

CURRENT AFFAIRS

WEEKLY

WEEK: 1

MARCH
2022

MAINS

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- GS-II ■ AUSTRALIA-INDIA SCRIPTING A 'NEW CHAPTER' IN BILATERAL RELATIONS
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■ NATIONAL SCIENCE DAY BEING CELEBRATED TO COMMEMORATE DISCOVERY OF RAMAN EFFECT

■ MOON'S WORLD TO BE ROCKED AS TONS OF SPACE JUNK LIKELY TO PUNCH 20 M HOLE

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The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

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SECTION: A
(MAINS)

CURRENT AFFAIRS

HERITAGE CONSERVATION IN CITIES OF INDIA

CONTEXT:

Need for Cultural heritage sites in India's cities to be protected so that the current and future citizens are rooted in their heritage and feel proud of it.

◎ BACKGROUND

- Cities and towns act as catalyst for cultural, social and economic development.
- Half of the world's population already lived in urban settlement.
- Historical sites represent the heart of the cities which play a very important role in creating a stimulating and economically attractive environment for inhabitants.
- The development of these sites is an integral part of societies that comprises historic buildings, urban spaces and people using them.

This brief focused on the current issues faced by **India's rich cultural heritages** and also suggest changes for development while maintaining current qualities.

◎ ANALYSIS

About India's rich cultural heritage:

- India, as an ancient and living civilisation, is enormously rich in cultural heritage.
- Its diversity is equally vast this is due to India having assimilated into itself thousands of years of diverse cultural trends.

This richness is visible in its tangible heritage—archaeological sites, monuments, landscapes, artifacts, and other structures of historical value—and its intangible heritage comprising language, music, festivals, dance, social practices, and customs.

Cultural heritage

- Cultural heritage is typically understood to be built heritage, monuments related to culture such as museums, religious buildings, ancient structures and sites.
- They constitute an integral part of nations' history, identity and regional diversity

Significance of cultural heritage

- Conveys diverse messages and values that contribute to give a meaning to people's life.
- Represents the identity of a social group.

- Represents a vehicle for understanding the diversity of people and developing a policy for peace and mutual comprehension.
- A source of economic development.

What are the persistent challenges in conserving heritage?

- Accelerating globalization
- Structural, social and demographic changes
- Environmental problems
- Urban growth
- **Other challenges include:**
 - ▶ Variety of heritages that are to be protected
 - ▶ Process of selection
 - ▶ Volume of heritage structures in Indian cities
 - ▶ Finance needed to protect them
 - ▶ Reconciling heritage conservation with future development

Constitutional and Legal Provision to protect India's heritage:

- The Indian Constitution casts a responsibility on both the State and Citizen of India to protect and conserve heritage.
- **Article 49**, which is one of the **Directive Principles of State Policy**, states, "It shall be the obligation of the State to protect every monument or place or object of artistic or historic interest, (declared by or under law made by Parliament) to be of national importance, from spoliation, disfigurement, destruction, removal, disposal or export, as the case may be."

- The Directive Principles of State Policy of India are the guidelines or principles given to the institutes for governing the State of India.
- These are provided Part IV (Article 36-51) of the Constitution of India, are not enforceable by any court, but the principles laid down there in are considered 'Fundamental' in the governance of the country, making it the duty of the State to apply these principles in making laws to establish a just society in the country.

- **Article 51 A (f)**, one of the Fundamental Duties of the Indian Citizens, states: "It shall be the duty of every citizen of India to value and preserve the rich heritage of our composite culture; and (g) to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures."
- To back these two Constitutional provisions, the Central and state governments have enacted number and implemented a number laws with respect to heritage conservation.
- One of them is the **Ancient Monuments and Archaeological Sites and Remains Act 1958** that provides for the preservation of ancient and historical monuments, archaeological sites and remains of national importance.
- The above law also creates **National Monument Authority** which is charged with the grading and classifying the protected monuments and areas.

India have nationally protected monuments numbering around 3,650 that are looked after by the **Archaeological Survey of India (ASI)**, functioning under the **Ministry of Culture** and state-protected monuments that are administered by the directorates of state archaeology. Together, they protect about 10,000 structures, which form a miniscule fraction, though the most significant, of the country's total heritage.

Archaeological Survey of India:

- ASI works under the Ministry of Culture.
- It takes care of around 3,650 nationally protected monuments.
- It is also tasked with protecting state-protected monuments that are administered by the directorates of state archaeology.
- Together, they protect about 10,000 structures, which form a miniscule fraction, though the most significant, of the country's total heritage.

Efforts made by Cities in India to conserve archaeological heritage:

- For the purpose of expanding the effort towards heritage conservation, some major Indian cities have stepped up their efforts.
- They have prepared **City Heritage Lists** that comprise such heritage sites that neither figure as national heritage nor fall in the category of state heritage. However, they have considerable local significance.

- Cities have also framed their own regulations with state approval for the conservation of local heritage.
- **Mumbai was the first city to come up with such a list in the mid-1990s.** Several cities have followed suit that include **Ahmedabad, Jaipur, Bengaluru and many more.**
- Heritage sites included in these city lists are generally graded into **Grade I, Grade II, and Grade III structures**, depending on their significance in terms of history and culture.
- Many of the city heritage lists have several hundred pieces of heritage listed.
- These contain both public and private properties and these lists have consistently expanded.

Suggestive measures

- **Effective strategy formulation:** A careful strategy that preserves heritage in the best possible manner without they becoming obstacle to the development of cities needs to be adopted.
- **Learning from experts:** Therefore, a proper balance amongst other varieties of heritage ought to be observed. Guidance here could be taken from the **UNESCO's World Heritage List (WHL).**

World Heritage List

World Heritage List divides its heritage selection into cultural, natural, and mixed sites.

- **Cultural heritage** comprises historical buildings and archaeological sites, sculpture, and painting.
 - **Natural heritage** includes sites of exceptional natural beauty, exceptional biodiversity, habitats for rare and endangered animals and plants and such things of rare natural significance.
 - **Mixed heritage** sites contain elements of both natural and cultural significance.
- **Increasing public awareness:** Illiteracy affects the monuments badly due to the ignorance of the importance of historical sites to the national income for societies. Thus, raising the educational level of people is essential for conservation.
 - **Investment:** The government needs to focus on enhancing the surrounding conditions of the heritage through funding and investment.

AUSTRALIA–INDIA SCRIPTING A ‘NEW CHAPTER’ IN BILATERAL RELATIONS

CONTEXT:

India and Australia are keen to move beyond mere rhetoric and build a robust partnership in the changing geopolitical scenario and come up with tangible commitments to a peaceful and prosperous Indo-Pacific.

◎ BACKGROUND:

- In the present scenario, our relationship revolves around the free movement of people, goods, services, capital, and questions like economic sovereignty and self-reliance.
- It gets translated into new aspirations, new players and revised allegiances, brought together by the consequences of the pandemic.

◎ ANALYSIS:

Overview of India-Australia Relationship:

- Australia and India established diplomatic relations in the **pre-Independence period** when the Consulate General of India was first opened as a Trade Office in **Sydney in 1941**.
- **In March 1944**, Australia appointed its **first High Commissioner to India**. India's first High Commissioner to Australia arrived in **Canberra in 1945**.
- In 2009, a '**Strategic Partnership**' was established between the two countries and relations have significantly expanded since then. **In 2013, A K Antony** became the **first-ever Indian Defence Minister** to visit Australia.
- India is Australia's **seventh-largest trading partner** and **our sixth-largest export market** in 2020.
- **India's export basket** to Australia majorly comprises of goods like petroleum products, medicines, polished diamonds, gold jewellery, apparel etc., while **key Australian exports** to India include coal, LNG, alumina and **non-monetary gold**.

Non-monetary gold covers exports and imports of all gold not held as reserve assets (monetary gold) by the authorities. Non-monetary gold is treated as any other commodity and, when feasible, is subdivided into gold held as a store of value and other (industrial) gold.

India is deepening its engagement with Australia:

- **Changing Global Dynamics:** The India-Australia bilateral story is changing rapidly. The **dynamic global geostrategic and geo-economics landscape** is intensifying competition and redefining power, principles, and values on which the regional order should be based. The apparent barriers of the pandemic have provided **a new kind of catalyst** for greater connectivity, cooperation, and co-existence.
 - Australia has reiterated its support for a free and open **Indo-Pacific Ocean**.
 - And while doing so the **Quad**, has agreed to accelerate the delivery of COVID-19 vaccines across the region, address regional challenges including humanitarian assistance and disaster response (HADR), maritime security, counterterrorism, countering disinformation and cyber security.
- The **Indo-Pacific Ocean** is a common thread that comprises **38 countries**, share 44 percent of world surface area, is home to more than **64 percent of the world's population**, accounts for **62 percent of global GDP** with more than **50 percent of global trade** traversing through its waters, highly heterogeneous with countries at different levels of development.
- India and Australia are both members of **the Quad (Quadrilateral Security Dialogue)** along with the US and Japan. Both countries have noted that the coalition has given impetus to increasing trade relations between all members of the Quad.
 - Australia has also proposed to host an **Indo-Pacific Clean Energy Supply Chain Forum** in mid-2022.

Indo-Pacific:

- The **Indo-Pacific is a geopolitical construct** that has emerged as a substitute to the long-prevalent "Asia-Pacific", which represented the eastwards shift of global developments from the Euro-Atlantic dimension.

- **Major stakeholders** in the Indo-Pacific include- India, the U.S.A., Australia, Japan, the Association of Southeast Asian Nations (ASEAN) members and other maritime nations that occupy the strategic positions in the Indian and the Pacific Ocean including small island countries.

Contemporary development:

- The engagement on both sides has amplified across multiple platforms, clearly focused on building tangible commitments and actions, to embrace a win-win partnership.
- India has been supporting Australia on the **issue of the South China Sea** through improved bilateral relations. India is likely to strengthen its strategic partnership with Australia to **counter China's military and diplomatic aggression**.
- India has extended the **invitation to Australia and an Australian contingent in the 2020 Malabar exercise**. Earlier India has resisted inviting Australia to the Malabar Naval exercise.
- India is seeking to deepen our bilateral trade and investment links through the conclusion of a **Comprehensive Economic Cooperation Agreement (CECA)**.

India's Interests:

- **Geo-political aspirations:** To expand its presence in the region, especially in Africa, the Middle East and Southeast Asia and maintain its role as a net security provider.
- **Countering China:** Ensuring that China does not gain a significant strategic foothold in the region.
- **Enhancing Trade and Investment Cooperation:** by encouraging the greater flow of goods, services, investment and technology between India and other countries in the region.
- **Promoting sustainable development:** In the coming times, climate change is set to adversely affect India.
- **Other Interests:** include- Combating marine pollution, Regulating illegal, unregulated, and unreported (IUU) fishing, deep-sea mineral exploration and effective disaster risk management.

Bilateral Economic and Trade Relationship:

- **Economic Integration:** It mandates greater **physical infrastructure and connectivity** between South and Southeast Asia. The Australian government will invest to promote infrastructure investment opportunities in the region to Australian business and to improve Australian resources and **mining equipment, technology and services (METS)**.

- **Critical Technology Cooperation:** With the advent of industry 4.0, cyber security, innovation, digital economy, and cyber & critical technology cooperation have become a **key part of Australia's relationship with India**, enabling an ecosystem of collaboration between industry, academia, and subject matters.
- **Comprehensive Economic Cooperation Agreement (CECA):** To advance the ongoing bilateral Free Trade Agreement negotiations, there is a likely possibility of a **"full-fledged CECA"** becoming a reality sooner than later.
 - ▶ The CECA is likely to **lower tariffs** and **provide greater access to Australian and Indian exporters** in areas such as textiles, pharmaceuticals, footwear, dairy products, milk, premium wines and many more, **focused on post-COVID economic recovery**, along with the importance of an early resolution of the ongoing issue of taxation of offshore income of Indian firms in Australia.
 - ▶ Both sides agreed that the **long-pending free trade agreement**, covering trade in goods and services, investments, etc. **will be finalized by the end of 2022**.

India aims to achieve a **5 percent share in world merchandise exports** and **7 percent in services exports by 2025**, which currently stands at **1.67 percent in global merchandise exports**, and **3.54 percent in services**.

- **Tourism Cooperation:** Both countries have renewed their commitment through an MoU on Tourism Cooperation, **enabling tourism operators on both sides to take advantage of Australia's international border re-opening to all fully vaccinated eligible visa holders, including tourists and business travellers**.

Pre-pandemic, India was Australia's fastest-growing source of international visitors. In 2019, almost 400,000 visitors from India visited Australia and spent a combined total of US \$1.8 billion.

- **Australia-India Infrastructure Forum:** To promote two-way investment in infrastructure and support broader trade and investment bilateral objectives. The opportunities in urban infrastructure, transport, and water are the key focus sub-sectors for Australia in India.

Australia's largest superannuation fund, Australian Super which has over US \$200 billion of funds under management, has over **one and a half billion dollars currently invested in India**. With large sovereign funds, pension funds, private equity investing in India, and with infrastructure

spending slated to be US\$ 1.4 trillion by 2025 as part of the Govt. of India's national infrastructure, the **future holds tremendous opportunities in the infrastructure sector.**

- **Maitri (friendship) initiatives:** A series of **three new Maitri initiatives** to support our education, community, tourism and investments links will add to our growing bilateral relationship.
 - ▶ **Maitri Scholarships Programme:** It will attract and support high achieving Indian students to study at Australian universities.
 - ▶ **Maitri Grants and Fellowships Programme:** It will build links between our future leaders, supporting mid-career Australian and Indian professionals to collaborate on strategic research and shared priorities.
 - ▶ **Australia-India Maitri Cultural Partnership:** It will boost the role of creative industries in our economic and people-to-people ties to promote artistic talent and cultural exchanges in visual and performing arts, literature, film, television, and music industries.
- **Australia India Energy dialogue:** Both countries have decided to drive down the costs of technologies that will help reduce global emissions, with a focus on tangible actions and projects including the manufacture and deployment of ultra-low-cost solar and green hydrogen.

Over 90% of solar cells globally use Australian technology. India in the next 10 years, will be one of the largest adopters of solar technology in the world and Australian and Indian innovators have significant potential to work together in this area. **India's National Hydrogen Mission** could align well with Australia's advanced technology in the hydrogen industry, as well as with India's emphatic push on green transition in Union Budget 2022.

- **Australia India Business Exchange (AIBX) program:** To aid Australian and Indian business partnerships, the Australian Government has launched the Australia India Business Exchange (AIBX) program. Its objectives are:
 - ▶ access the latest insights and opportunities
 - ▶ establish valuable connections and partnerships
 - ▶ compete and succeed in the Indian market.

Challenges

- The region faces a range of **traditional security challenges** that relate to issues of trust in the form of China which has emerged as a regional power and has little faith in rule-based order.
- There are also a growing number of **non-traditional and transboundary security challenges**, including terrorism, natural disasters and pandemics.
- India also faces **unfavourable trade with Australia** and despite opening talks for a comprehensive economic cooperation agreement in 2011, the agreement which would have significantly lowered the trade balance in favour of India has remained elusive.

◎ CONCLUSION:

India and Australia share **a truly comprehensive bilateral growth story** that is driven by consistency, commitment, and action. The key lies in Australia and India thriving each other growth stories. It involves a **holistic multi-stakeholder strategy** and approach which **deepens understanding** and appreciation of each other. The future of our relationship will be primarily focused on **scripting new and committed engagement narratives**. The evolving narrative on the Indo-Pacific region reflects the emerging **structural shift in geostrategic and geoeconomics** imagination and environment that effectively **forces a reimagination** and discovery of new ways to grow and engage with the **changing global reality**.

JUDICIAL APPOINTMENT: A MIX OF JUDICIARY + EXECUTIVE

CONTEXT:

Appointment of Anoop Kumar Mendiratta as the Judge of Delhi High Court.

● ANALYSIS:

Who is Anoop Kumar Mendiratta?

- Anoop Kumar Mendiratta is the **first Union Law Secretary to be appointed as a Judge of High Court**.
- He was also the first district judge to be appointed as Union Law Secretary.

Was his appointment as per law?

- The appointment of Mr. Mendiratta was done after **following the required procedure** and his name being **recommended** for the post **by the Collegium**.
- Hence he becoming the Judge of Delhi High Court may be considered as **unconventional but not unconstitutional or unlawful**.
- Constitutionally there is no bar as such on a serving secretary of the Government of India being appointed as Judge of a High Court.

Why is his appointment in news?

- Indian polity believes in the principle of separation of powers.
- Appointment of a member from the executive branch of government to the judicial branch has therefore raised some eyebrows.

What is Separation of Powers?

- It is vesting of the legislative, executive, and judiciary powers of government in separate bodies.
 - This concept was put forward by French Philosopher Montesquieu.
- Separation of power is considered important so that the members for judiciary can perform their function as per the law and principle of natural justice without getting influenced by those in power.
 - Organizations like judiciary and the executive branch of government carry the weight of people's trust.
 - And for the sake of safeguarding this trust it is not just important that they carry out their functions

in ethical manner, but it is also extremely crucial for the occupants of these high offices to be seen as functionaries that are performing their duties in morally upright way.

- The occurrence of suspicion, even if this is to a very limited extent, accompanied with the above appointment will dent the confidence of Indian people in both executive and judiciary. This therefore is ought to be avoided.

What is Collegium system?

- It is the system of appointment and transfer of judges that has evolved through judgments of the Supreme Court, and not by an Act of Parliament or by a provision of the Constitution.
- Under the system, the collegium decides the following:
 - appointments and elevations of judges and lawyers to the Supreme Court and the High Courts
 - transfer of judges to High Courts and the Apex court

Composition of Collegium

- **SC Collegium:** The Supreme Court collegium is headed by the Chief Justice of India and comprises four other seniormost judges of the court.
- **HC Collegium:** A High Court collegium is led by its Chief Justice and four other seniormost judges of that court.

The procedure

- **CJI and SC Judges:** The President of India appoints the CJI and the other SC judges.
 - ▶ **CJI:** As far as the CJI is concerned, the outgoing CJI recommends his successor.
- In practice, it has been strictly by seniority ever since the supersession controversy of the 1970s.
- The Union Law Minister forwards the recommendation to the Prime Minister who, in turn, advises the President.
 - ▶ **SC Judges:** For other judges of the top court, the proposal is initiated by the CJI.

- ▶ The CJI consults the rest of the Collegium members, as well as the senior-most judge of the court hailing from the High Court to which the recommended person belongs.
- The consultees must record their opinions in writing and it should form part of the file.
- The Collegium sends the recommendation to the Law Minister, who forwards it to the Prime Minister to advise the President.
- Chief Justice of HC: The Chief Justice of High Courts is appointed as per the policy of having Chief Justices from outside the respective States. The Collegium takes the call on the elevation.
- HC Judge: High Court judges are recommended by a Collegium comprising the CJI and two senior-most judges.
 - ▶ The proposal, however, is initiated by the Chief Justice of the High Court concerned in consultation with two senior-most colleagues.
 - ▶ The recommendation is sent to the Chief Minister, who advises the Governor to send the proposal to the Union Law Minister.

Consultation with Judges

- The constitution also has another condition specific to the appointment of the judges in the High Courts and the Supreme Court.

- **Article 124 (2)** mandates the President to consult the judges of the court before appointing a judge in the same court.
- The 'consultation' however did not bind the president in the same way he is bound by the council of ministers and the president's power to appoint judges before 1973 was just a formality and the appointments were on behalf of the executive government.

Is the system provided in the Constitution?

- The Collegium of judges is the Supreme Court's invention.
- It does not figure in the Constitution, which says judges of the Supreme Court and High Courts are appointed by the President and speaks of a process of consultation.

What about 'independence of judiciary'?

- The Constitution of India has embodied the concept of Independence of Judiciary.
- However, the appointment of judges in the High Court and the Supreme Court has been left to the President, who works on the aid and advice of the council of ministers.
- The President shall act in accordance with such advice.

ORDER BY CENTRE ON CENTRAL DEPUTATION OF DIG LEVEL IPS OFFICERS

CONTEXT:

Order issued by Central Government makes the entire pool of DIG-level officers in a state eligible for central deputation.

◎ ANALYSIS:

What does the order actually state?

- As per the order issued by the Department of Personnel and Training (DoPT)- IPS officers of **DIG level** would **no longer be required to be empaneled** with the Union Government before being considered **for deputation at the Centre**.

How is it different from the existing system?

- Earlier, a DIG-ranked IPS officer with a minimum experience of 14 years could only be deputed to the Centre if the **Police Establishment Board listed them as eligible to serve at the Centre**.
- The Police Establishment Board chooses the panel on the basis of **officers' career and vigilance records**.
- The new order therefore makes the **entire pool of DIG-level officers in a state eligible for central deputation**.
- Only **Superintendent of Police-level officers do not require empanelment for Central Deputation**.

What is the reason for changing the existing system?

- The move aims at **increasing the pool of DIG-level IPS officers** for central deputation in the backdrop of massive vacancies in central police organisations (CPOs) and the Central Armed Police Forces (CAPFs).
- It is important to note that out of 252 posts reserved for IPS officers at DIG level at the Centre, 118 (almost half) are vacant.
- Empanelment process** has become **cumbersome** and it takes almost a year to just complete it.

Can DIG level officers be deputed by Centre directly?

- No**, it does not mean that DIGs level IPS officers would automatically be deputed to the Centre.
- Officers would still have to be put on the offer list for central deputation and then the deputation itself has to be **decided by the states and the Centre in consultation**.
- For the process of Central Deputation of DIG level IPS officers to be complete, **the home state** (state government for which the said officer is discharging his/her duties) **of the officer would have to be willing to relieve them**.

What problem do states see in this order?

- States see this order as part of Union Government's strategy to gain more control on All India Service officers and hence **secure administrative upper hand and political upmanship**.

- The Union Government had recently issued a proposal according to which the Centre would have powers to demand, within a stipulated time frame, a certain quota of officers from the state for central deputation, and also to call any IAS officer on central deputation in "public interest".
- In case the state failed to relieve the officer, he/she would be deemed relieved following the fixed date.

- States have also emphasized on the fact that there is **little evidence that a waiver of empanelment conditions would have an impact on vacancies at the Centre**.
- Statistics show the **vacancies are close to 50% at the level of SP**, even when there is no requirement of empanelment for this level for central deputation.

ROLE OF 'INDIGENOUS LANGUAGE' IN EDUCATION

CONTEXT:

MBBS Course to be offered by the Madhya Pradesh government in Hindi medium.

◎ BACKGROUND:

- Vishwas Sarang, Medical Education Minister of Madhya Pradesh, has announced that the state government would soon launch MBBS course in Hindi medium.
- The Minister also announced that study material for the course will be available at the earliest and provisions for lectures for medical students in Hindi are also being made.
- This act of the Madhya Pradesh government has raised the issue of providing education in mother tongue.

◎ ANALYSIS

Provisions for education in mother tongue?

- **Article 350** of the Indian Constitution states that "It shall be the endeavour of every State and of every local authority within the State to provide adequate facilities for instruction in the mother-tongue at the primary stage of education to children belonging to linguistic minority groups".

The **National Education Policy (NEP)** says that wherever possible the medium of instruction in schools until Grade V and preferably until Grade VIII -- should be the mother tongue or the local or regional language.

Benefits of providing primary education in mother tongue:

- As a child is well versed with his mother tongue, studying in the same language will ensure **faster learning and retention**.
- Teaching in mother tongue and also providing education of any other language/s will lead to **higher synaptic activity in the brain of a child** and this multi-language processing may cause higher mental agility. This mental flexibility will transfer to all areas of brain functioning.
- The use of the mother tongue as a medium of instruction will also result in a **higher rate of parental participation in a child's learning**. In India due to a lack of knowledge of English, many parents are unable to participate in their child's schooling effectively.
- Learning in the local language **boosts the self-confidence of children** and they will be able to express themselves better without any hesitation.

- Mother tongue isn't just a language but a **sense of belonging for an individual**. Learning in the local language helps to preserve our cultural roots and deepen our understanding of our heritage.
- With the use of local languages for learning, **dropout rates can be dramatically reduced in rural India**.
- A lot of students show disinterest to go to school because they are unable to connect with English and with no substitute coaching and lack of parent's intervention, the odds are against them. The use of a known language can dramatically alter the situation.
- The switch to the local language will be a **big boon for teachers**, too. The realistic situation on the ground is that many teachers in "English medium" schools are not actually fluent in English and this affects their performance in classroom.
- Knowing more than one language **helps in developing new perspectives for an individual** and brings in various social and cultural opportunities.

Arguments in favour of technical education in mother tongue:

- Imparting technical education in mother tongue **will help the students who** have done their **schooling in regional or vernacular language**.
- This **will help them in understanding the subject** in a more comprehensive manner.
- It will **aspire students from underprivileged backgrounds** to get education in technical courses without spending their valuable resources (time and money) on learning English.
- Students from vernacular medium of education **won't have to suffer from inferiority complex** in technical education institutions due to their lack of proficiency in English language.

Difficulties in providing technical courses in mother tongue:

- **Infrastructural issues** stare on the face of implementing the policy of providing technical courses in mother tongue.
- Translating and producing nationally and internationally renowned **materials in mother tongue** would be a Himalayan task leading to logistical nightmare.

- The existing **faculties** themselves have been **trained** in their respective **technical courses in English**. These faculties also have experience of teaching in English. Their **migration therefore from English to regional languages may not be smooth**.
- Implementation of this policy by employing educators how could teach in mother tongue becomes even more difficult when considered that **close to 15 percent of the teaching posts across technical education institutes are vacant in the country**. This when technical education today is only in English.

- The biggest concern, among students, is whether studying will **hamper their chances of securing an international job** after studying in regional languages.

◎ CONCLUSION

Technical education in mother tongue is per se **not a bad proposition**. It may in fact be responsible for better **penetration of technical courses in Indian society**. Implementation of this policy though **requires proper planning, channelizing of resources and cultivating an entire ecosystem**.

IRAN–RUSSIA RELATIONS UNDER RAISI: THE EURASIAN DIMENSION

CONTEXT:

Recently Iran's President Ebrahim Raisi visited Moscow for a two-day official visit.

It was President Raisi's first bilateral and third foreign visit after coming to power since August 2021.

Both Iran and Russia have continuously shown growing convergence in their relationship with each other.

◎ BACKGROUND:

- Iran and Russia are strategic allies and form an axis in the Caucasus alongside Armenia.
- Iran and Russia are also military allies in the conflicts in Syria and Iraq and partners in Afghanistan and post-Soviet Central Asia.
- In the past, **Hassan Rouhani** (president of Iran 2013-21) has been slammed for Trusting the west, but the new president **Ebrahim Raisi** is trying to reinforce relations with non-western countries, including China and Russia.

◎ ANALYSIS:

Contours of Iran-Russia Relations:

- Strengthening Bilateral Trade:** The record figure of Iran-Russia bilateral trade exceeded **\$3.5bn in 2021**. But it still falls far short compared with the levels reached between Russia and several other regional actors. Bilateral cooperation in infrastructure, energy, banking and trade are the area of common interest. **Raisi has asserted that Iran–Russia ties are on the path to becoming strategic relations.**
- Long-Term Cooperation Agreement:** On the lines of the **Iran-China 25-year Comprehensive Strategic Partnership**, Iran is pushing for the implementation of a similar **strategic long-term cooperation agreement with Moscow**, which indicates how the relations between China and Russia are being deepened under the **"Look to the East policy"**.
- Maintaining Distance from preceding Nuclear Issue:** Raisi administration has linked the **revival of Iran's economy** by envisaging **Look East policy** based on strengthening economic ties with Iran's neighbours and key non-Western powers as the long-term strategy serving Iran's geo-economics and geopolitical interests. **This is contrary to the approach adopted by the preceding Rouhani administration.**

Geo-economic Opportunities and Challenges:

- Countering Economic sanction levied by the USA:** Strengthening of economic ties with Russia has acquired a new significance in countering Washington's economic pressure and policy of isolating Iran. The **bilateral trade between Iran and Russia doubled** in the last two years. **Iran's exports to Russia have passed US\$ 1 billion for the first time.**
- EAEU-Iran preferential trade agreement (PTA):** The impressive growth comes after Iran and the **Eurasian Economic Union (EAEU)** implemented in October 2019, a **three-year preferential trade agreement (PTA)** which stipulated that during this period, the two parties must accept the conditions for achieving a full free trade plan for tariff-free essential commodities.

Eurasian Economic Union (EAEU)

- The **Eurasian Economic Union (EAEU)** includes Armenia, Belarus, Kazakhstan, and Kyrgyzstan as well as **Russia**.
- Objectives of EAEU:**
 - ▶ **Increase cooperation and economic competitiveness for the member states**
 - ▶ Promotion of stable development to **raise the standard of living in member states.**
 - ▶ Free movement of goods, services, labour, and capital between the states
 - ▶ Provide for **common policies in the macroeconomic sphere**
- The **agreement was designed to be in effect for 3 years**, it is to expire on October 5, 2022. For this reason, the parties have recently begun technical and expert negotiations to **upgrade the PTA to a free trade agreement (FTA).**

- Partnership with non-Western powers:** The partnership with non-western powers is crucial to the Raisi administration's narrative of **'active resistance'**, namely that Western sanctions can be rendered ineffective through a **partnership with non-Western powers.**

- **Synergy Against US unilateralism:** President Raisi has called for synergy against US unilateralism. Iran has also made it clear that it is selling its oil and getting its money despite western economic sanctions, therefore the US cannot use its sanctions as leverage anymore.
- **Russia as a 'Eurasian Balancer':** Since the collapse of the Soviet Union in 1990, the emergence of **landlocked republics in Central Asia and Russia no longer had a threatening presence on Iran's northern borders**. It has consistently improved Iran's view of Russia in the region. **Unlike the Soviet Union**, which was seen by Iran as a hegemonic power, Russia is seen as a **'Eurasian balancer'** seeking to **bring forward a multipolar world** with the vision of **'Greater Eurasia'**.

'Greater Eurasia': It is a powerful **new geopolitical space** that could pose a **fundamental challenge to the US-led liberal international order**". At the same time, it provides Iran with opportunities to advance its geo-economic position, especially its transit role and trade, by participating in and seeking synergies with various trans-continental connectivity projects in Eurasia.

Limitations:

- **Limitations of money transfer Transactions:** Since 2019, **more than 50 per cent of the total bilateral trade** is being **conducted through national currencies** as both countries **seek to break dollar dominance** in trade and finance. Despite bearing the brunt of being **cutting-off** from the **Brussels-based Swift** since November 2018, **Iran's trade ties with Russia and the member states of EAEU have remained unimpeded** as Russia's alternative financial messaging system called **SPFS or the System for Transfer of Financial Messages** was introduced to the banks of the EAEU in October 2019.
- **Low shipping capacities of Iranian ports in the Caspian Sea:** Measures need to be taken to increase the volume of trade between Iran and the EAEU.
- **Shortage of Refrigerated Trucks and Wagons:** **More than 60% of Iran's exports** to the EAEU are **agricultural and livestock products**. Iran imports products such as meat from the Union, which also require refrigerated containers. The cold weather in the winters of Kazakhstan, Armenia and Russia, as well as the very hot weather in Turkmenistan in the summer, have created conditions within which it is not possible to export and import agricultural and livestock products without refrigerated containers.

- **Underdeveloped Rail Communication:** Another limitation is underdeveloped rail communication **between Iran and Russia in the Caucasus region**. Unfortunately, due to the non-membership of Turkmenistan and the Republic of Azerbaijan in the EAEU, Iran does not have a direct land connection with the Union. And Armenia, although a neighbour of Iran and a member of the EAEU does not share a border with Russia.

It should be noted that **Russia accounts for more than 80% of Iran's trade with the EAEU**. For this reason, **direct rail communication** between Iran and Russia **can increase the volume of trade** between the two countries.A

- **Developing transit and transport infrastructure:** In **Shanghai Cooperation Organization (SCO), summit 2021** President Raisi projected Iran as the link between the three key infrastructure projects in Eurasia:
 - **The Eurasian Economic Union**
 - **China's Belt and Road Initiative**
 - **The North-South Corridor**
- Iran could be the connecting link between **South and North Eurasia** through the **North-South Corridor**, connecting **Central Asia and Russia to India**. The north-south corridor can strengthen the convergence infrastructure in the form of the **'Great Eurasia'**.

Iran has **fifteen common land or water borders** with neighbouring countries. Numerous Iranian ports in the Caspian Sea in the north and the Sea of Oman and the Persian Gulf in the south, as well as an extensive road and rail network, provide a convenient location to transit goods between Iran and the Eurasian Economic Union. In this regard, **Iran has a very good position for the North-South corridor, the Persian Gulf-Black Sea corridor, and the One Belt One Road initiative**.

- **Russia also considers Iran** as a **geographically, economically and politically important** country located at the southern periphery and shares Iran's interests in **promoting north-south connectivity**.
- The **integration of the three countries (Iran, Azerbaijan and Russia) railways** will enhance their **transit capacities** while **promoting trans-continental trade in Eurasia**.
- Iran has agreed to **Moscow's 3+3 formulation** involving the **three Caucasus countries Azerbaijan, Armenia and Georgia plus Turkey, Russia and Iran** for unblocking of Soviet-era transportation lines across the **Aras River** into Iran.

- **A full-fledged free trade agreement between Iran and the EAEU, a reliable land transit across the Caucasus is crucial.**

Shaping Eurasian Order:

- **Russia-centric policy:** In the wake of the changes in the post-Cold War international system (when the possibility of balance between superpowers in the bipolar system was suddenly removed) **Iran turned to regionalism when the regional cooperation became a geostrategic necessity.** It can be exemplified by the pragmatic approach of Iran when it considered Russian **'counter-terrorism' operations in Chechnya** in the 1990s and 2000s as an **'internal matter' of Russia.**

The **Chechen experience** shaped Russian understanding of the threat posed by **'radical Islam'** to regional stability and territorial integrity of Russia, **Iran also feels threatened by the spread of anti-Iranian Sunni 'radical Islam'.** This convergence culminated in **Russia–the Iran counter-terrorism partnership in Syria.**

- **Shared Opposition to the NATO expansion:** The **Russia–Iran geopolitical convergence** is based on their *shared opposition to the NATO expansion* and their shared belief that **regional powers should shape the security architecture in Eurasia.** Russia considers Iran's participation as necessary in settling regional crises in Syria, Iraq and Afghanistan. Both Putin and Raisi have a convergent view- **"NATO influence under any kind of cover in the Caucasus and Central Asia threatens the common interests of independent countries."**
- **Afghanistan as a source of Regional Instability:** Both Iran and Russia have been concerned about Afghanistan becoming a **source of regional instability, terrorism and drug trafficking** after the US withdrawal and Taliban takeover of the country. Iran and Russia share an interest in denying the security role to the US and its allies.

- **Cooperation against Terrorism in Caucasus and Afghanistan:** Iran sees its **'counter-terrorism'** cooperation with Russia in Syria as a **'model of regional cooperation'** that succeeded in preventing state disintegration against the **rise of Sunni-jihadist forces.** Iran not only hopes to replicate the success in Afghanistan but also strengthen its position as Russia's co-operative security partner in Eurasia. President Raisi reiterated that **"the successful experience of cooperation against terrorism in Syria can be applied to the Caucasus and Afghanistan as well".**

Geographically, Eurasia is a tectonic plate that lies under much of Europe and Asia. However, **when it comes to political boundaries, there is no shared international understanding of what constitutes the region.**

◎ CONCLUSION:

- After the **withdrawal of the United States from the Joint Comprehensive Plan of Action (JCPOA),** the conservatives (**Ebrahim Raisi** who is a hard-line, ultra-conservative Islamist, principlist politician) have seized the ground by consolidating the Eastern dimension of Iran's foreign policy. Iran under his leadership is now looking forward to a long-term **partnership with Russia** to contribute towards stability and security in their shared neighbourhood and bring geo-economic opportunities.
- Previous administrations in Iran had tried to **evade and circumvent US sanctions,** on the contrary, the **Raisi administration's** strategy is to **neutralize sanctions,** which is being realized through **good communications** with neighbouring countries. **Raisi's administration** is firm on the **"strategy of balancing foreign relations"**. Increasing cooperation and interaction with neighbours is Iran's basic priority to increase its bargaining power, especially at a time when its economy is fragile and its international position uncertain.

ROLE OF UNHCR- A CRITICAL ANALYSIS

CONTEXT:

The world is witnessing the largest and most rapid escalation ever in the number of people being forced from their homes.

Millions of people are fleeing conflict in Syria, Iraq, Afghanistan and Myanmar and recently in Ukraine, as well as persecution in areas of Southeast Asia and Sub-Saharan Africa, creating the highest level of displacement since World War II.

● ANALYSIS:

About UNHCR:

- The **United Nations High Commissioner for Refugees (UNHCR)** was created in 1950 to **address the refugee crisis that resulted from World War II**. It is a **UN agency** mandated to aid and protect refugees, forcibly displaced communities, and stateless people. It assists in their voluntary repatriation, local integration or resettlement to a third country.
- The **UNHCR has also won the Nobel Prize for Peace twice (1954 and 1981)**. Its parent organisation is the United Nations General Assembly (UNGA). Its headquarter is situated in Geneva, Switzerland.
- UNHCR serves as the '**guardian**' of the **1951 Convention and its 1967 Protocol**. According to the legislation, States are expected to cooperate with us in ensuring that the rights of refugees are respected and protected.

● OBJECTIVE OF UNHCR:

- UNHCR's objective is to **guarantee the fundamental rules** accepted by all States concerning the right of individuals to **flee their country and seek asylum in another**.
- To facilitate the same, it **helps States face the administrative, legal, diplomatic, financial, and human problems** that are caused by the refugee phenomenon.

Understanding Refugee, Asylum – Seeker and Migrant:

- **Refugee:** Refugees are persons who are outside their country of origin for reasons of feared persecution, conflict, generalized violence, or other circumstances that have seriously disturbed public order and, as a result, require international protection. The refugee definition can be found in the 1951 Convention and regional refugee instruments, as well as UNHCR's Statute. **The UN defines refugees as those individuals that have fled their own countries because of persecution, war or violence.**

- **Migrant:** While there is **no formal legal definition of an international migrant**, most experts agree that an international migrant is someone who changes his or her country of usual residence, irrespective of the reason for migration or legal status. Generally, a distinction is made between **short-term or temporary migration**, covering movements with a duration between **three and 12 months**, and **long-term or permanent migration**, referring to a change of country of residence for a duration of one year or more.
- **Asylum-seeker:** An asylum-seeker is a person who has left their country and is seeking **protection from persecution and serious human rights violations in another country**, but who hasn't yet been legally recognized as a refugee and is waiting to receive a decision on their asylum claim. **Seeking asylum is a human right. This means everyone should be allowed to enter another country to seek asylum.**

Why do refugees need protection?

- States are responsible for protecting the fundamental human rights of their citizens.
- When they are unable or unwilling to do so often for political reasons or based on discrimination – individuals may suffer such serious violations of their human rights that they have to leave their homes, their families and their communities to find sanctuary in another country.
- Since, by definition, refugees are not protected by their own governments, the international community steps in to ensure they are safe and protected.

Who does the 1951 Convention protect?

- The 1951 Convention protects refugees. It defines a refugee as a person who is outside his or her country of nationality or habitual residence; has a well-founded fear of being persecuted because of his or her race, religion, nationality, membership of a particular social group or political opinion; and is unable or unwilling to avail him— or herself of the protection of that country, or to return there, for fear of persecution.

- The Convention is **both a status and rights-based instrument** and is underpinned by several fundamental principles, most notably non-discrimination, non-penalization and **non-refoulement**.

Non-refoulement is a fundamental principle of international law that forbids a country receiving asylum seekers from returning them to a country in which they would be in likely danger of persecution based on "race, religion, nationality, membership of a particular social group or political opinion". India is not a party to the UN Refugee Conventions. **Article 21 of the Constitution encompasses the right of non-refoulement.**

- It **builds on Article 14 of the Universal Declaration of Human Rights 1948**, which recognizes the right of persons to seek asylum from persecution in other countries.

India is not a party to the UN Refugee Conventions; it is a party to the **Universal Declaration of Human Rights of 1948** and the **International Covenant on Civil and Political Rights of 1966**.

What rights does the 1967 Protocol contain?

- The **1967 Protocol broadens the applicability of the 1951 Convention**.
- The 1967 Protocol removes the geographical and time limits that were part of the 1951 Convention.
- These limits initially restricted the Convention to persons who became refugees due to events occurring in Europe before 1 January 1951.
- The Protocol Relating to the **Status of Refugees**, alternatively known as the **1967 Protocol**, is a major international document for refugee rights.
- The protocol expands the definition of a refugee given in the Convention.
- **It also removes the Euro-centricity of the Convention**. India is not a signatory to the 1967 Protocol.

Current refugee crises across the globe:

- **Rohingya Muslims of Myanmar** fled the country after violence broke out in the country's Rakhine state. An estimated 6.7 lakh crossed over to neighbouring Bangladesh. Chin State in Myanmar's northwest has also seen large-scale displacement.
- The **Afghans were evacuated to the UAE** on behalf of the United States and other Western countries following the withdrawal of foreign

forces from Afghanistan and the Taliban's return to power. The UAE agreed to provide the Afghans with temporary housing until they could travel onwards to third countries, but six months later many said they had received no news on their immigration cases. Beyond the UAE, thousands of Afghans are in a similar state of limbo in south-eastern European countries such as Albania and Greece, and in other parts of the world, including Uganda, Mexico and Chile.

- In Africa, the three countries alone – the **Democratic Republic of the Congo, Uganda and Sudan – conflicts have led to the internal flight of some nine million people**. In many areas, security has deteriorated to such an extent that humanitarian work has been impossible and past successes, including repatriation and successful reintegration, are now jeopardized.
- According to a UN report, the **Ukraine refugee crisis passes one million** in the first week of Russia's invasion. It could be the swiftest refugee exodus in history. This took three months even in Syria. Five million people may eventually leave Ukraine. The question arises, Is the world ready to handle the worst refugee crisis of the century?

UNHCR's operational environment is characterized by four main trends. These are:

- a decreasing number of refugees
- increased internal displacement
- growing numbers and complexity of irregular and mixed migration movements
- a pressing need for reform across the humanitarian response system

Key Challenges to UNHCR:

- Growing Disregard for International Law
- Mandate to address statelessness
- Disdain for Multilateral Cooperation
- Stretched Humanitarian System (due to major emergencies and COVID-19 pandemic)
- Increase in irregular and mixed migration movements

Area of Improvements:

- **Improving the security of refugees and humanitarian workers:**
- Threats to the **physical security of refugees** and others of concern have grown in recent years. They emanate from **armed criminals, state and non-state armed actors**, local populations and even elements within the refugee community itself.

- At the same time, the “**humanitarian space**” for aid workers has also been **shrinking**, and **staff of humanitarian agencies have increasingly become the target of violent attacks**.
- To counter violence, UNHCR takes help from UN peacekeepers and national police, which help them to separate combatants from civilian elements.

Internal reform:

- One of the biggest challenges for UNHCR as an organization is how to become **more flexible, effective and results-oriented**.
- Its **administrative structures, systems, processes and staffing arrangements** are being **reviewed** to make sure that they are fully aligned with the challenges.

Promoting the use of Resettlement:

- Resettlement is a vital instrument of international solidarity and responsibility-sharing, and UNHCR is mandated to continue to promote it.
- Resettlement on some occasions has been hampered by a very restrictive implementation of anti-terrorist legislation.

Addressing the protection concerns in mixed population flows:

- To ensure refugee protection in migration-focused responses to mixed population movements. Faced with **restrictive policies and obstacles to entry into territory**, asylum-seekers and refugees have been resorting increasingly to illegal means.
- The Office fears that increasing numbers of asylum-seekers and refugees are being treated as if they were illegal migrants, and in the process, their right to international protection is violated.

In the face of barriers to immigration, some economic migrants have tried to use the asylum door, which has led to many calls for restrictive

asylum policies in an effort to curb “**bogus**” **asylum claims**, and to the perception that refugees and asylum-seekers are only after a better life.

Introduction of Results-Based Management (RBM):

- The introduction of **results-based management** has made some progress and the next step is the testing and application of **specially-designed software**. It primarily focuses on two areas:
 - ▶ Planning Tool
 - ▶ Monitoring Tool
- UNHCR’s ability to meet these challenges will have important implications for the protection and welfare of the people the Office works for.

◎ CONCLUSION:

- Reform processes within the United Nations, particularly with regard to responses to **humanitarian concerns** and notably to situations of internal displacement, require UNHCR to **adopt new methods of work and new approaches** in order to become more flexible, efficient, reliable and integrated partner within the broader UN system.
- A new humanitarian crisis is escalating now as a result of ongoing Russia’s military action in Ukraine. As many as **4 million Ukrainians** are expected to leave the country in the coming days and weeks. **It is considered the largest exodus of people in Europe since the Balkan wars**. The incidents of **double standards** and **racism inherent in Europe’s refugee** responses are glaring. There are **accounts of Polish authorities taking aside African students and refusing them entry into Poland**. It’s a **testing time for UNHCR to step up its** operation and capacity in Ukraine and neighbouring countries.

NEED FOR REFORMS IN MARKET INFRASTRUCTURE INSTITUTIONS

CONTEXT:

SEBI levying fine on NSE, its former M.D and CEO Chitra Ramkrihnan, her predecessor in NSE Ravi Narain and the Group Operating Officer of NSE Anand Subramanian.

◎ BACKGROUND:

- Ms. Chitra Ramakrishna, in her capacity of being M.D. and C.E.O of NSE, appointed Anand Subramanian as the Group Operating Officer of the National Stock Exchange in an arbitrary manner without him possessing any experience for this job.
- It is alleged that Ms. Ramakrishna appointed Mr. Subramanian on an advice given to her by a spiritual guru with whom she also shared confidential information from NSE.
- SEBI taking cognisance of this incident fined all those mentioned above.
- NSE was fined and censured by SEBI for not acting swiftly against Ms Ramakrishnan and other personnel involved in the incident even after getting complaints regarding the same.
- This incident though has called in question the role of Market Infrastructure Institutions, their management and need for reforms in them.

What are MIIs?

- Stock exchanges, depositories and clearing houses are all Market Infrastructure Institutions.
- The primary function of this institutions is to provide a platform which makes working of capital markets possible in India.
- MIIs are responsible for making capital markets accessible to investors including the retail investors.
- It is also the duty of MIIs to oversee that the functioning of capital markets is carried on with due diligence and in fiduciary capacity to safeguard the interest of the investors.

What are the specific institutions in India that qualify as MIIs?

- Stock Market in India that are registered with SEBI and they are as follows:
 - ▶ Bombay Stock Exchange Ltd
 - ▶ National Stock Exchange Ltd
 - ▶ Calcutta Stock Exchange Ltd
 - ▶ Indian Commodity Exchange Ltd

- ▶ Metropolitan Exchange of India Ltd
- ▶ Multi Commodity Exchange of India Ltd
- ▶ National Commodity and Derivatives Exchange of India Ltd
- Two depositories, namely:
 - ▶ Central Depository Services Ltd.
 - ▶ National Securities Depository Ltd.

What is a depository?

The above named depository function as banks. The only difference being that as banks holds the money of depositors, these depositories electronically store the financial securities of investors

- And the seven clearing houses:
 - ▶ Indian International Clearing Corporation (IFSC) Limited
 - ▶ Indian Clearing Corporation
 - ▶ Metropolitan Clearing Corporation of India Limited
 - ▶ Multi Commodity Exchange Clearing Corporation Limited
 - ▶ National Commodity Clearing Corporation Limited
 - ▶ National Securities Clearing Corporation Limited (NSCCL)
 - ▶ NSE IFSC Clearing Corporation Limited

What is a Clearing House?

Clearing corporations, commonly known as clearing houses or clearing firms, are entities that are associated with stock exchanges constituted to act as a designated mediator between a buyer and a seller in a financial market. The primary function of a clearing house is validation and finalization of the transaction by ensuring that both – the seller and the buyer – honour their contractual obligations.

Why are they considered important?

- Important of MIIs in India can be fathomed from the phenomenal growth that these institutions

have witnessed in terms of market capitalisation of listed companies, capital raised and the number of investor accounts with brokers and depositories and the value of assets held in the depositories' account.

- It has to be though remembered that unlike the typical financial institutions (e.g. banks and NBFCs), the number of stock exchanges, depositories and clearing corporations in an economy is limited.

Why are governance norms critical in the regulation of MIs?

- Lapses in the functioning for these institutions for any reason e.g. technical glitch, misdeed or

incapacity of their personnel etc. can result in catastrophic ramifications.

- Any news for poor performance due to above mentioned or some other reason can result and has directly resulted in withdrawal for capital from India's equity market, loss of valuable asset of the investors and mostly importantly the retail investors and loss of confidence in capital markets of India in the heart of both foreign and domestic investors.

Given the potential for a domino effect that a failure of an MI could have on the wider market and economy, governance and oversight are absolutely critical and need to be of the highest standards.

CIRCULAR ECONOMY: FROM NEW TO FOREVER NEW

CONTEXT:

The European Union has called for support to enhance 'circular economy' at a working group of the fifth session of the United Nations Environment Assembly (UNEA 5.2).

What is the concept of Circular Economy?

- A circular economy entails markets that give **incentives to reusing products**, rather than scrapping them and then extracting new resources.
- Circular economy, therefore, is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the **life cycle of products is extended**.
- In practice, it implies **reducing waste** to a minimum. When a product reaches the end of its life, its materials are kept within the economy wherever possible. These can be productively used again and again, thereby **creating further value**.
- This is a **departure from the traditional, linear economic model**, which is based on a take-make-consume-throw away pattern. This model relies on large quantities of cheap, easily accessible materials and energy.
- This can provide a way to **not only protect the environment, but use natural resources more wisely, develop new sectors, create jobs and develop new capabilities**.
- In such an economy, all forms of waste, such as clothes, scrap metal and obsolete electronics, are returned to the economy or used more efficiently.
- According to United Nations, the concept of Circular Economy works on the principle - "**the goods of today are the resources of tomorrow at yesterday's resource price**".

Why do we need to switch to a circular economy?

- The world's population is **growing** and with it the **demand** for raw materials. However, the supply of crucial raw materials is limited.
- Finite supplies also means some countries are **dependent on other countries** for their raw materials and the **supply of the same can be hampered** due to various reasons e.g. supply of semiconductors being disrupted due to Russia's war on Ukraine.

- In addition extracting and using raw materials has a **major impact on the environment**. It also increases energy consumption and CO2 emissions. However, a smarter use of raw materials can lower CO2 emissions.

Image on Next Page:

What are the benefits?

- Measures such as **waste prevention, eco-design and re-use** could save money while also reducing total annual greenhouse gas emissions.
- Currently, the production of materials we use every day account for 45% of the **CO2 emissions**.

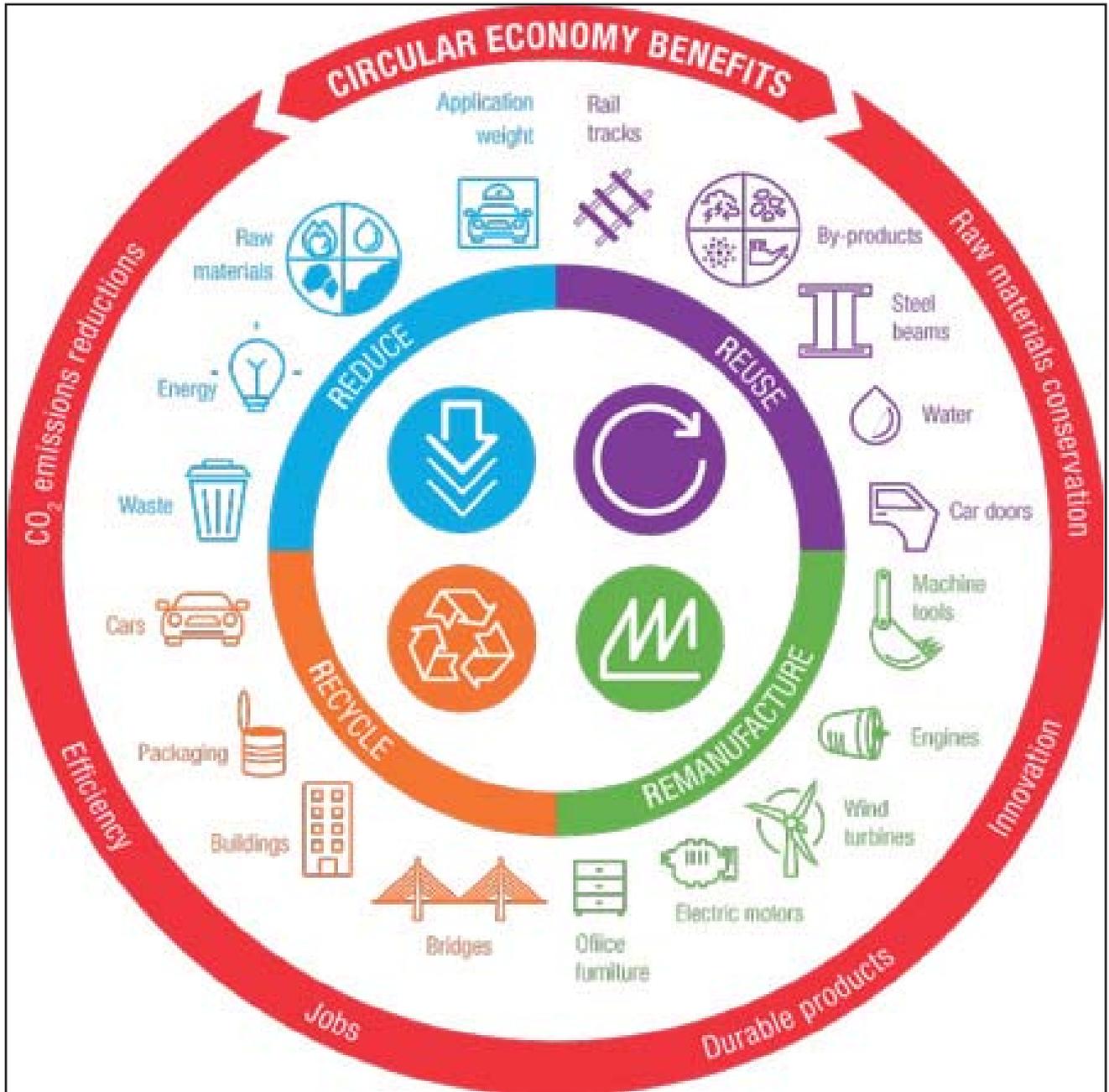
What is Eco-design?

- Eco design is both a principle and an approach. It consists of integrating environmental protection criteria over a service or a product's **lifecycle**. The main goal of eco design is to anticipate and minimize negative environmental impacts (of manufacturing, using and disposing of products). Simultaneously, eco design also keeps a product's quality level according to its ideal usage.

- Moving towards a more circular economy could deliver benefits such as
 - ▶ Reducing pressure on the environment
 - ▶ Improving the security of the supply of raw materials
 - ▶ Increasing competitiveness
 - ▶ Stimulating innovation
 - ▶ Boosting economic growth
 - ▶ Creating jobs.
- Consumers will also be provided with **more durable and innovative products** that will increase the quality of life and save them money in the long term.

What are Economic barrier to Circular Economy?

- **Social and environmental externalities are not considered in prices**. Hence financial market



signals instead of people and nature are taken into consideration when economic decisions are made.

- **The GDP index** doesn't consider social and environmental externalities, discouraging the creation of value in both these areas.
- **Prices of raw materials are fickle and at low** therefore good quality secondary resources are not competitive.
- Circular economy business models are harder to develop, as most **investors are still working under a linear economy logic** and sometimes

upfront investments are required which are at this point of time.

- The **demand** for circular products and alternatives **is still small**
- There **aren't still many qualified professionals with technical or information and communication technology' (ICT) knowledge** who can be the workforce for Circular Economy.
- Many companies still have **goals and appraisal systems** that **focus on short-term value creation**, whereas the circular economy model is a long-term value creation model.

ARE START-UPS REALLY THE NEW GROWTH ENGINES OF INDIAN ECONOMY?

CONTEXT:

Increasing number of Start-ups and Unicorns in India.

◎ BACKGROUND

- India in the last few years has seen the boom of start-ups and unicorns.
- These entities are thought off as new growth engines of the country.
- The start-up culture in India's economy though may not be a one shot panacea as is thought to be.

◎ ANALYSIS

What is a Start-up?

- The term start-up refers to a company in the first stages of operations.
- Start-ups are founded by one or more entrepreneurs who want to develop a product or service for which they believe there is demand.
- These companies generally start with high costs and limited revenue, which is why they look for capital from a variety of sources such as venture capitalists.

Venture Capitalist: is a private equity investor that provides capital to companies with high growth potential in exchange for an equity stake.

- A Start-up with valuation of \$ 1 Billion is termed as Unicorn.

Why is India seeing the rise of start-ups?

- India's demographic dividend has blessed it with population of such age group that has either not entered in the job market or is willing to leave the existing job and start a business.
- Government initiatives such as start-up India, stand-up India etc. These initiatives of the government focus on providing finance, training, market access, tax-breaks etc. to the entrepreneurs.
- Availability of investors, both foreign and domestic, whose purpose of financing start-ups is to gain multi-bagger returns.
- Increasing demand of products and services that can cater the needs of India's expanding middle class.

- Telecom and IT revolution in India has made getting access to new products and services fairly easy and therefore generating customer base through a website or an app is not that difficult for the start-ups.

How can Start-ups help the Indian Economy?

- Start-ups are providing an opportunity to the entrepreneurial youth of India an opportunity to express their idea and grow their finances exponentially.
- Wealth creation has therefore become synonymous with start-ups.
- Establishment of a start-up brings with it growth in employment opportunities.
- Creation of products or services can cater the needs of a section of Indian population and make them economically more potent.

Example of above is the availability of online e-commerce platforms to traditional artisans who can now more easily reach their customers.

- These new business entities in some cases focus their attention on solving a regional or local issue or catering to a local demand.
- This results in creation of economic opportunities in places that are not traditional known for the same hence reducing regional disparity in economy.

Why start-ups are not a complete panacea to India's economic woes?

- Statistically, a large number of start-ups do not make it big and are shut down.
- Closure of start-ups leads to lose of capital invested in them, employment of those working for and in them and also it sets a demotivating example for those willing to take chance by establishing a business entity.

Why do start-ups fail?

- Journey of all the start-ups is not uniform.
- Some Start-ups are run-aways successes, while others meet success after some hustle and many of them end up failing.

Some the reasons why many start-ups do not end up successful are-

- Weak business model followed by start-ups
 - Poor planning by the entrepreneurs
 - Faulty costumer insights
 - Lack in originality of the idea which results in multiple products and services catering to the same demand.
 - Lack of focus on the existing product and services under consideration or provided to the customers.
-
- Employment opportunities in start-ups, especially the ones that are technology and service based, are not proportionate to their valuation.
 - Disparities in the salary and working conditions are also known to exist in the start-up ecosystem to a large extend.
 - It is important to note that the founders and others in top level management of the start-ups take home huge pay outs that are proportional to

valuation of the company but ordinary employees on the other hand receive less the bare minimum in name of optimum utilization of resources.

- The start-up sector being less regulated, has also led to no or minimum labour laws being applied to it.
- Most labourers working for the start-ups are not entitled to worker's welfare legislations and therefore face exploitation.

Way Forward:

- Start-ups are the new growth engines and money multipliers in the economy and hence they deserve to be promoted. Though giving them a complete free hand and living their employees out of labour legislation is not feasible. This would only create a situation that will lead to concentration of wealth in the hands of few.
- Complete reliance on Start-ups for economic growth cannot be made as they too are and can be hit by business cycles and face contraction and/or closure.

ECONOMIC N-BOMB DROPPED ON RUSSIA, EXCLUDED FROM SWIFT

CONTEXT:

Exclusion of number of Russian banks by US, UK and European Union from SWIFT.

◎ BACKGROUND:

- Western countries, led by USA, have imposed economic sanctions on Russia on the backdrop of its military attack on Ukraine.
- One of the modes in which these economic sanctions have been imposed is the exclusion of Russian Banks from the SWIFT arrangement.

◎ ANALYSIS:

What is SWIFT?

- Society for Worldwide Interbank Financial Telecommunication (SWIFT)** is an organisation that provides services related to the execution of financial transactions and payments between banks of different countries.
- Its principal function is to serve as the **main messaging network** through which **international payments are initiated**.
- SWIFT does not actually move money**, it operates as a middleman to verify information of transactions by providing secure financial messaging services to more than 11,000 banks in over 200 countries.
- It is a **Cooperative Society** registered in La Hulpe, Belgium.

What is the organisational structure of SWIFT?

- Work of SWIFT is **overseen by Central Banks of 11 countries**, they are- Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, the United States and Belgium.
- It is a **cooperative society under Belgian law** and is owned and controlled by its shareholders, representing approximately 3,500 financial institutions across the world.
- The **shareholders elect a board of 25 independent directors** representing banks across the world. This board governs the company and oversees its management.
- SWIFT also has an **executive committee** which is a group of full-time employees **headed by the Chief Executive Officer**.

- Each **nation's usage of SWIFT's messaging service** determines both SWIFT shareholding allocations and the number of board directors that each nation is entitled to.

Why has Russia been expelled from SWIFT?

- Russian invasion of Ukraine** is considered by the Western Countries to be a violation of international law.
- Hence, as **a censure against Russia for this act**, US and its European allies have excluded a number of Russian Banks from SWIFT.

What impact will this step have?

- Russian banks will now find it difficult to communicate with international peers which will result in **slowing down trade** the country's trade and make its **transactions costlier**.
- The companies and individuals of Russia therefore will find it **harder to pay for imports and receive cash for exports**.
- Also it will be **difficult** for the Russian companies and individuals **to borrow or invest overseas**.

Are alternatives to SWIFT available?

- Russia, in the year 2014, has developed **System for Transfer of Financial Messages** also called as SPFS.
- The above was set up, by the Central Bank of Russia, as an alternative to SWIFT but has **struggled to be accepted as a messaging medium in international transactions**.
- China had also launched the **Cross-Border Interbank Payment System (CBIP)** in 2015 to internationalise the use of the yuan.
- It allows global banks to clear **cross-border yuan transactions** directly.
- CIPS itself still relies heavily on SWIFT** for cross-border financial messaging though its potential has been acknowledged by many experts and financial institutions.

Was any other country expelled from SWIFT?

- Iran, in the year 2012, was banned from SWIFT.
- It was done as part of sanctions against Iran's nuclear programme.

MOST CARBON CAPTURE & UTILIZATION TECHNOLOGIES MAY BE COUNTERPRODUCTIVE

CONTEXT:

Most carbon capture and utilization (CCU) technologies, which suck carbon dioxide (CO₂) from the atmosphere and convert it into fuel or other valuable products, might fail to help the world reach Net Zero emissions by 2050, according to a new study.

◎ BACKGROUND:

- CCU is considered an important tool to help countries halve their emissions by 2030 and reach **net-zero** by 2050.
- These goals are crucial to meet the **Paris Agreement** targets for restricting global warming to 2 degrees Celsius (°C), and preferable to 1.5°C, over pre-industrial levels.

◎ ANALYSIS:

- A majority of these systems are **energy intensive** and the resultant product can **also release CO₂** into the atmosphere.
- Countries should narrow down on the **handful of technologies** that show more promise and channel investment in them.

What is CCUS?

- Carbon capture, utilization and storage (**CCUS**), is a process that **captures** carbon dioxide emissions from sources like coal-fired power plants and either **reuses or stores** it so it will not enter the atmosphere.
- Carbon dioxide storage in **geologic formations** includes oil and gas reservoirs, coal seams and deep saline reservoirs -- structures that have stored crude oil, natural gas, brine and carbon dioxide over **millions of years**.

Status of the Technology:

- As of 2021, **27 carbon capture, utilization and storage facilities** are operating worldwide, and five others are under construction. Many are in the research and development phase, with 67 in the advanced stage and seven in the early stage.
- Typically, a technology **takes 20-30 years** to progress from the research and development stage to being available in the market.
- The authors of the report rated CCU on their **technology readiness level (TRL)** – ranging from the basic concept (**TRL 1**) to successful, real-life operation (**TRL 9**).

- For a CCU technology to be ready and make a difference on the ground in 2030, it must have reached at least **TRL 6** by 2020, according to the study.

Boon or bane?

- Replacing a conventional fuel with a synthetic fuel like methanol produced via CCU is likely to be a successful mitigation strategy **only if clean energy is used to capture CO₂** and convert it into synthetic fuel.
- This raises the question: Can this clean energy not be used more easily and efficiently to **directly replace the use of conventional fuel?**
- The researchers warned that most CCU techs **might divert attention** from more effective emission reduction options like carbon capture and permanent storage and reducing consumption.

Promising technologies:

- CO₂ captured using CCU technologies are converted into **fuel** (methane and methanol), **refrigerants** and **building materials**.
- The captured gas is used directly in **fire extinguishers, pharma, food and beverage industries** as well as the **agricultural sector**.
- Using CO₂ to improve crop yields in **agricultural greenhouses** and **enhanced oil recovery** are two examples of mature CCU technologies.
- Combining CO₂ with **steel slag** (an industrial byproduct of the steel manufacturing process) to make **construction materials** are compatible with the Paris Agreement goals.
- Taking stock of the current CCU technologies in meeting the Paris goals can help nations redirect funding to technologies that are more likely to reduce emissions drastically.

Progress in India:

- Keeping pace with the global developments to **building CCU capacity**, the Indian government announced that it would establish **two CCU centres**:
 - The National Centre of Excellence in Carbon Capture and Utilization at IIT, Bombay and

- ▶ The National Centre in Carbon Capture and Utilization at Bengaluru's Jawaharlal Nehru Centre for Advanced Scientific Research.
- The technology is **attractive to industries that lack effective clean energy alternatives**, especially **carbon-intensive sectors** that manufacture cement, iron and steel or chemicals.
- Oil and Natural Gas Corporation (**ONGC**) signed a MoU with Indian Oil Corporation Limited (**IOCL**) for enhanced oil recovery (**EOR**) by injecting CO2 captured from IOCL's Koyali refinery, Gujarat.
- **Countries like India** would need **more construction material** in the future, and **climate-**

compatible construction blocks could be a game-changer.

Way Forward:

The country is in a very early stage of adopting these nascent technologies. Over the next couple of years, India should invest in building and strengthening research and development work on CCU technologies. Demonstrating their capabilities will increase stakeholders' confidence in the technology while also helping them understand its uncertainties.

UN ENVIRONMENT MEET: 175 NATIONS SIGN MANDATE TO CURB USE OF 'PLASTIC'

CONTEXT:

One hundred and seventy-five countries, parties to the United Nations Environment Assembly (UNEA), on Wednesday signed a mandate which makes it legally binding for the signatories to address the full life of plastics — from production to disposal, to end plastic pollution.

◎ BACKGROUND:

- Two major proposals have emerged during years of international discussions about ways to reduce single use plastic.
- The first, by Peru and Rwanda, calls for a full spectrum approach to plastic pollution, covering raw materials extraction, plastic production, as well as plastic use and disposal.
- A second proposal, sponsored by Japan, calls for an international agreement to address marine plastic pollution covering the whole life cycle and promoting resource efficiency and circular economy, including reuse.
- The key difference is that Japan's approach concentrates on marine plastic pollution, while the Peru-Rwanda proposal covers plastic pollution in all environments.

◎ ANALYSIS:

A Global Plastics Treaty adhering to the blueprint laid out in the mandate will join the Montreal Protocol and the Paris Climate Agreement as one of the most significant international environmental laws in world history.

Highlights of the Mandate:

- According to the mandate, the treaty will tackle the whole life cycle of plastic — not just post-consumer waste.
- This is a critical shift in international policymakers' approach to the crisis, which previously focused on plastic as a "marine litter" issue.
- The mandate recommends measures to tackle plastic production, which as of now is slated to almost quadruple by 2050, and take up 10-13% of global carbon budget, endangering climate.
- The mandate also recommends addressing the toxic burden of plastic, following hundreds of studies showing the impact of plastic in the environment and its presence in air, agricultural lands, and drinking water.

- Toxic chemicals from plastic have been shown to enter the human body through a variety of routes, causing infertility, cancers, and metabolic dysfunction, among others.

Indian Stand on the Mandate:

- The Indian text proposed voluntary action, which remained a separate document throughout the negotiations, with a majority of countries favoring binding commitments.
- The term voluntary was retained as an option upon insistence by India.
- New Delhi was also keen on the insertion of the words "national circumstances and capabilities" in the text which is in alignment with its position of common but differentiated responsibility under the Paris agreement.

How big is this plastic issue?

- Plastic is a synthetic polymer made of gasoline with structures suitable for various uses, including packaging, construction, household and sports equipment, automobiles, electronics and agriculture.
- More than 300 million tons of plastic are produced annually, half of which are used to design consumer goods, such as shopping bags, cups and straw.
- Only 9% of plastic waste is recycled. About 12% burned, while 79% accumulated in landfills.
- According to IUCN, at least eight million tons of plastic end up in the oceans every year.
- 3 million tons of Indian plastic waste was recovered in 2018-19.
- This translates to about 9,200 tons per day (TPD).
- The total amount of municipal waste is 55-65 million tons; plastic waste is about 5-6 percent of the solid waste generated in the country.

Plastic Waste Management Amendment Regulations, 2021:

- These laws prohibit certain types of plastic items that are used and have 'low use and high waste disposal capacity' by 2022.

- The permissible size of plastic bags, currently **50 microns**, will be increased to **75 microns** from September 30, 2021, and to **120 microns** from December 31, 2022.
- **High-strength plastic bags** are easily treated as waste and have high **recycling performance**.
- At the policy level, the concept of **Extended Product Responsibility (EPR)**, already mentioned under the **2016 Regulations**, should be promoted.
- EPR is a policy in which **producers** are given significant, financial and/or physical **responsibility** for the treatment or disposal of post-consumer products.

Suggestive measures:

- As **consumers**, we need to make sure that all the plastic waste that leaves our homes is **separated** and not contaminated with food waste.
- Handling plastic waste requires **practical knowledge**, not only for those who manufacture plastic but also for those who use it.

- **The owner of the product** and the manufacturer must try and **understand the penalty** for the plastic assembly that you will encounter after its packaging purpose has been used.
- Citizens should bring about a **change in behavior** and contribute to non-pollution and help to separate waste and waste management.
- **Encouraging innovation** in the use of **alternative plastics** identification methods and digital plastic waste management solutions.

◎ CONCLUSION:

India has **banned single-use plastic**, which will come into effect on July 1. The Centre has also recently issued **fresh guidelines** for manufacturers, brand owners, importers of plastics making it **mandatory to recycle** and has drawn up a pathway to incorporate the large informal sector, which is involved in plastic recycling, in a more formal **circular economy**.

IPCC REPORT WARNS OF UNAVOIDABLE MULTIPLE CLIMATE HAZARDS

CONTEXT:

Recently second part of IPCC's Sixth Assessment Report which talks about climate change impacts, risks and vulnerabilities, and adaptation options has been released.

The first part, centered around climate change's scientific basis, was released last August. The third instalment, set to come out in April, will look into the possibilities of reducing emissions.

◎ BACKGROUND:

- The Assessment Reports, the first of which was in 1990, are the most comprehensive **evaluations of the Earth's climate**.
- Hundreds of experts go through every piece of relevant and published scientific information available to prepare a common understanding of climate change.
- The four subsequent reports came out in **1995, 2001, 2007, and 2015**. These are the **basis of the global response on climate change**.

◎ ANALYSIS:

Key findings of the report:

- Climate impacts are more widespread and severe than expected
 - ▶ Climate change is already causing widespread disruption in every region in the world with just 1.1 degrees C of warming.
 - ▶ Withering **droughts, extreme heat** and **record floods** already threaten **food security** and **livelihoods** for millions of people.
- Worse impacts from climate change in the near-term
 - ▶ Even if the world rapidly **decarbonizes**, greenhouse gases already in the atmosphere and current emissions trends will make some very significant **climate impacts unavoidable** through 2040.
 - ▶ The IPCC estimates that in the next decade alone, climate change will drive **32-132 million** more people into **extreme poverty**.
 - ▶ Global warming will **jeopardize food security**, as well as increase the incidence of **heat-related mortality, heart disease** and **mental health** challenges.
- Risks will escalate quickly with higher temperatures
 - ▶ The report finds that **every tenth of a degree** of additional warming will escalate threats to **people, species** and **ecosystems**.

- ▶ **Inequity, conflict** and **development** challenges such as **poverty, weak governance**, and **limited access** to basic services like healthcare not only heighten sensitivity to hazards, but also **constrain communities' ability to adapt** to climatic changes.
- ▶ Even limiting global warming to 1.5 degrees C—a global target in the Paris Climate Agreement — **is not safe for all**.

For instance, with just 1.5 degrees C of global warming:

- Many glaciers around the world will either disappear completely or lose most of their mass;
- An additional 350 million people will experience water scarcity by 2030;
- As much as 14% of terrestrial species will face high risks of extinction.

○ Adaptation is crucial

- ▶ **Gaps in Adaptation:** The report also highlights **large gaps in the adaptation actions** that are being taken and the efforts that are required. It says these gaps are a result of "lack of **funding, political commitment, reliable information, and sense of urgency**".
- ▶ Adaptation is essential to reduce harm, but if it is to be effective, it must go hand in hand with **ambitious reductions in greenhouse gas emissions** because with increased warming, the effectiveness of many **adaptation options declines**.
- ▶ Feasible solutions already exist, but more support must reach **vulnerable communities**.
- ▶ The IPCC estimates that **adaptation needs** will reach \$127 billion and \$295 billion per year for developing countries alone by 2030 and 2050, respectively.

Key findings with respect to India:

- Over 3.5 billion people, over **45%** of the global population, were living in **areas highly vulnerable to climate change**.

- The report identifies **India as one of the vulnerable hotspots**, with several regions and important **cities** facing very **high risk of climate disasters** such as **flooding, sea-level rise** and **heat-waves**.
 - ▶ For example, **Mumbai** is at high risk of **sea-level rise and flooding**, while **Ahmedabad** faces serious danger of **heat-waves**.
- The IPCC report has looked at the **health impacts of climate change**.
 - ▶ It has found that climate change is increasing **vector-borne** and **water-borne diseases** such as **malaria** or **dengue**, particularly in sub-tropical regions of Asia.
 - ▶ It has also said **deaths related** to circulatory, respiratory, diabetic and infectious diseases, as well as infant mortality, are likely to increase with a rise in temperature.
 - ▶ **Increasing frequency of extreme weather events** like heatwaves, flooding and drought,

and even air pollution was contributing to **under-nutrition, allergic diseases** and even **mental disorders**.

About IPCC:

- The Intergovernmental Panel on Climate Change (**IPCC**) is the international body for **assessing the science related to climate change**.
- The IPCC was set up in 1988 by the World Meteorological Organization (**WMO**) and United Nations Environment Programme (**UNEP**).
- It aims to provide **policymakers** with **regular assessments** of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.

HYDROPOWER IN INDIA: BALANCING GLOBAL CARBON BENEFITS WITH LOCAL ENVIRONMENTAL COSTS

CONTEXT:

The large number of researchers criticizing the construction of hydro-projects in the Himalayan mountains highlight environmental damage imposed on local populations.

It is hard to deny the benefits acquired from hydropower, however, the local environmental compromises cannot be dismissed.

◎ BACKGROUND:

- In 1947, hydropower capacity in India was about **37 percent** of the total power generating capacity.
- In the late 1960s, growth in **coal-based power generation initiated the decline in hydropower's share** in both capacity and generation.
- In 2022, hydropower capacity accounted for roughly **11.7 percent** of total capacity.

◎ ANALYSIS:

What is Hydropower?

Hydro electricity is the conversion of the **mechanical energy in flowing water into electricity**. Hydro electricity is generated when the force of falling water from dams, rivers or waterfalls is used to **turn turbines**, which then drives generators that produce electricity. The energy produced is directed to a substation, where transformers "**step up**" the voltage before its transmission to the electricity grid.

Declining Growth in Power generation from Hydro Station in past:

- **1947-1967:** Power generation from hydro stations grew by **11.8%**
- **1967-1987:** Power generation from hydro stations grew by **5.6%**
- **1987-2007:** Power generation from hydro stations grew by **around 3%**
- **2007-2019:** Power generation from hydro stations grew by **under 1%**

Global Benefits:

- In 2020, hydropower contributed to 4,370 Terawatt-hours (TWh) of **global electricity generation**, the **highest contribution** by a renewable and low carbon energy resource.

- **Reservoir-based hydropower** projects also provide **flood control** and a **dependable water supply** for drinking and irrigation purposes.
- Many hydropower plants can ramp their electricity generation **up and down very rapidly** as compared with other power plants such as nuclear, coal, and natural gas.
- Hydropower plants can also be **stopped and restarted** relatively smoothly.
- This high degree of **flexibility** enables them to adjust quickly to shifts in demand and to compensate for fluctuations in supply from RE sources.

For Example: Hydropower **demonstrated** these capabilities on the 5th of April 2020 when most households in India **switched off** electrical lights for **nine minutes**. The **anticipated** electricity demand reduction was **12-14 GW** but the **actual** demand loss was over **32 GW** for 49 minutes, more than double the demand loss anticipated. Hydro generation stepped in increasing and then decreasing supply within few minutes.

Local Environmental costs:

- Twelve projects of total capacity of over 3,500 MW have either been **terminated** or held up due to **local environmental concerns**.
- Forty projects of capacity 13633 MW have either been **abandoned or delayed** due to local opposition to the projects rooted in **local environmental concerns**.
- In the last few years, many of India's newer hydro-power projects on **the Himalayan rivers** have been **damaged by floods and landslides**. Though recurrent floods are a natural phenomenon, they can be aggravated by **anthropogenic interventions**.
- **High precipitation** in the Himalayas, coupled with the sudden fall in altitude in the mountains of that region results in **large volume of water gushing** down river channels.

- Construction of hydro projects and related infrastructure such as roads often aggravate this phenomenon.

Push for Hydropower:

In March 2019, the government approved targeted measures to promote hydropower development in India. This included

- Inclusion of **large hydro power** projects as RE sources.
- Hydro-purchase obligation** (HPO) as a separate category in the non-solar renewable purchase obligation (RPO).
- Tariff rationalization** measures including providing flexibility to the developers to determine tariff.
- Increasing debt repayment period** to 18 years, and introduction of escalating tariff of 2 percent.
- Budgetary support** for funding flood moderation component of hydropower projects on case-to-case basis for enabling infrastructure

Challenges:

- The hydropower generation is highly **capital-intensive** mode of electricity generation.
- Barring a few small projects in central and southern India, **most are in the North and North-eastern states.**

- This means **reinvigoration of local agitations** over environmental compromises.
 - This is justified given that the **massive flash floods** in Uttarakhand in 2013 caused 5000 deaths, destroyed homes and damaged hydropower projects.
- The 12th plan cautioned that “hydro-power projects on the **Himalayan Rivers** may not be viable even if they are looked at from a **narrow economic perspective**”.
- The Himalayas are **relatively young mountains** with high rates of erosion. There is **little vegetation** in the upper catchment to bind soil.
- High sediment load** reduces productive life of power stations through **heavy siltation**.

◎ CONCLUSION:

- Local environmental concerns cannot be dismissed as **environmental fundamentalism** or **anti-developmentalism**. The **trade-off** between the local and global environmental benefits of hydropower are real. The **costs are local**, and the **benefits are global** and to some extent national.
- It is important that the **government policy**, in its enthusiasm to contribute to the global public good of carbon reduction, **does not ignore the cost imposed** on the local environment and populations dependent on it.

UNDERSTANDING OCEANS: WHY UNESCO WANTS TO MAP 80% OF THE WORLD'S SEABED

CONTEXT:

Around 80 per cent of the world's ocean floors will be mapped by 2030, pledged the United Nations Educational, Scientific and Cultural Organization (UNESCO).

According to UNESCO, only 20 per cent seabed has been mapped and studied.

◎ BACKGROUND:

UNESCO started working towards this goal in **2017** when it joined hands with Japan's **Nippon Foundation**, a non-profit that works on marine resource development among other projects, to launch the **Seabed 2030 program**.

Seabed 2030 Project:

- Seabed 2030 is a collaborative project between the **Nippon Foundation** of Japan and the General Bathymetric Chart of the Oceans (**GEBCO**).
- It aims to bring together all available **bathymetric data** to produce the definitive **map of the world ocean floor** by 2030 and make it available to all.
- The project was launched at the United Nations (UN) **Ocean Conference** in June 2017 and is aligned with the UN's **SDG 14** to conserve and sustainably use the oceans, seas and marine resources.

◎ ANALYSIS:

The repository of knowledge will be gained through studying the topology and depth of seafloors to identify the following:

- Location of **ocean faults**
- Workings of **ocean currents and tides**
- Transport of **sediments**

Why is the study of the ocean floor important?

- The knowledge of **bathymetry** (the measurement of the shape and depth of the ocean floor) is instrumental in understanding several natural phenomena, including **ocean circulation, tides, and biological hotspots**.
- It also provides key inputs for
 - ▶ Navigation,
 - ▶ Forecasting tsunamis,

- ▶ Exploration for oil and gas projects,
 - ▶ Building offshore wind turbines,
 - ▶ Fishing resources
 - ▶ For laying cables and pipelines.
- This data becomes highly valuable during **disaster situations**.

Importance in better understanding climate change:

- The maps would also ensure a better understanding of **climate change**.
- Since floor features including **canyons** and **underwater volcanoes** influence phenomena such as the **vertical mixing of ocean water**, and ocean currents — which act as **conveyor belts** of warm and cold water, thus influencing the weather and climate.
- Climate change has **impacted** the flow of these currents, and more knowledge about them would help scientists create **models forecasting** the future behavior of the climate, including sea-level rise.

Technologies used to map ocean floor:

- In the past, satellites and **planes carrying altimeter instruments** have been able to provide large swathes of data about the ocean floor.
- The Seabed 2030 Project, aims to obtain higher quality information using equipment such as **deep water hull-mounted sonar systems**, and more advanced options such as **Underwater Vehicles**.
- Recent technological advancements will propel the research.
 - ▶ **Multiple-beam sonars** to measure water height at **different points and directions simultaneously** is one such innovation that will help **scan seabeds** in a shorter period.
- Deploying a fleet of 50 dedicated **mapping vessels**
- **Transmission of cartographic data:** For this, the project aims to rope in governments, private companies, and international organizations to acquire data.

© CONCLUSION:

- UNESCO also launched a **repository of educational content** for policymakers and curriculum developers for a holistic approach towards **strengthening ocean research**.
- This ambitious initiative of mapping 80% of ocean floor is driven by a **strong motivation to empower the world** to make policy decisions, **use the ocean sustainably** and undertake **scientific research** based on detailed **bathymetric information** of the Earth's seafloor.

STATE AS A MORAL AGENT

CONTEXT:

It has become quite noticeable that modern world politics across the globe has lacked a guiding morality in which we can hold states morally accountable in both the international and domestic spheres.

This can be seen in the never-ending wars and occupations across the Middle East, South-East Asia, and the recent one in Ukraine.

Now, attempting to implement such guiding moral principles seems to be an impossible task mainly because of the massive difficulties that one would face in trying to get the 195 countries around the world to agree on such principles.

The inevitable effects of the Climate Crisis and the need to see basic human rights observed across the world are enough reasons to at least discuss the question: How can we begin to hold collective agents, states specifically, accountable for their actions?

Scholar and philosophical perspectives supporting State as a moral agent:

- To begin a discussion on how to hold the state morally responsible, it seems necessary to look back at how philosophers have traditionally discussed the agency of the state and figure out what features must a state have to be able to say that it can be held morally responsible.
- **Phillip Pettit** establishes conditions that must be met for a collective entity to hold moral responsibility. Though Pettit does not specifically talk about the state, we can observe that the argument he lays out for collective entities as a whole can be used for the state by breaking down the argument and analyzing how and why a state meets these same conditions.
- This will include deciphering what the state owes its citizens and how to decipher whether an action taken by the state, in the domestic sphere, is morally right or wrong. While doing this, we can lay the groundwork for holding states morally responsible for their actions, which can be rarely seen in the world anymore, and help craft the image of a morally just state.
- To start analyzing the moral responsibilities of states and what a morally right or wrong state looks like, we must have a moral theory to use as the framework. While traditionally agential theory arguments have been running through **Kantian** and **Rights-Based moral framework**, we can see that the argument can better be laid out using a form of Virtue Ethics.
- By using **Virtue Ethics**, we can achieve two things. First, we can create The Virtues of the State, which will resemble the virtues that already exist for moral agents, but will be specifically tied to actions that are uniquely made by states. This will provide us with basic moral principles that we can use to judge the moral status of a states' action. Second, through these created virtues, we can form the

image of what a Virtuous State would look like. This can be used by states as a moral exemplar to strive towards. Virtue Ethics is rarely used within the political philosophy and global justice spheres because it has been traditionally focused on an individual actor.

- However, by successfully establishing the agential theory of moral agency for collective entities, like states, we can talk about states in the same sense that we talk about individual moral actors within Virtue Ethics.
- **Locke** wrote that all individuals are equal in the sense that they are born with certain "inalienable" natural rights. That is rights that are God-given and can never be taken or even given away. Among these fundamental natural rights, Locke said, are "life, liberty, and property." Locke believed that the most basic responsibility of the state is the preservation of mankind. To serve that purpose, he reasoned, individuals have both a right and a duty to preserve their own lives.

Scholar and philosophical perspectives negating the role of State as a moral agent:

- **Machiavelli** made a clear distinction between distinctions between politics on the one hand and religion and ethics on the other and in doing so he has accorded a subordinate position to the latter. He ignores the ethical purpose of the state. To him, the state is not a means but an end in itself with its own interest. The interest of the state justifies everything. The state has no ethics. State actions are not to be judged by individual ethics.
- In exercising political power, Machiavelli opines that a ruler should give priority to what is good for the state rather than what is moral or immoral. A ruler should not lag behind even in the employment of violence, cruelty and bad faith. Appreciating the good qualities of a ruler, Machiavelli emphasized

that he cannot part with the bad means to be an able leader. He says public morality need not necessarily be identical with private morality because the ends of public morality may not necessarily be identical with those of private morality. Hence Machiavelli prescribed a double standard of conduct for the ruler and for the individual citizens.

- The main aspects of **Hobbes's** political philosophy revolve around the contrasting relationship between the state of nature (a state of war) and the State itself as one of peace and cooperation. While dealing with the selfish nature of human beings, Hobbs gives exceptional powers to the state and gives away its requirement to be in a moral obligation to serve the ultimate purpose of securing the right to life of its citizens.

- **Realism** school of thought in international relations often site National Interest as the ultimate tool to advance the state policies, irrespective of moral obligations of the state. It can be seen in the context of the Russia Ukraine war, where India is forced to take a balanced stand despite major international opinion against Russian military operation.

◎ **CONCLUSION:**

The role of the state in modern times undeniably goes beyond securing the territorial integrity of the nation-state and maintaining law and order. In recent times, mechanisms like Universal Declaration on Human Rights and UN Human Rights Council can be strengthened to implement the moral obligations of the states, for which there needs a broad international consensus.

SECTION: B

(PRELIMS)

CURRENT AFFAIRS

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150TH BIRTH ANNIVERSARY YEAR OF SRI AUROBINDO

◎ CONTEXT:

The Government is committed to expanding Auroville into a 'city' in line with the existing Master Plan, amidst reaffirmed support to the experimental township.

- The first Auroville Festival was organized recently to mark the **150th birth anniversary year of Sri Aurobindo**.

About Sri Aurobindo:

- Sri Aurobindo was born in Calcutta in **1872**.
- After studying in London, he returned to India in **1893** and worked for the **Princely State of Baroda in the service of the Maharaja and as a professor in Baroda College**.
- During this period he also joined a revolutionary society and took a leading role in secret preparations for an uprising against the British Government in India.
- In 1906, soon after the **Partition of Bengal**, Sri Aurobindo quit his post in Baroda and went to Calcutta, and became **one of the leaders of the Nationalist movement**.
- He was the first political leader in India to openly put forward, in his newspaper **Bande Mataram**, the idea of complete independence for the country.
 - He was prosecuted twice for sedition and once for conspiracy, he was released each time for lack of evidence.
- In **1910 he withdrew from politics** and went to Pondicherry in order to devote himself entirely to his inner spiritual life and work.
 - During his forty years in Pondicherry he evolved a new method of spiritual practice, which he called the **Integral Yoga**.
 - Its aim is a spiritual realisation that not only liberates man's consciousness but also transforms his nature.
 - In **1926**, with the help of his spiritual collaborator, the Mother, he founded the **Sri Aurobindo Ashram**.
- Among his many writings are **The Life Divine, The Synthesis of Yoga and Savitri**.

About Auroville:

- It was founded in **1968 by Mirra Alfassa**, known as '**The Mother**'.
- Auroville currently has a population of 3200 people, with the **Auroville Foundation** owning 3,300 acres of land. A plan, known as the **Galaxy Plan**, envisages a city of 50,000 residents.
- Created on the lines of the **Galaxy Plan**, the Auroville Universal Township Master Plan (perspective 2025) was approved by the **HRD Ministry in 2001**.
- According to the Master Plan, the 'Galaxy' is planned to be 20 square kilometres in size, of which 5 sq km are to be the city and 15 sq km are to be the 'green belt'.
- The city is planned to have **four zones: residential, cultural, industrial and international**.
 - ▶ Apart from this, there will be the '**Crown**', which the Master Plan defines as "a special use zone, which traverses all the four zones in a concentric fashion with a width of 75 meters, consisting of a circular road with buildings facing it."
 - ▶ This Crown area will provide most of the service facilities required to support the activities in the four zones.

KONARK WILL NOW LIGHT UP ITS SUN TEMPLE WITH SOLAR ENERGY

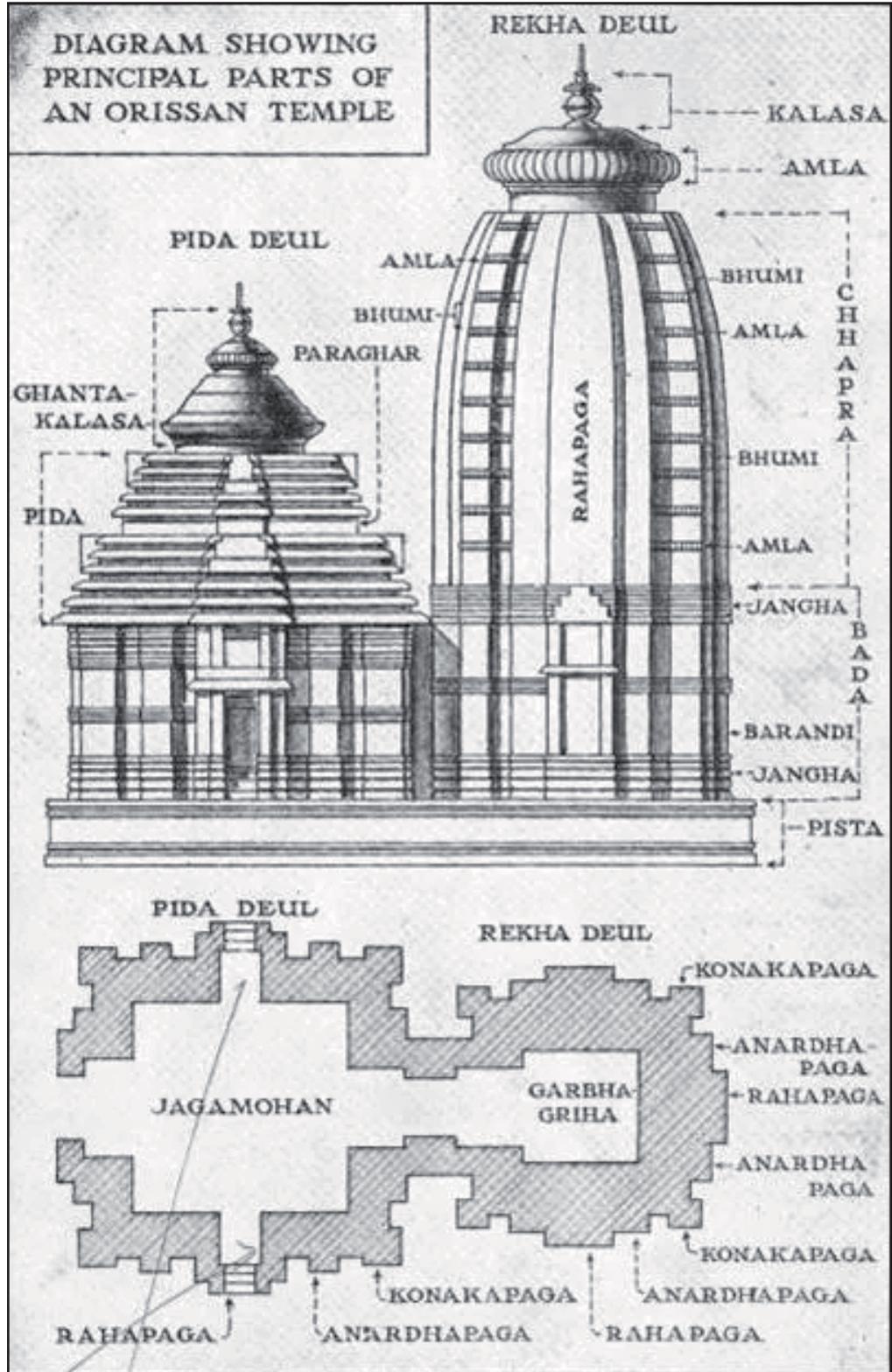
© **CONTEXT:** The Ministry of New and Renewable Energy (MNRE) has taken up the complete solarisation of Konark Sun Temple and Konark town in Odisha.

About Scheme:

- The scheme plans to set up the **10-MW grid-connected** solar project and various solar off-grid applications such as solar trees, solar drinking water kiosks, and off-grid solar power plants with battery storage,
- It is not just the temple; even the Konark town will be covered as part of the scheme.
- The **implementation** of this project will be done by the Odisha Renewable Energy Development Agency (**OREDA**)
- Also, **100% central financial assistance** of around **Rs. 25 crores** from the Government of India through the MNRE.

About Konark Sun Temple:

- The temple is a **World Heritage Site** is situated in the eastern state of Odisha and is a massive temple **dedicated to the Sun** God temple.
- The alignment of the Sun Temple is in the **east-west direction**.
- Great poet Rabindranath Tagore wrote of Konark: "Here the language of stone surpasses the language of man."
- The main Temple was called by European sailors "**The Black Pagoda**" as it formed an important landmark for them in their coastal voyage.
- It forms part of the **golden triangle of Odisha**, along with Puri and Bhubaneswar, and attracts tourists, pilgrims, and history and art lovers.
- It was built by **King Narasimhadeva I** of the Eastern **Ganga dynasty** from **1238-1250 CE**.
- The Sun temple belongs to the **Kalinga School of Indian Temples**.
- Its architecture has all the defining elements of the Kalinga architecture. It includes:
 - Shikhara (crown)
 - Jagmohana (audience hall)
 - Natmandir (dance hall)
 - Vimana (tower)
- In Kalinga Architecture, basically a temple is made in two parts, a tower and a hall.
 - The tower is called deula
 - The hall is called jagmohan.
- The walls of both the deul and the jagmohan are lavishly sculpted with architectural motifs and a profusion of figures.
- The most repeated form is the **horseshoe shape**, which has come from the earliest times, starting with the large windows of the chaitya-grihas.
- Examples of Kalinga architecture:
 - Rajarani temple (Bhubaneswar)
 - Jagannath Temple, Puri



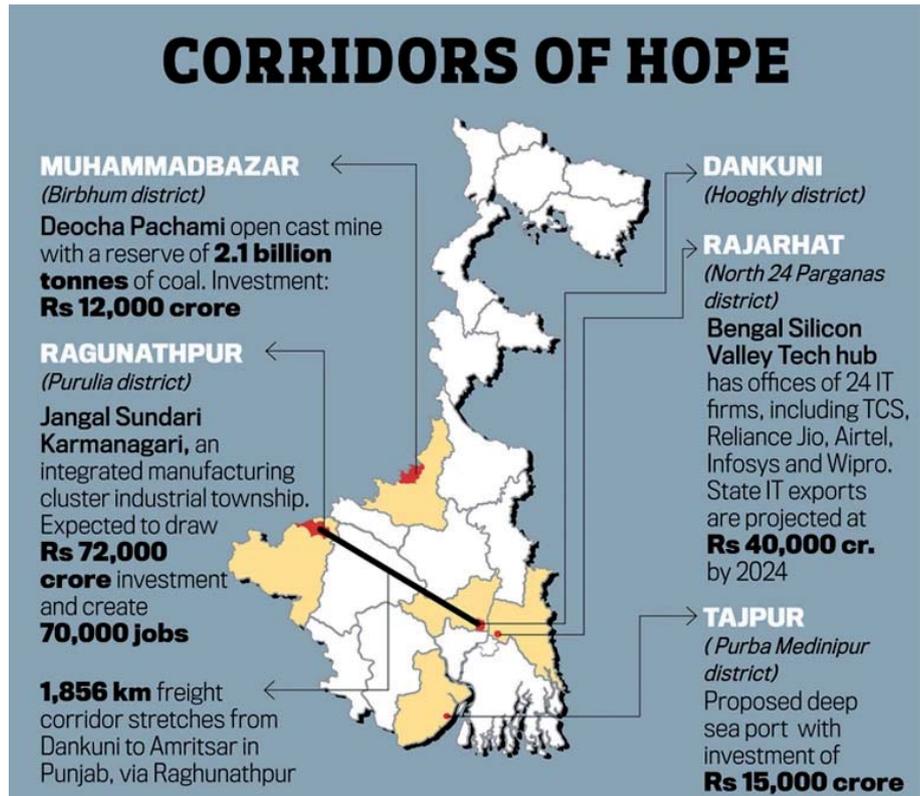
**DEOCHA-PACHAMI MINING PROJECT:
COMPENSATION DISBURSAL BEGINS BUT DETAILS
OF PLAN HAZY**

© **CONTEXT:**

The Government of West Bengal has started disbursing compensation to residents of villages under the Deocha-Pachami and Dewanganj-Harinsingha coal blocks.

About Deucha-Pachami Mines:

- **Deucha-Pachami-Dewanganj-Harinsingha** coal block is the second-largest coal block in the world; it is the largest in India.
- The block has a thick coal seam trapped between equally thick layers of rocks, mostly basalt. It has a great economic value.
- The existence of these thick basalt layers, however, makes mining of coal difficult; foreign investment and technology will be hence needed for mining.



Issues:

- The **Deocha-Pachami-Harinsingha-Dewanganj mining block** will not only displace 21,000 people but also destroy local ecology, which the tribal community relies on.
- A majority of the local population belong to the **Santhal community** — a **Schedule Tribe**.
 - This region, however, does not fall under **Schedule V**.
 - The **Panchayat (Extension of the Scheduled Areas) Act (PESA), 1996**, which empowers the Gram Sabha to put forth the people’s opinion and consult them for such projects, is also not applicable here.

A Schedule V area is declared, according to the Union Ministry of Tribal Affairs, based on the following criteria:

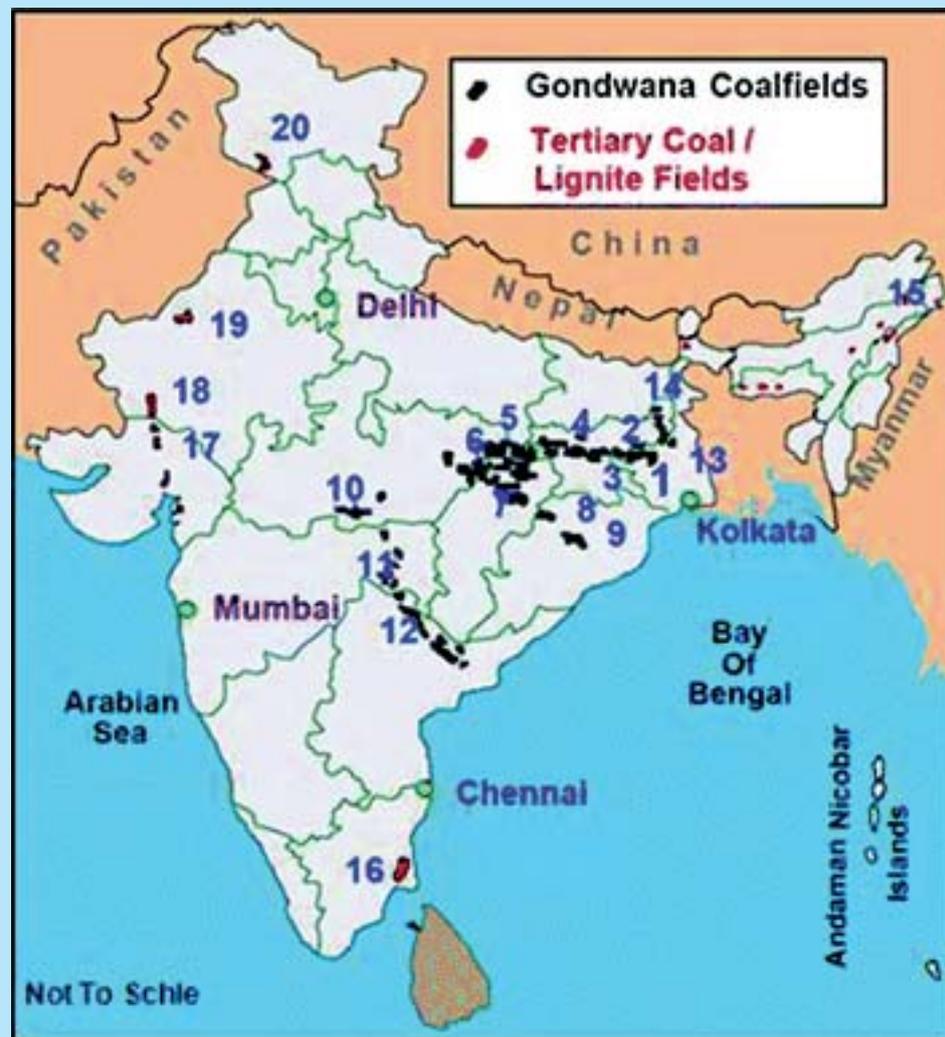
- Preponderance of tribal population
- Compactness and reasonable size of the area
- A viable administrative entity such as a district, block or taluk
- Economic backwardness of the area as compared to the neighboring areas

About Coal:

- Coal is a combustible black or brownish-black sedimentary rock with a high amount of carbon and hydrocarbons.
- Coal is classified as a non-renewable energy source because it takes millions of years to form. Coal contains the energy stored by plants that lived hundreds of millions of years ago in swampy forests.
- Coal is also called black gold.
- Coal contains carbon, volatile matter, moisture, and ash & [in some cases Sulphur and phosphorous].
- Mostly used for power generation and metallurgy.
- Different varieties of coal arise because of differences in the kinds of plant material (coal type), degree of coalification (coal rank), and range of impurities (coal grade).

Types of coal found in India:

- **On the basis of a time period:**



| GONDWANA COALFIELDS | |
|------------------------------|-----------------------|
| 1. Raniganj | 2. Jharia |
| 3. Bokaro | 4. North Karanpura |
| 5. Singrauli | 6. Sohagpur |
| 7. Korba | 8. Ib-valley |
| 9. Talchir | 10. Satpura |
| 11. Wardha | 12. Godavari |
| 13. Birbhum | 14. Rajmahal |
| TERTIARY COAL/LIGNITE FIELDS | |
| 15. Assam - Meghalaya | 16. Neyveli |
| 17. Cambay | 18. Barmer - Sanchor |
| 19. Bikaner | 20. Jammu and Kashmir |

- ▶ **Gondwana coal:** Around 98% of India's total coal reserves are from Gondwana times. This coal was formed about 250 million years ago.
- ▶ **Tertiary coal:** It is of younger age. It was formed from 15 to 60 million years ago.
- **On the basis of carbon content:**
 - ▶ **Anthracite:** It is the highest grade of coal containing a high percentage of 80 to 95% carbon content. It is hard and brittle. It is found in smaller quantities in regions of Jammu and Kashmir.
 - ▶ **Bituminous:** It is a medium grade of coal having high heating capacity and carries 60 to 80% of carbon content and a low level of moisture content. It is the most commonly used type of coal for electricity generation in India. Most bituminous coal is found in Jharkhand, Odisha, West Bengal, Chhattisgarh, and Madhya Pradesh.
 - ▶ **Lignite:** It is the lowest grade coal with the least carbon content. It carries 40 to 55% carbon content. It is found in the regions of Rajasthan, Tamil Nadu, and Jammu & Kashmir.
 - ▶ **Peat:** It has less than 40% carbon content. It is in the first stage of transformation from wood to coal. It has low calorific value and burns like wood.

SAUDI ARAMCO FINDS NEW GAS FIELDS IN FOUR REGIONS

◎ **CONTEXT:** Saudi Aramco (Saudi Arabian Oil Company) has discovered several new natural gas fields.

The new gas fields:

- Central region - Shadoon
- Southeastern region - Shehab and Shurfa

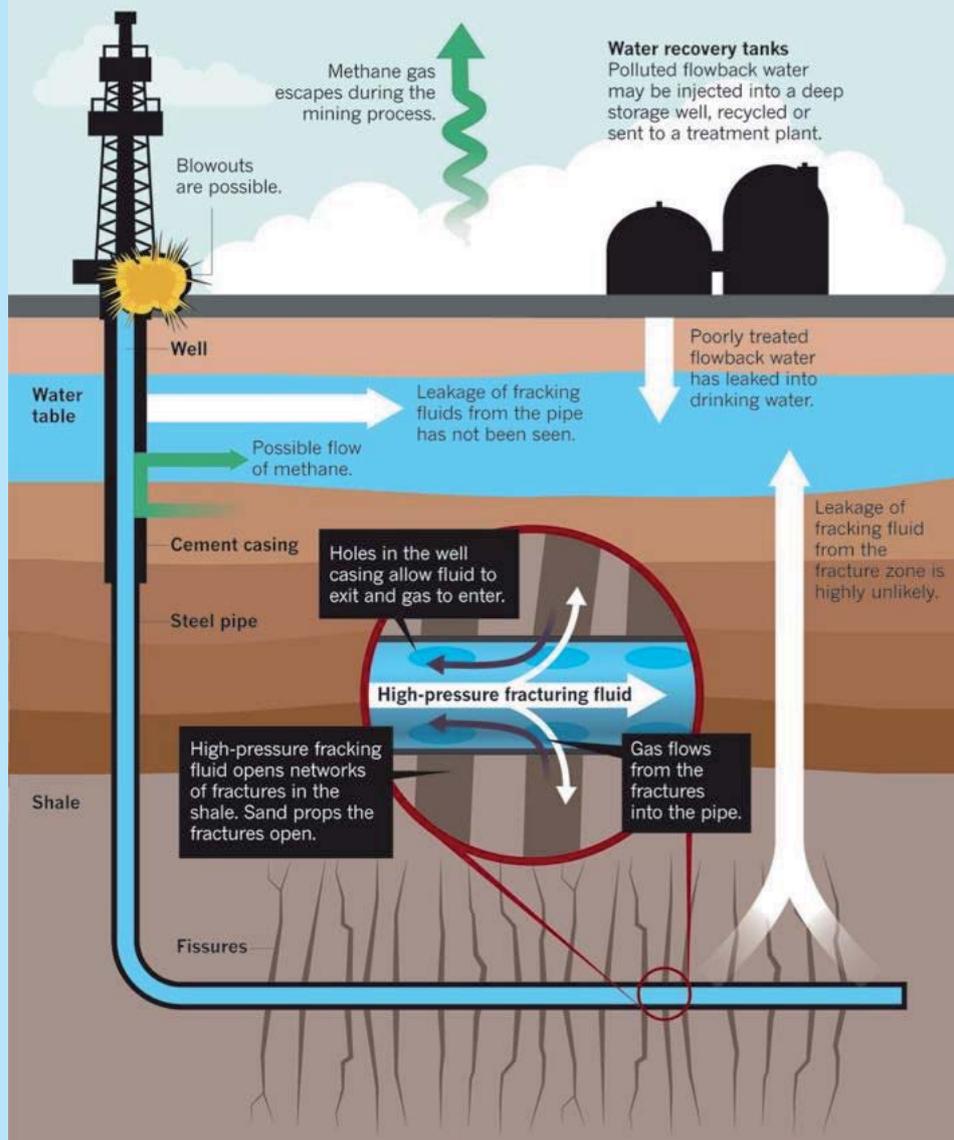
- Northern border with Iraq - Umm Khansar
- Eastern region – Samna
 - Two of the gas fields, Samna and Umm Khansar, are “non-conventional”.
 - Non-conventional deposits, also known as shale, are usually trapped in tight pore spaces, requiring special extraction techniques.

Shale gas:

- Shale gas refers to natural gas that is **trapped within shale formations**.
- Shales are **fine-grained sedimentary rocks** that can be rich resources of petroleum and natural gas.
- Sedimentary rocks are rocks formed by the **accumulation of sediments at the Earth’s surface** and within bodies of water.
- Common sedimentary rocks include **sandstone, limestone, and shale**.

FRACKING FOR FUEL

Hydraulic fracturing is used to access oil and gas resources that are locked in non-porous rocks.



Facts & Figures about Oil and gas in Saudi Arabia:

- The oil and gas sector accounts for nearly 50% of Saudi Arabia's GDP and 70% of its export earnings (OPEC)
- About **60% of Saudi Arabia's total gas production** comes from four fields: **Ghawar, Safaniya, Berri and Zuluf**. Associated natural gas produced at the Ghawar Oil Field alone accounts for almost 50% of total production (EIA)
- Electricity demand increased by a compound average growth rate of 6% between 1990 and 2016 due to population growth and industrial sector development
- **Iran, Qatar and Saudi Arabia are the three largest gas producers in the Middle East**, accounting for 34%, 27% and 17% of the region's output, respectively
- Iran and Saudi Arabia are expected to account for 70% of the total consumption increase in the Middle East by 2025 (IEA).

RUSSIA-UKRAINE CONFLICT: NUCLEAR PLANT FIRE RAISES CONTAMINATION SCARE

◎ CONTEXT:

Russian troops seized the biggest nuclear power plant in Europe (Ukraine's Zaphorizhzhia nuclear power plant).

About Ukraine's Nuclear Power Plants:

- Ukraine is **heavily dependent on nuclear energy**.
- In 2020, the 4 plants generated 13,107 GWe power, the **third largest** in Europe after Russia and France.

Nuclear power plants in Ukraine



- Ukraine operates **15 nuclear reactors** that generate around **54 per cent of the country's electricity needs**.
- Ukraine has four nuclear plants, and all **15 “water-water energy reactors”, or VVER**, are located in these plants.
 - VVERs are water cooled and water moderated.
- As many as 12 of the reactors were developed in the 1980s, while one came up in 1995 and the last two in 2004.
- The four plants are the:
 - **Rivne plant** in northwest Ukraine near the Belarus border
 - **Khmelnyskyi plant** located around 180 km (110 miles) southeast of the Rivne site
 - **South Ukraine plant** near Odessa
 - **Zaporizhzhia plant**

About Zaporizhzhya Nuclear Power Plant:

- The **6GW** Zaporizhzhya Nuclear Power Plant, **located in Energodar, Ukraine, is the biggest nuclear power plant in Europe**.
- Zaporizhzhya is one of the four operating NPPs in the country and generates up to 42 billion kWh of electricity, accounting for about **40% of the total electricity generated** by all the Ukrainian NPPs and **one-fifth of Ukraine's annual electricity production**.
- The Zaporizhzhya NPP consists of **six pressurised water reactor (PWR) units** commissioned between 1984 and 1995, with a gross electrical capacity of 1,000MW each.
- The Zaporizhzhya nuclear power facility is situated on a 104.7ha site **on the banks of the Kakhovka reservoir**.
 - The Steppe zone of Ukraine was selected because of available infrastructure at the nearby Zaporozhe Thermal Power Plant, land unsuitable for agriculture and its distance from foreign territories.

RESERVATION FOR TRANSGENDER IN INDIA

◎ CONTEXT:

The Delhi High Court last week issued a notice to the Delhi government on a plea seeking reservation for transgender people in all public appointments in the NCT of Delhi.

- In India, the trans-population makes up a total of 4.88 lakh, as per the 2011 census.

Reservation in India

- Reservation in India is provided to Scheduled Castes (SCs), Scheduled Tribes (STs) and Other Backward Classes (OBCs) at the rate of 15%, 7.5% and 27%, respectively, in case of direct recruitment on all India basis by open competition.
- In direct recruitment on all India basis, other than by open competition, the percentage fixed is 16.66% for SCs, 7.5% for STs and 25.84% for OBCs 10% reservation under the Economically Weaker Section (EWS) category applies to those not covered under the existing scheme of reservations for the Scheduled Castes, the Scheduled Tribes, and the Socially and Educationally Backward Classes.

Constitution (103rd Amendment) Act 2019

- The **Constitution (103rd Amendment) Act 2019** passed by Parliament enables the State (i.e., both the Central and State Governments) to provide reservation to the **Economically Weaker Sections (EWS)** of the society.

- Whether or not to provide reservation to the EWS of the society for appointment in State Government jobs and admission to State Government educational institutions, as per provisions of the newly inserted **Articles 15(6) and 16(6) of the Constitution**, is to be decided by the State Government.

Constitutional provisions for Reservation of Transgender

- Currently, Karnataka is the **only state** that provides 1% horizontal reservation for transgender people.
- The reservation of 1% is available in each category – **general, SC, ST**, and in each of the categories under 'OBC'.

In the landmark 2014 judgment by the Supreme Court in **NALSA vs Union of India**, the SC had recognised the constitutional **rights of equality, liberty, and dignity for transgender persons** and had directed the Union and state governments to take steps to treat transgender people **“as socially and educationally backward classes of citizens and extend all kinds of reservations in cases of admission in educational institutions and for public appointments”**.

CENTRE LOOKS TO BRAND 'INDIA-GROWN' MILLETS FOR GLOBAL MARKET

◎ CONTEXT:

India's request to declare 2023 as the global year of millets has been approved at the UN General Assembly recently.

- India had formally requested the UN in 2018 to declare 2023 as the global year of millets, which was approved at the UN General Assembly in 2022.

About Millets:

- Millets are a group of **highly variable small-seeded grasses**, widely grown around the world as cereal crops or grains for human food and as fodder.
- In India, millets have been mentioned in some of the **oldest Yajurveda texts**, thus indicating that millet consumption was very common, pre-dating to the Indian Bronze Age (4,500BC).
- Millets have come to be looked down upon by modern urban consumers as **“coarse grains”**.
- **Before Green Revolution**, millets made up **around 40 percent of all cultivated grains** (contributing more than wheat and rice).
 - However, since the revolution, the production of rice has increased doubly and wheat production has tripled.
- Millets are often referred to as Superfood and its production can be seen as an approach for sustainable agriculture and a healthy world.

Millets in India:

- Some of the common millets available in India are **Ragi (Finger millet), Jowar (Sorghum), Sama (Little millet), Bajra (Pearl millet), and Variga (Proso millet)**.
- Along with that, India grows a rich array of bio-genetically diverse and indigenous varieties of “small millets” like **kodo, kutki, chenna and sanwa**.
- Major producers include Rajasthan, Andhra Pradesh, Telangana, Karnataka, Tamil Nadu, Maharashtra, Gujarat and Haryana.

Importance:

- Due to its **high resistance against harsh conditions**, millets are sustainable to the environment, to the farmer growing it, and provide cheap and high nutrient options for all.
- Nearly 40 percent of the food produced in India is wasted every year.
 - Millets do not get destroyed easily, and some of the millets are good for consumption even after 10-12 years of growing, thus providing food security, and playing an important role in keeping a check on food wastage.
- Millet is fibrous in content, has magnesium, Niacin (Vitamin B3), is gluten-free and has **high protein content**.
- **Anti-diabetes quality:** Millets can also help tackle health challenges such as obesity, diabetes and lifestyle problems as they are gluten free, have a low glycemic index and are high in dietary fibre and antioxidants.
 - Millet ingestion helps in a slower release of glucose over a longer period of time; thus, due to low glycaemic index (GI), their habitual intake reduces the risk of diabetes mellitus.
- **More sustainable:** Besides, millets help in reducing the atmospheric CO₂ and thus contribute in mitigating the climate change.
 - On the contrary, paddy is a major contributor to climate change through methane emission (the green-house gas emanating from water-drenched rice fields).

NEW GIN BERRY SPECIES DISCOVERED IN SOUTHERN WESTERN GHATS

◎ CONTEXT:

Recently, Botanical Survey of India (BSI) has discovered a new gin berry species from the Kanyakumari Wildlife Sanctuary in Tamil Nadu.

About the new species:

- The species, named **Glycosmis albicarpa** with a distinct **large white fruit**, is **endemic to the southern Western Ghats**.
 - The species belongs to the **Orange family, Rutaceae**.
- Berries of Glycosmis species have the **unique characteristic of 'gin aroma'** and have gained in popularity as an **edible fruit**.
- The species is also a **larval host plant for butterflies** like other species of Glycosmis.
- The species is an **evergreen small tree**.
 - It was found as **undergrowth in Tirunelveli semi-evergreen forests at the Panagudi forest section of the wildlife sanctuary**.
- Though flowering, natural regeneration and seedling recruitment of this taxon is found to be fairly good within the locality, while habitat modification causes a major threat to the survival of this species.



About Botanical Survey of India (BSI):

- Botanical Survey of India (BSI) is the **apex research organization** under the **Ministry of Environment, Forests and Climate Change**.
- It carries out taxonomic and floristic **studies on wild plant resources** of the country through survey, documentation and conservation.
- It was established in **1890** under the direction of **Sir George King**.
- The organization's mandate **was to explore, collect, identify and document** the rich plant resources of the erstwhile British India.
- The department has also developed a **digital platform 'Indian Plant Diversity Information System (IPDIS)**.

CRYOABLATION CANCER THERAPY FACILITY

◎ CONTEXT:

Thirty years of Indo-Israel collaboration has further strengthened by technology transfer in healthcare sector.

- **The Israel government donated a "state-of-the-art" Cryoablation device developed and researched by Israel scientists for treatment of certain specific cancers to Tata Memorial Centre.**

About the technology

- This technology uses liquid nitrogen where temperature of about – 140o C freezes the cancer cells to death.
- It is the first of its kind in India.

What is Cancer?

- Cancer is a disease that develops when cells in your body divide at a faster rate than normal. These abnormal cells grow into a lump — or tumor. Most cancers have four stages. The specific stage is determined by a few different factors, including the size and location of the tumor:
- **Stage I:** Cancer is localized to a small area and hasn't spread to lymph nodes or other tissues.
- **Stage II:** Cancer has grown, but it hasn't spread.
- **Stage III:** Cancer has grown larger and has possibly spread to lymph nodes or other tissues.
- **Stage IV:** Cancer has spread to other organs or areas of your body. This stage is also referred to as metastatic or advanced cancer.

Major types of cancer

There are five main types of cancer. These include:

- **Carcinoma-** This type of cancer affects organs and glands, such as the lungs, breasts, pancreas and skin. Carcinoma is the most common type of cancer.
- **Sarcoma-** This cancer affects soft or connective tissues, such as muscle, fat, bone, cartilage or blood vessels.
- **Melanoma-** Sometimes cancer can develop in the cells that pigment your skin. These cancers are called melanoma.
- **Lymphoma-** This cancer affects your lymphocytes or white blood cells.
- **Leukemia-** This type of cancer affects blood.

NATIONAL SCIENCE DAY BEING CELEBRATED TO COMMEMORATE DISCOVERY OF RAMAN EFFECT

◎ **CONTEXT:** 28th February is celebrated as National Science Day.

About National Science Day:

- Every year, India celebrates **National Science Day** to commemorate the remarkable work of **Indian physicist CV Raman in the field of light scattering**.
- On this day in 1928, he discovered a phenomenon of scattering of photons which was later known as '**Raman Effect**' after his name.
- After two years **in 1930**, he got **Nobel Prize** for this remarkable discovery and this was the **first Nobel Prize for India in the field of Science**.
- The **theme** for National Science Day 2022 is "**Integrated Approach in Science and Technology for Sustainable Future.**"

About Raman Effect:

- Raman Effect is a **phenomenon in spectroscopy** discovered by the eminent physicist while working in the laboratory of the Indian Association for the Cultivation of Science, Kolkata.
- Raman Effect, **change in the wavelength of light that occurs when a light beam is deflected by molecules**.
- **When a beam of light traverses a dust-free, transparent sample of a chemical compound, a small fraction of the light emerges in directions other than that of the incident (incoming) beam.**
- Most of this scattered light is of unchanged wavelength.
- A small part, however, has wavelengths different from that of the incident light; its presence is a result of the Raman Effect.

Objective of the Celebration:

The basic objective of observation of National Science Day is to spread the message of importance of science and its application among the people. National science day is celebrated as one of the main science festivals in India every year with following purpose:

- To widely spread a message about the **significance of scientific applications** in the daily life of the people,
- To display all the activities, efforts and achievements in the field of **science for welfare of human being**,
- To discuss all the issues and implement **new technologies for the development** of the science,
- To give an **opportunity to the scientific minded citizens** in the country,
- To encourage the people as well as **popularize the Science and Technology**.

MOON'S WORLD TO BE ROCKED AS TONS OF SPACE JUNK LIKELY TO PUNCH 20 M HOLE

◎ **CONTEXT:** The moon is about to get walloped by 3 tons of space junk.

Why in news?

- On 4 March, humanity will set a record for littering when an **old rocket booster smashes into the far side of the Moon**.
- It will be the **first time a piece of human-made space debris has hit a celestial body** other than Earth without being aimed there.
- The moon is about to get walloped by **3 tons of space junk**, a punch that will carve out a crater that could fit several semitractor-trailers.
- The leftover rocket will smash into the **far side of the moon at 5,800 mph** (9,300 kph).
- The booster is probably part of a rocket that launched a small **Chinese spacecraft, called Chang'e 5-T1, towards the Moon in 2014**.
 - Although Chang'e 5-T1 returned to Earth successfully, the booster is thought to have been zipping around chaotically in space ever since.
 - Lunar gravity is now drawing it close, and will soon pull it into a fatal collision with the far side of the Moon.
 - The smash-up is expected to produce a puff of debris and leave behind a small crater.



Impact:

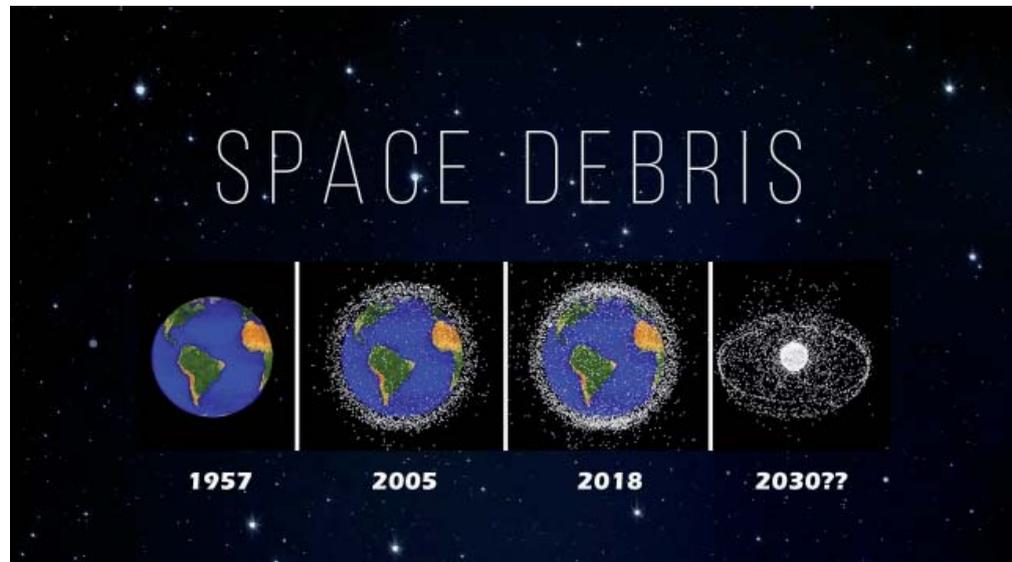
- Scientists expect the object to carve out a **hole 33 feet to 66 feet** (10 to 20 meters) across and send moon dust flying hundreds of miles (kilometers) across the barren, pockmarked surface.
- The **Goldstone Solar System Radar** near Barstow, California, is set to observe the object a few days before impact.
- NASA's **Lunar Reconnaissance Orbiter (LRO)** will look for changes in the moon's exosphere, a very thin layer of gases due to the crash and then later scan the lunar surface for the impact crater itself.

About Space Debris:

- Space junk is **any piece of machinery or debris left by humans in space**—principally in Earth orbit.
- These include **dead satellites, fragments of rocket bodies and spacecraft etc.**

Kessler syndrome:

- This is an **idea proposed by NASA scientist Donald Kessler in 1978.**
- It says if there is too much space junk in orbit, it could result in a chain reaction where **more and more objects will collide and create new space junk in the process, to the point where Earth's orbit became unusable – a Domino Effect.**
- 12 fragmentation events have already taken place every year for the past two decades.

**Initiatives taken to tackle the problem:**

- Inter-Agency Space Debris Coordination Committee
 - ▶ IADC is an inter-governmental forum whose aim is to co-ordinate efforts to deal with debris in orbit around the Earth founded in 1993.
- **NORAD**
 - ▶ North American Aerospace Defense Command, is an initiative of the U.S. and Canada that shares selective debris data with many countries.
- **ClearSpace-1 Mission**
 - ▶ In this a "chaser" with its four robotic arms will grab the leftover of 2013 craft known as VESPA (Vega Secondary Payload Adapter) and drag it down to Earth's atmosphere where both will burn up.
 - ▶ To be launched in 2025.
- **ELSA-d, Mission**
 - ▶ ELSA-d (End-of-Life Services b), will test technologies to capture an object in low-Earth orbit and move it to a lower altitude, where it will eventually burn up harmlessly in Earth's atmosphere.
- **Starship**
 - ▶ Space X Starship – the passenger-carrying spacecraft once ready can collect and de-orbit space junk apart as well.
- **NEO-01'**
 - ▶ China launched a **low Earth orbit robot prototype called 'NEO-01'.**
 - ▶ It can **scoop up space debris** left behind by other spacecraft with a big net.
 - ▶ NEO-01, was launched on Long March 6 rocket.
 - ▶ NEO-01 will use a net to capture space debris and then burn it with its electric propulsion system.

- ▶ The NEO-01, will also peer into deep space to observe small celestial bodies.
- ▶ The 30kg robot will pave the way for future technologies capable of mining on asteroids.

ISRO's efforts:**Netra:**

- To safeguard its space assets from space debris, ISRO had set up a dedicated **Space Situational Awareness (SSA) Control Centre named "Netra"** in Bengaluru last December.
- Netra's key objective is **to monitor, track and protect the national space assets** and function as a hub of all SSA activities.
- **Only the US, Russia and Europe have similar facilities** in place to track space objects and share collision warnings.

India's Anti-Satellite (ASAT) missile:

- **Mission Shakti** is a joint programme of the Defence Research and Development Organisation (**DRDO**) and the Indian Space Research Organisation (**ISRO**).
- As part of the mission, an **anti-satellite (A-SAT) weapon** was launched and targeted an Indian satellite which had been decommissioned. Mission Shakti was carried out from DRDO's testing range in Odisha's Balasore.

SECTION: C
(QUICK FACTS)

HEMATIC WIPER MALWARE

◎ **CONTEXT:** Several Ukrainian computers and websites faced cyberattacks by a destructive data-wiper malware hours before Russia began its military assault in the country

About Hematic Wiper Malware:

- **Hematic Wiper** or **data wiper malware** can **erase all the data** from the system that it has infected.
- The thing that makes this malware dangerous is that the data once deleted, the data cannot be recovered.
- This malware is quite different from most of the malware out there as **it doesn't steal information, it just destroys it.**
- The malware can even **attack the system recovery tools without leaving any traces of the attack.**
- Several cybersecurity experts believe the infections from the malware have spread widely.

Malware:

- Malware, or malicious software, is any program or file that is harmful to a computer user.
- Malware includes computer viruses, worms, Trojan horses and spyware.
- These malicious programs can perform a variety of functions, including stealing, encrypting or deleting sensitive data, altering or hijacking core computing functions and monitoring users' computer activity without their permission.

SEBI APPOINTS ITS FIRST WOMEN CHAIRMAN

◎ **CONTEXT:** The elevation of Madhabi Puri Buch, who has been appointed as the chairperson of the Securities and Exchange Board of India (Sebi), assumed significance as she became the first woman to lead the market regulator in the country.

- The Securities and Exchange Board of India was constituted as a non-statutory body on **April 12, 1988** through a resolution of the Government of India.
- SEBI was established as a statutory body in the year 1992 and the provisions of the **Securities and Exchange Board of India Act, 1992** came into force on January 30, 1992.

WORLD WILDLIFE DAY

◎ **CONTEXT:** March 3 is celebrated as World Wildlife Day.

About World Wildlife Day:

- World Wildlife Day is celebrated every year on the 3rd of March since 2013.
- The date chosen coincides with the day the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** which was signed in 1973.

- **Theme:** The theme of World Wildlife Day 2022 is “Recovering key species for ecosystem restoration”.
- It focuses on the conservation of some of the most critically endangered species of wild fauna and flora.
- Also, it is important to drive discussions towards imagining and implementing solutions to conserve them.

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| 51 | 52 | 55 | 56 | 58 | 59 | 67 | 68 | 70 | 71 | 73 |
| 74 | 76 | 78 | 83 | 84 | 85 | 86 | 89 | 93 | 98 | 100 |

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| 51 | 52 | 56 | 58 | 62 | 74 | 81 | 89 | 92 | 94 | 98 | 100 |

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