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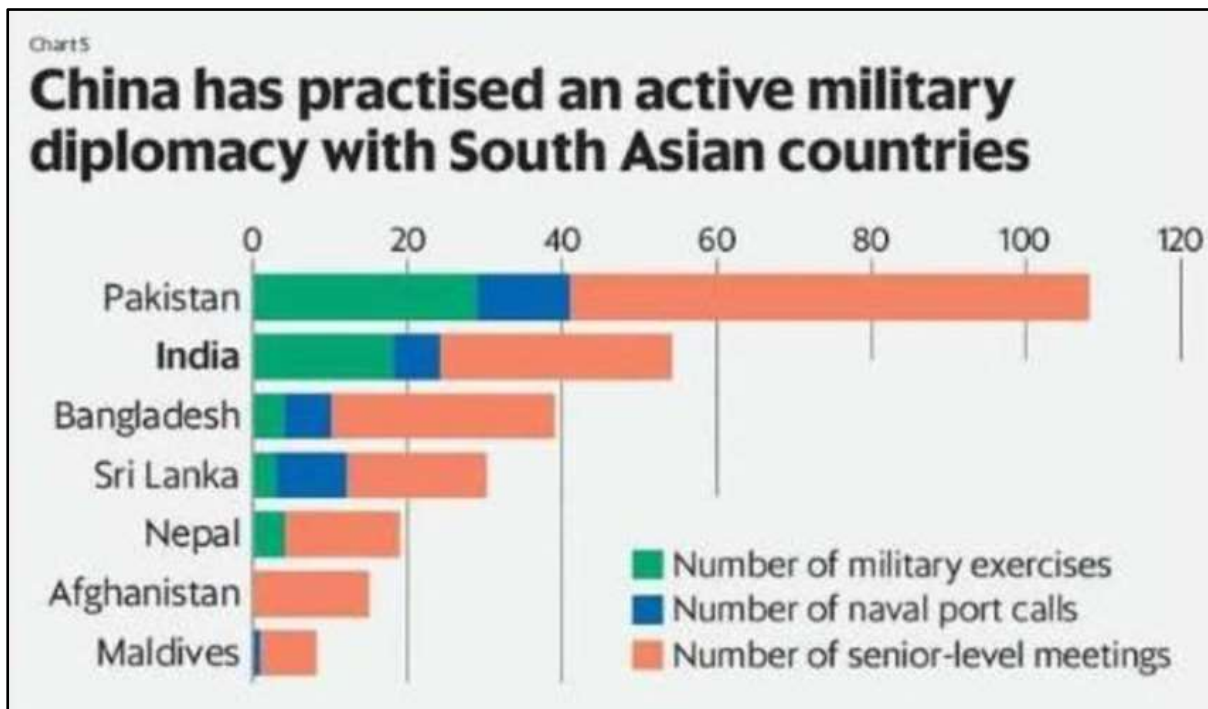
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Topic 1. CHINA'S MILITARY DIPLOMACY IN SE ASIA

Important for the Subject: International Relations



Due to its intensifying geopolitical competition with the U.S. and its own security interests in the region, China is expanding its military outreach to Southeast Asian countries.

Firstly, China has put excessive emphasis on defence diplomacy under his flagship **Global Security Initiative (GSI)**. Further, due to the increasing proximity of the U.S. with the

- **Philippines**, with whom **China shares a disputed maritime border** in the **Luzon Strait** in the South China Sea, and **Philippines' decision to provide the U.S. with access to four military bases** in addition to the five bases the U.S. already had access to, under the 2014 Enhanced Defence Cooperation Agreement between the two sides are worrisome for China.
- **Bases** are advantageous for the U.S. during offensive against China, as they **help fulfil purposes such as refuel and resupply for warships, intelligence,**



reconnaissance and surveillance (ISR), and blocking Chinese trade through critical chokepoints in the South China Sea.

- To defend its claims and interests in the region, China is likely to pursue both aggressive military posturing and diplomacy in Southeast Asia.

Examples include:

- **Friendship Shield:** bilateral military exercise between People's Liberation (PLA) and Laotian People's Armed Forces (LPAF) **'Golden Dragon' drills:** PLA with **Cambodia PLA STC** conducted a joint exercise with the **Singaporean Navy.**

Global Security Initiative:

- The Global Security Initiative (GSI), a **China-led framework** aiming to **restore stability and security in Asia**, appears to be **more of a counter-narrative to U.S.** leadership rather than a genuine attempt to establish a sustainable security order.
- It was stated that the five major pillars to implement GSI would be: **Mutual respect, Openness and inclusion, Multilateralism, Mutual benefit, Holistic approach.**

Key Principles of GSI:

- China held that the Global security initiative is envisaged to uphold the principle of "**indivisible security**". The principle of "indivisible security" means that no country can strengthen its own security at the expense of others.
- This initiative would build an **Asian security model** of mutual respect, openness and integration.
- It would **oppose the destruction of the international order** under the

banner of so-called rules. It will also **oppose the dragging of the world under the cloud of the new cold war.**

- This initiative will **oppose the use of the Indo-Pacific strategy to divide the region and create a new Cold War**, and the use of military alliances to put together an Asian version of NATO.

Topic 2. NORTH KOREA SPY SATELLITE LAUNCH FAILS AS CHOLLIMA-1 ROCKET FALLS INTO THE SEA

Important for the Subject: International Relations



North Korea's attempt to put its **first spy satellite** into space failed in a setback to leader Kim Jong Un's push to boost his military capabilities as tensions with the United States and South Korea rise.

- After an unusually quick admission of failure, North Korea vowed to conduct a second launch after it learns what went wrong. It suggests Kim remains determined to expand his weapons arsenal and apply more pressure on Washington and Seoul while diplomacy is stalled.



- A satellite launch by North Korea is a violation of U.N. Security Council resolutions that ban the country from conducting any launch based on ballistic technology.
- The newly developed **Chollima-1 rocket** was launched at the North's Sohae Satellite Launching Ground in the northwest, carrying the **Malligyong-1 satellite**.
- The rocket crashed off the Korean Peninsula's western coast after it lost thrust following the separation of its first and second stages.

38th Parallel Line:

- The 38th parallel is a circle of latitude 38 degrees north of the equatorial plane. This **line divides the Korean peninsula roughly in half** (leaving about 56% of Korean territory on the northern side).
- 38th parallel, popular name given to latitude 38° N that in East Asia roughly demarcates North Korea and South Korea.
- The line was chosen by U.S. military planners at the Potsdam Conference (July 1945) near the end of World War II as an army boundary, north of which the U.S.S.R
- The **actual border between North and South Korea slants across this circle of latitude**, finishing some distance north of it on the east coast.

Topic 3. UAE WITHDRAWS FROM U.S.-LED MARITIME COALITION IN THE GULF

Important for the Subject: International Relations

The United Arab Emirates has withdrawn from a U.S.-led maritime coalition tasked with securing tense Gulf waterways that are vital to the global oil trade.

Background



- The Bahrain-headquartered CMF was established in 2001, initially as a partnership between 12 nations.
- It is active in crucial but troubled Gulf waters where tankers have been seized and attacked in recent months.

Details

- **India is not a member of CMF.** At the **India-US 2+2 dialogue held in April (2022)**, India had announced that it **would join the CMF as an Associate Partner.**
- **Associate members** to provide resources, personnel and cooperative engagement based on the needs and requirements. The Indian Navy could be contributing a warship whenever required.

Combined Maritime Forces

- It is a **multinational naval partnership** to promote security, stability and prosperity. This is a **34 members grouping commanded by a U.S. Navy Vice Admiral.**
- The maritime forces are based in Bahrain and undertake counter-terrorism, counter piracy and regional cooperation. Pakistan is a full member of the Combined Maritime Forces.

It comprises three task forces:

- CTF 150 (maritime security and counter-terrorism).
- CTF 151 (counter-piracy).
- CTF 152 (Arabian Gulf security and cooperation).
- It is a flexible organization and members are not bound by either a political or military mandate. India has in the past cooperated with CMF on various occasions.

Topic 4. CABINET NOD FOR SECOND PHASE OF CITIIS PROGRAM

Important for the Subject: International Relations

Cabinet approves City Investments to Innovate, Integrate and Sustain 2.0 (CITIIS 2.0) from 2023 to 2027.

CITIIS 2.0

- CITIIS 2.0 is a program conceived by the **Ministry of Housing and Urban Affairs (MOHUA)** in partnership with: the French Development Agency (AFD), Kreditanstalt für Wiederaufbau (KFW), the European Union (EU), and National Institute of Urban Affairs (NIUA).
- **Duration:** The program will run for a period of four years, i.e., from 2023 till 2027.

Aim:

- The program envisages to support competitively selected projects promoting circular economy with focus on: integrated waste management at the city level, climate-oriented reform actions at the State level, and institutional strengthening and knowledge dissemination at the National level. CITIIS 2.0 aims to leverage and scale up the learnings and successes of CITIIS 1.0.

Funding:

- The funding for CITIIS 2.0 would include: a loan of Rs.1760 crore (EUR 200 million) from AFD and KFW (EUR 100 million each) and a technical assistance grant of Rs.106 cr. (EUR 12 million) from the EU.

CITIIS 1.0:

- CITIIS 1.0 was launched jointly in 2018 by MOHUA, AFD, EU, and NIUA, with a total outlay of ₹933 crore (EUR 106 million).



CITIIS 1.0 consisted of three components:

- Component 1: 12 city-level projects selected through a competitive process.
- Component 2: Capacity-development activities in the State of Odisha.
- Component 3: Promoting integrated urban management at the national level through activities undertaken by NIUA, which was the Program Management Unit (PMU) for CITIIS 1.0

Impact:

- It has resulted in the mainstreaming of innovative, integrated and sustainable urban development practices through a unique challenge-driven financing model based on the principles of competitive and cooperative federalism.
- CITIIS 2.0 will supplement the climate actions of Government of India through: its ongoing National programs (National Mission on Sustainable Habitat, AMRUT 2.0, Swachh Bharat Mission 2.0 and Smart Cities Mission), contributing positively to India's Intended Nationally Determined Contributions (INDCs) and Conference of the Parties (COP26) commitments.

Topic 5. VENICE GRAND CANAL

Important for the Subject: International Relations

The spectacular transformation of a stretch of Venice's Grand Canal to fluorescent green was due to fluorescein, a non-toxic substance used for testing wastewater networks, local authorities have concluded. Residents noticed a stretch of Venice's Grand Canal turned bright green on Sunday, prompting police to investigate amid speculation it could be a stunt by environmentalists.

Local authorities has said that test samples of the water confirmed that the canal's bright new hue was **caused by fluorescein, a chemical often used to find leaks during underwater construction**. Now, Italian officials are

investigating how the chemical got into the canal.

About Fluorescein

- **Fluorescein** is an **organic compound and dye based on the xanthene tricyclic structural motif**, formally belonging to triarylmethine dyes family. It is available as a dark orange/red powder slightly soluble in water and alcohol. It is widely used as a fluorescent tracer for many applications.
- The color of its aqueous solutions is green by reflection and orange by transmission (its spectral properties are dependent on pH of the solution), as can be noticed in bubble levels, for example, in which fluorescein is added as a colorant to the alcohol filling the tube in order to increase the visibility of the air bubble contained within.
- More concentrated solutions of fluorescein can even appear red (because under these conditions nearly all incident emission is re-absorbed by the solution). It is on the **World Health Organization's List of Essential Medicines**.

About the famous canal and gondolas of Venice-

- Located in northern Italy, the city of Venice has a unique geography. It is a **collection of over 118 small islands spread over a lagoon**, which is a kind of water body that is separated from a larger water body through some kind of land formation.
- Covering 70,176.4 ha, Venetian lagoon is separated from the Adriatic Sea. According to UNESCO, temporary settlements in the 5th century gradually became permanent here, comprising land-dwelling peasants and fishermen.
- UNESCO states that Venice and its lagoon landscape is the result of a dynamic process which illustrates the interaction between people and the ecosystem of their natural environment over time.



Venice (City of Canals)-

- Venice, the capital of **northern Italy's Veneto region**, is built on more than 100 small islands in a lagoon in the Adriatic Sea.
- The islands are in the shallow Venetian Lagoon, an **enclosed bay lying between the mouths of the Po and the Piave rivers** (more exactly between the Brenta and the Sile). It has **no roads, just canals** – including the Grand Canal thoroughfare – lined with Renaissance and Gothic palaces.
- The central square, Piazza San Marco, contains St. Mark's Basilica, which is tiled with Byzantine mosaics, and the Campanile bell tower offering views of the city's red roofs.

Topic 6. INTERNATIONAL TRADE HAS A CARBON PROBLEM

Important for the Subject: International Relations

India has opposed to the **Carbon Border Adjustment Mechanism (CBAM)** introduced by the **European Union** to restrict the trade of products from carbon intensive industries like Iron and Steel, aluminium, cement etc.

What is the issue?

- India fears that **CBAM will cripple the export of its carbon-intensive products to the EU.**
- While **India's exports may be limited to aluminium, iron, and steel**, and affect only **1.8% of its total exports to the EU**, India has reportedly decried **CBAM as being protectionist and discriminatory.**

EU's concern:

- The EU's concern is that while it has a mechanism for its domestic industries, emissions embedded in products imported from other countries may not be priced in a similar way due to a lack of stringent policies or due to less

stringent policies in those countries.

This would put its industries at a disadvantage.

- To tackle this, the impacted industries in the EU had so far been receiving free allowances or permits under the ETS.
- The EU also apprehends the phenomenon of ‘**carbon leakage**’, that is, due to the application of **ETS**, European firms operating in carbon-intensive sectors might possibly shift to those countries that have less stringent GHG emission norms.

How CBAM will resolve this concern?

- CBAM is levelling the playing field for the EU industries. Under the **CBAM**, **imports of certain carbon-intensive products**, namely **cement, iron and steel, electricity, fertilizers, aluminium, and hydrogen**, will have to bear the **same economic costs borne by EU producers under the ETS**.
- The **price to be paid will be linked to the weekly average of the emissions priced under the ETS**.
- However, where a carbon price has been explicitly paid for the imported products in their country of origin, a reduction can be claimed.

WTO’s consistency with the CBAM:

- A cornerstone principle of **WTO law is non-discrimination**. Under this **law**, countries are required to accord equal treatment to ‘like’ products irrespective of their country of origin (most-favoured-nation treatment) and to treat foreign-made ‘like’ products as they treat domestic ones (national treatment principle).

Discriminatory nature of CBAM:



- While the **CBAM's design is origin-neutral in appearance**, it may, in its application, **discriminate between goods from different countries** on account of an inadequate carbon pricing policy, or due to onerous reporting requirements that importers would be Important for the Subject to.
- There are no clear provisions for which products are considered 'like'. The CBAM violates WTO law for discriminating between EU and foreign products covered by CBAM based on embedded emissions.

Article XX of the GATT:

- Even if the **EU's CBAM is discriminatory**, there could be a claim for justifying it under the **General Exceptions clause given in Article XX of the General Agreement on Tariffs and Trade (GATT)**.
- Under **Article XX**, measures taken by countries that otherwise violate GATT obligations are permitted if, **first**, they fall under one of the listed policy grounds, and **second**, if they satisfy the requirements of the introductory clause of Article XX, known as the chapeau.
- One of the listed policy grounds in **Article XX** is the '**conservation of exhaustible natural resources**'. CBAM would fall under this category.
- However, it is doubtful if it would satisfy the chapeau, which inter alia requires that **countries do not apply measures in a manner that results in arbitrary or unjustifiable discrimination between countries** where the same conditions prevail

Topic 7. UN AGENCY WARNS THERE IS NO LET-UP IN DRUGS TRADE FROM ASIA'S GOLDEN TRIANGLE

Important for the Subject: International Relations



The **huge trade-in methamphetamine** and **other illegal drugs** originating from a small corner of **Southeast Asia** shows **no signs of slowing down**, the **United Nations Office on Drugs and Crime** warned.

Details:

- High volumes of methamphetamine continue to be produced and trafficked in and from the region while the production of ketamine and other synthetic drugs has expanded, according to the **UN report: Synthetic Drugs in East and Southeast Asia**.

What does the report say?



- The **lion's share of methamphetamine**, in the form of tablets and crystal meth, comes from the area known as the **Golden Triangle**, where the **borders of Myanmar, Laos and Thailand meet**.
- The **production of opium and heroin** used to flourish in **golden triangle region**, mainly because of the lawlessness around **Myanmar's remote eastern Shan State**.
- **Methamphetamine** continues to be the **most used drug in East and Southeast Asia** and that use has increased over the past decade.
- The main chemicals needed to make **methamphetamines** are generally under **tight international controls**, so illicit laboratories in recent years have moved to use chemicals that are not so closely regulated.
- The drug is distributed by land, sea and air all around Asia and the Pacific. There have been **record methamphetamine seizures almost every year** for the past decade in **East and Southeast Asia**, but the **latest data suggest that the total drugs seized declined in 2022 to 151 tons**.

Reasons for declined seizure:

- Traffickers changed their smuggling routes from land to maritime to evade authorities.

Golden Crescent:

- The **Golden Crescent** is the name given to **one of Asia's two principal areas of illicit opium production** (the other being the **Golden Triangle**).
- Located at the **crossroads of Central, South, and Western Asia**, this space covers the mountainous peripheries of **Afghanistan and Pakistan**, extending into **eastern Iran**.

Newly emerging regions of drug trafficking:



- **Cambodia** has become “a key transit and to some extent production point for the regional drug trade.” **Industrial-scale ketamine labs** and facilities for processing and storing the substance were found across **Cambodia**.
- **Laos** is another weak link in the fight against drug trafficking. The meth and other drugs produced in **Shan State laboratories** usually enter **Laos by crossing the Mekong River** from ports “**under the control or influence of major non-state armed groups,**” naming some of them: ethnic militias including the **United Wa State Army, the Myanmar National Democratic Alliance Army, the National Democratic Alliance Army, etc.**

Methamphetamine:

- It is a **potent central nervous system (CNS) stimulant** that is mainly used as a recreational drug and less commonly as a second-line treatment for attention deficit hyperactivity disorder and obesity.
- Methamphetamine was discovered in **1893**.

United Nations Office on Drugs and Crime (UNODC):

- It was **established in 1997** and was named as the **United Nations Office on Drugs and Crime (UNODC) in 2002**.
- It acts as the **Office for Drug Control and Crime Prevention** by combining the **United Nations International Drug Control Program (UNDCP)** and the **Crime Prevention and Criminal Justice Division of the United Nations Office at Vienna**.

Relate International Initiatives

- **International Day Against Drug Abuse and Illicit Trafficking** is celebrated every year on **26th June**.



Conventions related to drug and crime:

- **Single Convention on Narcotic Drugs, 1961. The Convention on Psychotropic Substances, 1971.**
- **The United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 1988.**
- **India is a signatory to all three and has enacted the Narcotics Drugs and Psychotropic Substances (NDPS) Act, 1985.**

Topic 8. NATO CHIEF URGES TURKEY NOT TO VETO SWEDEN'S BID

Important for the Subject: International Relations

NATO chief Jens Stoltenberg has urged Turkey not to veto Sweden's bid to join the military alliance, ahead of a meeting this month to try to overcome objections delaying Stockholm's membership.

- Also, China's defence minister warned **against establishing NATO-like military alliances in the Asia-Pacific**, saying they would plunge the region into a "whirlpool" of conflict.
- Li's comments echoed long-held Chinese criticism of the United States' efforts to shore up alliances in the region and counter China's rise.
- **The United States is a member of AUKUS, which groups it with Australia and Britain. Washington is also a member of the QUAD group, which includes Australia, India and Japan.**

Topic 9. SAUDI ARABIA TO CUT OIL OUTPUT BY 1 MILLION BARRELS PER DAY

Important for the Subject: International Relations

Saudi Arabia will soon pledge new voluntary production cuts as part of a broader OPEC+ deal to curb output.

About OPEC+:

- It is a **group of 23 oil-exporting countries** which meets regularly to decide how much crude oil to sell on the world market.
- These nations aim to work together on adjusting crude oil production to bring stability to the oil market.
- At the core of this **group are the 13 members of OPEC** (the Organization of the Oil Exporting Countries), which are **mainly Middle Eastern and African countries**.
- **Members:** It comprises 13 OPEC countries plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Russia, Mexico, Malaysia, South Sudan, Sudan, and Oman.

Organization of the Petroleum Exporting Countries (OPEC):

- It is a permanent intergovernmental organization of oil-exporting countries.

Mission:

- To coordinate and unify the petroleum policies of its Member Countries. Ensure the stabilization of oil prices in the international oil markets, with a view to eliminating harmful and unnecessary fluctuations.
- **Formation:** It was established in 1960 by the five founding members Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.
- **Currently, it has 13 members**, including Algeria, Angola, Congo, Equatorial Guinea, Gabon, Libya, Nigeria, and the United Arab Emirates

Topic 10. BRICS THAT COULD BE BIGGER

Important for the Subject: International Relations



The grouping of Brazil, Russia, India, China and South Africa is **considering whether to add new members** and to look seriously at a common currency. Both proposals involve making complex choices.

What is BRICS?

- BRICS is an acronym for the grouping of the world's leading emerging economies, namely **Brazil, Russia, India, China and South Africa**.
- The BRICS Leaders' **Summit is convened annually**. **BRICS does not exist in the form of organization**, but it is an annual summit between the supreme leaders of five nations.
- The **Chairmanship of the forum is rotated annually** among the members, in accordance with the acronym B-R-I-C-S.
- Together, **BRICS accounts for about 40% of the world's population and about 30% of the GDP** (Gross Domestic Product), making it a critical



economic engine.

- The acronym “**BRICS**” was initially formulated in 2001 by economist **Jim O’Neill, of Goldman Sachs**, in a report on growth prospects for the economies of Brazil, Russia, India and China – which together represented a significant share of the world’s production and population.
- The **first BRIC Summit took place in 2009 in the Russian Federation** and focused on issues such as reform of the global financial architecture.
- **South Africa was invited to join BRIC in December 2010**, after which the group adopted the acronym BRICS. South Africa subsequently attended the Third BRICS Summit in Sanya, China, in March 2011.
- During the Sixth BRICS Summit in **Fortaleza (2014) the leaders signed the Agreement establishing the New Development Bank (NDB)**, headquartered in Shanghai.
- **The Fortaleza Declaration** stressed that the NDB will strengthen cooperation among BRICS and will supplement the efforts of multilateral and regional financial institutions for global development thus contributing to sustainable and balanced growth.
- **South Africa, which is in the chair this year**, is hosting a Friends of BRICS meeting, with 15 foreign ministers from Africa and the Global South.

Looking for multi polarity

- As many as 19 countries are said to be in the queue to join BRICS. Among the countries that have been mentioned frequently since last year: **Argentina, Nicaragua, Mexico, Uruguay, Venezuela from Latin America; Nigeria, Algeria, Egypt, Senegal, Morocco from Africa; Saudi Arabia, the UAE, Türkiye, Syria, Iran from West Asia; Kazakhstan from Central Asia; Bangladesh and Afghanistan from South Asia; and Indonesia and Thailand from South- east Asia.**



- By admitting some key countries in the list, BRICS could lay claim to representing more than half the world's population. Significantly, the list includes big oil producers Saudi, Iran, the UAE, Nigeria, and Venezuela.

China in BRICS

- **The idea of BRICS came between 2001 and 2003 from then Goldman Sachs chief economist Jim O'Neill**, who projected that the four emerging markets of Brazil, Russia, India, and China would be the future economic power houses of the world, with South Africa being added later.
- While the economic performance of BRICS has been mixed, the war in Ukraine — which has brought the West together on the one hand and strengthened the China Russia partnership on the other — has turned it into an **aspiring bloc that appears to be challenging the western geopolitical view.**

China is driving the expansion of the group.

India in BRICS

- If **India's presence at the G7 summit in Hiroshima**, where Prime Minister Narendra Modi also participated in an informal Quad summit, **was seen as a sign of New Delhi's US tilt**, the importance it attaches to the **“anti- West” BRICS is an apparent contradiction** — much like the several others it has negotiated through the last year. The Indian view is that it is a “non- western” group.

Common currency:

- The idea of a common currency was **proposed by Russia's President Vladimir Putin at the Beijing BRICS summit last year.** The idea got a cautious reception, with the leaders deciding to set up a committee to study



its viability.

- The last year of war has seen economies around the world feel the impact of the sanctions on Russia, the resultant spike in energy prices, combined with the rising value of the dollar. An insulation from the dollar is a tempting proposal, but not all members believe that it is an idea whose time has come.
- There are complications, such as the setting up of a common central bank of member countries that have different economic and political systems and are located on different continents.
- An option is for members to trade with each other in their respective currencies — but as the India-Russia example has shown, this is not easy either. Moscow wants payments in dollars because it does not import enough from India to use rupee payments. Negotiations are stuck.
- **China has hit out against the “hegemony of the US dollar” as the source of all instability in the world, and is already trying to push the yuan as a trading currency in Central Asia.** But there is no evidence that it is ready to dump the dollar yet.

Topic 11. WORLD NO TOBACCO DAY: TOBACCO FARMING ADDING TO GLOBAL FOOD CRISIS, SAYS WHO?

Important for the Subject: Geography

Tobacco farming is taking up millions of acres of fertile land that can help feed these people, as per a WHO report.

Details:

- **World tobacco day:** 31 May Tobacco growing harms the health of people, farmers and even the planet’s health. Tobacco is grown in over **124 countries**, taking up valuable farming land that can address nutrition challenges and help feed families instead.



- The **WHO** report further pointed out the **serious health impacts on tobacco farmers** due to the **heavy use of pesticides** and **high absorption of nicotine** through the skin due to its farming. Growing tobacco is also not profitable for many farmers.

Tobacco crop:

- Tobacco cultivation in India was introduced by the Portuguese in 1605. It is a drought-tolerant, hardy and short-duration crop which can be grown on soils where other crops cannot be cultivated profitably.
- The cultivation of tobacco usually takes place annually. The tobacco is germinated in cold frames or hotbeds and then transplanted to the field until it matures.
- It is **grown in warm climates with rich, well-drained soil**. For tobacco **50-100cm annual rainfall** and **15-20o C temperature** during the growth period is ideal.
- Tobacco cannot stand if rainfall is more than 100cm. After harvesting to dry the leaves it requires bright sunshine & dry weather but not less than containing 8% moisture.
- About 4.2 million hectares of tobacco were under cultivation worldwide in 2000, yielding over seven million tonnes of tobacco.

Varieties of tobacco crop:

- Ninety-three varieties including **Flue Cured Virginia (FCV) (29)**, **Burley (3)**, **Natu (5)**, **Lanka (2)**, **Chewing (17)**, **Bidi (15)**, **Cheroot (3)**, **Cigar (4)**, **Hookah & chewing (15)** types have been released for the farming community. Breeding efforts are made for developing varieties with high solanesol, high flavor, low nicotine etc. CMS hybrids having higher levels of flavour compounds have also been developed. 80-85% of India's tobacco



exports continue to be **FCV alone**.

Top products:

- **The top producers of tobacco are China (39.6%), India (8.3%), Brazil (7.0%) and the United States (4.6%).** In India, **Andhra Pradesh** is the largest producer of tobacco. Gujrat, Karnataka, Bihar and Odisha are other tobacco-producing states.
- **India has seven tobacco research centres** that are located in: **Jeelugumilli, A.P., Kandukuru, A.P., Guntur, A.P., Kalavacherla, A.P., Hunsur, Karnataka, Vendasandur, Tamil Nadu, Dinhata, West Bengal;** and **Rajahmundry houses the core research institute.**
- The government has set up Tobacco Board Guntur which works to increase the production, sale and exports of Indian tobacco. Guntur is also well known for its tobacco plantations.
- India is one of the **leading exporters of tobacco** and occupies second place after Brazil. The country accounts for 6% by volume and 0.7% by value of the world tobacco trade.

Risks faced by tobacco farmers:

- Farmers are trapped in a vicious cycle of debt as a result of unfair contractual agreements with the industry.
- **Green tobacco sickness**, a form of **occupational poisoning** which is caused by **nicotine** absorbed through the skin from the **handling of wet tobacco leaves**, Exposure to heavy use of pesticides and exposure to tobacco dust. Child labour and gender inequality.

Environment pollution.

Smoke from the burning of cigarettes:



- Smoke from a burning cigarette is a **concentrated aerosol of liquid particles** suspended in an atmosphere consisting mainly of **nitrogen, oxygen, carbon monoxide and carbon dioxide**.
- Researchers have also described cigarette smoke as a “lightly charged, highly concentrated matrix of submicron particles contained in a gas with each particle being a multi-compositional collection of compounds arising from distillation, pyrolysis, and combustion of tobacco”
- Tobacco smoke is a complex and dynamic chemical mixture. It contains **pollutants** such as **Carbon monoxide** and **Benzene**. Researchers have analyzed whole smoke or used chemical and physical means to separately examine the gas and particulate portions of tobacco smoke.

WHO campaign to end tobacco production:

- **2023 marks 20 years** of member states unanimously adopting the **first public health treaty** negotiated under the WHO Constitution — **the Framework Convention on Tobacco Control, also called WHO-FCTC**.
- This treaty is the first international agreement to reduce tobacco consumption and its devastating health effects.
- The WHO campaign **encouraged governments to end tobacco growing subsidies** and use the savings to support farmers to switch to more sustainable crops that improve food security and nutrition.
- It also aimed to raise awareness about moving away from growing tobacco and growing sustainable crops instead.

Topic 12. ODISHA TO PROCURE SAL SEEDS FROM 9 DISTRICTS.

Important for the Subject: Geography

The government-owned **Tribal Development Co-operative Corporation of Odisha Ltd (TDCCOL)** decided to procure **sal seeds (Shorearobusta)** from

nine Odisha districts in late May 2023.

Details:

- The district administration has entrusted Odisha Rural Development and Marketing Society (**ORMAS**) to purchase the seeds from the tribals at a fair price at the beginning of the procurement season.
- **ORMAS** has already procured around **150 metric tonnes of sal seeds** from the tribals in the district, which would be supplied to a Chhattisgarh-based company. The move, which comes after a **gap of three years**, intends to arrest the **distress sale of the minor forest produce (MFP)**.
- The government will procure the sal seeds from tribal people at the **minimum support price (MSP) of 20rs/kg**.

Associated issues:

- **Odisha has no major solvent extraction plant** that produces oil from sal seeds, due to which the **intermediaries procure the seeds from the state at a lower rate and sell them at a higher rate** to the oil companies of other states
- The sal seeds will be procured from 9 tribal districts only, the rest of the sal seeds will be sold at throwaway prices. Some major districts that are excluded are Deogarh, Koraput, Rayagada, Gajapati, Nayagarh and Mayurbhanj.
- The decision came a bit late, as tribals from many districts have already sold the seeds at 10-15rs/kg.

Sal tree (Shorea robusta):

- A species of tree in the family Dipterocarpaceae. The tree is **native to India, Bangladesh, Nepal, Tibet and across the Himalayan regions**.



- In India, it extends from **Chhattisgarh, Assam, Bengal, Odisha** and **Jharkhand** west to the **Shivalik Hills in Haryana, east of the Yamuna**. The range also extends through the **Eastern Ghats** and to the **eastern Vindhya and Satpura** ranges of central India. It is often the dominant tree in the forests where it occurs.

Sal seeds in Odisha:

- **Odisha has a rich depository of sal seeds** accounting for **25 per cent** of the country's production, which played a significant role in the economics of the tribal people in the state.
- Around **40 per cent** of the total tribal populations here are **engaged in collecting and processing the seeds** to eke out a living. Other major sal seeds producing states include **Bihar, Chhattisgarh, Madhya Pradesh and Jharkhand**.
- Generally, the **collection starts in mid-April** and is completed before the onset of monsoon.
- After collecting the raw seeds, they are **processed, dried, roasted, winnowed and pounded to separate the husk and the kernel**. The process is very difficult and involves the labour of an entire family to produce **quality dry seeds**.

Topic 13. WHY IS CHINA DIGGING A 10-KM-DEEP HOLE INTO EARTH'S CRUST?

Important for the Subject: Geography

China has embarked on an ambitious endeavor to **dig a 10-kilometre-deep hole into the Earth's crust** as part of its exploration efforts with the **aim to reach rocks from the Cretaceous Period**, the layer known as the **Cretaceous System**, which dates back up to **145 million years**.



Details:

- The project is taking place in the **Tarim Basin of Xinjiang province**. The excavation is located in the challenging environment of the **Taklimakan Desert, China's largest desert**.

The project will fetch the information about:

The evolution of landscapes, Climate change, and the distribution of life. The project will allow the scientists to **identify and date significant events** such as:

- Volcanic eruptions, Earthquakes, Shifts in climate, Study ancient life forms
deepest hole dug by human:
- The **deepest man-made hole on Earth** is held by the **Kola Superdeep Borehole** in **Russia**, which reached a depth of **12,262 meters**.
- The Kola project was aimed to study the Earth's crust and mantle. The digging was stopped in 1992 when the temperature reached 1800C.
- Apart from **Russia** and **China**, the **US** and **Germany** have also previously tried digging into the Earth's crust but weren't able to finish the project because of the **increasingly unbearable temperature** and **lack of funds**.

Topic 14. WHO SHOULD OWN THE WORLD'S LITHIUM?

Important for the Subject: Geography

Recently, a significant reserve of lithium has been found in the Raesi district of Jammu and Kashmir UT.

Who should own these minerals:

- In **July 2013**, a three-judge bench of the Supreme Court of India ruled that the **owner of the land has rights to everything beneath, "down to the centre of the earth"**.



- Yet, large areas of land, including forests — which make up more than 22% of India’s landmass — hills, mountains, and revenue wasteland are publicly owned.
- The **Supreme Court** also recalled that the **Union government could always ban private actors from mining sensitive minerals**, as is already the case with **uranium** under the **Atomic Energy Act 1962**.

Importance of lithium reserve:

- The ongoing **global transition to low-carbon economies**, the rapid expansion of **artificial intelligence (AI)**, and **5G networks** will greatly reshape global and regional geopolitics.

Global practices to manage lithium reserves:

- In **Chile**, the government has designated **lithium as a strategic resource** and its development has been made the **exclusive prerogative of the state**. The **state has licensed only two companies** — **SQM and Albemarle** — to **produce lithium** in the country.
- In April 2023, **Chile’s president Gabriel Boric** announced a new “**National Lithium Strategy**”, the new strategy calls for **public-private partnerships for future lithium projects**, which will allow the state to regulate the **environmental impact of lithium mining**, **distribute the revenue from lithium production** more fairly among local communities, and **promote domestic research into lithium-based green technologies**.
- **Bolivia’s new constitution** gave the state “**the control and direction over the exploration, exploitation, industrialization, transport, and commercialization of natural resources.**”
- **Bolivia has nationalized lithium and adopted a hard line against private and foreign participation.**



- **Bolivia's current president, Luis Arce, seeks to change that. Mexico's president Andrés Manuel López Obrador also nationalized lithium in February this year, declaring, "Oil and lithium belong to the nation, they belong to the people of Mexico."**

Lithium metal:

- **A soft, silvery metal. It has the lowest density of all metals. It reacts vigorously with water.**

Applications of lithium:

- **The most important use of lithium is in rechargeable batteries for mobile phones, laptops, digital cameras and electric vehicles.**
- **Lithium is also used in some non-rechargeable batteries for things like heart pacemakers, toys and clocks.**
- **Lithium metal is made into alloys with aluminium and magnesium, improving their strength and making them lighter. A magnesium-lithium alloy is used for armour plating. Aluminium-lithium alloys are used in aircraft, bicycle frames and high-speed trains.**

Lithium oxide is used in special glasses and glass ceramics.

- **Lithium chloride is one of the most hygroscopic materials known, and is used in air conditioning and industrial drying systems (as is lithium bromide).**
- **Lithium stearate is used as an all-purpose and high-temperature lubricant. Lithium carbonate is used in drugs to treat manic depression, although its action on the brain is still not fully understood.**
- **Lithium hydride is used as a means of storing hydrogen for use as a fuel.**

Natural occurrence:

- **Lithium does not occur as a metal in nature** but is **found combined** in small amounts in **nearly all igneous rocks** and in the **waters of many mineral springs**. **Spodumene, petalite, lepidolite, and amblygonite** are the more important minerals containing lithium.
- Most lithium is currently produced in **Chile**, from **brines that yield lithium carbonate** when **treated with sodium carbonate**. The metal is produced by the **electrolysis of molten lithium chloride and potassium chloride**.

Status of India's lithium industry:

- **India's electric-vehicle (EV) market** was valued at **\$383.5 million in 2021**, and is expected to expand to **\$152.21 billion in 2030**.
- India **imported 450 million units of lithium batteries** valued at **\$929.26 million (₹6,600 crore)** in **2019-2020**, which makes the development of the country's domestic lithium reserves a matter of high stakes.

Topic 15. YELLOW RIVER PROTECTION EFFORTS STEPPED UP

Important for the Subject: Geography

China's top legislature passed the **Yellow River Protection Law** on October 30, 2022.

Yellow River Delta protection reserve:

- The reserve, established in **October 1992** to **protect the wetlands**, covers about **1,530 square kilometers**, with the wetlands comprising most of the area. The reserve is situated in **Dongying, Shandong Province**. The environment at the reserve has **significantly improved over the years**. It is now home to many birds.



Causes of destruction of yellow river delta:

- Back in the **1980s** and **'90s**, **coastal erosion**, **seawater encroachment** and **drought** caused the wetlands to **shrink**.
- The delta's rich wetland ecosystems were also seriously threatened by **oil production**, **industrial waste pollution** and **land reclamation**.

Efforts to protect the delta:

- The **Yellow River Law**, which took effect in **April**, regulates water use along the river, to which more water resources will be added to supplement the wetlands.
- In recent years, the city has spent **1.36 billion yuan** (Rs 15.92 billion) to support **17 wetland protection and restoration projects** in the delta, including **water supplements**, **cord grass treatment**, and **offshore biodiversity conservation**, which has helped strengthen the city's wetland ecosystem.
- In the past three years, **more than 480 million cubic meters of water** from the Yellow River has been **replenished at the reserve**.
- Data from the reserve's management committee show that this work has **effectively alleviated soil salinization in the wetlands**. They have built channels and sluices to ensure that water is replenished when needed at the wetlands.
- The **reserve management committee** divided the wetlands into **49 areas** based on the growth conditions for animals and plants, ensuring that each area receives the correct amount of water. Nurtured by the waterway, the animals and plants are thriving.
- Work is being carried out in **Dongying** to **restore sea grass beds** and **native plants** growing along waterways in the wetlands, such as **Suaeda salsa**, a



type of herb.

Removal of invasive plants:

- Teaming up with the Chinese Academy of Sciences Yantai Institute of Coastal Zone Research, the local government has created an effective way to **eradicate *Spartina alterniflora***, a type of **marsh cordgrass** found on the estuary coastline that was **seriously threatening the habitats of numerous species**.
- ***Spartina alterniflora*** found on more than **8,730 hectares of land** has been **eradicated in past years**, resulting in **76 kilometers of blocked tidal channels being cleared**, the management committee's data show.

Result of the protection efforts:

- Statistics show that the **number of avian species in the delta has risen from 187** in the years after the reserve was established to **373**.
- Last year, **470 chicks were born to Oriental storks at the reserve**, while **315 red crowned cranes were observed** wintering at the wetlands.
- To create a good environment for the birds, they built some small islands on water ways where the Yellow River flows through the wetlands.

About Yellow River:

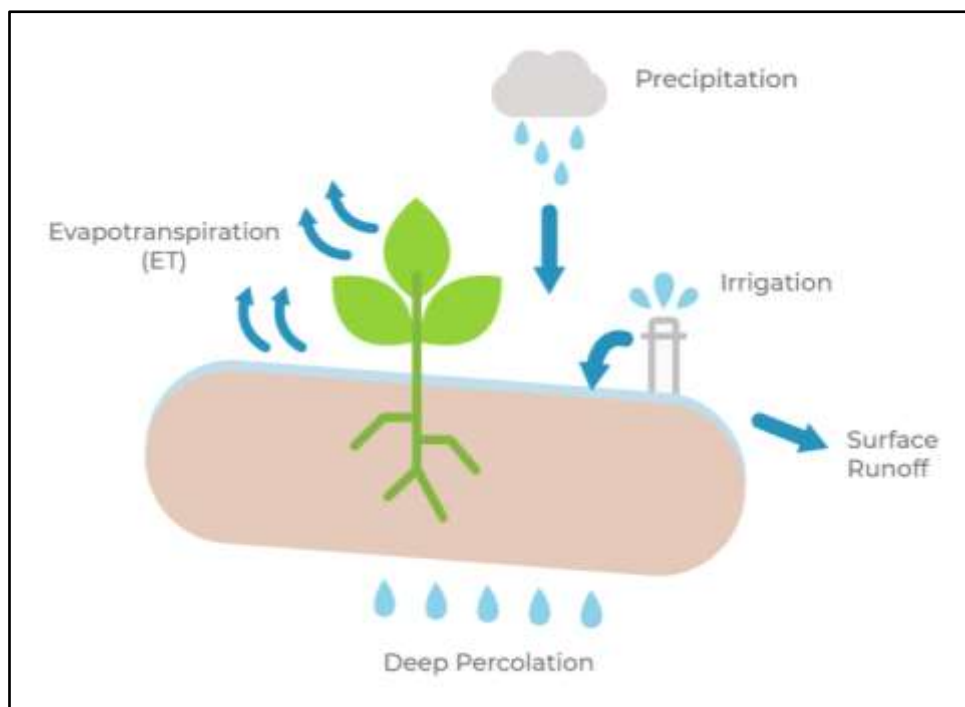
- The **Yellow River** or **Huang He** is the **second-longest river in China**, after the **Yangtze River**, and the **sixth-longest river system in the world** at an estimated length of **5,464 km (3,395 mi)**. **Originating** at an elevation above **15,000 feet (4,600 metres)** in the **Bayan Har**
- **Mountains in Qinghai province of Western China**, it flows through **nine provinces**, and it empties into the **Bohai Sea** near the **city of Dongying in**

Shandong province.

- It carries **millions of tonnes of soil** east every year, some of it reaching the estuary, where the waterway flows into the **Bohai Sea in Dongying, forming the wetlands.**
- The **Yellow River's basin** was the **birthplace of ancient Chinese, and, by extension, East Asian civilisation.**

Topic 16. EVAPOTRANSPIRATION

Important for the Subject: Geography



Evapotranspiration is the **combined process of evaporation and transpiration** that **leads to the loss of water from the Earth's surface to the atmosphere.** Term 'Evapotranspiration' was coined and later defined by climatologist Charles Warren Thornthwaite in 1944.

- Evaporation refers to the **conversion of liquid water to water vapour, mainly** from open water bodies, whereas transpiration is the release of water



vapor by plants through their leaves.

- Several **factors influence the rate of evapotranspiration**, including temperature, humidity, wind speed, solar radiation, and the availability of water in the soil.
- Higher temperatures, low humidity, and strong winds increase evapotranspiration, while cloudy conditions and limited soil moisture reduce the process.
- Various methods are used to measure evapotranspiration. These include the use of evaporation pans, lysimeters, and meteorological instruments such as atmometers and eddy covariance systems.
- These techniques help researchers and policymakers estimate water loss from different landscapes, including agricultural fields, forests, and urban areas.
- Evapotranspiration plays a **crucial role in agricultural water management**. By understanding the water requirements of crops and estimating evapotranspiration rates, farmers can optimize irrigation scheduling to ensure efficient water use.
- This knowledge helps prevent over-irrigation, which can lead to water wastage and environmental issues, and under-irrigation, which can reduce crop productivity.

Evapotranspiration is an essential component of the Earth's water cycle and has significant environmental implications.

- It affects regional and global climate patterns by regulating the exchange of moisture between the land surface and the atmosphere.
- Changes in evapotranspiration rates due to land-use changes, deforestation, or climate change can impact local and regional water availability, precipitation patterns, and overall ecosystem health.



- Understanding evapotranspiration is vital for effective water resource management and sustainable development.

Hydrological Cycle

- The hydrological cycle is also known as Water Cycle. It is the circulation of water in various forms – Liquid, Solid, and Gaseous. Water moves in different realms like ocean, river, glaciers etc.

Distribution of water on surface of the earth

- About 71% of the water of the earth is found in the oceans. The remaining is freshwater in glaciers and ice caps, groundwater, lakes, etc. About 59% of the water on the land evaporates and returns back to the atmosphere.

Hydrological cycle Process

- The movement of water takes place through various processes. Evaporation, Condensation, Precipitation, Runoff, Infiltration, Transpiration, etc.

Evaporation and Transpiration

- The Water cycle begins with the evaporation of water. It is the process of water transfer from surface of water bodies into the atmosphere. Water vapors also get discharged from plant leaves through transpiration.

Condensation

- The water vapors rise up and get cooled to liquid water droplets in the air, forming fog and clouds.

Precipitation

- The condensed water vapor falls on the Earth is known as Precipitation. The

water also falls in form of hail, snow, sleet depending on the temperature.

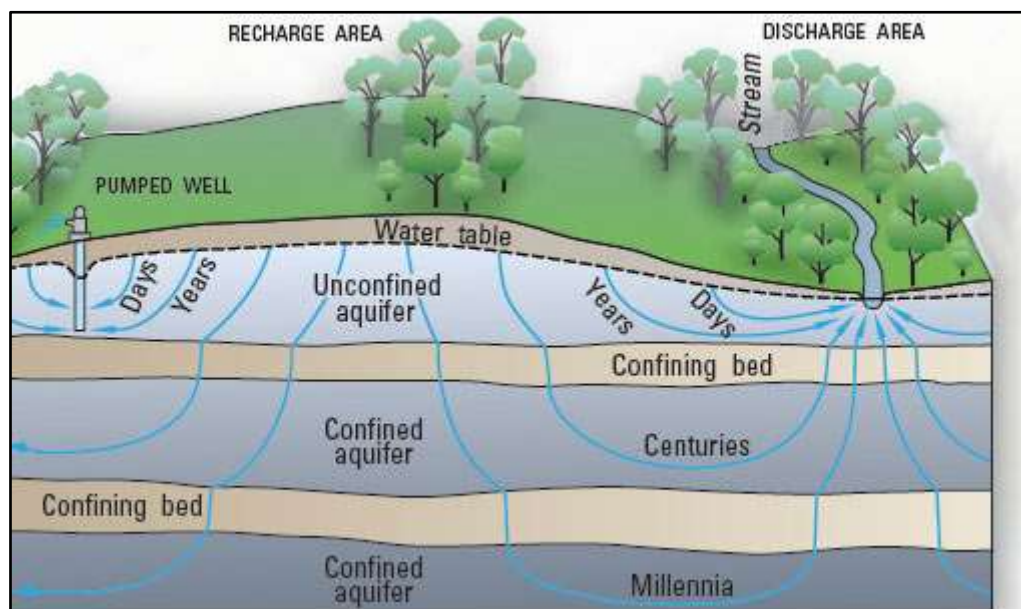
Runoff and Infiltration

- Runoff is the flow of water in rivers, streams, and lakes. Infiltration is the process through which rainwater is absorbed by the surface of earth.

Headquarters: Vienna, Austria.

Topic 17. INCREASED RAINFALL ALONE WILL NOT HELP GROUNDWATER RECOVERY

Important for the Subject: Geography



Rapid groundwater depletion in north India has become a norm during the last few decades.

Groundwater exploitation:

- Between 2002 and 2022, about **95%** of India's groundwater depletion occurred in north India. **Groundwater use** and **summer monsoon rainfall variability** are the two main drivers of groundwater storage.
- The **evapotranspiration** has increased due to the warming climate, which

will further limit water availability for groundwater recovery.

- **Groundwater exploitation for irrigation purposes** is still the main cause of groundwater depletion. **Excessive pumping from nonrenewable groundwater storage** will aggravate groundwater loss.

Status of Groundwater Depletion in India:

- According to the **CGWB**, with **230 billion meter cubes of groundwater** drawn out each year for **irrigating agricultural lands** in India, many parts of the country are experiencing rapid depletion of groundwater.
- The total estimated groundwater depletion in India is in the range of **122–199 billion meter cubes. 89% of ground water** extracted is used in the **irrigation sector**, making it the **highest category user in the country**.
- This is **followed by groundwater for domestic use** which is **9%** of the extracted groundwater. **Industrial use of ground water is 2%.50% of urban water** requirements and **85% of rural domestic water requirements** are also fulfilled by groundwater.

Recovery of depleted groundwater:

- The warming climate will also **increase the amount of summer monsoon rainfall** that north India will receive, and the enhanced precipitation could help the recovery rates of groundwater.
- **Gravity Recovery and Climate Experiment (GRACE)** data shows that the increased monsoon rainfall due to a warming climate is not enough for the recovery of depleted groundwater due to irrigation purposes.
- As per climate projection, **the summer monsoon rainfall is projected to increase by 6-8%**, and this increase is expected to help recover the lost groundwater.
- But even in the most optimistic scenario, the **highest projected**

groundwater recovery (about 260 cubic km) in the near period (2021-2040) will only help recover about **50% of groundwater lost in the last two decades.**

Effects of drought:

- While the impact of droughts at longer frequencies may be less, consecutive years of drought can adversely affect groundwater storage as recharge will be less while extraction of groundwater for irrigation will be higher than when summer monsoon rainfall is normal.
- There is a compulsion to make irrigation more efficient and shift crop growing and procuring areas.

Some initiatives taken by the government to reduce and recover the groundwater resources in India:

- It is promoting the concept of **conjunctive use of surface and groundwater** based on the **village/gram panchayat level water security plan** prepared in a scientific manner through the participation of communities/stakeholders.
- **Atal Bhujal Yojana (Atal Jal):** It is a **Rs. 6000 crore Central Sector Scheme** with **World Bank assistance**, for sustainable management of groundwater resources with community participation.
- **Jal Shakti Abhiyan (JSA):** It was launched in **2019** in **256 water-stressed districts** in the country to **improve water availability** including groundwater conditions in these areas.
- It has a special emphasis on the **creation of recharge structures, rejuvenation of traditional water bodies, intensive afforestation** etc.

Aquifer Mapping and Management Program: The **CGWB** has taken up **Aquifer Mapping and Management Program.**



- The program is **aimed to delineate aquifer disposition** and their characterization for the preparation of aquifer/area-specific groundwater management plans with community participation.
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT):** The Mission focuses on the **development of basic urban infrastructure** in the **AMRUT cities**, such as **water supply, sewerage & septage management, storm water drainage, green spaces & parks, and non-motorized urban transport.**

Topic 18. BETWEEN ‘FRIENDS’ CONG & DMK, MEKEDATU DAM DISPUTE

Important for the Subject: Geography



Days after Karnataka’s Congress government took over at a ceremony that was attended by Tamil Nadu Chief Minister M K Stalin, the two states, run by parties that are southern allies against the BJP, **clashed over a project to supply drinking water to Bengaluru.**



The dispute over Mekedatu project:

- After Karnataka Deputy Chief Minister **expressed the resolve to build a dam and reservoir on the Cauvery at Mekedatu close to the state's border with Tamil Nadu**, Tamilnadu pointed out that the **Mekedatu project was not part of the awards of the Cauvery Water Disputes Tribunal (CWDT) or the ruling of the Supreme Court.**
- Any **unauthorized construction** across the river could harm Tamil Nadu and **violate both the 2007 final order of the CWDT and the 2018 verdict of the SC**, Durai Murugan, who is Water Resources Minister for the state, said.

Mekedatu project:

- The Mekedatu dam project is located in Ramanagara district about 100 km **south of Bengaluru, close to where the Cauvery enters Tamil Nadu.** The project has been contentious for years.
- Mekedatu, meaning goat's leap, is a deep gorge situated at the confluence of the rivers Cauvery and Arkavathi, about 100 km from Bengaluru.
- The dam **aims to supply drinking water to Bengaluru and replenish the regional groundwater table.**
- The Mekedatu dam will be **larger than the Krishnaraja Sagar project on the Cauvery.** The Central Water Commission (CWC) had cleared a feasibility study for the project in 2018.

History of opposition:

- **Tamil Nadu witnessed widespread protests against the dam in 2015**, with a statewide bandh that was supported by various stakeholders. The state Assembly passed unanimous resolutions against the project in December 2018 and January 2022.



- In August 2021, Tamil Nadu approached the Supreme Court against the project. **Tamil Nadu's key arguments are that Karnataka is attempting to modify the flow of the river by constructing two reservoirs on it.**
- The action violates the final award of the CRWT, and would impound the flow in the intermediate catchment below the Krishnaraja Sagar and Kabini reservoirs, and Biligundlu, along the border of Karnataka and Tamil Nadu, the state has argued.

Topic 19. FOR THE COOL SUMMER SO FAR, THANK THE FREQUENT SPELLS OF RAIN

Important for the Subject: Geography

India was bracing for a record hot summer. However, **western disturbances have brought some much-needed rain and surprisingly pleasant weather.** Despite a few heat waves, India has had an unusually pleasant summer so far. Temperatures in most places have been **1 to 4 degrees Celsius below normal**, going against predictions of a very hot summer.

Predictions & portents:

- 2023 is predicted to be extremely hot both globally and in India. Indeed, the **January to March period was globally the fourth warmest start to a year ever.** March was the second warmest ever, behind only 2016; April was fourth warmest.
- **In India, there was a heat-wave like situation in February** — a month for which heat-wave conditions are not even defined because heat waves are expected only in April, May, and June.
- Despite the IMD's forecast of a normal monsoon, apprehensions remain. The **developing El Niño in the equatorial Pacific Ocean is expected to get very strong** in the coming months, and has the **potential to spoil India's**



monsoon.

Rain and cool weather:

- The first five months of the year have been far from being uncomfortably hot, the few heat waves notwithstanding. Only parts of east and north-east India, and some parts of Gujarat and Maharashtra, have experienced slightly higher than normal temperatures.
- The **average maximums have remained well below normal almost everywhere** except parts of Bihar, Jharkhand, West Bengal, and the Northeast. (Some of these areas are facing heat-wave conditions even now.)
- At the same time, **rainfall has been higher than normal in most parts of the country.** For the three-month period from March to May, India as a whole **received 12% higher rainfall.** The rain has been the most important reason that has kept temperatures in check.

Western Disturbances:

- Most of the rainfall activity in the last three months happened over north and northwest India, and central India, and were **caused by what are called Western Disturbances.**
- These are east-moving rain-bearing wind systems that **originate beyond Afghanistan and Iran, and pick up moisture from as far as the Mediterranean Sea** and even the Atlantic Ocean.
- These are **examples of extra-tropical cyclones** that are a result of low-pressure areas formed due to the interactions between polar and tropical winds. **Western Disturbances frequently influence weather over India, particularly the northwestern regions.**
- There were seven Western Disturbance events in March, five in April, and eight in May, causing frequent, sometimes heavy, rainfall over large parts of



India.

- A fresh Western Disturbance is expected to bring more rain to northwest India. **Southern India is also expected to get rainfall over the next couple of days because of a different low-pressure system.**
- Kerala is likely to receive some rain until Sunday, while some places in Karnataka, Andhra Pradesh and Tamil Nadu could receive rain over the next five days.

No pointer to monsoon:

- The **current weather conditions are the result of short-term local interactions that do not have a bearing over long-term weather.** How the monsoon turns out remains to be seen.
- Several scientists have **predicted an unusually strong El Niño this year.** The IMD has said that a positive Indian Ocean Dipole (IOD), a phenomenon similar to El Niño in the Indian Ocean, could offset the impact of the El Niño to an extent.
- However, El Niño is known to have a much stronger impact on the monsoon than the IOD.

Topic 20. OIL RESERVES IN SALT CAVERNS

Important for the Subject: Geography

A Govt-owned engineering firm is studying **whether petroleum reserves can be developed in Rajasthan's salt caverns.**

Why do countries need strategic petroleum reserves (SPR)?

- If the idea comes to fruition, India could get its first salt cavern-based oil storage facility. The country's three existing strategic oil storage facilities — at **Mangalore and Padur in Karnataka, and Visakhapatnam in Andhra**



Pradesh — are made up of excavated rock caverns.

- Countries build strategic crude oil reserves to mitigate major supply disruptions in the global supply chain.
- India, the world's third-largest consumer of crude, depends on imports for more than 85% of its requirement — and **strategic petroleum reserves (SPR) could help ensure energy security and availability during global supply shocks** and other emergencies.
- **Salt cavern-based reserves vs rock cavern-based reserves** Unlike underground rock caverns, which are developed through excavation, **salt caverns are developed by the process of solution mining**, which involves **pumping water into geological formations** with large salt deposits to dissolve the salt.
- **After the brine (water with dissolved salt) is pumped out** of the formation, the **space can be used to store crude oil**. The process is simpler, faster, and less cost-intensive than developing excavated rock caverns.
- Salt cavern-based oil storage facilities are also **naturally well-sealed**, and engineered for rapid injection and extraction of oil. This makes them a more attractive option than storing oil in other geological formations.
- The **salt that lines the inside of these caverns has extremely low oil absorbency**, which creates a **natural impermeable barrier** against liquid and gaseous hydrocarbons, making the caverns apt for storage. Also, unlike rock caverns, salt cavern-based storages can be created and operated almost entirely from the surface.
- The **entire SPR program of the United States has so far been based on salt cavern- based storage facilities**. Salt caverns are **also used to store liquid fuels and natural gas** in various parts of the world. They are also considered suitable for storing compressed air and hydrogen.



Potential in India for storing crude, petroleum products

- Rajasthan, which has the bulk of requisite salt formations in India, is seen as the most conducive for developing salt cavern-based strategic storage facilities.

Strategic petroleum reserves program: story so far

- India's strategic oil reserves are part of the effort to build sufficient emergency stockpiles on the lines of the reserves that the US and its Western allies set up after the first oil crisis of the 1970s. The three existing rock cavern-based facilities were built during the first phase of the programme.
- Crude oil from the reserves are to be re-leased by an empowered committee set up by the government, in the event of supply disruptions due to a natural calamity or an unforeseen global event leading to an abnormal increase in prices.
- The **International Energy Agency (IEA), a Paris-based autonomous intergovernmental organization in which India is an 'Association' country, recommends that all countries should hold an emergency oil stockpile sufficient to provide 90 days of import protection.**
- In India, apart from the SPR that are sufficient to meet 9.5 days of oil requirement, the oil marketing companies (OMCs) have storage facilities for crude oil and petroleum products for 64.5 days — which means there is **sufficient storage to meet around 74 days of the country's petroleum demand.**

Topic 21. GHARIAL CONSERVATION

Important for the Subject: Environment

The collective efforts of local authorities and conservationists caused gharial nest numbers in **Katarniaghat Wildlife Sanctuary (KWS)** rise to 36 in 2022,



from 19 in 2019.

Details:

- The conservation efforts of critically endangered gharial in KWS were started in 1970s. The government launched a **crocodile conservation project in 1975**, with a goal to increase the numbers of India's three **crocodilian species – the freshwater crocodile, the gharial and the saltwater crocodile.**
- They began breeding and rearing them in captivity and then releasing them in the wild.

Gharial:

- **Gharials** are **endemic to South Asia**. Historically, they were found in the riverine ecosystems of **India, Pakistan, Bangladesh** and **southern parts of Bhutan and Nepal**.
- According to the **International Union for Conservation of Nature (IUCN)**, an estimated **5,000 gharials** could be found in the wild in the **1940s**.
- By **1976**, there were **less than 200**. In India, this **fish-eating reptile** was on the brink of extinction at the time, with populations dropping by about **96%** across its entire distribution range.
- Presently, In India, they are found within the **tributaries of the Ganga: Girwa** (Uttar Pradesh), **Son** (Madhya Pradesh), **Ram ganga** (Uttarakhand), **Mahanadi** (Odisha), **Gandak** (Bihar), and **Chambal** (Uttar Pradesh, Madhya Pradesh and Rajasthan).

Conservation status:

- Under the Schedule-1 in Wildlife Protection Act 1972 IUCN Red list: Critically endangered



Role in the ecosystem:

- **Gharials** are **top predators** and **keystone species** in running freshwater systems. They play a **crucial role in bringing nutrients from the bottom of the riverbed to the surface**, thus **increasing fish populations** and helping **maintain the aquatic ecosystem**.
- Of the three crocodylian species, the **gharial** is the most efficient fish catcher because of its unique snout.

Katarniaghat Wildlife Sanctuary (KWS):

- **KWS** was among the **first five sanctuaries** declared since the project began, as it was home to gharial populations breeding in the **Girwa river**.

Other sanctuaries were:

- The National Chambal Sanctuary (largest gharial conservation centre in India), Satkosia Gorge Wildlife Sanctuary, Son Gharial Sanctuary and Ken Gharial Sanctuary. **Kukrail Gharial Rehabilitation Centre** in Lucknow, Uttar Pradesh

Reasons for the decline of the gharial population:

- After the initial success of the conservation-cum-captive breeding project, the government stopped the captive breeding program, thus the gharial population falls by 58%.
- Construction of Girijapuri barrage across Girwa River. Vegetative growth on sandy plains in the girwa river hinders the hatching activities of gharial.
- Habitat destruction Pollution in river streams.

Topic 22. CPCB'S NEW GUIDELINES FOR INDIA'S STONE CRUSHER SECTOR A WELCOME STEP

Important for the Subject: Environment

The Central Pollution Control Board (CPCB) published the Environmental Guidelines for Stone Crushing units

Details:

- The **stone crusher sector** is responsible for significant **fugitive dust emissions** and causes **severe air pollution**.
- The **Environment Pollution (Prevention & Control) Authority (EPCA)** banned the operation of the stone crusher units, along with brick kilns and hot mix plants, under the implementation of the **Graded Response Action Plan (GRAP)**.
- The guidelines are in alignment with the recommendations made by New Delhi based non-profit Centre for Science and Environment (CSE).
- **Stone-crushing products** tend to get **airborne** under the effect of **strong winds** and worsen the surrounding air quality. To tackle this, the central board also added measures for product storage as well.
- The **CPCB guidelines** cover various aspects of stone crushing, such as **source emissions, product storage, transportation, water consumption and legal compliance**. Some of the key features of the guidelines are:
- The stone crushers should **obtain consent to establish and consent to operate (CTO)** from the **State Pollution Control Board (SPCB)** before starting their operations.
- Stone crushing unit shall **comply with emission norms** prescribed under the **Environment (Protection) Rules, 1986** and conditions laid down in CTO by concerned SPCB/PCC.
- They should install **adequate pollution control devices**, such as **dust**



- suppression** systems, covers, screens and sprinklers, to reduce the dust emissions from crushing, loading and unloading activities.
- They should also store their products in covered areas or silos to prevent windblown dust. The stone crushers should **use water judiciously** and ensure its availability and quality and procure their raw material from legal sources and maintain proper records of their transactions.
 - A District Level Committee is to be constituted under the chairmanship of the **District Magistrate/Deputy Commissioner** so that surprise inspections for surveillance of stone-crushing units located under their jurisdiction can be carried out on a regular basis.
 - Health surveys of workers should be carried out by the stone crusher on a half yearly basis.

What is the Issue Associated with Stone Crushing Units?

- **Stone-crushing units** are one of the **major sources of air pollution in India**. These units produce crushed stones that are used as raw materials for various construction activities.
- However, the process of stone crushing also generates a lot of **dust** that affects the **health** of the workers and the surrounding population.
- Moreover, stone mining is also associated with this activity, which further degrades the environment.

What is the Central Pollution Control Board?

- The **CPCB** is a **statutory organization** that was **established in September 1974** under the **Water (Prevention and Control of Pollution) Act, 1974**. Further, **CPCB** was entrusted with the powers and functions under the **Air (Prevention and Control of Pollution) Act, 1981**.
- It is the apex body for environmental protection and pollution control in



India. It functions under the **Ministry of Environment, Forest and Climate Change (Mo EFCC)** and coordinates with the **State Pollution Control Boards (SPCBs)** and other agencies.

- The CPCB has various divisions that deal with different aspects of pollution control such as air quality management, water quality management, hazardous waste management, environmental assessment, laboratory services, information technology, public participation etc.

Topic 23. GLOBAL TREATY ON PLASTIC POLLUTION

Important for the Subject: Environment

A United Nations committee met in Paris Monday to work on what is intended to be a landmark treaty to bring an end to global plastic pollution.

Background:

- On March 2, 2022, representatives from over 200 countries gathered in Nairobi, Kenya for the UNEA-5. The assembly then created history when 175 countries unanimously agreed on a UN framework to fight global plastic pollution.
- Plastic pollution has been deemed as one of the most important crises of the modern world. Studies estimate there are now **15–51 trillion pieces of plastic in the world’s oceans**. At current rates, **plastic is expected to outweigh all the fish in the sea by 2050**.
- Plastic waste produced globally is set to **almost triple by 2060**, with about half ending up in landfills and under a fifth recycled, according to the OECD.
- The resolution agreed at the UNEA calls for **global rules, financing and enforcement mechanisms** aimed at regulating plastics from manufacture through disposal, all to hopefully be **hammered out by the end of 2024, with the final treaty language negotiated before 2025**.



- This treaty will serve as a framework for an **Intergovernmental Negotiating Committee** to develop a **legally binding agreement mandating countries to reduce, recycle, and manage plastic pollution**, particularly in the oceans, through national objectives and strategies.
- The resolution has been **described** by the head of the UNEP as **the most important multilateral environmental deal since the Paris climate accord in 2015**. Countries like **India and Japan initially held firm against restrictions on production but were persuaded to go along**.

Plastic Pollution

UNEP's Clean Seas 2.0: From Source- to- Sea:

- Launched in 2017, the Clean Seas campaign engages governments, the general public, civil society and the private sector to strengthen effective action plans on marine litter and plastic pollution. Currently, 63 countries are Clean Seas signatories.
- **Clean Seas 2.0** initial focus on **single-use plastics and their elimination**, communicating the root causes associated with the production, use and disposal of unnecessary, avoidable and problematic plastics thereby following an **evidence based approach**.
- Its topic areas will cover a range of products, including packaging, ghost fishing gear, tyres and textiles. It leverages two key river-focused UNEP projects: **Counter MEASURE and Mississippi River Plastic Pollution Initiative**.
- The “**Counter MEASURE**” uses cutting-edge technology to identify the source of plastic pollution in **river systems in Asia – primarily the Ganges and Mekong**. Through a combination of **citizen science, drone imaging, machine learning and geographic analyses**, the project collects data and identifies plastic waste hotspots and shares it with partner organizations and



governments across the region.

- **Citizen science** is a critical aspect of the “**Mississippi River Plastic Pollution Initiative**” also led by UNEP in partnership with the Mississippi River Cities and Towns Initiative and the University of Georgia.
- **UNEP and the Ellen Mc Arthur Foundation** also co-lead the **Global Commitment**, which has established a common vision of a **circular economy for plastics by 2025**.
- Through the Global Partnership on Marine Litter, UNEP is developing a **Digital Platform** to bring together and connect actors and information to catalyze action before plastic pollution ends up in the ocean.

Existing international instruments

- **The 1972 Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (or the London Convention).**
- **The 1996 Protocol to the London Convention (the London Protocol).**
The 1978 Protocol to the International Convention for the Prevention of Pollution from Ships (MARPOL).

Topic 24. IS CLIMATE CHANGE ALTERING ARCTIC GROUND SQUIRRELS' HIBERNATION PATTERNS?

Important for the Subject: Environment

A new study (Science) analyzed more than 25 years of climate and biological data. The findings include **shorter hibernation periods** and **differences between male and female hibernation periods**.

Details of the study:

- Arctic ground squirrels survive harsh Alaska winters by hibernating for over half the year. They still must spend energy to generate enough heat from



stored fat to keep tissues from freezing.

- They resurface from their burrows more than three feet below the ground each spring, famished and eager to mate. The researchers found that **females are changing when they end hibernation, emerging earlier every year, but males are not.**

Changes in females match earlier spring thaw.

- The **advantage of this phenomenon** is that **they do not need to use as much stored fat during hibernation and can begin foraging for roots and shoots, berries and seeds sooner in the spring.** Scientists think this could lead to healthier litters and higher survival rates.

Arctic ground squirrel:

- The **Arctic ground squirrel** is a species of ground squirrel **native to the Arctic and Subarctic of North America and Asia.**
- People in Alaska, particularly around the Aleutians, refer to them as “**parka**” **squirrels**, most likely because their pelt is good for the ruff on parkas and for clothing.

Hibernation:

- The **Arctic ground squirrel hibernates over winter** from early August to late April in adult females and from late September to early April for adult males, at which time it can reduce its body temperatures from 37 °C (99 °F) to as little as -3 °C (27 °F).
- **During hibernation, its core body temperature reaches temperatures down to -2.9 °C (26.8 °F) and its heart rate drops to about one beat per minute.**
- Peripheral, colonic, and blood temperatures become subzero. The best theory



as to why the squirrel's blood doesn't freeze is that the animal is able to cleanse their bodies of ice nucleators which are necessary for the development of ice crystals.

- In the **absence of ice nucleators, body fluids can remain liquid while in a super cooled state.**
- This process is being studied with the hope that the mechanism present in arctic ground squirrels may provide a path for better **preservation of human organs** for transplant.

The connections between brain cells also wither away in this state.

- The damage should have resulted in death, but research on related species shows that these connections regrow after waking up. In the warmer months, the squirrel is active during the day.

Diet:

- This squirrel feeds on **grasses, sedges, mushrooms, bog rushes, bilberries, willows, roots, stalks, leaves, leaf buds, flowers, catkins, and seeds.** They will also **eat insects**, and occasionally they will even feed on **carrion** (such as mice, snowshoe hares and caribou).
- **IUCN Red List:** Least Concern.

Topic 25. STUDY REVEALS EVOLUTIONARY HISTORY, BIOGEOGRAPHIC ORIGINS OF BUTTERFLIES

Important for the Subject: Environment

An international team of researchers **sequenced 391 genes from nearly 2,300 butterfly species from 90 countries** to help reconstruct a **new phylogenomic tree of butterflies representing 92% of all general.**

Details:



- While the **earlier classification was based more on butterfly morphology**, the latest attempt has been **based on genome sequencing**. As a result, the researchers found that **at least 36 butterfly tribes (above genus in taxonomical classification) require reclassification**.

Origin of butterflies:

- According to a study published recently in the journal **Nature Ecology and Evolution**, **butterflies originated in the Americas in the late Cretaceous, about 100 million years after the origin of flowering plants**.

There is **no adaptive reason for butterflies to originate in North America**.

- It's more of a coincidence that butterflies had their origin in North America where the closest moth relatives of the earliest butterflies were present.
- While butterflies **dispersed from North America to Europe** relatively quickly about **75 million years ago** due to the **landmass then being nearly contiguous**, the **dispersal from North America to Asia** was through **colder northern regions** and happened around **60 million years ago**.
- **North America largely being a temperate region** has **far less diversity** compared with the **tropical region in South America and Asia**.

Speciation is far higher in the tropics than in the temperate region.

- A **suitable climate** that allows butterflies to live through the year, the **greater diversity of habitats**, and the **far higher diversity and an absolute number of plant species** that serve as a source of food for butterflies serves as the **main drivers for higher speciation of butterflies in the tropics**.
- The dispersal of butterflies never followed a single direction. The dispersal has been seen in both directions, which has been the case in other animal species.



Role of butterflies in the ecosystem:

- They are naturally responsible for increasing the biodiversity of an ecosystem. Thus they are the indicator of a healthy environment.
- Their primary role in the ecosystem is that of a pollinator. Some species of butterflies such as monarch butterflies help in reducing air pollution by absorbing carbon dioxide from the atmosphere.

Topic 26. HERE IS WHAT TO EXPECT AT BONN ON CLIMATE MITIGATION

Important for the Subject: Environment

Mitigation at COP27:

Mitigation — the act of reducing greenhouse gas emissions so as to prevent further global warming — is a crucial pillar of climate action, covering entire economic sectors from power, industry, and transport, to even forests and land.

The COP27 outcome document instead reiterated previous calls “towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies” and also called for a just transition to renewable energy.

Just Energy Transition:

- The issue of a “just energy transition” gained traction at **COP27** as well, since **Indonesia** announced at the parallel **G20 summit**, that it would be a recipient of **about \$20 billion** in starter funding through a **Just Energy Partnership (JET-P) deal** to reduce its coal dependence.

Unequal distribution of finances:

- Most of the increase in clean energy investment between 2019 and 2023 taking place in China, the US and the EU. Poor and vulnerable countries are not seeing a clean energy boom in line with their needs.



- About 97 per cent of South Africa’s \$8.5 billion JET-P package comprised of loans.

Efforts from private sector:

- The **First Movers Coalition** — a voluntary alliance of companies “using their purchasing power to create early markets for innovative clean technologies across eight hard to abate sectors”.
- They announced the joining of the **cement and concrete sectors** to the coalition. The group pledged to purchase **at least 10 per cent of near-zero carbon cement and concrete by 2030** and also committed **\$12 billion to scale up green technologies** and cut emissions.

Mitigation work program:

- Setup in **2021** at **UNFCCC forum**.

Objective: ‘work program for urgently scaling up mitigation ambition and implementation.

- It was proposed to address the insufficiency of Nationally Determined Contributions (NDC), and bridge the gap by increasing ambition in pledges to cut emissions. Should be guided by the principle of **Common But Differentiated Responsibilities- Respected Capabilities (CBDR-RC)**. It should not be a replication of **Global Stock take**.

Topic 27. CLIMATE FINANCE WILL BE KEY AT BONN CLIMATE CONFERENCE

Important for the Subject: Environment

While the **\$100 billion climate finance goal** — first pledged in **2009** — may be met this year, discussions on its successor, the **New Collective Quantified Goal (NCQG)** on climate finance, will continue at **Bonn**, where the **Sixth**



Technical Expert Dialogue (TED) will deliberate on the “quantum” of money for the new goal as well as “mobilization and provision of financial sources”.

Details:

- According to an estimate by the **Organization for Economic Co-operation and Development**, a total of **\$83.3 billion** was provided to developing and emerging economies in **2020** — **\$16.7 billion short of \$100 billion**.
- The **Stern-Songwe report of 2022** estimated that **\$1 trillion per year** will be needed in **external climate finance by 2030** for emerging and developing economies other than China. The **UNFCCC Standing Committee on Climate**
- **Finance** estimated the needs of developing countries to be from **\$5.8-11.5 trillion**. The **currently evolving debt crisis in the Global South underlines the urgent need for more grant-based climate finance**, without which developing countries will be pushed deeper into debt, negatively impacting their development.
- The **International Energy Agency** stated that the **high cost of capital and rising borrowing costs reduce the economic attractiveness of clean energy investment** in developing countries, even if they possess rich renewable resources.

What is the New Collective Quantified Goal (NCQG)?

- By decision 1/CP.21, para. 53, Parties decided that, in accordance with **Article 9, paragraph 3, of the Paris Agreement**, the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) shall set a **new collective quantified goal (NCQG)** from a **floor of USD 100 billion per year**, taking into account the needs and priorities of



developing countries, prior to 2025.

- The **NCQG** is expected to be operational by **2025** and will be designed to consider the needs of developing nations. At **COP26 in Glasgow**, an ad hoc work program for the **NCQG** for **2022-24** was set up.
- Under this program, Parties agreed to have **four TEDs** annually through 2024 to guide the technical work to inform political deliberations at COP.

Technical Expert Dialogue (TED):

- The theme of discussion will be “**quantity, mobilization and provision of financial sources**”.

Climate finance:

- According to the **UNFCCC Standing Committee on Finance**, **climate finance** is that which “aims at reducing emissions, and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts”.
- But there is no standard, internationally agreed definition of what can be counted as climate finance or even what should be reported as “new” or “additional” climate finance.

Topic 28. GREEN GDP

Important for the Subject: Economy

Green GDP is a term used for expressing GDP after adjusting for environment degradations. Green GDP is an attempt to measure the growth of an economy by subtracting the costs of environmental damages and ecological degradations from the GDP. The concept was first initiated through a System of National Accounts.



- The System of National Accounts (SNA) is an accounting framework for measuring the economic activities of production, consumption and accumulation of wealth in an economy during a period of time. When information on economy's use of the natural environment is integrated into the system of national accounts, it becomes green national accounts or environmental accounting.
- The process of environmental accounting involves three steps viz. Physical accounting; Monetary valuation; and integration with national Income/wealth Accounts.
- Physical accounting determines the state of the resources, types, and extent (qualitative and quantitative) in spatial and temporal terms.
- Monetary valuation is done to determine its tangible and intangible components. Thereafter, the net change in natural resources in monetary terms is integrated into the Gross Domestic Product in order to reach the value of Green GDP.

Topic 29. COAL INDIA – DIVESTMENT FOR FY 2023-24

Important for the Subject: Economy

Government's bid to divest up to **3% equity stake** in the company through offer for sale of shares (**OFS**). Centre is likely to raise about **Rs. 4,200 crore** from the sale of the full 3% stake at the base price of Rs. 225 per share.

Government currently holds a **13% stake** in the coal mining PSU. A green shoe option to further sell an additional 1.5% over the base offer, which will be exercised in case of oversubscription.

Related points:

- Government of India, who set a disinvestment of **Rs 51,000 crore** for the fiscal year 2024 which is lower than the previous financial year.



- Coal India produced 622 MMT (million metric tonne) coal in 2022. Out of it, coking coal production is 54 MMT.

Types of Coals

- **Non Coking Coal** does not have any caking properties and it is mainly used as thermal coal for power generation. It has a higher ash content and is also used in industries like cement, fertilizer, glass, ceramic, paper, chemical and brick manufacturing.
- **Coking coal (Metallurgical coal)** is the type of coal which on heating in the absence of air undergoes a transformation into a plastic state, swells, and then solidifies to form coke. Only **some bituminous coals** possess such properties, and to varying degrees.
- Coke is an essential fuel and reactant in the blast furnace process for primary steelmaking. The demand for metallurgical coal is highly coupled to the demand for steel.
- **Ranks of coals**, from those with the least carbon to those with the most carbon, are lignite < subbituminous < bituminous < anthracite.

Green Shoe Option

- The green shoe option is a special clause used in an underwriting agreement for IPO/OFS where the underwriter is under no restrictions to sell more than the planned number of shares. Underwriters thus have the right to sell more shares to investors than what is planned.
- Disinvestment means **sale or liquidation of assets by the government**, usually Central and state public sector enterprises, projects, or other fixed assets.
- The government undertakes disinvestment **to reduce the fiscal burden on the exchequer, or to raise money for meeting specific needs**, such as to

bridge the revenue shortfall from other regular sources. In some cases, disinvestment may be done to privatize assets. However, **not all disinvestment is privatization.**

- Some of the benefits of disinvestment are that it can be helpful in the long-term growth of the country; it allows the government and even the company to reduce debt. Disinvestment allows a larger share of PSU ownership in the open market, which in turn allows for the development of a strong capital market in India.
- There is a separate department under the Ministry of Finance which handles all disinvestment-related works for the government.
- On 10 December 1999, the Department of Disinvestment was set up as a separate department and later renamed as **Department of Investment and Public Asset Management.**
- **Disinvestment targets are set under each Union Budget,** and every year the targets change. The government takes the final decision on whether to raise the divestment target or not.
- As per the latest policy, **disinvestment now covers two types: (1) disinvestment through minority stake sale and (2) strategic disinvestment.**
- Public Sector Undertakings are the wealth of the Nation and to ensure this wealth rests in the hands of the people, promote public ownership of CPSEs;
- In the case of disinvestment through minority stake (share) sale in listed CPSEs, the Government will retain majority shareholding, i.e. at least 51 per cent of the shareholding and management control of the Public Sector Undertakings;
- Strategic disinvestment by way of sale of substantial portion of Government shareholding in identified CPSEs up to 50 per cent or more, along with



transfer of management control.

Topic 30. GOVERNMENT TO CREATE 70MT GRAIN STORAGE

Important for the Subject: Economy

Key Points:

Cabinet has approved the constitution and empowerment of an **Inter-Ministerial Committee (IMC)** for facilitation of the “world’s largest grain storage plan in the co-operative sector.”

Committee will be chaired by Minister of Cooperation with Minister and have following as members:

- Minister of Agriculture and Farmers Welfare, Minister of Consumer Affairs, Food and Public Distribution, Minister of Food Processing Industries and Secretaries concerned as members.
- Ministry of Cooperation will implement a pilot in at least 10 districts. **70 million tonne capacity** to be added in next **five** years, with a scheme outlay of **Rs 1-lakh crore**.

The funds will be mobilized through following funds/schemes: **Program Ministry**

- Agriculture Infrastructure Fund (**AIF**)
- Ministry of Agriculture & Farmers Welfare
- Agricultural Marketing Infrastructure Scheme (**AMI**)
- Ministry of Agriculture & Farmers Welfare
- PM Formalization of Micro Food Processing Enterprises Scheme (**PMFME**)
- Ministry of Food Processing Industry (MOFPI)
- PM Kisan SAMPADA Yojana (**PMKSY**)
- Ministry of Agriculture & Farmers Welfare Each block will have **2,000**



tonne capacity that will be managed by the Block Development Officer (BDO) In addition Primary Agriculture Co-operative Society (PACS) will establish, operate and manage godowns with capacity between **500 and 2,000 tonnes**.

Objectives:

- Prevent distress sale of crops by giving farmers an options other than selling immediately, thus enabling the farmers to realise better prices for their produce.
- Drastically reduce the cost incurred in transportation of food grains to procurement centers and again transporting the stocks back from warehouses to the Fair Price Shops (FPS)

Topic 31. COUNTRIES MUST BE ALLOWED TO PREPARE OWN PLANS FOR SAF: INDIA

Important for the Subject: Economy

India on Wednesday asserted that global mandates for Sustainable Aviation Fuel with 2050 as the target year was “too early” and that each State must be allowed to develop its strategy as per its national plans. It also sought support from the **UN Aviation watchdog ICAO** to **achieve carbon net zero goals alongside other priorities in the aviation sector** such as growing aspirations of passengers.

- The **41st International Civil Aviation Organization (ICAO) Assembly** adopted a long-term global aspirational goal (LTAG) for international aviation of net-zero carbon emissions by 2050 in support of the UNFCCC Paris Agreement’s goal to limit global warming to 1.5 degree celsius and reach net zero by 2050.
- This was preceded by a resolution at the 77th IATA Annual General Meeting



in Boston, USA, on October 4, 2021, where a resolution was passed by member airlines committing them to achieving net-zero carbon emissions from their operations by 2050.

Sustainable Aviation Fuel (SAF)

- **Sustainable Aviation Fuel (SAF)**, also referred to as **bio-jet fuel**, is created using domestically developed methods using cooking oil and oil-rich seeds from plants.
- The SAF samples produced by the institutes are undergoing strict testing at the US Federal Aviation Administration Clearinghouse to meet the standards required for the ASTM D4054 certification from ASTM International.

Sources of Production:

- The CSIR-IIP has created fuel using different materials, such as non-edible and edible oils, as well as used cooking oil.
- They used various sources, including palm stearin, sapium oil, palm fatty acid distillates, algae oil, karanja, and jatropha.

Benefits of SAF Scaling in India:

- Scaling up the production and use of SAF in India can bring several benefits, including reducing GHG emissions, improving air quality, enhancing energy security, creating jobs in the renewable energy sector, and promoting sustainable development.
- It can also help the aviation industry meet its environmental targets and contribute to global efforts to combat climate change.

Biofuel for aviation can be mixed with regular jet fuel and used together.

- Compared to traditional fuel, it has lower sulfur content, which can decrease

air pollution and support India's goal of achieving Net Zero emissions.

ASTM Certification

- **ASTM International**, formerly known as the **American Society for Testing and Materials**, is a global organization that develops and publishes technical standards for a wide range of products, materials, and systems.
- ASTM standards are used by industry, governments, and other organizations to ensure quality, safety and reliability in products and processes.
- ASTM certification is a process by which a product or material is tested and evaluated against relevant ASTM standards.
- Certification can be used to demonstrate that a product or material meets certain requirements, such as performance specifications, safety standards, or environmental regulations etc.

Topic 32. DEPOSIT INSURANCE COVER FOR PPIS

Important for the Subject: Economy

RBI committee to review the Customer Service Standards in RBI Regulated Entities (RE) has recommended to examine the **extension** of Deposit Insurance and Credit Guarantee Corporation (**DICGC**) cover to **PPIs**, which, at present, is available only to bank deposits.

- To examine whether DICGC cover can be extended to bank PPIs and later to nonbank PPIs. At present DICGC only covers bank deposits.

Why RBI made the recommendation:

- The money kept in wallets is in the nature of deposits.
- All PPI issuers (both bank and non-bank) are regulated by RBI.

PPI Issuers



- PPIs can be issued by banks and non-banks after obtaining approval from the RBI. As on November 9, 2022, over **58 banks** and **33 non-bank** PPI issuers as on May 30, 2023.

DICGC

- DICGC is a wholly-owned subsidiary of the RBI and provides deposit insurance. The deposit insurance system plays an **important role in maintaining the stability of the financial system**, particularly by **assuring the small depositors of the protection of their deposits in the event of a bank failure**.
- The deposit insurance extended by DICGC covers all commercial banks including local area banks (LABs), payments banks (PBs), small finance banks (SFBs), regional rural banks (RRBs) and co-operative banks, that are licensed by the RBI.

What does the DICGC insure?

- DICGC insures all deposits such as **savings, fixed, current and recurring including** accrued interest. Each depositor in a bank is insured up to a **maximum of Rs 5 lakh** for both principal and interest amount held by them as on the date of liquidation or failure of a bank.

Pre-paid Instruments (PPI)

- PPIs are instruments that facilitate the purchase of goods and services, conduct of financial services and enable remittance facilities, among others, against the money stored in them.

PPIs can be issued as cards or wallets. There are two types of PPIs:

- **Small PPIs:** can be used only for purchase of goods and services (no withdrawal or transfer) PPIs up to Rs 10,000 (with cash loading facility)



- PPIs up to Rs 10,000 (with no cash loading facility)
- **Full-KYC PPIs**– Limit of Rs. 2 Lakh. Use for purchase of goods and services, funds transfer or cash withdrawal PPIs can be loaded/reloaded by cash, debit to a bank account, or credit and debit cards. The cash loading of PPIs is limited to Rs 50,000 per month Important for the Subject to the overall limit of the PPI.
 - Banks / Non-banks permitted to issue PPIs can issue INR denominated full-KYC PPIs to foreign nationals / NRIs visiting India (G-20 only at present) RBI has put stop on **BNPL** (Buy Now Pay Later) use of PPI cards- all non-bank Prepaid Payment Instrument (PPI) cannot load their PPIs through **credit lines**. PPI-linked credit lines have been operating like shadow credit cards.
 - Their primary features like interest rates, terms/conditions, and repayment schedules closely resemble a credit card more than a loan product. However, they do not comply with the regulatory requirements for credit cards.

Topic 33. 'RISKS TO 6.5% GROWTH GOAL MORE EVENLY BALANCED NOW'

Important for the Subject: Economy

Chief Economic Advisor (CEA) expressed confidence that the risks to India's projected GDP growth trajectory of 6.5% in 2023-24 were more evenly balanced now. Compared with a few months ago, there is momentum across sectors along with rising private investments and public capex spending would prove to be buffers against external risks.

About Chief Economic Adviser (CEA)

- **The Chief Economic Adviser (CEA)** is a post in Government of India and is equivalent to rank of Secretary to the Government of India. The CEA is the **ex-officio cadre controlling authority of the Indian Economic Service**.



- The CEA is head of Economic Division of the Department of Economic Affairs, Ministry of Finance, Government of India.
- Until 2009, the CEA's position was a Union Public Service Commission appointment and until the 1970s almost all CEAs were members of the Indian Economic Service.

The CEA reports directly to the Minister of Finance.

Functions:

- The key roles of India's chief economic advisor are to determine the government's overall strategy in managing the economy. The Chief Economic Advisor (CEA) advises the Government of India on matters related to finance, commerce, trade, economy.
- The Economic Division examines domestic and international economic trends. It undertakes research studies focusing on economic policies and management of the economy. Based on the research it provides advice to the Government of India.
- Help prepare the government's annual Economic Survey preceding the Union Budget, which provides a glimpse into its economic hits and misses.
- Study and advice about financial market risks. To help with advice in times of global turmoil. To contribute in preparing the budget.

Topic 34. GRAPHENE

Important for the Subject: Science & Tech

Graphene along with AI and Quantum computing will disrupt the existing human machine interface in the next couple of decades.

Graphene:

- Graphene is the world's **thinnest, strongest, and most conductive** material

of both electricity and heat. It **conducts electricity better than copper**. It is 200 times stronger than steel but six times lighter. It is almost **perfectly transparent** as it absorbs only 2% of light. It is **impermeable to gases**, even those as light as hydrogen and helium.

Uses:

- Graphene composites are used in **aerospace, automotive, sports equipment and construction**.
- It is used for **high performance batteries and super capacitors, touchscreens, and conductive inks**. Graphene based sensors are used for **environmental monitoring, healthcare and wearable devices**. Graphene oxide membranes are used for **water purification and desalination**. Graphene based **masks** were made during COVID.
- **Defence:** Its exceptional strength makes it promising material for **armour and ballistic protection**. It has the potential to absorb and dissipate electromagnetic waves, making it valuable for developing **stealth coatings and materials that reduce radar signatures and electromagnetic interference**.
- Graphene is highly sensitive to environmental changes, which makes it excellent in **sensing chemical and biological agents, explosives, radiation, and other hazardous substances**. This can also protect us against chemical and biological attacks.

Topic 35. INDIA JOINS GLOBAL LABORATORY NETWORK FOR VACCINE TESTS

Important for the Subject: Science and technology

India has recently become a member of the **Centralized Laboratory Network (CLN)**, which is a part of the **Coalition for Epidemic Preparedness**

Innovations (CEPI).

Centralized Laboratory Network (CLN)

- CLN consists of **15 partner facilities in 13 countries** and aims to test **vaccines** for use during pandemics and epidemic disease outbreaks. It focuses on testing vaccines for pandemic and epidemic disease outbreaks. It is part of the Coalition for Epidemic Preparedness Innovations (CEPI). The network aims to standardize testing methods and materials.

New members of the CLN

- Indian Council of Medical Research-National Institute of Virology (ICMR-NIV) joins CLN.
- Institute Pasteur de Dakar (IPD) from Senegal is a new member. KAVI Institute of Clinical Research (KAVI ICR) and University of Nairobi Institute of Tropical and Infectious Diseases (UNITID) from Kenya join CLN.

Synexa Life Sciences from South Africa becomes a member.

- Uganda Virus Research Institute (UVRI) from Uganda is also a new member.

Objectives of the CEPI-funded network

- The CEPI-funded network aims to identify promising vaccine candidates rapidly and accurately. The network focuses on emerging infectious diseases. The goal is to support sustainable regional outbreak preparedness infrastructure.

CEPI-Funded Network Objectives

- The CEPI-funded network, which includes CLN, has the primary objective of identifying the most promising vaccine candidates rapidly and accurately



against emerging infectious diseases.

- In addition to vaccine testing, the expanded network also aims to support the development of sustainable regional outbreak preparedness infrastructure. By working collaboratively and sharing standardized methods and materials, the network enhances global preparedness for potential disease outbreaks.

Topic 36. ACINETOBACTER BAUMANNII

Important for the Subject: Science and technology

In a major breakthrough for the use of Artificial Intelligence (AI) in the field of medicine, scientists from the United States and Canada have found a new antibiotic – powerful enough to kill a superbug – using AI.

Superbugs

- Superbugs are bacteria that are resistant to several types of antibiotics. Each year these drug-resistant bacteria infect more than 2 million people in the US and kill at least 23,000, according to the US Centers for Disease Control and Prevention (CDC).

Acinetobacter baumannii

- The dealt with the bacterium Acinetobacter baumannii. In 2017, the bacterium was identified by the World Health Organization (WHO) as one of the world's most dangerous antibiotic-resistant bacteria. baumannii can cause pneumonia, meningitis and infect wounds, all of which can lead to death. baumannii is usually found in hospital settings, where it can survive on surfaces for long periods.

How do bacteria become resistant to drugs?

- Antibiotics are medicines used to prevent and treat bacterial infections.



Antibiotic resistance occurs when bacteria change in response to the use of these medicines.

- This ultimately threatens the ability of medicines to treat common infectious diseases.

How did researchers use AI in this case?

- Narrowing down the right antibacterial chemicals against bacteria can be a long, difficult process.
- This is where algorithms come in because the concept of AI is based on the process of machines being given large amounts of data and training themselves on identifying patterns and solutions based on them.
- The researchers first exposed *A. baumannii* grown in a lab dish to about 7,500 different chemical compounds, to see which ones could help pause the growth of the bacterium.
- Then they fed the structure of each molecule into the machine-learning model. They also told the model whether each structure could prevent bacterial growth or not.
- This allowed the algorithm to learn chemical features associated with growth inhibition. Once the model was trained, the researchers used it to analyse a set of 6,680 compounds. This analysis took less than two hours and yielded a few hundred results.
- Of these, the researchers chose 240 to test experimentally in the lab, focusing on compounds with structures that were different from those of existing antibiotics.
- Those tests yielded nine antibiotics, including one that was very potent and effective at killing *A. baumannii*. This has been named abaucin.



Topic 37. HOW GENOME SEQUENCES TRACKED DOWN AN ANCIENT DISEASE

Important for the Subject: Science and technology

The ‘**Black Death**’ causing **bacteria’s prehistoric trail** has been traced by scientists thanks to **advanced gene-sequencing techniques**. The ‘**black death**’, or the **Great Plague, of the 14th century**, was one of the deadliest epidemics in human history. It’s a clear example of the profound influence infectious disease outbreaks can have on society, economy, and culture.

It was also probably one of the most impactful epidemics, considering it left an indelible mark on humankind and shaped the collective memory of many subsequent generations.

Whole Genome Sequencing

- All organisms have a **unique genetic code, or genome**, that is **composed of nucleotide bases- Adenine (A), Thymine (T), Cytosine (C) and Guanine (G)**. The unique Deoxyribonucleic Acid (DNA) fingerprint, or pattern can be identified by knowing the sequence of the bases in an organism.

Determining the order of bases is called sequencing.

- Whole genome sequencing is a laboratory procedure that determines the order of bases in the genome of an organism in one process.
- **Methodology:**

DNA Shearing:

- Scientists begin by using molecular scissors to cut the DNA, which is composed of millions of bases (A’s, C’s, T’s and G’s), into pieces that are small enough for the sequencing machine to read.



DNA Bar Coding:

- Scientists add small pieces of DNA tags, or bar codes, to identify which piece of sheared DNA belongs to which bacteria. This is similar to how a bar code identifies a product at a grocery store.

DNA Sequencing:

- The bar-coded DNA from multiple bacteria is combined and put in a DNA sequencer. The sequencer identifies the A's, C's, T's, and G's, or bases, that make up each bacterial sequence.
- The sequencer uses the bar code to keep track of which bases belong to which bacteria.

Data Analysis:

- Scientists use computer analysis tools to compare sequences from multiple bacteria and identify differences.
- The number of differences can tell the scientists how closely related the bacteria are, and how likely it is that they are part of the same outbreak.

Advantages:

- Provides a high-resolution, base-by-base view of the genome Captures both large and small variants that might be missed with targeted approaches Identifies potential causative variants for further follow-up studies of gene expression and regulation mechanisms
- Delivers large volumes of data in a short amount of time to support assembly of novel genomes

Significance:

- Genomic information has been instrumental in identifying inherited



disorders, characterizing the mutations that drive cancer progression, and tracking disease outbreaks.

- It is beneficial for sequencing agriculturally important livestock, plants, or disease-related microbes.

Black Death Disease

- The **term Black Death refers to the bubonic plague** that spread across Western Asia, Northern Africa, Middle East and Europe in 1346-53.
- Most scholars agree that the Black Death, which killed millions, was caused by bacterium *Yersinia pestis* and was spread by fleas that were carried by rodent hosts.
- The **microorganism *Y. pestis*** spread to human populations, who at some point transmitted it to others either through the vector of a human flea or directly through the respiratory system.
- Contemporaries who wrote about the epidemic, often described the buboes (hard, inflamed lymph nodes) as the distinguishing clinical feature.
- In the **14th century, the epidemic was referred to as the ‘great pestilence’ or ‘great death’, due to the demographic havoc that it caused.**
- Due to a lack of comprehensive historical data from that time, it is difficult to know the exact death toll.

Topic 38. GE COTTON: THREE STATES REFUSE NOC FOR FIELD TRIALS

Important for the Subject: Science and Technology

Four locations viz. **Haryana, Gujrat, Telangana and Maharashtra** have been chosen for **biosafety research trials (BRL) of genetically engineered (GE) cotton hybrids**. Only **Haryana** has approved the field trial.

Details:

- **42 locations** across India have been selected for ‘**notified field trials**’ (NFT) to conduct confined tests of GE crops.
- Plots in **five districts** were proposed in **2022** for conducting **BRL-1** (first year) trial of **GE cotton hybrids** for resistance against **pink bollworm** — **Ranga reddy in Telangana, Jalna and Akola in Maharashtra, Junagadh in Gujarat and Hisar in Haryana.**

Pink bollworm and Bollgard technology:

- The **pink bollworm** is an **insect** known for being a **pest in cotton farming**. **Bollgard1** and **Bollgard 2** help in developing **genetically modified crop plants**. **Bollgard cotton provides in-built protection** for cotton against destructive **Bollworm infestations**, and contains an **insecticidal protein** from a naturally occurring soil microorganism, **Bacillus thuringiensis (Bt)**.
- **BollgardBt cotton** (single-gene technology) is **India’s first biotech crop technology** approved for commercialization in India in **2002**. **Bollgard II technology** contains a **superior double-gene technology** – **Cry1Ac** and **Cry2Ab** which provides protection against bollworms and Spodoptera caterpillar.

Resistance against genetically modified crops:

- The **Coalition for GM Free India**, a platform of organizations and individuals representing farmers, consumers, experts and activists **against genetically modified (GM) crops**, has termed these recent events as **coercion of state governments for NOCs of field trials**.
- State governments like Telangana and Gujarat have declined to provide NOCs, but the GEAC is forcing them to provide reasons or break their silence.
- **Agriculture is a state Important for the Subject and state governments’**

involvement is essential for compliance monitoring. Recently, **GM crop Dhara Mustard Hybrid (DMH-11)** received the environmental clearance on October 18, 2022.

Why states are refusing the biosafety trials of genetically modified crops?

- Environmental concerns.
- Impact on agriculture of the region.
- Contamination issue of BN Bt cotton.
- It may adversely impact the health of the flora and fauna of the region.
- **The Coalition for GM Free India:** a platform of organizations and individuals representing farmers, consumers, experts and activists against genetically modified (GM) crops.
- Corporatization of agriculture.

Bikaneri BT cotton contamination issue:

- The **GM cotton** variety in question- **Bikaneri NermaBt or BN Bt**– was developed by the **Nagpur-based Central Institute for Cotton Research (CICR) of the Indian Council of Agriculture Research (ICAR)**.
- It was commercialized in **2009** and was touted as an **alternative to GM cotton** marketed by **Mahyco**. Two years back, **Mahyco complained to ICAR that BN Bt, in fact, contained a gene developed by its partner Monsanto**.
- The **Sopory Committee** was formed to look into the matter and the committee confirmed that the BN Bt got contaminated with the gene developed by the **Monsanto**.

Topic 39. OTT PLATFORMS MANDATED TO SHOW ANTI-TOBACCO WARNINGS

Important for the Subject: Polity

On World No-Tobacco Day, the Union Health Minister issued OTT (over-the-top) guidelines for the control of tobacco product depiction in online curated content.

Health warnings, advertisements, and disclaimers

- Publishers of online curated content that depicts tobacco products or their use will be forced to follow strict criteria.
- These include the display of anti-tobacco health advertisements that last at least thirty seconds at the start and middle of the program. Furthermore, during the display of tobacco goods or their usage, publishers must post anti-tobacco health warnings as a noticeable static notice at the bottom of the screen.
- In addition, at the beginning and middle of the program, an audio-visual disclaimer on the dangers of tobacco smoking must be broadcast for at least twenty seconds.

Access to content

- The publisher of the online curated content will have access to the health ads, messages, and disclaimers.

Legibility and language

- The anti-tobacco health warning message must be visible and readable, with black font on a white background, and must include the warnings “Tobacco causes cancer” or “Tobacco kills.”
- In addition, the health warning message, health spot, and audio-visual

disclaimer must be in the same language as the online curated content.

Display restrictions

- The exhibition of tobacco products or their usage in online curated content that includes the brands of cigarettes or other tobacco products, as well as any type of tobacco product placement, is forbidden.
- Furthermore, the exhibition or usage of tobacco products in promotional materials is prohibited.

World No-Tobacco Day

- World No Tobacco Day is observed around the world every year on 31st May. It is a global campaign that aims to raise awareness about the harmful effects of tobacco growing and consumption on human health, food security and the environment.
- The theme for this year is “We need food, not tobacco”.

Cigarettes and Other Tobacco Products Act 2003

- The **Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003** or COTPA, 2003 is an Act of Parliament of India enacted in 2003 to prohibit advertisement of, and to provide for the regulation of trade and commerce in, and production, supply and distribution of cigarettes and other tobacco products in India.
- The Act was enacted by the Parliament to give effect to the Resolution passed by the 39th World Health Assembly, urging the member states to implement measures to provide non-smokers protection from involuntary exposure to tobacco smoke.



Provisions of COTPA

- The Act prohibits smoking of tobacco in public places, except in special smoking zones in hotels, restaurants and airports and open spaces. Advertisement of tobacco products including cigarettes is prohibited.
- Tobacco products cannot be sold to person below the age of 18 years, and in places within 100 yards radius from the outer boundary of an institution of education, which includes school colleges and institutions of higher learning established or recognized by an appropriate authority.
- Tobacco products must be sold, supplied or distributed in a package which shall contain an appropriate pictorial warning, its nicotine and tar contents.
- The owner/manager/in-charge of a public place must display a board containing the warning “No Smoking Area – Smoking here is an offence” in appropriate manner at the entrance and inside the premises.
- The Act also gives power to any police officer, not below the rank of a sub-inspector or any officer of State Food or Drug Administration or any other officer, holding the equivalent rank being not below the rank of Sub-Inspector of Police for search and seizure of premises where tobacco products are produced, stored or sold, if he suspects that the provision of the Act has been violated.

Topic 40. GOVT IMPOSES STOCK LIMITS ON TUR, URAD DAL TO CHECK HOARDING

Important for the Subject: Polity

The central government imposed stock limits on tur (arhar) and urad till October 31, a move aimed at controlling the rising prices.

Stock limits:

- The stock limit applicable to each of the pulses individually will be 200



metric tonnes for wholesalers and 5 MT for retailers. An order to this effect has been **issued by the Ministry of Consumer Affairs,**

Food and Public Distribution.

- To prevent hoarding and unscrupulous speculation and also to improve affordability to the consumers **in respect of tur dal and urad dal**, the government has issued an order where it has imposed stock limits on the pulses **applicable to wholesalers, retailers, big chain retailers, millers and importers.**
- Under this order... **importers are not to hold imported stock beyond 30 days** from the date of Customs clearance.
- The respective legal entities are to declare the stock position on the portal of Department of Consumer Affairs and in case the stocks held by them are higher than the prescribed limit, they shall bring the same to the prescribed stock limits within 30 days of issuance of the notification.

The order has been issued in exercise of the powers conferred by the Essential Commodities Act, 1955 Essential Commodities Act:

- There is no specific definition of essential commodities in The EC Act. Section 2(A) of the act states that an “essential commodity” means a commodity specified in the “Schedule” of this Act. The ECA was enacted way back in 1955.
- It has since been used by the Government **to regulate the production, supply and distribution of a whole host of commodities it declares ‘essential’ in order to make them available to consumers at fair prices.**
- The list of items under the Act **include drugs, fertilizers, pulses and edible oils, and petroleum and petroleum products.** The Centre can include **new commodities** as and when the need arises, and take them off the list



once the situation improves.

- Under the Act, **the government can also fix the maximum retail price (MRP)** of any packaged product that it declares an “essential commodity”.

How does it work?

- If the Centre finds that a certain commodity is in short supply and its price is spiking, it can notify stock-holding limits on it for a specified period.
- The States act on this notification to specify limits and take steps to ensure that these are adhered to. Anybody trading or dealing in a commodity, be it wholesalers, retailers or even importers are prevented from stockpiling it beyond a certain quantity.
- A State can, however, choose not to impose any restrictions. But once it does, traders have to immediately sell into the market any stocks held beyond the mandated quantity.

Topic 41. IDOLS, COINS, SEALS: LATEST FINDS AT PURANA QILA EXCAVATION SITE

Important for the Subject: History



Excavations at Purana Qila, where the ‘**sixth city**’ of Delhi once stood, have so far revealed nine cultural levels and a continuous history spanning over 2,500 years.

The artifacts recovered:

- The artifacts recovered — ranging from **idols of Hindu deities to over a hundred coins and almost three dozen seals among others** — will be show- cased as an Open Air Site Museum at the fort.
- As per the Ministry of Culture, the ongoing leg of excavation work aims to establish “a complete chronology of the site”, which has yielded artifacts from different historical periods: Pre-Mauryan, Mauryan, Sunga, Kushana, Gupta, Post Gupta, Rajput, Sultanate and Mughal.
- Currently, after reaching a depth of 5.50 meters, according to the Ministry, **structures from early Kushana level have been exposed**, and the excavation is expected to provide further **insights into the ancient city of Indraprastha**.
- The ministry listed a stone image of Vaikuntha Vishnu, a terracotta plaque of Gaja Laxmi, a stone image of Ganesha, seals and sealings, coins, terracotta figurines, beads of various stones and a bone needle among the notable recoveries from the site.
- Purana Qila — which served as an internment camp for Japanese civilians of British India during the Second World War and as a refugee camp following the Partition — has witnessed multiple excavations in the past.
- Padma-awardee Professor BB Lal conducted excavations in 1955 and 1969-73, followed by excavations led by Dr Vasant Kumar Swarnkar of the ASI in 2013-14 and 2017-18.

Purana Qila:

- Purana Qilla, the 16th-century fort, **was built by Sher Shah Suri and second Mughal emperor Humayun.** The fort is standing on a site with thousands of years of history.
- PuranaQila is built on the banks of river Yamuna and is the oldest fort of Delhi. It has been said that the **fort was previously built by the Pandavas** for their kingdom Indraprastha as some gray ware of that period was found during excavation.
- PuranaQila was **renovated by Humayun in 1533** and it took around five years to complete.
- The fort was built inside **Din Panah** Which was a small city in Delhi. Sher Shah Suri defeated Humayun in 1540 and captured the fort. Sher Shah Suri ruled for five years and in his reign he constructed many structures inside the fort and named the fort as Shergarh.After winning again, the renovation of the fort continued by Humayun.
- Shah Jahan wanted to shift his capital from the old fort so he constructed Lal Qila or Red Fort.

Gateways of the fort

- The walls of the fort are 18m high and the circumference of the fort is 1.5km. There are three gates in the fort which are Bara Darwaza, Humayun Darwaza, Talaqi Darwaza
- The **Bara Darwaza** is still in use and it faces west. Humayun Darwaza was named so because Humayun's tomb is visible from here.
- **Talaqi Darwaza** or forbidden gate is the third gate of the fort. Each of the gates has two storeys and are built with sandstone. Each gate also has two bastion towers made up of marble.



- **Qila-i-Kuhna Mosque:** Sher Shah Suri built this mosque in 1541. Five doorways are there, each having a pointed arch in each. In this mosque the king and his courtiers used to offer prayers.
- **Sher Mandal:** The construction of Sher Mandal was started by Babur and completed by Humayun. The building is made up of red sandstone and is octagonal in shape. Babur used the building as an observatory and library.

Topic 42. IN NEW PARLIAMENT BUILDING, THE STORY OF INDIA TOLD THROUGH ITS ART AND CRAFT FORMS

Important for the Subject: History

The answers to these have found their way into the Shilp Gallery of the **new Parliament is home to eight rare installations** by 300-odd workers and one of three such galleries dedicated to the arts.

Galleries in Parliament:

- While the **Shilp Gallery**, entry to which is from the old Lok Sabha side, is completed, the **Sangeet gallery** for India's dance and music traditions and the **Sthapatya gallery**, dedicated to the country's architectural her- itage, are works in progress.
- From using traditional forms of storytelling to showcase the festivals of India to calligraphy to present the different scripts through poems, sayings and shloka, the gallery is a rich layer- ing of India's numerous crafts.
- DastkariHaat Samiti, has brought together eight installations in parliament under themes that were given by the Ministry of Culture. These include — **Gyan (knowledge), Prakriti (nature), Aastha (faith), Ullas (happiness), Parv (celebration), Swavlamban (self- reliance) and Yatra (journey).**



Highlights of Ancient Artworks model in Parliament:

- The new building **has six entrances** to exhibit “guardian statues showing auspicious animals.
- These “auspicious animals” **have been chosen based on their importance in Indian culture, vastu shastra and traits such as wisdom, victory, power and success.**
- Each animal chosen to be installed in the building possesses a set of affirmations, spreading well-being and harmony.

Importance of Direction:

- **The North:** Guarding the ceremonial entrance to the north is the gaja (elephant), which represents wisdom, wealth, intellect and memory. According to vastu shastra, the northern direction is associated with Mercury, which is the source of higher intellect.
- **The South:** The southern entrance is the ashva (horse), which is symbolic of endurance, strength, power and speed — describing the quality of governance.
- **The East:** Soaring at the eastern entrance is the garuda (eagle), which symbolizes the aspirations of the people.
- In vastu shastra, the east is associated with the rising sun, representing victory. The northeastern entrance has hamsa (swan), representing discernment and wisdom.
- The **remaining entrances showcase the Makara** (a mythical aquatic creature that is a combination of the body parts of different animals), which **represents unity in diversity, and the shardula** (a mythical animal that is said to be the most powerful of all living beings), which symbolizes the power of the people of the country.



Remains of India's freedom struggle:

- The new building will have **six granite statues devoted to personalities involved in the freedom struggle** and making of the Constitution, four galleries each for the two Houses, three ceremonial foyers, as many India galleries and one Constitution gall.