9 percentage point improvement in the sex ratio at birth, which has contributed to overall parity after more than a decade of slow progress.
- **Skewed Sex Ratios:** In the case of Vietnam, Azerbaijan, India, and China, their relatively low rankings on the Health and Survival sub-index can be attributed to skewed sex ratios at birth.
- **Skewed sex ratio means the lower or higher population of one gender over the other.**
- When compared to the top-scoring countries, which achieve a 94.4% gender parity at birth, India has shown some improvement with an indicator of 92.7%, as compared to previous editions, while Vietnam, China, and Azerbaijan have ratios below 90%.

Gender Parity of Southern Asian Region

- The Southern Asian region has achieved a gender parity of 63.4%, which is the second-lowest among the eight regions.
- However, there has been a slight improvement of 1.1 percentage points in the South Asian score since the last edition.
- This improvement can be partially attributed to the increased scores of populous countries such as India, Pakistan, and Bangladesh.

Purana Qila Excavations Reveal Pre-Mauryan Era Settlement

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Ancient History

Prepp Mains Booster: Indian Heritage, GS2: Global groupings and agreements involving India and/or affecting India's interests.

Context:

- Recently, a **new phase of excavations at Delhi's Purana Qila, or Old Fort, has unearthed evidence of the city's continuous existence dating back to the pre-Mauryan period.**
- The **excavated remains at Purana Qila will serve as a point of attraction for the delegates of the G20 summit**, consisting of various heads of states, scheduled to be held in Delhi in September 2023.

Background

- This was the third round of excavations at the site, beginning from January. Earlier excavations had been carried out in 2013-14 and 2017-18.
- Former Archaeological Survey of India (ASI) director general B.B. Lal had earlier carried out excavation work inside the fort itself and its premises in 1954 and 1969-73.
- These **efforts have revealed nine cultural levels**, representing different historical periods, including **pre-Mauryan, Mauryan, Sunga, Kushana, Gupta, post-Gupta, Rajput, Sultanate, and Mughal.**
- The primary goal of the latest excavation is to uncover and protect the trenches that were previously excavated in 2013-14 and 2017-18. These trenches have provided valuable insights into the historical layers predating the Mauryan period.
- This season's excavation will prioritize the discovery and documentation of Painted Grey Ware artifacts within their stratigraphic context.

- This particular type of pottery is of significant interest to researchers, and its identification at Purana Qila suggests an ancient settlement known as Indraprastha, which has been continuously inhabited for approximately 2500 years.

What is Purana Qila?

- Purana Qila is a 16th-century fort. **It was constructed by Sher Shah Suri and Humayun**, the second Mughal emperor.
- The walls of the Purana Qila are made of massive red stones with minimal ornamentation and decoration.
- The Qila-i-Kuhna mosque of Sher Shah Suri, Sher Mandal (a tower traditionally associated with Humayun's death), a stepwell, and the remains of the extensive rampart with three gates are the main attractions within the fort.
- The **Purana Qila is believed by many to be the site of Indraprastha**, as mentioned in the Mahabharata.

Importance of Purana Qila

- The Purana Qila has been an important site for trade and industrial activity throughout the Mauryan, Shunga, Kushana, Rajput, and Mughal eras, **because of its location on the Yamuna River**.
- Terracotta, beads, figurines, and coins from these dynasties in the last excavation, were found, adding that it is the only place in Delhi with cultural deposits dating back 2,500 years.
- Dholavira in Gujarat is another such site in the country that demonstrates cultural continuity through the centuries, but the terrain is vastly different.

Pre-Mauryan Period

- The Pre Mauryan Period witnessed a lot of political changes and therefore making changes in economies. The last dynasty to rule Magadha was the Nanda dynasty. Although the Nanda dynasty brought wealth to the dynasty but was unable to rule.
- Historians have sought the help of archaeology to verify this claim. Excavations at this site in 1954–55 and 1969 -1973, conducted by the Archaeological Survey of India and headed by BB Lal, revealed a few shards of pottery belonging to the Painted Grey Ware (PGW) variety, that historians trace to the Mahabharata period (1500-1000 BCE).
- The Pre-Mauryan age had a number of governmental upheavals, which resulted in economic developments. It was the period when 'janapadas' grew in size and became involved in territorial expansion, resulting in the development of 'Mahajanapadas.'

*To read more about this topic, check the [Pre-Mauryan Age](#).

Findings of the excavations

- The discoveries contain fragments of Painted Gray Ware pottery, which is typically dated between 1200 and 600 BC.
- The new excavations have also found remains of a 900-year-old Vaikuntha Vishnu from the Rajput period, a terracotta plaque of Goddess Gaja Lakshmi from the Gupta period,
- the structural remains of a 2,500-year-old terracotta ring well from the Mauryan period, and
- a well-defined four-room complex from the Sunga-Kushan period dating back to 2,300 years ago, besides beads, seals, copper coins and a bone needle.

Significance of the excavation

- **Trade Centre:** The excavation has revealed a "continuous existence of human habitation and activities spanning 2500 years", underscoring the historical importance of Purana Qila. More than 136 coins and 35 seals and sealings have been discovered from a small excavated area, indicating the site's pivotal role as a trade center.

- **Discovering Chronology:** The continuing excavation seeks to provide a detailed chronology of the site. Structures from the early Kushana level are currently uncovered, with a depth of 5.50 metres reached so far. This excavation is intended to give further information about the ancient city of Indraprastha.
- **Open-air museum:** The Purana Qila would soon be reopened, and the unearthed remains would be kept, conserved, and housed in a shed. The location will be presented as an open air museum, allowing visitors to experience Delhi's rich historical past.
- **Point of attraction:** The excavated remains at Purana Qila will serve as a point of attraction for the delegates of the G20 summit.
- **History:** This is the only site in Delhi- NCR where one can witness the continuous history of Delhi from the pre-Mauryan to Mughal period through the excavated remains.



Archaeologist Reports Mesolithic-Era Rock Paintings In Guntur

Priority: Medium

Primary Source: The Hindu

Prepp Prelims Booster: Art and Culture

Prepp Mains Booster: Art and Culture

Context:

- Recently, a **Mesolithic period rock painting** depicting a person tilling a piece of land has been found by D. Kanna Babu, **former Superintending Archaeologist of the Temple Survey Project (Southern Region)** of the Archaeological Survey of India, Chennai, in Orvakallu village in Guntur district, Andhra Pradesh.
- The new prehistoric rock paintings on the **walls and ceiling of natural rock shelters on a hillock at Orvakallu** were identified while surveying the lower River Krishna Valley to ascertain the architectural features of shrines.
- Earlier, in 2018, archaeologists uncovered prehistoric rock art estimated to be from the **Neolithic era, circa 1500-2000 BC**, on natural limestone formations near **Dachepalli in Guntur district**.

About the findings

- It was noticed that these were shelters **for prehistoric humans** who lived in this place.
- Among these five naturally formed caves, two are embellished with distinguished depictions of **rock paintings on the back walls and ceilings** executed by people of the Mesolithic Age, roughly from 5000 BC.
- These paintings were made with "**natural white kaolin and red ochre pigments**".

- Ochre is a pigment composed of clay, sand, and ferric oxide. Kaolinite is a soft, earthy, and usually white mineral produced by the chemical weathering of aluminum silicate minerals like feldspar.
- Most of the paintings had been “badly damaged” due to exposure to “air and wind”. Only a few of the sketches and outlines are still intact.
- Social life and culture:** The painting throws light on aspects of the social life and culture of the people who lived in the area.
- Semi-settled life pattern:** A painted figure of a man holding a plough and appearing to be tilling land -- an indication, of a semi-settled life pattern” in which members of this **community domesticated animals** and cultivated and harvested crops.
- One of the paintings depicted a man **catching a wild goat** with his left hand while wielding **a hook-like implement to control it**. Another showed two couple standing with their hands raised while a child stood behind them.



Regulator Approves First Omicron-Specific mRNA Vaccine From India

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Science and Technology

Prepp Mains Booster: Achievements of Indians in science & technology; Indigenization of technology and development of new technology.

Context:

- Recently, the Department of Biotechnology (DBT) has announced that the **Omicron-specific mRNA-based Booster vaccine**, GEMCOVAC-OM developed using the indigenous platform technology by **Gennova Biopharmaceuticals Ltd** and supported under the **Mission COVID Suraksha, implemented by Biotechnology Industry Research Assistance Council (BIRAC)**, has got a nod from the office of the Drug Control General of India (DCGI) for Emergency Use Authorization (EUA).
- GEMCOVAC-OM was approved against the Omicron variant of SARS-CoV-2.

About GEMCOVAC-OM

- GEMCOVAC-OM is **India's first mRNA-based Omicron-specific booster vaccine** developed using the indigenous platform technology by Gennova in collaboration with DBT against the highly transmissible Omicron variant.

- GEMCOVAC®-OM is a thermostable vaccine, which does not require ultra-cold chain infrastructure used for other approved mRNA-based vaccines, making it easy for deployment pan India.
- It is delivered **intradermally** using a device called Tropis, developed by

PharmaJet, USA. This is a needle-free device that eliminates the disadvantages of using a needle, such as needle phobia, sharps disposal, and needle-stick injuries, to name a few.

- Adults of 18 years of age and older can** take the vaccine as a **booster dose**, which can be administered safely to individuals who have received two doses of either Covaxin or Covishield.
- The currently approved vaccines used as precautionary/ booster doses

are designed against the ancestral strain of SARS-CoV-2.

- Although these will increase the antibody titers, their ability to neutralize the circulating Omicron variant of SARS-CoV-2 is limited.
- Developing antibodies and memory immune responses specific to the Omicron variant would reduce the probability of infection and hospitalization and prevent future waves of the pandemic, GEMCOVAC-OM specifically addresses this gap.



Mission COVID Suraksha

- Mission COVID Suraksha- the Indian COVID-19 Vaccine Development Mission', was announced as part of the third stimulus package, Atmanirbhar Bharat 3.0, for promoting research and development of Indian COVID-19 vaccines.
- Mission COVID Suraksha is being led by the Department of Biotechnology (DBT) and is being implemented by Biotechnology Industry Research Assistance Council (BIRAC), a Public Sector Undertaking (PSU) of DBT, at a total cost of Rs. 900 Cr. for 12 months.
- The four vaccines are- **ZyCoV-D- World's 1st and India's indigenously developed DNA Vaccine**, **CORBEVAXTM-India's first protein subunit vaccine**, **GEMCOVAC™-19 - World's 1st and India's indigenously developed mRNA vaccine** and **iNOVACC- World's 1st and India's indigenously developed intranasal COVID-19 Vaccine**.

National Programme for Civil Services Capacity Building (NPCSCB): The First National Training Conclave

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Indian Polity

Prepp Mains Booster: Government policies and interventions for development in various sectors;

Context:

- Recently, Prime Minister Narendra Modi inaugurated the **"first-ever" National Training Conclave** in New Delhi.
- The **conclave aims to enhance capacity building in civil services and improve the training infrastructure for civil servants nationwide.**

About National Training Conclave

- The **National Training Conclave is an important event organized as part of the National Programme for Civil Services Capacity Building (NPCSCB), known as 'Mission Karmayogi.'**
- Its main objective is to promote collaboration among civil services training institutes and enhance the training infrastructure for civil servants across the country.
- Civil Servants from central government departments, state governments, and local governments, as well as experts from the private sector also took part in the deliberations.
- The conclave featured eight-panel discussions addressing crucial aspects of civil services training institutes, including faculty development, training impact assessment, and content digitization.

Key aspect of the conclave

- The most crucial aspect of the conclave was the participation of representatives from civil services training institutes across the country. They had come from every part of India and were eager to collaborate and learn from one another.
- The conclave was hosted by the Capacity Building Commission.** Its primary objective was to foster collaboration among civil services training institutes and strengthen the training infrastructure for civil servants across the country.
- Over 1,500 representatives from central training institutes, state administrative training institutes, regional and zonal training institutes, and research institutes across India attended the conclave.
- This was a significant step towards building a better future for India's civil services.



Karmayogi for the Nation

What is Mission Karmayogi?

- Mission Karmayogi is a landmark initiative launched by the Government of India as part of the National Programme for Civil Services Capacity Building (NPCSCB).
- It is a capacity-building scheme for civil servants aimed at upgrading the post-recruitment training mechanism of the officers and employees at all levels.
- It aims to transform the training and capacity building framework for civil servants in the country. The mission recognizes that civil

servants play a crucial role in implementing government policies and delivering services to citizens.

- Therefore, it seeks to empower them with the necessary skills, knowledge, and competencies to meet the evolving demands of governance and public service.

Six Pillars of Mission Karmayogi

- Policy Framework
- Institutional Framework
- Competency Framework
- Digital Learning Framework iGOT-Karmayogi (Integrated Government Online Training Karmayogi Platform)
- Electronic Human Resource Management System (e-HRMS)
- Monitoring and Evaluation Framework

Need for reform in Civil Service

- The National Programme for Civil Services Capacity Building (NPCSCB) is dedicated to establishing a proficient and forward-thinking civil service that plays a central role in government activities.
- Civil servants serve as policymakers and are responsible for executing government initiatives on the ground.
- Their skill sets and capacity greatly influence service delivery, program implementation, and overall governance functions.
- Recognizing the significance of this role, the NPCSCB aims to develop a professional and well-trained civil service that possesses a shared understanding of India's developmental goals, national programs, and priorities.
- The program places a strong emphasis on enhancing the interface between citizens and the government, with a focus on promoting ease of living and ease of doing business.

Conclusion

The conclave is an effort to bring together all Civil Service Training Institutions (CSTIs) in a common setting with the aim to help identify strategies for the ecosystem to build and improve the government's Capacity Building Program.

India, France, UAE Hold Maiden Maritime Exercise In Gulf Of Oman

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Maritime Exercise

Prepp Mains Booster: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context:

- Recently, India, France, and the UAE participated in the maiden trilateral maritime exercise between the three countries in the Gulf of Oman.
- INS Tarkash, French Ship FS Surcouf, French Rafale aircraft & UAE Navy MPA participated in the exercise.

Trilateral Exercise

- The **navies of India, France, and the UAE participated in the first India-France-UAE Maritime Partnership Exercise held on June 7th and 8th.**
- As part of the exercise, the units participated in a wide spectrum of at-sea operations such as
 - surface warfare, which involves tactical firing and drills for missile engagement,
 - close quarter maneuvers
 - advanced air defense exercises with France's Rafale and UAE's Dash-8 Maritime Patrol Aircraft
 - Helicopter cross-landing operations

- Drills for at-sea replenishment
- According to a spokesperson for the Indian Navy, live firing and simulated missile engagement drills, Helo Cross Deck operations, Advanced air defense exercises, and boarding operations were conducted.

INS Tarkash

- It is a state-of-the-art stealth frigate of the Indian Navy equipped with a versatile range of weapons.
- Tarkash belongs to the Talwar class of guided missile frigates. These are modified Krivak III class frigates built by Russia.
- It was built by the Yantar shipyard in Kaliningrad, Russia.
- It was commissioned into Indian Navy service on 9 November 2012 at Kaliningrad and joined the Western Naval Command on 27 December 2012.
- It is also equipped with BrahMos missiles instead of the Klub-N missiles, which makes it different from the earlier flight of Talwar-class ships.
- **INS Tarkash was one of the ships dispatched to Sudan to conduct evacuations of stranded Indians following the violence between military factions.**

What was the aim of the exercise?

- The **primary aim behind the conduct of the Trilateral exercise was to enhance maritime cooperation between the Indian, French, and UAE navies.**
- The Exercise aimed at **developing cooperation and synergies regarding ensuring the safety of mercantile trade and freedom of navigation on the high seas** in the region.
- Another aim was to **develop appropriate measures to address conventional and non-conventional threats** in the maritime sector.

Why is the Indo-French-UAE cooperation important?

- Naval cooperation between the three countries is a crucial element in securing critical sea lanes and combating security threats such as piracy, transnational crime, and terrorism in the Indian Ocean.
- India can significantly expand the **Indian Navy's operational footprint across the Indo-Pacific region through maritime cooperation with UAE and France.**
- Cooperation with France facilities would **improve India's network of nautical outposts in the IOR** and help counter the threat of an aggressive China in the region.
- The trilateral exercise sent a strong message to India's opponents in the geopolitics of maritime Asia.
- A partnership with the French and the UAE would **allow India to play a greater role in littoral South-East Asia**, thereby influencing the security dynamic of the Pacific

India-France Defense

- France is one of India's key defense partners and a major strategic partner.
- **French Scorpene conventional submarines** built in India under the technology transfer agreement of 2005, and the **36 Rafale fighter jets** for the IAF are one aspect of the strong security ties between the two countries.
- Airbus and Tata have tied up to manufacture C-295 tactical transport aircraft in Vadodara, Gujarat while the Safran Group will set up their largest and first aircraft engine MRO (maintenance, repair, and overhaul) facility in Hyderabad with an investment of ₹1200 crores.

- **In 2020, India and France conducted joint patrols from Reunion Island for the first time.**

Maritime

- The two countries have shared principles in the maritime domain.
- **The Joint Strategic Vision of India-France Cooperation in the Indian Ocean Region (IOR)** was developed to serve as a blueprint for enhanced cooperation.
- India and France have conducted joint patrols in the IOR to engage with like-minded partners in the region and thereby extend their influence.
- The two countries have articulated the need for a free, fair, and open Indo-Pacific.
- In September 2022, India and France agreed to set up the **Indo-Pacific Trilateral Development Cooperation Fund** to support sustainable development for Indo-Pacific countries.
- The two countries also agreed to expand cooperation in the region through separate trilaterals with the UAE and Australia.



India-UAE

- The growing cooperation between India and the UAE in the security and defense sector is a significant pillar of engagement between the two nations.
- The spread of radicalism in the Gulf and in South Asia has led India to enhance security cooperation with the UAE in order to counter terrorist threats and combat radicalization.
- Regular high-level and functional-level exchanges have been organized between the two countries.

- Vessels belonging to the Navies of both nations have regularly made port calls to the other, thereby enhancing bilateral defense cooperation.
- **India and UAE signed a comprehensive strategic partnership in 2017**, and have organized annual defense dialogues.
- The two countries participate in bilateral and multilateral military exercises with each other.

Other defense exercises between India, France, and the UAE Bilateral

- **Ex Varuna:** Bilateral exercises between the navies of India & France started in 1983 and was named Ex Varuna in 2001. The 21st edition was held in the Arabian Sea (Western Seaboard) in January 2023. It aimed to improve war-fighting skills in the maritime theater, enhance their interoperability to undertake multi-discipline operations in the maritime domain, and demonstrate their ability as an integrated force to promote peace, security, and stability in the region.
- **Ex Garuda:** This exercise, established in 2003, between the respective air forces of India and France, is an essential aspect of Indo-French bilateral military cooperation. GARUDA VII was held in Jodhpur, Rajasthan in 2022.
- **Ex Desert Eagle:** It is a bilateral air combat exercise that aims to synergize mission planning and execution in a simulated high-threat combat environment between the Indian Air Force and the United Arab Emirates Air Force.

Multilateral

- India and France are participants in the **US-led RIMPAC**.
- India and the UAE participated in the **Samvedana** exercise for HADR in South Asia.
- India, France, and the UAE are among the participants in **Ex Kakadu** and **Ex Pitch Black**.

Conclusion

- The Exercise has strengthened the maritime relationship between the three navies and enhanced interoperability in addressing threats in the Indo-Pacific region.

To know more about Defense exercises, click the [link](#).

W20 Summit Women-Led Development; Transform, Thrive and Transcend

Priority: Medium



Primary Source: PIB

Prepp Prelims Booster: Currents events of National and International Importance

Prepp Mains Booster: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.; Role of women and women's organization;

Context:

- Recently, Women 20 Summit was held in **Mahabalipuram, the UNESCO World Heritage town**, India on 14th - 16th June 2023.
- The theme of this year's summit is **'Women-Led Development-Transform, Thrive and Transcend'**.

Women 20 (W20)

- The Women 20 (W20) is the **official G20 engagement group**, created in 2015 under Turkey's Presidency of G20, with the objective of focusing on **gender equity**.
- The primary objective of W20 is **women's empowerment and advocating for women's rights**, raising women's voices in society.
- India's W20 agenda focuses on five key priorities:
 - Women's Entrepreneurship,

- Grassroots Women's Leadership,
- Bridging the Gender Digital Divide,
- Education and Skill Development, and
- Climate Change.

Group of Twenty (G20)

- The Group of Twenty (G20) is the **premier forum for international economic cooperation** which plays an important role in shaping and strengthening global architecture and governance on all major international economic issues.
- **India** holds the Presidency of the G20 from **1 December 2022 to 30 November 2023**.
- The G20 was founded in **1999 after the Asian financial crisis** as a forum for the Finance Ministers and Central Bank Governors to discuss global economic and financial issues.
- The G20 was upgraded to the level of Heads of State/Government in the wake of the global economic and financial crisis of 2007, and, in 2009, was designated the **"premier forum for international economic cooperation"**.
- The G20 Summit is held **annually**, under the leadership of a **rotating Presidency**.
- The G20 Presidency is responsible for bringing together the G20 agenda in consultation with other members and in response to developments in the global economy.
- **Members:** The Group of Twenty (G20) comprises 19 countries (Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Türkiye, United Kingdom and United States) and the European Union. The G20 members represent around 85% of the global GDP, over 75% of the global trade, and about two-thirds of the world population



Group of Monuments at Mahabalipuram - UNESCO Heritage Site

- Mahabalipuram (or Mamallapuram), located along southeastern India's Coromandel Coast, was a port city of the Pallavas.
- This group of sanctuaries, founded by the Pallava kings, was carved out of rock along the Coromandel coast in the 7th and 8th centuries.
- It is known especially for its **rathas (temples in the form of chariots), mandapas (cave sanctuaries), giant open-air reliefs such as the famous 'Descent of the Ganges', and the temple of Rivage**, with thousands of sculptures to the glory of Shiva.

The monuments may be subdivided into five categories:

- **The mandapas (rock-cut caves):** During the time of **Narasimhavarman-I Mamalla**, new innovations were introduced in the rock medium in the form of cave temples.

- Notable examples of the cave temple are Konerimandapa, Mahishmardhini cave, and Varahamandapa. These rock-cut caves are richly embellished with sculptural representations known for their natural grace and suppleness. Noteworthy among them are **Mahishamardhini, Bhuvараha, Gajalakshmi, Tirivikrama, and Durga.**
- **The rathas (monolithic temples):** The monolithic temples are locally called "ratha" (chariot), as they resemble the processional chariots of a temple. These **five monolithic temples** are each hewn out of a huge boulder.
- They display the full form and features of the contemporary temple form and show variations both in ground plan and elevation. They are richly carved with artistic motifs and wall panels depicting many **Hindu divinities and royal portraits.**
- **The rock reliefs:** The sculptural bas reliefs are another very important class of masterly creations created during Mamalla's reign. There are four such reliefs at Mamallapuram, the most noteworthy among them being the **Arjuna's Penance and Govardhanadhari.**
- **The temples:** King Rajasimha introduced structural architecture on a grand scale. The earliest and most modest is the **Mukundanayanar temple, followed by the Olakknesvara temple,** perched on a rock near the lighthouse. The tempo of structural edifices culminated in the creation of the famous Shore temple, having the most finite layout of a Dravida vimana, majestically fringing the sea.
- **The excavated remains:** Sustained removal of the sand over a period of time has brought to light several buried structures around the **Shore temple.** Unique among them is a stepped structure, a miniature shrine, a Bhuvараha image, a reclining image of Vishnu, and a well from **Pallava King Narasimhavarman Rajasimha's reign (638-660 CE),** all of which are carved in the live bedrock.
- Remains of additional temples have recently been excavated, including one to the south of the Shore temple.

Poshan App Allows Migrant Workers To Access Nurseries Wherever They Live

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Economic and Social Development – Sustainable Development, Poverty, Inclusion, Demographics, Social Sector initiatives, etc.

Prepp Mains Booster: Government policies and interventions for development in various sectors and issues arising out of their design and implementation. Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes; mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections, Issues relating to poverty and hunger.

Context:

- Recently, the Ministry of Women and Child Development stated that the Poshan Tracker app has helped in the success of the One nation one Anganwadi programme by effective coordination between the Union and the state governments.
- 10 crore 6 lakh beneficiaries have been registered in the Poshan Abhiyan since 2018, of which 47.6 lakh were lactating mothers, 7.48 crore were pregnant women and the remaining were children.



Poshan Tracker

- **According to the Ministry of Women and Child Development, more than 57,000 migrant workers have registered for the one nation one Anganwadi programme.**
- Under the scheme, people can avail of the benefits given by the government to children under the age of 6, pregnant and lactating mothers even if they migrate to another state.
- **Migrant workers who have registered in their home state could go to the nearest Anganwadi in their current place of residence to avail themselves of the schemes and services offered under the scheme.**
- The Ministry claimed that the **Poshan Tracker mobile application** has enabled coordination between the Union government and the state governments.
- The Poshan Tracker management application provides a **360° view of the activities performed by Anganwadis or childcare centers, the services delivered by Anganwadi Workers, and the management of benefits enjoyed by pregnant women, lactating mothers, and children under 6.**
- The app has also digitized and automated the physical registers used by the Anganwadi workers in order to help improve their performance and quality of work.
- The Anganwadi workers have been provided smartphones, procured through the Government e-Market (GeM) for the efficient delivery of services.
- Under the scheme, 8.66 lakh phones have been procured by the states and union territories, and more than 6.5 lakh Anganwadi workers have been trained in its use.
- A nodal person has also been appointed to provide technical support and resolve any issues related to the functioning of the Poshan Tracker app in the states, including issues related to downloading and using the app.

Impact

- **9 crore 38 lakh beneficiaries of the total 10 crores 6 lakh beneficiaries registered under the Poshan Abhiyan scheme have been verified.**
- According to sources in the Ministry of Women and Child Development, a take-home ration that is age-appropriate for children under the age of 6 years is being designed, and a proposal regarding this has been forwarded to the Ministry of Finance.
- These sources also claimed that the **number of girls in the 11-14 age group from all states and UTs who were dropping out has declined significantly from 1.14 crore in 2013-14 to 5 lakh in 2020-21 to 3.8 lakh in 2021-22 and eventually to around one lakh by July 2022.**

- According to experts, the reduction in the number of girl dropouts indicated that many fake beneficiaries and wrong entries have been removed.
- The sources also claimed that the one lakh girls who had dropped out of school had been reintroduced into the mainstream, following which the scheme for adolescent girls was also revised.
- Around 22.40 lakh girls have been identified in the North East states and aspirational districts. These girls would then be covered under the new scheme, which is a part of **Poshan 2.0**.

Poshan Abhiyan

- The [Poshan Abhiyaan](#) or National Nutrition Mission was launched by the Union Government in 2018.
- **The POSHAN (Prime Minister's Overarching Scheme for Holistic Nutrition) Abhiyaan builds awareness around malnutrition and associated problems and proposes viable solutions.**
- The Poshan Abhiyaan scheme targets women and children who suffer from malnutrition-related problems and emphasizes specifically on pregnant women and lactating mothers.
- It was launched in 2018 and is based on a four-pillar strategy consisting of:
 - Inter-sectoral convergence aimed at optimized service delivery
 - Real-time growth monitoring and tracking using technology
 - Intensified health and nutrition services for the first 1000 days
 - Jan Andolan

Objectives:

- Reduction of under-nutrition levels in the country
- Improvement in the nutritional status of children
- Enhancement of the nutritional outcomes of adolescents, children, pregnant women, and lactating mothers

Targets:

- Reduction in stunting by 2% per annum.
- Reduction in under-nutrition by 2% per annum.
- Reduction in anemia by 3% per annum.
- Reduction in low birth weight by 2% per annum.
- The POSHAN Abhiyaan is implemented through the Technical Support Unit (TSU) which was established at the NITI Aayog. It is also mandated to provide research, policy, and technical support for the program.
- The NITI Aayog submits implementation status reports of the Abhiyaan every six months.

**POSHAN
Abhiyaan**
PM's Overarching
Scheme for Holistic
Nourishment



सही पोषण - देश रोशन

Poshan 2.0

- Poshan 2.0 was launched by the Ministry of Women and Child Development as an umbrella programme encompassing the Integrated Child Development Services (ICDS) programme which includes the Anganwadi Services, Poshan Abhiyan, Scheme For Adolescent Girls, and the National Creche Scheme.
- As a part of the scheme, the Ministry invited all Aspirational Districts to create a **Poshan Vatika** or nutrition garden during the Nutrition Month or **Poshan Mah**.
- The Programme was announced as part of the 2021-22 Union Budget and was established with the aim of improving the nutritional content, delivery, and outcomes and promoting health, well-being, and disease resistance.

Objectives:

- Contribute to the development of the country's human capital;
- Address the challenges of malnutrition;
- Promote awareness about nutrition and good eating habits for sustainable health
- Address nutrition deficiencies
- Early Childhood Care and Education for children between 3 and 6 years and early stimulation for those under 3 years, enhancements in Anganwadi infrastructure such as the modern, upgraded Saksham Anganwadi have been integrated under Poshan 2.0 to address gaps and improve outcomes related to children's nutrition and development.

Other features of the scheme:

- It focuses on the 1,000 days between a mother's pregnancy and the child's second birthday.
- Prioritizing the nutritional deficiencies faced by women and girls through fortification and take-home rations.
- Community-based programmes to tackle malnutrition.
- Focus on district-level nutrition outcomes

Bima Sugam Platform: All-In-One Policy Plan To Spread Insurance In India

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Bima sugam

Prepp Mains Booster: Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context:

- The **Insurance Regulatory and Development Authority (IRDA)** is devising a **new affordable bundled product** to expand the poor insurance penetration in the country against multiple risks and to give citizens protection, and seeking to expedite claim settlements by linking death registries onto a common industry platform.
- These initiatives are part of a **comprehensive reform strategy that includes legislative amendments** aimed at **attracting more investments** in the insurance sector.







Reason behind this move

- According to a recent Swiss Re study, the **pandemic-induced spike in digital activity** has resulted in **more Indians buying insurance online**.
- Buying insurance through traditional channels is a multi-step process and has always been cumbersome for customers.
- The study shows that insurers can no longer afford to stick to an offline-only model and need to transition to the digital realm to capture the attention of the Gen Z and millennial audience.

- Another study by IDC FutureScape predicts that by 2024, 50 percent of all policies of non-life and life insurers will be sold through a fully automated, personalized insurance engine.
- The amendments will introduce differentiated licenses for niche players, similar to the banking sector. The objective is to make insurance more readily available, affordable, and accessible
- These changes could double the number of jobs in the sector to 1.2 crore.

Cover drive for the uninsured

The Insurance Regulatory and Development Authority is driving multi-pronged changes to expand citizens' safety nets

| | | |
|---|---|---|
|  <ul style="list-style-type: none"> ■ A new bundled insurance product Bima Vistar to provide life, health, accident and property cover through a single, simple policy |  <ul style="list-style-type: none"> ■ A Bima Sugam platform as a one-stop shop for customers, integrating insurers and distributors |  <ul style="list-style-type: none"> ■ Linking digital death registries to platform so claims can be settled within hours or a day |
|  <ul style="list-style-type: none"> ■ Permitting insurers to sell value-added services with policies; for example, a yoga class bundled with a health scheme |  <ul style="list-style-type: none"> ■ Women to lead campaign to spur insurance penetration in each Gram Sabha |  <ul style="list-style-type: none"> ■ Roping In States to form insurance committees and expand coverage across districts |

■ Move will also allow smaller, micro and regional insurers to reach different strata of society

What is IRDA's plan to address the Insurance gaps?

- In order to address huge protection gaps across life, health, motor, property or crops.
- The IRDA is working on a plan in collaboration with general and life insurance companies, to address these gaps. It is termed as "**Bima Trinity.**"
- The goal is to create a transformative moment similar to the Unified Payments Interface (UPI) in the insurance sector.
- **Bima Sugam platform:** It will integrate insurers and distributors onto a single platform to make it a one-stop shop for customers.
- Customers at a later stage can pursue service requests and settlement of claims through the same portal.
- **Bima Vistar:** IRDA is developing Bima Vistar, a comprehensive bundled insurance product covering life, health, property, and accidents. It offers defined benefits for each risk and enables faster claim settlements without requiring a surveyor.
- **Bima Vaahaks (carriers):** The third part of the Bima trinity involves the establishment of a women-centric workforce of Bima Vaahaks (carriers) in each Gram Sabha that will meet the women heads of each household to convince them that a composite insurance product like Bima Vistar.
- Integration of IRDA with state's birth and death registries could help settle claims as fast as six to eight hours or a day at the most.
- To meet the target of providing insurance coverage for all by 2047, the IRDA is planning to form State-level insurance committees similar to ones in the banking sector, and rope in State governments to formulate district-level plans.
- **Amendments:** The IRDA has proposed amendments to the insurance laws that will allow differentiated capital requirements for niche insurers so as to attract more investments, and permit players to add value-added services to the policies.
- Currently, the statute does not permit such provisions. The proposed changes would allow insurers to offer additional benefits along with insurance policies, such as a yoga membership or nursing services for distant parents. This customization aims to attract millennials and address specific needs.

- The amendments will enable the entry of new players in the form of micro, regional, small, captive players, specialised players, and even composite licences.


Conclusion

- If India's IRDA's plans fructify, households across the country could soon be able **to get an affordable single policy that covers health, life, property and accident, get their claims settled within hours**, and even secure value-added services such as gym or yoga memberships at the time of buying a policy.

Insurance Regulatory and Development Authority

- Insurance Regulatory and Development Authority of India (IRDAI), is a **statutory body** formed under an Act of Parliament, i.e., Insurance Regulatory and Development Authority Act, 1999 (IRDA Act, 1999) **for overall supervision and development of the Insurance sector in India.**
- The powers and functions of the Authority are laid down in the IRDA Act, 1999 and Insurance Act, 1938.
- The key objectives of the IRDAI include protecting the interest of policyholders, speedy and orderly growth of insurance industry, speedy settlement of genuine claims, effective grievance redressal mechanism, promoting fairness, transparency and orderly conduct in financial markets dealing with insurance, prudential regulation while ensuring the financial security of the Insurance market.

Oil Reserves In Salt Caverns: The Potential In India

Priority: Medium 

Primary Source: Indian Express

Prepp Prelims Booster: Strategic Petroleum Reserves

Prepp Mains Booster: Infrastructure: Energy, Ports, Roads, Airports, Railways etc ; Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context:

- Engineers India (EIL), a Government-owned engineering consultancy firm is studying the prospects and feasibility of **developing salt cavern-based strategic oil reserves in Rajasthan**, in line with the government's **objective of increasing the country's strategic oil storage capacity.**
- If the plan comes to fruition, India could get its **first salt cavern-based oil storage facility.**
- The country's three existing strategic oil storage facilities — at Mangaluru and Padur in Karnataka, and Visakhapatnam in Andhra Pradesh — are made up of **excavated rock caverns.**

What are Salt caverns?

- Salt caverns are artificial cavities in underground salt formations, which are created by the controlled dissolution of rock salt by injection of water during the solution mining process.
- Salt caverns are used to store liquid fuels and natural gas in various parts of the world.
- They are also considered suitable for storing compressed air and hydrogen.

Advantages of Salt cavern-based reserves

- **Economical:** Salt cavern-based storage is considered **cheaper and less labor- and cost-intensive** than rock caverns.
- **Less labor intensive:** Salt caverns are developed by the process of **solution mining**, which involves **pumping water into geological formations** with large salt deposits to dissolve the salt.

- After the brine (water with dissolved salt) is **pumped out of the formation**, the space can be used to store crude oil.
- **Simpler:** The process is **simpler, faster, and less cost-intensive** than developing excavated rock caverns. Unlike rock caverns, salt cavern-based storage can be created and operated almost entirely from the surface. Underground rock caverns are developed through **excavation**.
- **Naturally well-sealed:** According to a report by the Environmental Solutions Initiative at the Massachusetts Institute of Technology (MIT), Salt cavern-based oil storage facilities are also **naturally well-sealed, and engineered for rapid injection** and extraction of oil.
- **Low oil absorbency:** The salt that lines the inside of these caverns has extremely low oil absorbency, which creates a natural impermeable barrier against liquid and gaseous hydrocarbons.
- **US salt cavern-based storage facilities:** The US Strategic Petroleum Reserve are the world's largest emergency oil storage, consists of four sites with deep underground storage caverns created in salt domes along the Gulf of Mexico coast in Texas and Louisiana.
- The entire SPR program of the United States has been **based on salt cavern-based storage facilities**.
- The US strategic oil reserves have a cumulative capacity of around 727 million barrels.

STRENGTHENING INDIA'S STRATEGIC PETROLEUM RESERVES
BOOSTING INDIA'S ENERGY SECURITY

SPR 1- 5.33 MMT (Commissioned)
SPR 2- 6.5 MMT (Proposed)

Taking advantage of low crude prices in International markets, India has purchased 16.71 million barrels of crude in April-May 2020.

India has filled all its Strategic Petroleum Reserves created at Vishakhapatnam, Mangalore and Padur.

₹ 5069 crore
Forex savings

Padur, Mangalore, Vishakhapatnam, Chandikhole

#ParliamentQuestion

#AatmaNirbharBharat

Indian Strategic Petroleum Reserve

- The government of India through Indian Strategic Petroleum Reserve Ltd. (ISPRL) under Phase –1 has setup Strategic Petroleum Reserves (SPR) at three locations with a capacity of 5.33 MMT located at Vishakhapatnam (1.33 MMT), Mangalore (1.50 MMT) and Padur (2.5 MMT) which can be used in emergencies, particularly from serious disruptions in global crude oil supply chain.
- These three SPRs can meet approximately **9.5 days** of national demand. Additionally, the oil marketing companies (OMCs) have storage facilities for crude oil and petroleum products for 64.5 days.
- The International Energy Agency (IEA), a Paris-based autonomous intergovernmental organisation in which India is an 'Association'

- country, recommends that all countries should hold an emergency oil stockpile sufficient to provide 90 days of import protection.
- The country is in the process of expanding its SPR capacity by a cumulative 6.5 million tonnes at two locations — Chandikhol in Odisha (4 million tonnes) and Padur (2.5 million tonnes).
- India's strategic oil reserves come under the **Petroleum Ministry's special purpose vehicle Indian Strategic Petroleum Reserve (ISPRL)**.
- India's strategic oil reserves are part of the effort to build sufficient emergency stockpiles on the lines of the reserves that the US and its Western allies set up after the first oil crisis of the 1970s.
- Crude oil from the reserves are to be released by **an empowered committee set up by the government**, in the event of supply disruptions due to a natural calamity or an unforeseen global event leading to an abnormal increase in prices.
- India has also decided to **commercialize its strategic petroleum reserves**, as part of which the Abu Dhabi National Oil Company (ADNOC) stored about 0.8 million tonnes of crude oil in the Mangaluru strategic reserve.
- In the **second phase** of the program, the government wants to **develop strategic reserves through public-private partnerships** so as to reduce government spending and exploit the commercial potential of the reserves.

Importance of Strategic Petroleum Reserves:

- India is the world's third-largest consumer of crude and for more than 85% of its requirement, it depends on imports.
- Strategic crude oil reserves **help in mitigating major supply disruptions** in the global supply chain.
- Strategic petroleum reserves (SPR) could help **ensure energy security** and availability during global supply shocks and other emergencies.

Indian Scientists Discover New Exoplanet With Mass 13 Times That Of Jupiter

Priority: Medium

Primary Source: The Hindu

Prepp Prelims Booster: Science and Technology

Prepp Mains Booster: Science and Technology- developments and their applications and effects in everyday life. Achievements of Indians in science & technology; indigenization of technology and developing new technology, Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

Context:

- Recently, a team of scientists at the Exoplanet Research Group of the Physical Research Laboratory discovered a new Jupiter-size exoplanet with a mass nearly 13 times that of Jupiter.
- This was the third discovery of an exoplanet by India and was made using indigenous equipment.

What have scientists discovered?

- Researchers from the **Exoplanet Research Group of the Physical Research Laboratory (PRL), Ahmedabad** discovered the presence of a massive giant exoplanet.
- **Massive giant exoplanets are exoplanets with a mass greater than four times the mass of Jupiter.**
- The team which consisted of scientists from India, Germany, and the U.S.A. identified that the exoplanet had a density of -14 g/cm³. This was the highest density of any exoplanet identified to date.

- The newly discovered exoplanet orbits around the star - **TOI4603 or HD 245134**.
- **NASA's Transiting Exoplanet Survey Satellite (TESS)** had initially declared TOI4603 to be a possible candidate to host a secondary body of unknown nature.
- The exoplanet has been named **TOI 4603b or HD 245134b** and is located 731 lightyears away.
- The exoplanet orbits TOI 4603, a giant F-type star, and has an orbital period of 7.24 days.
- ISRO claimed that the discovery is unique as the planet falls in the transition mass range of massive giant planets and low-mass brown dwarfs, ranging from 11 to 16 times the mass of Jupiter.
- Indian scientists at PRL had earlier used the **PARAS spectrograph** and the PRL 1.2m telescope, in order to discover exoplanets K2-236b in 2018 and TOI-17890b in 2021.



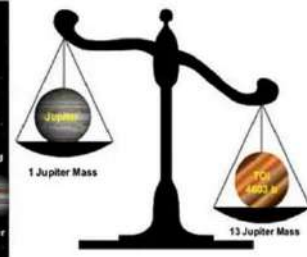
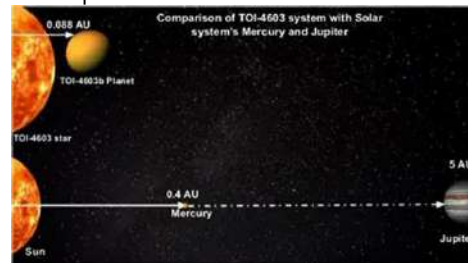
What are exoplanets?

- An **exoplanet is a planet that is located outside the solar system**. Some are part of star systems while others that are not part of any system are called rogue exoplanets.
- NASA has confirmed the existence of more than 5000 exoplanets since the first one was discovered in 1992.
- Exoplanets are classified as:
 - **Terrestrial:** Earth-sized or smaller exoplanets with a rocky or metallic nature. They also possess oceans and an atmosphere.
 - **Super-Earths:** Similar to terrestrial satellites but larger in size. They may or may not have atmospheres.
 - **Neptune-like:** These are larger than super-earths and are similar to Neptune and Uranus. These exoplanets have hydrogen or helium-dominated atmospheres.
 - **Gas Giants:** Exoplanets similar in size or larger than Jupiter and Saturn are called gas giants. This category also includes large planets located close to their host stars, known as "scorching Jupiters".

Nature of TOI 4603 b

- **Exoplanet TOI 4603b is one of the most massive and densest giant planets that follows an orbital path in close proximity to its host star.**
- The distance between the two is less than one-tenth the distance between the Earth and the Sun.
- The planet has a surface temperature of 1670 K and is undergoing high-eccentricity tidal migration with an approximate **eccentricity value** of 0.3.
- The detection of such exoplanets will provide detailed information about the formation, migration, and evolution of massive exoplanets.

- According to the ISRO, TOI-4603b is similar in size to Jupiter but is 50 times closer to its star in comparison to the distance between Jupiter and the Sun.



Indigenous components

- According to ISRO, the massive exoplanet was discovered using a number of tools developed indigenously such as the **PRL Advanced Radial-velocity Abu-sky Search Spectrograph (PARAS)**, which is part of the 1.2 m telescope of the PRL at its **Gurushikhir observatory at Mt.Abu**.
- The use of PARAS made it possible to precisely measure the planet's mass.
- The team confirmed TESS's declaration and identified it as a planet by measuring the mass of the secondary body using PARAS.

Chinese Mission With First Civilian Reaches Space

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Science and technology

Prepp Mains Booster: Space Technology

Context:

- Recently, **China sent three astronauts to its Tiangong space station, placing a civilian into orbit for the first time as it works toward sending a crewed mission to the Moon by 2030.**
- **The Shenzhou-16** was launched on a Long March-2F rocket from the Jiuquan Satellite Launch Centre in northwest China's Gobi Desert.

What is the new mission all about?

- The three astronauts will replace the crew of Shenzhou-15 at the Tiangong space station, who have been there since November of last year.
- The new crew will stay for the next five months and conduct large-scale in-orbit testing and research in several disciplines as scheduled.
- They are projected to accomplish high-level scientific discoveries in the investigation of unique quantum phenomena, high-precision space time-frequency systems, the verification of general relativity, and the genesis of life.

What is the Tiangong space station?

- The Tiangong space station, operated by the China Manned Space Agency (CMSA), was built by China after the United States forbade NASA from engaging with the Asian country, claiming a significant danger of espionage.
- The first module of the permanently manned space station entered orbit in 2021, and two additional modules were added to it in the years that followed.
- The Tiangong space station, which is projected to become the sole in-orbit outpost for scientific study once the International Space Station's activities conclude in 2030, is China's ambitious effort to realize its space aspirations.

- The country has previously announced that it intends to extend it, with the next module docking with the present T-shaped space station to form a cross-shaped structure.

What is the China Manned Space Programme?

- In 1992, the Chinese government decided to establish a manned space program utilizing a "three-step" technique known as the China Manned Space Program.
 - The first phase is to launch manned spaceships to learn fundamental human space technology.
 - The second phase is to establish Space Labs in order to achieve technical breakthroughs in R&D and to accommodate long-term human-tended use on a modest scale.
 - The third phase is to build China's Space Station to support long-term man-tended use on a huge scale.
- It is operated by the China Manned Space Agency.

Significance of the launch

- The Shenzhou-16 will be the first crew mission after China's space station programme entered the stage of application and development.
- Once ready, China will be the only country to own a space station as the **International Space Station (ISS)** of Russia is a collaborative project of several countries. The ISS station is also set to be decommissioned by 2030.
- The significant feature of China's space station is its two robotic arms, especially the long one which has the ability to grab objects, including satellites from space.
- After entering orbit, the Shenzhou-16 spacecraft will perform a quick, automated rendezvous and docking with the space station combination.
- The launch also marks the 475th flying mission of the Long March carrier rocket series.



What are India's Space Station Programmes?

- India has a number of space station programmes in the works. The most ambitious is the Gaganyaan project, which aims to send a crew of astronauts to space by 2023.
- The Gaganyaan project will be a major milestone for India's space programme, and will pave the way for the construction of a permanent space station.
- In addition to the Gaganyaan project, India is also working on a number of smaller space station programmes.
 - These include the Aditya-1 mission, which will study the sun, and the Chandrayaan-3 mission, which will explore the moon.
 - These missions will provide valuable data that will be used in the design and construction of a permanent space station.

- India's space station programmes are a major undertaking, and will require a significant investment of time and money.
- However, the benefits of having a permanent space station are enormous. A space station would allow India to conduct a wide range of scientific experiments, and would also provide a platform for commercial ventures such as space tourism.
- India's space station programmes are a sign of the country's growing ambition in space. With these programmes, India is well on its way to becoming a major player in the global space race.

Indian Space Policy 2023

- [The Indian Space Policy 2023](#) is a comprehensive set of guidelines that outlines the roles and responsibilities of different entities in the Indian space sector.
- The policy is expected to pave the way for much-needed clarity in space reforms and encourage private industry participation in the space economy.
- It aims to encourage and institutionalize private sector participation in India's space sector, with the Indian Space Research Organisation (ISRO) primarily focusing on research and development of advanced space technologies.
- It will provide the private sector with greater access to ISRO's infrastructure, technology and expertise to support their space-related activities.
- The Indian Space Policy-2023 permits non-government entities (NGEs) to offer national and international space-based communication services, through self-owned, procured or leased geostationary orbit (GSO) and non-geostationary satellite orbit (NGSO) satellite systems.
- The policy encouraged NGEs to manufacture and operate space transportation systems, including as launch vehicles and shuttles, as well as design and develop reusable, recoverable, and adaptable space transportation technologies and systems.
- According to the strategy, ISRO, as the national space agency, would prioritize research and development of new space technology and applications, as well as improving human understanding of outer space.

ISRO's GSLV-F12 Successfully Places Navigation Satellite NVS-01 Into Intended Orbit

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Science and Technology

Prepp Mains Booster: Science and Technology- developments and their applications and effects in everyday life; Achievements of Indians in science & technology; Indigenization of technology and development of new technology; Awareness in the fields of IT, Space

Context:

- Recently, the Indian Space Research Organisation successfully launched the first of the five **second-generation satellites for the Navigation by Indian Constellation (NavIC)**.
- The 2,232 kg satellite was launched using a Geosynchronous Satellite Launch Vehicle or GSLV rocket, which will add to India's regional navigation system and provide accurate and real-time navigation.

Navigation Satellite NVS-01

- The NVS-1 is the first satellite of the next-generation NavIC satellite aimed to **augment the navigational capabilities of the country**.

- **Atomic Clock:** The space-qualified Rubidium atomic clock **indigenously developed** by Space Application Centre-Ahmedabad. It is an important technology that only a handful of countries possess.
- A satellite-based positioning system determines the location of objects by **accurately measuring the time it takes for a signal** to travel to and back from it using the atomic clocks on board, **failure of clocks** means the satellites are no **longer able to provide accurate locations**.
- **L1 signals for better use in wearable devices:** The second-generation satellites will send signals in a third frequency, L1, besides the L5 and S frequency signals that the existing satellites provide, **increasing interoperability with other satellite-based navigation systems**.
- The **L1 frequency** is among the most commonly **used in the Global Positioning System (GPS)**, and will increase the use of the **regional navigation system in wearable devices** and personal trackers that use low-power, single-frequency chips.
- **Longer mission life:** The second-generation satellites will also have a longer mission life of more than 12 years. The existing satellites have a mission life of 10 years.



Navigation with Indian Constellation (NavIC)

- ISRO has established a **regional navigation satellite system** called Navigation with Indian Constellation (NavIC) to meet the positioning, navigation, and timing requirements of the nation
- NavIC was erstwhile known as Indian Regional Navigation Satellite System (IRNSS).
- NavIC is **designed with a constellation of 7 satellites** and a network of ground stations operating 24 x 7.
- Three satellites of the constellation are placed in **geostationary orbit**, and four satellites are placed in inclined geosynchronous orbit.
- **NavIC offers two services:** Standard Position Service (SPS) for civilian users and Restricted Service (RS) for strategic users.
- NavIC SPS signals are interoperable with the other global navigation satellite system (GNSS) signals namely GPS, GLONASS, Galileo, and BeiDou

Significance of a regional navigation system

- India is the **only country** that has a regional satellite-based navigation system. There are four global satellite-based navigation systems —
 - the American GPS,
 - the Russian GLONASS (GLObalnaya NAvigatsionnaya Sputnikovaya Sistema),
 - the European Galileo, and
 - the Chinese Beidou.
- Japan has a four-satellite system that can augment GPS signals over the country, similar to India's GAGAN (GPS Aided GEO Augmented Navigation).
- **Coverage:** NavIC provides coverage over the Indian landmass and up to a radius of 1,500 km around it. In this region, NavIC signals will likely be available in even hard-to-reach areas.
- Unlike GPS, **NavIC uses satellites in high geo-stationary orbit** — the satellites move at a constant speed relative to Earth, so they are **always looking over the same region on Earth**.
- **NavIC signals come to India at a 90-degree angle**, making it easier for them to reach devices **located even in congested areas, dense forests, or mountains**.
- Work is underway to set up ground stations in Japan, France, and Russia.
- **Precision:** Once the NavIC system is fully operational, utilizing ground stations located outside India to enhance the triangulation of signals, the open signals provided by **NavIC will have a precision of up to 5 meters**.
- In comparison the restricted signals will have an even higher level of accuracy. On the other hand, GPS signals generally have an accuracy of around 20 meters.

Applications:

- Transportation (terrestrial, aerial and marine)
- Location based services
- Personal mobility
- Resource monitoring
- Surveying and geodesy
- Scientific research
- Time dissemination and synchronization
- Safety-of-life alert dissemination

India Gifts Missile Corvette INS Kirpan To Vietnam

Priority: Medium



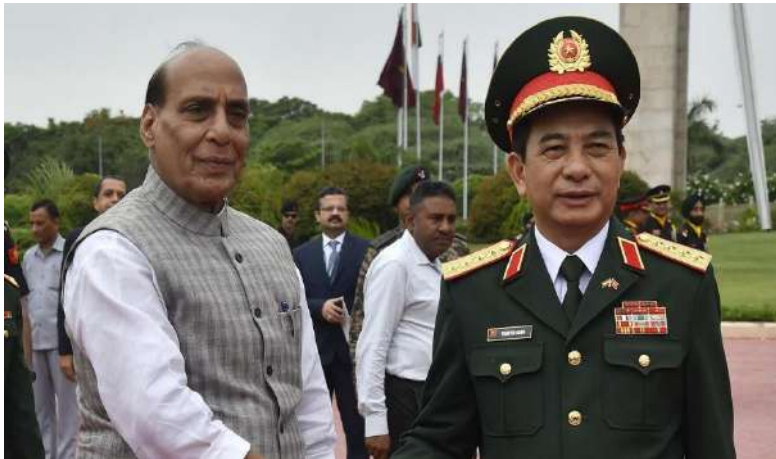
Primary Source: The Hindu

Prepp Prelims Booster: International Relations

Prepp Mains Booster: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests

Context:

- Recently, **India gifted the indigenously-built in-service missile corvette INS Kirpan to Vietnam** to enhance that country's naval capabilities.
- Defence Minister Rajnath Singh and his Vietnamese counterpart General Phan Van Gang engaged in bilateral talks recently, during which they reviewed the progress of various defence cooperation initiatives.
 - The discussions primarily focused on two key areas: **enhancing cooperation between the defence industries of India and Vietnam and strengthening maritime security**.



Background

- In June 2022, **India and Vietnam established closer ties by signing a Memorandum of Understanding (MoU) on mutual logistics support.**
- This significant event took place in the presence of both countries' Defense Ministers, solidifying their commitment to enhancing defense cooperation.
- **Assuring Vietnam of all possible help in modernizing its armed forces,** India has last year handed over 12 high speed guards boats built under a \$100 million line of credit to the country.
- The Defense Ministers also signed the "**Joint Vision Statement on India-Vietnam defense partnership towards 2030,**" a document that outlines the shared goals and objectives for strengthening the defense partnership between the two nations.
- This **collaboration is expected to substantially expand and improve the existing defense cooperation between India and Vietnam.**

About INS Kirpan

- INS Kirpan is a **formidable Khukri-class missile** corvette with a displacement of approximately 1,350 tonnes. It joined the Indian Navy's fleet on January 12, 1991.
- This remarkable vessel spans a length of 91 meters and has a beam of 11 meters, facilitating its exceptional maneuverability.
- With a remarkable top speed exceeding 25 knots, INS Kirpan possesses swift and agile capabilities.
- Equipped with various advanced weaponry, the ship boasts a medium-range gun, 30 mm close-range guns, chaff launchers, and surface-to-surface missiles.
- This impressive arsenal empowers INS Kirpan to fulfill a diverse range of roles, including coastal and offshore patrol, coastal security, surface warfare, anti-piracy operations, as well as **Humanitarian Assistance and Disaster Relief (HADR)** missions.

Why is India increasing defense ties with other countries?

- China's persistent deployment of warships and survey vessels in Vietnam's exclusive economic zone has further escalated tensions in the already volatile South China Sea, where Beijing has been asserting expansive territorial claims.
- In response to China's incremental encroachment tactics, India has taken proactive measures to enhance its defense cooperation with ASEAN nations such as Vietnam, Indonesia, Singapore, and the Philippines.
- These efforts include increased joint military exercises, military exchanges, and training programs, aimed at bolstering regional security and countering China's assertiveness.

Significance of gifting INS Kirpan to Vietnam

- **Enhance Maritime Security:** The missile corvette will become the second largest in Vietnam's arsenal and provide a cost-effective solution for Vietnam's coastal defence and patrol operations. It will allow the Vietnamese Navy to effectively address a wide range of maritime security challenges.
- **Deepening Mutual Cooperation for Further Growth:** It signifies the deepening alliance between Vietnam and India, which has been steadily growing over the past decade. Both Ministers identified means to enhance existing areas of collaboration, especially in the field of defence industry cooperation, maritime security, and multinational cooperation.
- **Strengthening India's Look East Policy:** India's strategic partnership with Vietnam is a crucial component of India's Act East Policy and broader vision for the Indo-Pacific region. The Look East Policy aims to foster economic cooperation, cultural ties, and strategic relations.

About Vietnam

- Vietnam is a Southeast Asian country located on the easternmost part of the Indochinese Peninsula.
- It is bordered by China to the north, Laos to the northwest, Cambodia to the southwest, and the South China Sea to the east and south.



Relation between India and Vietnam

- **Historical and Cultural Ties:** India and Vietnam have ancient cultural and historical connections that date back to the 2nd century AD when Indian traders and monks visited Vietnam, bringing with them Hinduism and Buddhism.
- **Diplomatic Relations:** India and Vietnam established diplomatic relations on January 7, 1972. Since then, the two countries have continued to strengthen their bilateral ties through regular high-level visits and exchanges.
- **Strategic Partnership:** India and Vietnam have shared a Comprehensive Strategic Partnership since 2016 and defence cooperation is a key pillar of this partnership. Vietnam is an important partner in India's 'Act East' policy and the Indo-Pacific vision.
- **Economic and Trade Relations:** Economic cooperation is a vital aspect of the India-Vietnam relationship. Bilateral trade between the two countries has witnessed significant growth, with a focus on sectors such as textiles, pharmaceuticals, agriculture, information technology, and oil exploration.
- **Regional Cooperation:** India and Vietnam collaborate within various regional frameworks, including the Association of Southeast Asian Nations (ASEAN), the East Asia Summit (EAS), and the Mekong-Ganga Cooperation (MGC).

- **People-to-People Exchanges:** Cultural and educational exchanges play an important role in strengthening the relationship between India and Vietnam. The Indian Council for Cultural Relations (ICCR) offers scholarships to Vietnamese students, and there are several Indian cultural centers in Vietnam promoting Indian art, dance, music, and language.

'Agni Prime' Ballistic Missile

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: Science and technology

Prepp Mains Booster: Indigenization of technology and development of new technology

Context:

- Recently, the New Generation Ballistic Missile 'Agni Prime' was successfully flight-tested by Defence Research and Development Organisation (DRDO) from Dr APJ Abdul Kalam Island off the coast of Odisha.
- All objectives were successfully demonstrated, during the flight test

About Agni Prime Missile

- According to the DRDO, Agni-P is a **two-stage canisterised solid propellant** ballistic missile with dual redundant navigation and guidance system.
- It has a strike range from **1,000 to 2,000 km**.
- It is a **surface-to-surface** ballistic missile
- It is lighter than all the earlier Agni series of missiles.
- Agni-Prime incorporates new propulsion systems and composite rocket motor casings as well as advanced navigation and guidance systems.
- It is capable of delivering nuclear warheads
- Agni-Prime is also a **canister-launch system** like the **country's first intercontinental ballistic missile (ICBM)**, the over 5,000-km Agni-V, which is now in the process of being inducted by the SFC.
- A canister-launch missile gives the armed forces the **requisite operational flexibility to store** it for long periods, swiftly transport it through rail or road when required, and fire it from wherever they want.



Significance of launch

- It was the **"first pre-induction night launch"** of the Agni-Prime conducted by the **tri-service Strategic Forces Command (SFC)**, which handles the country's nuclear arsenal.
- Range Instrumentation like Radar, Telemetry, and Electro-Optical Tracking Systems were deployed at different locations, including two down-range ships, at the terminal point to capture flight data covering the entire vehicle trajectory.
- The Agni-Prime will gradually replace the Agni-I (700-km) missiles in the arsenal of SFC, which also has the Prithvi-II (350-km), Agni-II (2,000-km), Agni-III (3,000 km) and Agni-4 (4,000-km) ballistic missiles.
- Along with Agni-V, the new missile would provide India with stronger deterrence against both China and Pakistan.

India's nuclear doctrine

- India's nuclear doctrine was promulgated in 2003, commits to "no first use", with weapons to be used only in retaliation against a nuclear attack on Indian territory or Indian forces.
- The doctrine states nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage.
- Retaliatory attacks **can only be authorized by the civilian political leadership** through the Nuclear Command Authority consisting of a political council and an executive council.
- The Prime Minister chairs the political council, while the national security advisor chairs the executive council

A Foucault Pendulum Swings Inside The New Parliament

Priority: Low



Primary Source: The Hindu

Prepp Prelims Booster: Current events of National Importance

Prepp Mains Booster: Parliament and State legislatures—structure, functioning, the conduct of business, powers & privileges and issues arising out of these; Infrastructure, Science & Technology

Context:

- India's newly inaugurated Parliament building features a Foucault Pendulum installed by the National Council of Science Museums (NCSM).
- The pendulum, designed to depict the Earth's rotation, hangs from the 'Constitutional Gallery' portion of the building.
- NCSM previously installed successful pendulums in Pune and Brisbane, demonstrating the usefulness of this instrument in showcasing the Earth's rotation.



About Foucault Pendulum

- Named after French scientist Léon Foucault, the pendulum is a simple yet effective device.
- A heavy bob swings from a wire attached to the ceiling, and the plane of its swing appears to rotate in a circle as the Earth completes one rotation.
- The pendulum serves as a symbol of scientific inquiry and the spirit of exploration.
- The Foucault Pendulum in India's Parliament represents the idea of the nation in relation to the cosmos.
- It adds a modern touch to the Constitution Hall, which also houses a digitized copy of the Indian Constitution.
- Foucault's pendulum is widely found in science museums globally, playing a significant role in educating children about the Earth's rotation and fostering scientific understanding.

ISRO, Norway And The 'Svalbard Mission' Of 1997

Priority: High



Primary Source: The Hindu

Prepp Prelims Booster: Science and Technology

Prepp Mains Booster: Science and Technology- developments and their applications and effects in everyday life. Achievements of Indians in science & technology; indigenization of technology and developing new technology. Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights, Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

Context:

- Recently, officials from Norway and India agreed on the importance of maintaining a continued partnership and encouraging new initiatives in the field of space exploration and technology.

Svalbard launch

- The Indian space research programme was initiated by the launch of the **U.S.-made Nike-Apache sounding rocket** from the Thumba launching station in 1963, after which Indian scientists have conducted regular upper atmospheric studies via sounding rockets.
- A tender floated by the Norwegian Space Agency for a rocket to conduct upper atmospheric studies from the new testing range in Svalbard was won by Antrix- the commercial arm of the ISRO.
- As part of the mission, a Rohini RH-300 Mk-II sounding rocket was launched from **Ny-Alesund in Svalbard, Norway** by the ISRO.
- The solid propellant-powered rocket was developed by the Vikram Sarabhai Space Centre (VSSC) in Thiruvananthapuram and was then shipped from India to Norway after it was qualified for the Arctic weather conditions.
- It was necessary to qualify the Rohini rockets as they had only been previously used in the tropical hot and humid conditions experienced in India while the Svalbard archipelago experienced extremely low temperatures due to its location in the Arctic Ocean.

What was the outcome of the launch?

- The rocket, which was **renamed Isbjorn-I (meaning Polar Bear) by the Norwegian Space Center** was launched on 20th November 1997, but it did not reach the elevation expected by scientists as the **rocket rose only to a height of 71 Km.**
- **Scientists used a velostat shroud to cover the rocket in order to maintain its ambient temperature at 18° Celsius.**
- **However, the shroud was not pierced through by the rocket during launch as planned by the scientists.**

- The rocket dragged the shroud along with it and the increased drag associated with it was the reason why the rocket did not rise to the expected height.
- According to ISRO veterans, P. V. Manoranjan Rao and P. Radhakrishnan in their book, 'A Brief History of Rocketry in ISRO.' (2012), the Norwegians expressed satisfaction with the launch as the data collected during the flight produced new and interesting findings.

New space ties between India and Norway

- The visit by the Norwegian Ambassador to India, Hans Jacob Frydenlund, to the ISRO headquarters in June 2023 indicated a commitment to strengthen cooperation in the space sector between the two countries.
- Following a meeting between the Ambassador, the ISRO chairman, and other officials from the Kongsberg Satellite Service (KSAT), the ISRO stated that there was a mutual agreement between India and Norway regarding the sustained partnership and regular interactions between the two countries in space exploration and technology.



India Norway Relations

- India and Norway have enjoyed a cordial relationship since relations were established between the two countries in 1947.
- **Prior to Independence, a Danish-Norwegian trading station was established in Tranquebar (Tharangambadi), Tamil Nadu in the 17th Century.**
- In 1952, the **India Fund** was established with the objective of providing development assistance with a focus on fisheries.
- Norway has expressed support for India's claim to membership of export control regimes such as the **Missile Technology Control Regime (MTCR), the Wassenaar Arrangement (WA), and the Australia Group (AG).**

Economic Relations:

- The Norwegian Pension Fund Global is likely one of India's largest single foreign investors with investments worth \$9.5 billion, as of 2019.
- Norway's exports to India include nonferrous metals, natural gas, plastic in primary form, crude minerals, and chemicals.
- Norway's imports from India include apparel and accessories, textile yarns, metal manufactures, rice, and other miscellaneous manufactured goods.
- India revised its Double Taxation Avoidance Agreement (DTAA) which was signed with Norway in 1986 in 2011.
- **India Strategy:** In December 2018, the Government of Norway launched a new 'India Strategy' which has set out clear priorities for

the Norwegian government to develop bilateral cooperation with India. **The five pillars of the Strategy are**

○ **Democracy and a rules-based world order**

○ **Oceans**

○ **Energy**

○ **Climate and Environment**

○ **Research, higher education, and global health**

● **Blue Economy:**

○ The **India-Norway Task Force on Blue Economy for Sustainable Development was launched jointly in 2020.**

○ The Task Force aimed to develop and implement joint initiatives between the two countries and mobilize stakeholders from both countries at the highest level.

● **Cooperation in Various Fields:**

○ Norway, with the world's fifth-largest commercial fleet, is cooperating closely with India in ship recycling and shipbuilding activities.

○ The two countries are also partners in the education sector as major institutions in India such as the Indian Institute of Technology-Madras and the Institute of Wind Energy in Chennai have collaborated with Norwegian institutes.

○ The Norwegian company, Piql was involved in the digitization of India's historical monuments such as the **Taj Mahal, Dholavira in Gujarat, and the Bhimbhetka Caves in Madhya Pradesh.**

● **Climate investments:**

○ Norway has expressed intent to invest \$1 billion in the next five years in climate investments, clean energy, and ocean technology in various countries including India. India's vast potential for solar energy makes it a suitable partner for partnership with Norway.

○ Norway is also collaborating with the National Institute of Wind Energy to expand Wind energy infrastructure in India.


● **Science and Technology:**

○ India's Polar Research Station "**Himadri**" which was established at Ny Alesund in Svalbard, Norway in 2008 hosts teams of researchers each year.

○ **IndARC** was deployed in 2014 at Kongsfjorden fjord, Svalbard, Norway as India's first underwater moored observatory in the Arctic region with the goal of studying the Arctic climate and its influence on the monsoon.

○ India and Norway have also initiated projects to combat marine litter and plastic pollution.

Clay The Solution For Safe Disposal Of Biomedical Waste, Say IIT-G Scientists

Priority: Medium 

Primary Source: Down to Earth

Prepp Prelims Booster: Science and Technology

Prepp Mains Booster: Science and Technology- developments and their applications and effects in everyday life. Achievements of Indians in science & technology; indigenization of technology and developing new technology Conservation, environmental pollution and degradation, environmental impact assessment.

Context:

- Recently, a study by scientists from IIT-Guwahati has proposed the use of compost natural clay to neutralize pathogens in waste.
- Countries like India have struggled with the segregation, treatment, and safe disposal of waste, especially medical waste.
- The study aimed to tackle the problems of segregation and disposal of pathogenic medical waste which were highlighted by the Covid-19 pandemic.

What are the findings of the study by scientists from IIT-G?


- They proposed to use **natural compost clay because of its ability to neutralize pathogens.**
- The data obtained from the study revealed that there is a 99.6% reduction in viral contamination as well as very low diffusion rates when using compacted clays like bentonite and kaolin.**
- The researchers claimed that the data helped them confirm that the **powder forms of bentonite and kaolin can prevent viral contamination** from entering the environment from landfills.
- The study revealed that **viral decay was quicker on bentonite as compared to kaolin clay.**

- **Bentonite:** It is a highly plastic clay containing not less than 85% clay mineral called montmorillonite. It was notified as a **minor mineral** by the Union Government in 2015.
- Bentonite clay is a natural clay with a fine, soft texture that is used to treat rashes and acne, or as a hair mask.
- **Kaolin:** Kaolin (China clay) is a layered silicate mineral that is used in ceramics, toothpaste, medicine, coated paper, food additives, and as a light-diffusing material. It has also been notified as a minor mineral by the Union Government.

Newcastle disease virus

- The study also considered the implications for waste management during disease outbreaks like the **Newcastle disease Virus** in poultry.
- The Newcastle disease virus was chosen for the study as it is a relatively safer substitute for the coronavirus in terms of experimental studies.
- The Newcastle Disease Virus or **Ranikhet disease** is a contagious and infectious viral pathogen that is one of the most common viral diseases in poultry affecting more than 250 bird species globally.
- It has been reported from most states including Uttarakhand, Gujarat, Rajasthan, Tamil Nadu and Kerala.
- It is caused by the **Paramyxovirus** and affects the respiratory, nervous, and digestive systems of birds.
- Symptoms:** Coughing, sneezing, nasal discharge, and greenish/watery diarrhea.
- It is an airborne virus that spreads through poultry. It is not fatal but can be a threat to the lives of infected birds if medication is not administered on time.
- The disease can be controlled by mass vaccination using a modified live vaccine.
- According to the researchers, a large amount of pathogenic waste is generated during an NDV outbreak in the form of carcasses, contaminated litter, farm bedding, and other contaminated objects (fomites).
- The removal efficiency of the NDV depended on the quality of bentonite and multilayer sorption of the virus on clay surfaces.

Leipzig Transport Summit: Decarbonise Now; Save On Road, Rail And Airport Maintenance, Advises Report

Priority: Medium 

Primary Source: Down to Earth

Prepp Prelims Booster: Leipzig Transport Summit

Prepp Mains Booster: - Conservation, environmental pollution and degradation, environmental impact assessment, Important International institutions, agencies and for- their structure, mandate, Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

Context:

- Recently, the **ITF Transport Outlook 2023 prepared by the International Transport Forum of the Organization for Economic Cooperation and Development (OECD)** stated that a mix of policies was needed to promote sustainable models.
- The report has suggested that the **adoption and acceleration of decarbonization in the transport sector will help it reduce CO2 emissions by 80% in the next 25 years, thereby ensuring compliance with the goals of the Paris Agreement.**



Leipzig Summit

- The meeting of the 64 member countries of the ITF, represented by their Transport Ministers was organized at Leipzig, Germany in May 2023.
- As part of the three-day summit, the ministers discussed topics such as climate change, Ukraine, supply chain resilience, and active mobility under the theme of **“Transport Enabling Sustainable Economies.”**
- The event was attended by around 1300 delegates from more than 80 nations.
- The United Kingdom holds the Presidency of the Summit.
- The Annual Summit is the world’s largest gathering of Transport Ministers and a global platform for dialogue on transport policy.



What are the findings of the ITF Outlook?

- The **ITF Transport Outlook 2023 has claimed that decarbonization can help achieve the goals of the Paris Agreement.**
- Acting promptly and adopting practices to decarbonize the transportation sector instead of following the present strategies can lead to a reduction in future investment in core infrastructure sectors such as roads, railways, and ports.

- A mixed policy framework is expected to produce benefits in multiple contexts, but in the transportation context, this requires investment in public transport infrastructure and the adoption of policies in favor of compact cities and modes of transport with higher occupancy and load factors.
- The Leipzig summit concluded that such **policies could help governments save up to \$4 trillion globally on road maintenance and investment.**
- An increase in the adoption of decarbonization strategies could lead to a reduction of CO2 emissions by around 80% over the next 25 years in comparison to 2019 levels.
- As a result, the transport sector could contribute significantly towards controlling the global temperature increase to well within the 2°C above pre-industrial levels limit set by the Paris Climate Agreement.

What needs to be done?

- According to ITF Secretary-General Young Tae Kim, a combination of complementary policies that successfully **avoid unnecessary transport activity, enhances the shift from fuel-burning to carbon-free transport and improves the general efficiency of transport.**
- He also recommended that it was essential to scale up cost-competitive technologies and fuels which will enable the movement of people and goods with substantially lesser levels of emissions.
- However, this had to be implemented at the earliest and at the quickest possible pace so that the most benefits could be enjoyed.
- The ITF has projected that the **investment and total capital requirements in core infrastructure sectors such as road, rail, airports, and ports under the ambitious scenario outlined in the Report would be 5% less than under present models.**
- The report claimed that the decarbonization strategy was not more expensive than the present levels of investment in the transport sector.

What is the ITF?

- The International Transport Forum at the [OECD](#) is an intergovernmental organization that performs the role of a think tank for transport policy and organizes the Annual Summit of Transport Ministers.
- The **ITF is integrated administratively with the OECD but is a politically autonomous organization.**
- It is the only organization in the world which deals with matters related to all forms of transport.
- The Secretariat of the ITF is based at the OECD in Paris, France.
- The ITF’s main responsibility is to foster a deeper understanding about the role played by the transport sector in economic growth, environmental sustainability, and social inclusion and to ensure the development of enhanced transport policies.
- **Functions:**
 - Organizing global dialogue for an improved transport sector
 - Acts as a platform for discussion and negotiation of all policy matters related to transport
 - Analyzes trends, shares knowledge, and promotes knowledge transfer among policymakers and civil society
- **Partnership with India:**
 - In **2020, a Decarbonizing Transport in Emerging Economies project (DTEE) was launched by the Niti Aayog and the ITF.** It is a five-year project that will help India develop a pathway toward a low-carbon transport system through the development of policy and modeling tools.

- In 2022, a contract was signed between the ITF and the Technology Information, Forecasting and Assessment Council, India (TIFAC) to support the ITF's activities in the Indian transport sector.

Sargassum Plagues Cancun Coast

Priority: Medium

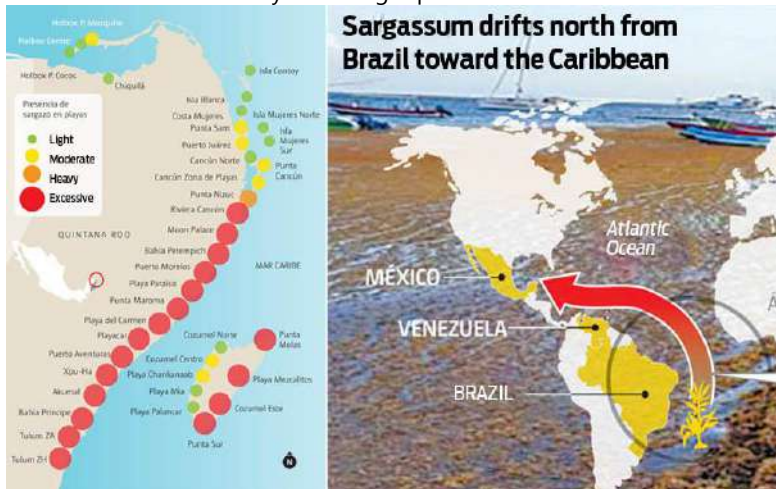
Primary Source: The Hindu

Prepp Prelims Booster: Sargassum sea weed

Prepp Mains Booster: Environmental pollution and degradation

Context:

- Recently, Multiple beaches in Cancun and the northern part of the Mexican Caribbean state are seeing unusually high levels of sargassum.
- Sargassum seaweed is a type of macroalgae that forms over the Atlantic Ocean each year in large quantities.



What Is Sargassum?

- Sargassum is a genus of **large brown seaweed (a type of algae)** that floats in island-like masses and never attaches to the seafloor.
- The foul-smelling but harmless seaweed is a perennial issue for Caribbean destinations like Cancun, which see huge quantities of the macroalgae wash up on their shores yearly.
- The sargassum season typically begins in late February to early March, although this year, it seems to have begun earlier.

Reasons behind the influx of sargassum

- The incidence and size of algal blooms in the Caribbean and West Africa has been growing due to **rising water temperatures, fertilizer release into the ocean** and increased Sahara dust clouds, which stimulate algal growth.
- **Sea currents** have made the beaches of the Mexican state of Quintana Roo a leading arrival point for the annual surge.

Significance of sargassum

- Sargassum provides **refuge for migratory species and essential habitat** for some 120 species of fish and more than 120 species of invertebrates.
- It's an important **nursery habitat** that provides shelter and food for **endangered species such as sea turtles** and for commercially important species of fish such as tunas.

Negative impact of Sargassum:

- **Fishing industry:** These "seaweed tides" **can harm tourism-based economies**, threaten aquaculture or disrupt traditional artisanal fisheries.

- Massive seaweed blooms damage fishing gear, boat engines and other fishing assets and have clogged fishing harbors and mooring sites across the eastern Caribbean.
- **Environment:** The sargassum influxes are causing increasing damage to the environment, biodiversity and coastal ecosystems. For example, decaying sargassum can smother coral reefs and restrict vital oxygen to fish in coastal areas. Marine mammals and turtles often drown when they become entangled in the algae.
- **Health:** Sargassum can cause headaches, nausea and breathing difficulties because it releases toxic gases when it decays along the shore

What is Sargasso sea?

- The Sargasso Sea is a vast patch of ocean named for a genus of free-floating seaweed called Sargassum
- The Sargasso Sea, located entirely within the Atlantic Ocean, is the only sea without a land boundary.
- It is defined only by ocean currents. It lies within the Northern Atlantic Subtropical Gyre. The Gulf Stream establishes the Sargasso Sea's western boundary, while the Sea is further defined to the north by the North Atlantic Current, to the east by the Canary Current, and to the south by the North Atlantic Equatorial Current.
- The Sargasso Sea is a **spawning site for threatened and endangered eels**, as well as white marlin, porbeagle shark, and dolphinfish.
- Humpback whales annually migrate through the Sargasso Sea.
- Commercial fish, such as tuna, and birds also migrate through the Sargasso Sea and depend on it for food.

CSE-DTE Mark World Environment Day With Release of State of India's Environment 2023: In Figures

Priority: Medium

Primary Source: Down to Earth

Prepp Prelims Booster: Environment

Prepp Mains Booster: Conservation, environmental pollution and degradation, environmental impact assessment.

Context:

- Recently, the State of India's Environment 2023 Report was released by the Centre for Science and Environment and Down To Earth on June 4th, 2023.
- The report has ranked India's states on the basis of their performance on parameters such as environment, agriculture, public health, and infrastructure.

What is the State of India's Environment Report 2023?

- The report is the **annual compendium published by the Center for Science and Environment (CSE) and Down To Earth that focuses on climate change, migration, health, and food systems.**
- It also covers biodiversity, forest and wildlife, energy, industry, habitat, pollution, waste, agriculture, and rural development and statistics on the state of climate and extreme weather, health, food and nutrition, migration and displacement, agriculture, energy, waste, water, and biodiversity.
- The CSE is a public interest research and advocacy organization based in New Delhi while DTE is a fortnightly published from New Delhi.
- The **2023 edition of the Report aims to describe India's environmental performance, its fallings, its achievements in moving towards a sustainable existence, and the existence of any gaps in data.**

- The report aims to quantify the problems faced in India's environment and indicate where they exist.
- The analysts behind the report claimed that it was based on government and official sources with the data standardized to make them comparable.
- According to the methodology mentioned in the report, differential weightages were assigned to the indicators on the basis of which the final scores and rankings were computed.

Statewise Performance

- **In terms of overall performance, Telangana is ranked first mainly on account of its increasing forest cover and advances in municipal waste treatment.**
- The report also noted that Telangana's performance is below average on parameters such as the share of waterbodies that are not in use, the stage of groundwater extraction, and the change in the number of polluted river stretches.
- **Telangana is followed by Gujarat, Goa, and Maharashtra.**
- **The bottom three states are Rajasthan (lowest-ranked), Nagaland, and Bihar while six of the ten lowest-ranked states are from the northeast including Assam.**
- **Madhya Pradesh is the top-ranked state in agriculture**, on the back of its increased foodgrain production and the highest share of net value added. However, the report cautioned that around half the crop area in the state is not insured.
- Madhya Pradesh is followed by Andhra Pradesh, Chhattisgarh, and Uttar Pradesh while Delhi, Goa, and Meghalaya are among the bottom-ranked states.
- **In terms of public health, Delhi is ranked first for its robust network of healthcare facilities and has allocated the highest share of its budget for health.** The report noted that Delhi's performance in immunization was very low.
- Sikkim, Goa, and Mizoram were the next top-ranked states in public health while Madhya Pradesh was ranked last due to its high maternal mortality ratio and infant mortality rate. Chhattisgarh, Assam, and Uttar Pradesh are other states that are ranked low on the public health criteria.
- **On public infrastructure and human development, Gujarat was top of the list due to its efforts in providing employment and tap-water connections.**
- However, Gujarat was ranked low in terms of its sex ratio and has a high proportion of households using unclean cooking fuels. Jharkhand is ranked last, with Nagaland, Rajasthan, and Arunachal Pradesh ranked just above it.
- The three major lessons learned from the assessment are:
 - Even the top-ranked states in each theme are struggling in some indicators
 - None of the states perform well across all four themes that are critical for sustainable development
 - Small states like Goa and Sikkim are performing well.

What are the other key findings of the Report?


- The report found that a poor grievance redressal rate translated into a declining number of complaints on the **SUP-CPCB, a mobile app developed by the Central Pollution Control Board in July 2022 for citizens to complain about the illegal use and sale of plastic**, following the ban on single-use plastics in India.
- **In 2021, India generated over 1,60,000 tonnes of municipal solid waste per day of which 32% remained unaccounted for.** The unaccounted waste was found to have been either burnt or dumped into drains, leading to choking.

- However, the report claimed that India's performance in waste treatment and monitoring has improved.
- The report also found that the **average life expectancy of people in India is most likely to have fallen by 4 years and 11 months as a consequence of air pollution in 2002.**
- The rural population's life expectancy is likely to have been reduced by 5 years and 2 months while the life expectancy of those in urban areas was 9 months longer.
- The report recommended that **rural India needs 35 % more community health centers.**
- The report also claimed that strong evidence is emerging on the efficacy of traditional and regenerative farming methods.
- **In 2022, India experienced extreme weather events on 314 out of 365 days which caused losses of over 3,026 lives and damage to 1.96 million hectares of crop area.**
- The report also noted that heatwaves were common in the first part of 2022, and hailstorms were the predominant extreme weather phenomena in 2023.
- According to the report, over 60 million newly displaced people were observed globally, which is majorly attributed to the war in Ukraine and the effects of La Nina.
- **In India, 2.51 million new displacements were observed, of which nearly 100% are due to climate-related disasters.**
- According to the report, there is a significant backlog of environmental cases in Indian courts. The courts would need to decide 245 cases every day in order to clear the backlog.
- Over the past five years, **India's overall global rank on SDGs has dropped by nine places to 121 in 2022.** India is now ranked below four of its South Asian neighbors — Bangladesh (104), Bhutan (70), Sri Lanka (76), and Nepal (98).
- The Report found that India is facing challenges in 11 of the 17 SDGs, including SDG 2 i.e. zero hunger, SDG3 i.e. good health and well-being, SDG 5 i.e. gender equality and SDG 11 i.e. Sustainable cities.

Conclusion

- India's performance on many of the criteria considered under the State of the Environment Report has improved but some concerns still remain.
- Some states, despite being leaders on a parameter have performed poorly on certain indicators indicating the disparate levels of development across sectors and across states.

Algal Blooms Of Aquatic Habitats Can Be A Sign Of Its Health

Priority: Medium 

Primary Source: Down to Earth

Prepp Prelims Booster: Algal Bloom

Prepp Mains Booster: Conservation, environmental pollution and degradation, environmental impact assessment.

Context:

- Conservation and monitoring of the health of aquatic ecosystems is necessitated by the rapidly increasing population and the consequent demand for freshwater which is a limited resource.
- A study of the algal community in a freshwater habitat provides information on the overall health of the ecosystem as algae are an important component in helping sustain other life forms within the freshwater ecosystem.

What are the major concerns about freshwater bodies?

- **Two major concerns about freshwater bodies, especially urban and peri-urban water bodies, are related to their quantity and quality.**
- Urban and peri-urban wetlands are experiencing high nutrient loading from catchments due to anthropogenic causes. This ultimately leads to the **eutrophication** of waterbodies.
- Water bodies are affected not just by anthropogenic pressures but by regional and local climate changes.
- The water level in these bodies is affected by the high rates of evaporation and low rates of precipitation which lead to cascading effects on the ecosystem.

Role of Algae in assessing water bodies

- Aquatic systems are assessed regularly to determine their health and provide information on their protection and restoration in order to ensure healthy and safe human communities.
- Experts have expressed concern about the growth of algal blooms and their adverse effect on the quality and taste of water.
- One of the most economically viable methods to monitor the health of water bodies is by using algal communities.
- **Freshwater Algal assemblages have been used as an ecological indicator with special reference to organic pollution.**
- **Algae**, whose name is derived from the **Latin word Alga meaning seaweed**, is **ecologically sensitive and has optimum tolerances for conditions such as pH, temperature, nutrients, etc.**
- **Algal assemblages are the primary producers of the freshwater ecosystem** and have high biological activity and are an important component in sustaining other organisms in the ecosystem.
- They represent significant proportions of biodiversity and are important drivers of biogeochemical cycling.
- The study of algal communities provides valuable information regarding the overall health of the aquatic ecosystem.
- It is necessary to maintain optimum levels of algal biodiversity in order to sustain ecosystem function which is threatened by regional and global changes in environmental conditions and anthropogenic pressures.



Algal community study

- A study conducted into the algal communities of local water bodies around the Shiv Nadar Institution of Eminence, Uttar Pradesh revealed vast diversity in algal species.

| Algae | Role |
|-------------------------|--|
| Anabaena species | <ul style="list-style-type: none"> • Anabaena is a common freshwater Blue Green Algae. • Habitat: |

| | |
|-------------------------|---|
| | <ul style="list-style-type: none"> ○ Rice fields, temporary pools, ponds, etc with the highest concentrations observed during the summer months. ○ It is commonly found in phosphorus-rich water. • It produces neurotoxins like anatoxin, which is a neuromuscular blocking agent that causes respiratory arrest, liver and gastrointestinal damage, and severe dermatitis. • Anabaena species may also cause the death of livestock and wildlife. |
| Lyngbya species | <ul style="list-style-type: none"> • Lyngbya is a dominant Blue Green Algae. • Habitat: <ul style="list-style-type: none"> ○ Freshwater, marine water, and soil. • It also releases toxins such as debromoaplysiatoxin, aplysiatoxin, and Lyngbya toxin into the water. <p>These toxins can cause irritations and severe dermatitis.</p> |
| Ankistrodesmus falcatus | <ul style="list-style-type: none"> • It is a green algae found in freshwater bodies. <p>It is most abundant in eutrophic water bodies but found commonly in all water bodies.</p> |
| Closterium species | <ul style="list-style-type: none"> • It is a freshwater green algae. <p>It is commonly found in acidic water while some species are found in hard water.</p> |
| Stigeoclonium species | <ul style="list-style-type: none"> • It is a green algae that is both epiphytic and periphytic in nature. • Habitat: ponds, pools, tanks, reservoirs, and sewage channels • It is heavy metal tolerant. <p>As it is capable of attaching to submerged rocks or aquatic plants, it can clog irrigation canals.</p> |
| Fragilaria species | <ul style="list-style-type: none"> • Fragilaria is a genus of freshwater and saltwater diatoms. <p>Habitat: It is found in all water bodies from mesotrophic to eutrophic.</p> |

- The area consists of numerous natural and man-made wetlands in the Beel Akbarpur, Bodaki, and Chithera making it a unique ecosystem for the study of algal communities in peri-urban regions.
- Surveys conducted in different seasons identified three major algal groups:
 - **Cyanophyceae (blue-green algae),**

- **Chlorophyceae (green algae)**
- **Bacillariophyceae (diatoms).**
- The study found that the three water bodies were dominated by diatoms during the December period.
- In February, the study found the Chithera waterbody to be dominated by Stigeoclonium taxa and the Beel Akbarpur water bodies by Anabaena, Lyngbya, Cylandrospermum, Scenedesmus, Oedogonium, Cosmarium species, etc.
- During the same period, agricultural fields nearby were dominated by Spirogyra species while Pinnularia, Gomphonema, Cymbella, and Nitzschia were common in all the wetland areas in addition to Discostella and Rhopalodia.
- **According to the study, the presence of cyanobacteria is a potential health hazard as they release hepatotoxins and neurotoxins, which are fatal to humans and animals.**
- The presence of algal species such as Oscillatoria, Stigeoclonium, Pinnularia, Nitzschia, and Cyclotella indicated sewage contamination.
- The study also found that **few waterbodies have excessive algal growth and are therefore not suitable for domestic use.**
- According to the study, all the water bodies which were monitored have **taste and odor issues.**
- The study recommended community-based conservation and management as the local communities are continuously interacting with these systems.

What Is The New Collective Quantified Goal as Per Bonn Climate Conference in Germany?

Priority: Medium



Primary Source: The Hindu

Prepp Prelims Booster: New Collective Quantified Goal

Prepp Mains Booster: Regional and global groupings and agreements involving India and/or affecting India's interests; Conservation, Environmental Pollution and Degradation; Climate Change

Context:

- The **recently concluded Bonn Climate Conference in Germany, expected to outline the political agenda for the crucial end of year Conference of Parties-28 (COP 28) in Dubai**, was critical for reviewing and reforming the climate finance architecture.
- The **conference has exposed a gaping hole in the funding needed to pay for climate action.**
- This comes from a long standing **impasse between developed and developing countries** over where money for climate change policies should come from and in what form.

Bonn Climate Change Conference

- The **recent Bonn Climate Change Conference took place at the World Conference Center Bonn (WCCB) in Bonn, Germany, from 5 to 15 June 2023.**
- This year's Bonn Climate Change Conference aimed to lay the foundation for crucial political decisions to be made at the **upcoming UN Climate Change Conference (COP28) in Dubai, United Arab Emirates**, scheduled for December.
- However, following the conclusion of the conference, there was widespread disappointment expressed by observers regarding its outcome.
- The meeting brought together more than 4,800 participants from around the world from June 5th to 15th, 2023, with the intention of preparing for COP28.

- At the Bonn meeting, **progress was made on issues of critical importance, including the global stocktake, climate finance, loss and damage, and adaptation**, among many others.

What is the New Collective Quantified Goal (NCQG)?

- **A commitment of \$100 billion per year in 2020 for developing nations from developed countries was a target set at the Conference of Parties (COP) in 2009.**
- But estimates since then show addressing climate change may cause billions and even trillions of dollars. Therefore, the **2015 Paris climate agreement agreed on setting a New Collective Quantified Goal (NCQG) for climate financing prior to 2025**, which is a reference point which accounts for the needs and priorities of developing nations.
- The **NCQG is thus termed the most important climate goal.** It pulls up the ceiling on commitment from developed countries, is supposed to anchor the evolving needs and priorities of developing countries based on scientific evidence and should respond to the ever increasing sums of funding necessary for Loss and Damage in response to failed or delayed financial support.

What is Climate Finance?

- Climate finance refers to the **funds required for various initiatives**, such as renewable energy projects, aimed at reducing the impact of climate change.
- It involves financial support from different sources, including governments, private companies, and alternative funding channels.
- The **objective of climate finance is to invest in activities that mitigate the effects of climate change and promote adaptation measures**, ultimately working towards the goal of limiting global warming to a maximum of 1.5°C above pre-industrial levels.

Challenges faced by Countries who are in need of Finance


- In 2020, **developed countries contributed \$83.3 billion towards the annual target of \$100 billion for climate finance.**
- The \$100 billion target, established in 2009, was primarily seen as a political objective rather than a clearly defined and transparent measure of climate finance sources and definitions.
- The economic prosperity of developed nations has been accompanied by significant carbon emissions, which imposes a greater responsibility on them to address climate change.
- **Despite an increase in the availability of funds for climate finance, there are several challenges** hindering their effective utilization.
- These challenges include **limited accessibility, reliance on private sources, delays in disbursement, and a failure to reach the countries most in need of assistance.**
- A recent study found roughly 5% of climate finance comes from grants, the rest comes through loans and equity which burden developing countries with a debilitating debt crisis.
- Countries most in need of finances have to wait years to access money and pay interest at high rates and thus increasing their debt burden.

Way Ahead

- Countries are facing a pressing deadline to reach an agreement on the National Climate Quantitative Goals (NCQG) before 2024.
- While an official number has not been established, the global shift toward a low-carbon economy necessitates an annual investment ranging from \$4 trillion to \$6 trillion.
- Some propose an alternative approach to determine separate figures for specific areas of focus, such as mitigation, adaptation, and addressing loss and damage.

- The objective is to emphasize the expansion of concessional financing, halt the accumulation of debt, and transform the NCQG into more of an ongoing process rather than a fixed endpoint, with the ultimate aim of ensuring an equitable and people-led transition.

CAG Chief Re-Elected As External Auditor Of WHO For 2024-27

Priority: Medium 

Primary Source: The Hindu

Prepp Prelims Booster: CAG

Prepp Mains Booster: Appointment to various Constitutional posts, powers, functions and responsibilities of various Constitutional Bodies; Important International institutions, agencies and fora- their structure, mandate

Context:

- Recently, Girish Chandra Murmu, the **Comptroller and Auditor General of India (CAG)**, has been re-elected as the **External Auditor of the World Health Organization (WHO)** for a **four-year term** from 2024 to 2027.
- The **CAG is already holding this position in the WHO** since 2019 for a four-year term from 2019 to 2023.
- The re-election was held recently at the **76th World Health Assembly in Geneva, where the CAG of India was re-elected** with an overwhelming majority (114 out of 156 votes) in the first round of voting itself.

WHO External Auditor

- The WHO External Auditor is the Auditor-General of a Member State appointed by and reporting to the Health Assembly.
- The term of **office is four years**, and **can be extended once**, by the Health Assembly, **for an additional four years**.
- The External Auditor obtains assurance to express an opinion on the annual Audited Financial Statements and issues an annual report on their review and findings to the Health Assembly.
- Audit is undertaken by both internal audit and external audit. The requirements for both are outlined in the WHO Financial Regulations and Rules.



Current Positions held by Indian CAG

- It is the **second major international audit assignment** for the CAG this year following his selection for the **post of External Auditor (2024-2027)** of the **International Labour Organisation (ILO)** in Geneva earlier this year in March 2023.
- Besides the WHO, the CAG of India is currently the **External Auditor of the Food and Agriculture Organisation (2020-2025)**, **International Atomic Energy Agency (2022-2027)**, **Organization for Prohibition of Chemical Weapons (2021-2023)** and **Inter-Parliamentary Union (2020-2022)**.

- The **CAG is a Member of the United Nations Panel of External Auditors**.
- He is also a member of the Governing Boards of the International Organisation of Supreme Audit Institutions and ASOSAI.
- The CAG chairs the INTOSAI Knowledge Sharing Committee, its Working Group on IT Audit, and the Compliance Audit Sub-Committee


Conclusion

- CAG's appointment is a recognition of its standing among the international community as well as its professionalism, high standards, global audit experience and strong national credentials.

Comptroller and Auditor General

- Article 148 of the Indian Constitution establishes an independent office of the Comptroller and Auditor General of India (CAG).
- He is the head of the Indian Audit and Accounts Department and one of the foundations of India's democratic government system.
- Comptroller and Auditor General is the guardian of the public purse and oversees the whole financial system of the country at both the federal and state levels.
- His responsibility is to enforce the Indian Constitution and Parliamentary legislation governing financial management.
- Appointment and Term:** The CAG is appointed by the President of India by a warrant under his hand and seal.
- Before taking over the office, the CAG makes and subscribed before the **President an oath or affirmation**
- Tenure:** The CAG holds office for a period of **six years or up to the age of 65 years, whichever is earlier**.
- Resignation and Removal:** He/she **can resign any time from his office** by addressing the **resignation letter to the President** and can also be removed by the President on the same grounds and in the **same manner as a Judge of the Supreme Court**.
- That is, he can be removed by the President on the basis of a resolution passed to the effect by both Houses of Parliament with the special majority, either on the ground of proved misbehavior or incapacity.

NIRF 2023: IIT-Madras Retains Number Top Spot

Priority: Medium 

Primary Source: The Hindu

Prepp Prelims Booster: NIRF

Prepp Mains Booster: Education; Human Resources

Context:

- Recently, The **National Institutional Ranking Framework (NIRF) under the Union Ministry of Education** has released the **India Rankings 2023 for higher education institutions**.
- This is the **eighth consecutive edition of Indian Rankings of higher education institutions in India**.
- The **Indian Institute of Technology (IIT)-Madras in Chennai maintains its position as the top educational institution for the fifth consecutive term**.

About NIRF

- The **National Institutional Ranking Framework (NIRF) was introduced by the Ministry for Human Resource Development** (now Ministry of Education) in September 2015.
- This framework establishes a standardized methodology for ranking educational institutions across India.
- It is the first-ever effort by the government to rank Higher Education Institutions (HEIs) in the country.

- Participation in NIRF was made compulsory for all government-run educational institutions in 2018.
- The ranking process is based on recommendations and insights from a Core Committee set up by the ministry to determine the key parameters for evaluating universities and institutions.
- **The five broad categories of parameters identified in the NIRF are:**
 - teaching;
 - learning and resources;
 - research and professional practice;
 - graduation outcome;
 - outreach, inclusivity and perception.

Report card

IIT-Madras topped the list in the National Institutional Ranking Framework Rankings, 2023. A look at the top 10 educational institutions in India, according to the Education Ministry's list

| Rank | Institution | Score |
|------|--|-------|
| 1 | Indian Institute of Technology, Madras | 86.69 |
| 2 | Indian Institute of Science, Bengaluru | 83.09 |
| 3 | Indian Institute of Technology, Delhi | 82.16 |
| 4 | Indian Institute of Technology, Bombay | 81.28 |
| 5 | Indian Institute of Technology, Kanpur | 77.23 |
| 6 | All India Institute of Medical Sciences, Delhi | 72.14 |
| 7 | Indian Institute of Technology, Kharagpur | 71.82 |
| 8 | Indian Institute of Technology, Roorkee | 71.66 |
| 9 | Indian Institute of Technology, Guwahati | 68.78 |
| 10 | Jawaharlal Nehru University, Delhi | 67.44 |



Highlights of the Ranking

- **Overall:** The Indian Institute of Technology (IIT)-Madras in Chennai remained the best educational institution in overall rankings for the fifth consecutive term.
- **Best university:** The Indian Institute of Science (IISc), Bengaluru ranked as the best university in the country for eight years in a row.
- **Best college:** Miranda House, Delhi is ranked the best college. Indian Institute of Management (IIM), Ahmedabad is the top management institute.
- **Pharmaceutical:** National Institute of Pharmaceutical Education and Research (NIPER), Hyderabad is ranked number one for pharmaceutical studies.
- **Medical:** The All India Institute of Medical Sciences (AIIMS), Delhi is ranked the best medical college, and Saveetha Institute of Medical and Technical Sciences, Chennai is the top dental college.
- **Law:** National Law School of India University, Bengaluru is ranked the best law college in the country.
- **Engineering:** IIT-Madras has also been ranked the best engineering college for the eighth consecutive year (from 2016 to 2023).
- **Research Institutions:** IISc Bengaluru stood first in the 'Research Institutions' category, too, for the third consecutive year. IISc is followed by the Jawaharlal Nehru University (JNU) and Jamia Millia Islamia University as the second and third best universities, respectively.
- **Management:** IIM-Ahmedabad retained its top position among management institutes for the fourth consecutive year, that is, from 2020 to 2023.
- **Pharmacy:** The National Institute of Pharmaceutical Education and Research, Hyderabad tops the ranking in pharmacy colleges for the first time, pushing Jamia Hamdard to the second slot.

- **Architecture:** IIT-Roorkee stood at first position in Architecture subject.
- **Agriculture:** Indian Agricultural Research Institute, New Delhi took the top slot in 'Agriculture and Allied Sectors'.
- **Innovation:** IIT-Kanpur topped the 'Innovation' category.

Significance of Indian Ranking

- India Rankings have indeed been a valuable tool for students in selecting universities based on their relative standing in various categories and subject domains among higher education institutions (HEI) in the country.
- These rankings provide students with information about the quality and excellence of HEIs, enabling them to make informed decisions about their educational pursuits.
- The multi-dimensional parameters used in India Rankings have been successful in capturing the diverse aspects of quality in HEIs in India.
- These parameters consider various factors such as teaching and learning resources, research output, industry collaboration, perception, inclusivity, and more.
- By evaluating HEIs on these parameters, the rankings provide a comprehensive assessment of their overall performance and standing.

Expansion and inclusion of new categories and subject domains in India Rankings

- The continuous expansion and inclusion of new categories and subject domains in India Rankings reflect the evolving nature of education and the recognition of different fields of study.
- The **addition of the "Innovation" category highlights the importance of fostering a culture of innovation and entrepreneurship within HEIs.**
- Furthermore, expanding the "Architecture" category to "Architecture and Planning" acknowledges the interdisciplinary nature of this field and provides a more comprehensive assessment.
- It is crucial to work collectively to bring more institutions under the ambit of India Rankings and accreditation.
- By increasing the participation of HEIs, the rankings can provide a broader and more representative view of the higher education landscape in India.
- Accreditation plays a vital role in ensuring quality standards and promoting excellence in education. Encouraging more institutions to seek accreditation will contribute to raising the overall quality of education in the country.
- The expansion of the India Rankings portfolio to include 13 categories and subject domains in the 2023 edition demonstrates a commitment to capturing the diversity and breadth of higher education in India.
- This expansion provides students with a wider range of options to explore and compare based on their specific interests and aspirations.

Conclusion

India Rankings have been instrumental in helping students choose HEIs based on their relative standing in various categories and subject domains. The rankings' multi-dimensional parameters effectively capture the quality and excellence of institutions. By continuously expanding the categories and subject domains, and by encouraging more institutions to participate, the rankings can provide a more comprehensive and representative view of higher education in India.

PLACES IN NEWS

Places In News - India

Debrigarh Wildlife sanctuary

National Parks & Sanctuaries of Orissa



Debrigarh, a wildlife sanctuary in Odisha's Bargarh district, has achieved a significant milestone by becoming completely free of any human settlement. **The Debrigarh wildlife sanctuary** is located in the Bargarh district in the Indian state of Odisha. It is situated near the city of Sambalpur's Hirakud Dam. The Debrigarh Wildlife Sanctuary is an important location for the conservation of various local wildlife and their habitat.

Sanjay Gandhi National Park (SGNP)

A recent ecological analysis discovered the existence of 18 highly protected species along the Thane-Borivali Link Road (TBLR) alignment, which includes the construction of twin tunnels beneath the Sanjay Gandhi National Park (SGNP). **Sanjay Gandhi National Park** is a protected area in Mumbai, Maharashtra. It was established in 1969 with its headquarters situated at Borivali. The 2400-year-old Kanheri caves, sculpted by monks out of the rocky basaltic cliffs, lie within the park.



Abohar Wildlife Sanctuary

Reason to be in news: Wildlife Census revealed that blackbuck count at Abohar sanctuary in Punjab is going down. Abohar Wildlife Sanctuary earned the status of a sanctuary in 1975 and again in 2000 under the Wildlife Protection Act 1972. It is located in the Fazilka district of Punjab.

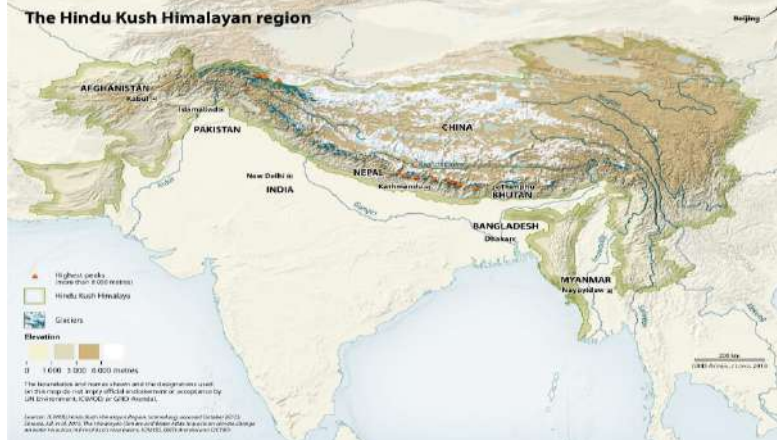
National Parks & Sanctuaries of PUNJAB



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Places In News - World

Hindu Kush Himalayas



According to a new report from International Centre for Integrated Mountain Development (ICIMOD), the Hindu Kush Himalayas (HKH) have seen a 65 per cent faster loss of glacier mass. The Hindu-Kush-Himalayan (HKH) region encompasses Afghanistan, Bangladesh, Bhutan, China, India, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Tajikistan, and Uzbekistan.

Diego Garcia Island



Dozens of migrants have been stranded for months on Diego Garcia Island in the Indian Ocean after being rescued from their struggling fishing boat. Diego Garcia Island is a coral atoll, the largest and

southernmost member of the Chagos Archipelago, in the central Indian Ocean. It is a part of the British Indian Ocean Territory.



Recently, the US Secretary of State Antony Blinken called on both Kosovo and Serbia to take immediate steps to de-escalate tensions, warning they were putting aspirations of European integration at risk. **Kosovo, is a country in Southeast Europe** with partial diplomatic recognition. Kosovo lies landlocked in the centre of the Balkans, bordered by Serbia to the north and east, North Macedonia to the southeast, Albania to the southwest, and Montenegro to the west.



Recently, North Korea's attempt to put the country's first spy satellite into orbit failed. North Korea wants a surveillance satellite in order to keep an eye on U.S. and South Korean military operations. **North Korea is a country in East Asia.** It constitutes the northern half of the Korean Peninsula and borders China and Russia to the north at the Yalu (Amnok) and Tumen rivers, and South Korea to the south at the Korean Demilitarized Zone. North Korea's border with South Korea is a disputed border as both countries claim the entirety of the Korean Peninsula. The country's western border is formed by the Yellow Sea, while its eastern border is defined by the Sea of Japan.

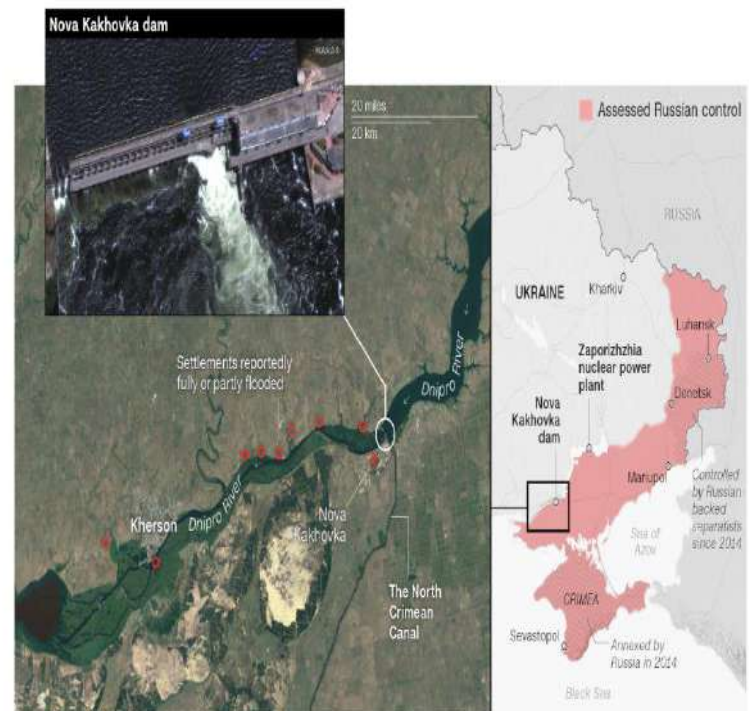
East China Sea



Recently, China and Russia conducted coordinated air force patrols over the Sea of Japan and the East China Sea, while South Korea announced the deployment of fighter jets in response to warplanes approaching its airspace. **The East China Sea**, a part of the Pacific Ocean, is a marginal sea located to the east of China. It shares borders with South Korea, Japan, Taiwan, and China. The South China Sea lies to its south, while the Asian continent extends to its west. The East China Sea is connected to the Sea of Japan through the Korea Strait and opens northward into the Yellow Sea.

Kakhovka Dam

Recently, a major dam and hydro-electric power plant in Russian-occupied southern Ukraine suffered a collapse, prompting mass evacuations and fears for large-scale devastation. Russia and Ukraine have come up with conflicting claims regarding the destruction of the Kakhovka dam, each blaming the other for the disaster. The Kakhovka Hydroelectric Power Plant is in the city of Nova Kakhovka in the Kherson region. The city is currently under Russian occupation. The dam was built in the Soviet era and is one of six that sit along the Dnipro River, which stretches from the very north of the country into the Black Sea.



Gulf of Oman



Recently, India, France, and the UAE participated in the maiden trilateral maritime exercise between the three countries in the Gulf of Oman. **The Gulf of Oman** also known as Gulf of Makran or Sea of Makran, is a gulf that connects the Arabian Sea with the Strait of Hormuz, which then runs to the Persian Gulf. It borders Iran and Pakistan on the north, Oman on the south, and the United Arab Emirates on the west.

Mexico



Recently, Mexico's national anthropology institute announced that a previously unknown Maya city was discovered in the jungles of Mexico. The Mayans are an ancient civilization of people indigenous to Central America and Mexico. **Mexico, is a country in the southern portion of North America.** It is bordered to the north by the United States; to the south and west by the Pacific Ocean; to the southeast by Guatemala, Belize, and the Caribbean Sea; and to the east by the Gulf of Mexico.

Nagorno-Karabakh



Armenia accuses Azerbaijan of 'ethnic cleansing' in Nagorno-Karabakh. **Nagorno-Karabakh**, known as Artsakh by Armenians, is a landlocked mountainous area in South Caucasus. It was claimed by both Azerbaijan and Armenia after the fall of the Russian Empire in 1917 and has remained a point of tension ever since. Territory is internationally recognised as part of oil-rich Azerbaijan, but its inhabitants are predominantly ethnic Armenians.

Sabang port

India and Indonesia have recently concluded a joint feasibility study on the development of the Sabang port, situated in the province of Aceh, Indonesia. This collaboration holds significant strategic value for both countries and aims to enhance maritime connectivity and bolster India's military position in the Indian Ocean. Sabang is a city in Aceh province, Indonesia consisting of Weh Island and several smaller islands off the northern tip of Sumatra.



Norwegian Sea

Scientists have made a groundbreaking discovery in the Norwegian waters near Bear Island – the Borealis Mud Volcano. Led by Stefan Buenz, the Advancing Knowledge of Methane in the Arctic (AKMA) expedition unearthed this remarkable submarine geological formation. **The Norwegian Sea** is a marginal sea, grouped with either the Atlantic Ocean or the Arctic Ocean, northwest of Norway between the North Sea and the Greenland Sea, adjoining the Barents Sea to the northeast.



Haifa Port

Israel Foreign Minister announced that Arab train networks in future would be carrying Indian goods to the Haifa port in Israel. **The Haifa Port is located in northern Israel**, adjacent to the city of Haifa along the Mediterranean Sea. It has a natural deep-water harbour, which operates all year long. The port was officially opened in 1933. It is the second-largest port in Israel in terms of shipping containers and the biggest in shipping tourist cruise ships.



Belize

Recently, the World Health Organization (WHO) has certified Belize as a malaria-free country. Belize is located on the northeast coast of Central America and south of the Yucatán Peninsula. It has a land of mountains, swamps, and tropical jungle. It is bounded by Mexico to the north, Guatemala to the west and south, and the Caribbean Sea to the east.



Sargasso Sea

Recently, multiple beaches in Cancun and the northern part of the Mexican Caribbean state are seeing unusually high levels of sargassum. **The Sargasso Sea** is a vast patch of ocean named for a genus of free-floating seaweed called Sargassum. The Sargasso Sea, located entirely within the Atlantic Ocean, is the only sea without a land boundary. It is defined only by ocean currents. It lies within the Northern Atlantic Subtropical Gyre. The Gulf Stream establishes the Sargasso Sea's western boundary, while the Sea is further defined to the north by the North

Atlantic Current, to the east by the Canary Current, and to the south by the North Atlantic Equatorial Current.



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