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PATHFINDER

CURRENT AFFAIRS FOR CIVIL SERVICES

Topic 1. External debt of India

Importance for Prelims: Economy

Against India's current external debt to gross domestic product ratio of twenty per cent, the estimated threshold level is between twenty three % and twenty four per cent of gross domestic product, indicating space for attracting more external debt inflows of $ 90 billion- says the RBI study on 'Growth maximizing external debt of India'.

- The total external debt crossed the pre-pandemic levels as at end-December 2020.
- The external debt to GDP ratio as at end-December 2021 was 20.0 per cent. Main factors for the rise– NRI deposits, commercial borrowings and short-term trade credit -all crossed the pre-pandemic level.
- • India's external debt remained relatively immune to the global financial crisis (GFC) reflecting the resilience of commercial borrowings, the foremost growth-sensitive and therefore the largest component of India's external debt.
- • India attracted only $ 3.23 billion NRI deposits in the FY22 as against $ 7.36 billion a year ago.
- Non-resident external rupee account (NR(E)RA) witnessed a growth of $ 3.33 billion in FY22 as against $8.84 billion last year. FCNR (B) deposits declined by $ 3.55 billion in FY22.
- The External Debt-to-GDP ratio is the ratio between the external debt to the gross domestic product (GDP) of a country.
- The ratio indicates the capability of a country in repaying its external debts.
- A country with a Law external debt-to-GDP ratio indicates that it's capable of manufacturing and selling goods and repaying its debts without incurring further debt.

- Various economic and geopolitical factors such as recessions, interest rates, war, etc influence the debt account of a country.
- Composition of India's external debt Multilateral -Multilateral institutions such as the International Development Association (IDA), International Bank for Reconstruction and Development (IBRD), Asian Development Bank (ADB) etc are regarded as multilateral creditors.
- Bilateral – nations that engage in sovereign and non-sovereign arrangements such as one-to-one loan arrangements are bilateral creditors.
- India's bilateral creditors are Japan, Germany, the United States, France, etc. International Monetary Fund –loans from IMF in form of SDR Trade Credit -It is when the loans and credits are extended for imports by overseas suppliers, banks and financial institutions to sovereign and non-sovereign entities.
- Commercial Borrowings -It includes borrowings from commercial banks, financial institutions, money that's raised through issuing securitized instruments like bonds, floating rate notes (FRN), securitized borrowing of commercial banks etc.
- NRI Deposits (above one-year) Rupee Debt Total Long-Term Debt– is debt with an original maturity of more than one year Short-term Debt– is defined as debt repayments on-demand or either with an original maturity of one year or even less.
- **External debt sustainability:** A country's public debt is considered sustainable if the government is able to meet all its current and future payment obligations without exceptional financial assistance or going into default.
- **External debt sustainability can be measured based on the following parameters:** Government's debt and current fiscal revenue ratio.
- The overall share of short and long-term debt in the total debt burden.

Share of concessional debt.

- Foreign debt to exports ratio Debt to GDP ratio The share of external debt to the total debt of the country.

Topic 2. Custom Duty

Importance for Prelims: Economy

To rein-in prices and preserve domestic supplies, the govt. today imposed stiff export duty on steel, steelmaking raw materials and intermediaries. It also waived import duty on the coal.

- Details: An export duty of 15 per cent levied on steel, steelmaking raw materials and intermediaries. Import duty cut on all grades of coal imports (coking and metallurgical coal) and pulverized coal Iron ore exports (for all grades and including concentrates) levied a 50 per cent duty. A forty five per cent export duty has been levied on iron ore pellets.
- Impact: Increase competitiveness of the manufacturing and export sector and will push value-added exports. Ease rising pricing by curbing domestic exports Ease the logistics pressure as in some cases because the same raw material was being exported and subsequently being imported by downstream users.
- Customs Duty refers to the tax that is imposed on the transportation of goods across international borders.
- It is a kind of indirect tax that is levied by the government on the imports and exports of goods.
- Put differently, the customs duty is a kind of fee that is collected by the customs authorities for the movement of goods and services to and from that country.
- The tax that is levied for the import of products is referred to as import duty The tax levied on the goods that are exported to some other country is known as an export duty.
- The primary purpose of customs duty is to raise revenue, safeguard the domestic business, jobs, environment and industries etc. from predatory competitors of other countries.

- Moreover, it helps reduce fraudulent activities and the circulation of black money.
- **Basic structure:** Customs duty in India falls under the Customs Act 1962 and Customs Tariff Act of 1975.
- India's tariff system is based on the Harmonised System of Nomenclature (HSN) of the Customs Co-operation Council.
- **The basic structure of import and export tariffs in India includes:** Basics customs duty additional Duty Special additional duty Education assessment or cess other state level taxes the additional duty is applied to all the imports except for wine, spirits and alcoholic beverages.
- Furthermore, the special additional duty is calculated on top of the basic duty and additional duty.
- Types of Customs Duty in India Customs duties are levied on almost all goods that are imported into the country. On the other hand, export duties are levied on a few items as mentioned in the Second Schedule. Customs duties are not levied on life-saving drugs, fertilizers, and food grains.
- **Customs duties are divided into different taxes, such as:** Basic Customs Duty-This is levied on imported items that are part of Section 12 of the Customs Act, 1962.
- Additional Customs Duty-It is levied on product that are stated below Section three of the Customs Tariff Act, 1975.
- Additional Customs Duty-It is levied on goods that are stated under Section 3 of the Customs Tariff Act, 1975.
- • The tax rate is more or less almost like the Central Excise Duty charged on product produced within India.
- This tax is subsumed under GST now. Protective Duty-This is levied for the purpose of protecting indigenous businesses and domestic products against overseas imports.

- The rate is decided by the Tariff Commissioner.
- Education Cess –This is charged at 2%, with an additional higher education cess 1%, as included in the customs duty.
- • Anti-dumping Duty-This is levied if a particular good is being imported is below fair market value.
- Safeguard Duty-This is levied if the customs authorities feel that the exports of a particular good can damage the economy of the country.
- Countervailing Duties– Duties that are imposed in order to counter the negative impact of import subsidies to protect domestic producers are called countervailing duties.
- Social Welfare Surcharge (SWS)-It is a tax imposed on the value of goods including the BCD-basic custom duty- value.
- It is generally 10% unless the goods are exempted from this tax.
- Social Welfare Surcharge was introduced in the Budget 2018 is levied in place of education Cess Integrated Goods & Services Tax (IGST)- IGST is imposed on imported goods to provide a level playing field for domestic manufacturers, who also pay an equivalent tax (Central GST + State GST or IGST) on sale of goods.
- IGST on imported goods can be set-off against any other GST liability in India. There are five slabs of IGST 0%, 5%, 12%, 18%, 28%.
- Value of imported Goods + Basic Customs Duty + Social Welfare Surcharge = Value on which IGST is calculated Compensation Cess-This is an additional tax that is imposed along with GST on both imported items as well as the domestically manufactured items on products that are classified as notified (mostly belonging to the luxury and demerit category) E.g.
- Special Utility Vehicles, Cigarettes, Tobacco, Aerated Water, etc. Customs Handling Fee-The Indian government assesses a 1% customs

handling fee on all imports in addition to the applied customs duty.

Topic 3. Indo-Pacific Economic Framework (IPEF)

Importance for Prelims: International relations

The Indo-Pacific Economic Framework is a new kind of trade agreement that the U.S.A. is seeking to push among the countries of the region. It is based on objectives around trade facilitation, standards for the digital economy and technology, supply chain resiliency, decarbonization and clean energy, infrastructure, worker standards, and other areas of shared interest.

- The IPEF is not a traditional trade agreement Rather, it'd include different modules covering supply and resilient trade, provide chain resilience, infrastructure and decarbonization, and tax and anticorruption.
- The IPEF will not include market access commitments such as lowering tariff barriers, as the agreement is "more of an Administrative arrangement", and Congressional approval, which is a must for trade agreements, is not mandatory for this.
- The IPEF is also seen as a means by which the US is trying to regain credibility in the region after the US withdrew from the Trans Pacific Partnership (TPP).
- • however IPEF might not enthuse all countries in the Indo-Pacific region equally as it comes with binding trade rules but no guarantees on market access. India's position India has a problem with some of the provisions.
- Amongst these are the prohibition / restrictions on cross-border data flows and data localization requirements, including for financial services; the prohibition of the levying of customs duties on digital products distributed electronically; promotion of the interoperability of the privacy rules and the related enforcement regimes.

Topic 4. Sustaining FDI

Importance for Prelims: Economy

Benefits of FDI: Economic development stimulation: FDI will stimulate a target country's economic development and create a more conducive environment for companies, the investor, and stimulate the local community and economy.

Easy international trade:

- Countries usually have their own import tariffs, which makes trading rather difficult.
- A lot of economic sectors usually require presence in the international markets to make sure sales and goals are met.
- FDI makes all of these international trade aspects a lot easier.
- Employment and economic boost: FDI creates new jobs and more opportunities as investors build new companies in foreign countries.
- This can lead to an increase in income and more purchasing power to locals, which in turn leads to an overall boost in targeted economies.
- **Tax incentives:** Of course — taxes. Foreign investors receive tax incentives that are very beneficial regardless of your selected field of business.
- Everybody loves a tax write-off.
- **Development of resources:** The development of human capital resources big huge advantage of FDI.
- The skill gained by the workforce through training increases the overall education and human capital within a country.
- Countries with FDI are benefiting by developing their human resources all while maintaining ownership.
- **Resource transfer:** Foreign direct investment allows for resource transfers and the exchanges of knowledge, technologies, and skills.
- **Reduced costs:** Foreign direct investment can reduce the disparity

between revenues and costs.

- With such, countries will be able to make sure that production costs will be the same and can be sold easier.
- **Increased productivity:** The facilities and equipment provided by foreign investors can increase a workforce's productivity in the target country.
- **Increase in a country's income:** Another huge advantage of foreign direct investment is that the increase of the target country's income.
- With more jobs and higher wages, the national income normally will increase that promotes economic growth.
- Large corporations typically offer higher salary levels than what you'd normally find in the target country, which can lead to an increment in income.

Topic 5. Jagannath Temple

Importance for Prelims: History

The temple is believed is to be constructed in the 12th century by King Anatavarman Chodaganga Deva of the Eastern Ganga Dynasty.

- Jagannath Puri temple is called 'YamanikaTirtha' where, according to the Hindu beliefs, the power of 'Yama', the god of death has been nullified in Puri due to the presence of Lord Jagannath.
- This temple was known as the "White Pagoda" and is a a part of Char Dham pilgrimages (Badrinath, Dwaraka, Puri, Rameswaram).
- There are four gates to the temple- eastern 'Singhdwara' that is the main gate with 2 crouching lions, Southern 'Ashwadwara', Western 'VyaghraDwara and Northern 'Hastidwara'.
- There's a carving of each type at each gate. In front of the entrance stands the Arunastambha or sun pillar, which was originally at the Sun Temple in Konark.
- Jagannath PuriYatrais the foremost famous Vaishnavite rituals observed in India and abroad.
- On the occasion, devotees pray to three deities – Lord Jagannath, Lord Balabhadra and Lordess Subhadra

Topic 6. Crypto crashed

Importance for Prelims: Economy

Bitcoin, the most dominant cryptocurrency around, is down more than 50% from an alltime high price of $68,000, which it achieved just last November.

- A stablecoin is a type of cryptocurrency that is typically pegged to an existing government-backed currency.
- A cryptocurrency is a form of digital asset based on a network that is distributed across a large number of computers.
- Stablecoins hold a bundle of assets in reserve, usually short-term securities like cash, government debt or commercial paper.
- • Stablecoins are useful because they allow people to transact more seamlessly in cryptocurrencies that function as investments, like Bitcoin.
- • They form a bridge between old-world money and the new-world crypto aslo they promise to function like perfectly safe holdings.
- **Types:** Fiat-collateralized Stablecoins:-They are collateralized by fiat money, such as the US dollar, euro or the pound, on a 1:1 ratio.
- **Examples:** Tether, Gemini Dollar, and TrueSD. Stablecoins Backed by other Assets:-There are a few stablecoins, that are backed by a basket of multiple assets (commercial papers, bonds, real estate, precious metals, etc).
- The value of these stablecoins can fluctuate over time subject to movement in commodity and precious metal prices.Example: Digix Gold, backed by physical gold.
- Crypto-Collateralized Stablecoins:- Crypto-collateralized stablecoins are more decentralised than their peers and are backed by cryptocurrencies.
- The flipside is price volatility and to address the risk of price volatility, these stablecoins are overcollateralized.
- **Example:** Dai Non-collateralized stablecoins:-These stablecoins don't

have any backing and are decentralized in the true sense and therefore the supply of non-collateralized stablecoins is governed by algorithms.

- **Example:** Basis. Cause of fall : Inflation and monetary tightening-investors shifting to safer assets Uncertainty and recession risk-investors again shifting to safer assets Fall in the value of the stablecoin– Terra USD to near zero led largescale sale of bitcoins Stablecoinsvs.
- CBDC vs. crptocurrency Stablecoins are a type of cryptocurrency usually tied to the dollar or a commodity such as gold.
- Central bank digital currencies are digital forms of dollars or other currencies, issued by governments.
- This would essentially just be a digital twin of the domestic currency: Fully regulated, under a central authority, and with the full faith and backing of the country's central bank.
- CBDC form is a liability of the central bank.
- Cryptocurrency or crypto, is a virtual currency secured by cryptography.
- It's designed to work as a medium of exchange, wherever individual ownership records are stored in a computerized database using blockchain technology.
- Defining traits No intrinsic value Scarce Not issued by central banks Based on blockchain-a decentralized public ledger

Topic 7. Trade off between unemployment and inflation

Importance for Prelims: Economy

Typically, when an economy goes through a phase of high inflation, chances are that the unemployment rate will fall. That's because firms, enticed by higher prices, try to ramp up production by recruiting more people.

Which is worse?

- According to a study, one percentage point increase in the unemployment rate lowers well-being by more than five times as much as a one percentage point increase in the inflation rate.
- However in terms of political instability- it depends on the country's past.
- In India, it would appear that governments fear high inflation more than high unemployment given the instant steps taken.
- Right fiscal policy?- given the monetary tightening Monetary policy does not have a direct solution to controlling such "cost-push" inflation.
- It cannot make fuel prices lower by the raising interest rates.
- All it can do is to control demand in the economy which will have a contractionary effect leading to stagflation.

How?

- Tighter monetary policy will reduce the demand that is driven by borrowed money.
- Say, as interest rates go up, private sector firms will reduce investment.
- Similarly, interest rate rise induce a reduction in consumption driven by borrowing — for example, demand for housing will likely take a hit.
- **Thus, fiscal alternatives:** Cut taxes on fuel and other imported raw materials.
- Increase capital expenditure-Government should step up public investment especially in smaller projects with instant returns and wider participation of MSMEs in order to make up for the likely fall in private

investments.

- Phillips curve- explaining the inflation unemployment trade off:
- • The Phillips curve is an the economic concept developed by A. W. Phillips states that the inflation and the unemployment have a stable and inverse relationship.
- The Phillips curve states that inflation and unemployment have an inverse relationship.
- • Higher inflation is associated with the lower unemployment and vice versa.
- As a result, high levels of employment can only be obtained when inflation is high.
- Relationship between Phillips Curve and Stagflation Stagflation happens when an economy's growth is sluggish, unemployment is high, and price inflation is high.
- Stagflation scenario fully contradicts the Phillips curve idea.
- It economists to examine the role of expectations in the relationship between unemployment and inflation more closely and led to following conclusions:
- The inverse relationship between inflation and unemployment might only hold in the short run since employees and consumers will adjust their expectations about future inflation rates based on present inflation and unemployment rates.
- Changes in expectation leads shift in the Phillips curve at natural rate of unemployment
- This is called the natural rate of unemployment, or NAIRU (Non Accelerating Inflation Rate of Unemployment), which effectively represents the economy's typical rate of frictional and institutional unemployment.
- So, if expectations can adjust to changes in inflation rates in the long run,

the long run Phillips curve at the NAIRU takes a vertical line shape; monetary policy merely boosts or lowers the inflation rate with no effect on unemployment.

Topic 8. How scientists plan to use plants to remove toxic metals from soil

Importance for Prelims : Science & Technology

'Heavy metal pollution of the soil'

- Heavy metals are elements that exhibit metallic properties like ductility, malleability, conductivity, cation stability, and ligand specificity.
- Some heavy metals such as Co, Cu, Fe, Mn, Mo, Ni, V, and Zn are required in minute quantities by organisms.
- However, excessive amounts of those elements will become harmful to organisms.
- Other heavy metals such as Pb, Cd, Hg, and As (a metalloid but generally referred to as heavy metal) do not have any beneficial effect on organisms and thus regarded as the "main threats" since they're very harmful to both plants and animals.
- The reason for soil contamination could be manufacturing, mineral extraction, accidental spills, illegal dumping, leaking underground storage tanks, pesticide and fertiliser use etc.
- Phytoremediation is a realistic and promising strategy for heavy metal removal from polluted areas, based on the employment of hyper-accumulator plant species that are extremely tolerant to heavy metals present in the environment/soil.
- Green plants are used to remove, decompose, or detoxify hazardous metals in this technique.
- For soil decontamination, 5 kinds of phytoremediation methods have been used viz.

1. Phytostabilization,
2. Phytodegradation,
3. Rhizofiltration,
4. Phytoextraction And

5. Phytovolatilization
6. A hyperaccumulator is a plant that capable of growing in soil or the water with very high concentrations of metals, absorbing these metals through their roots, and concentrating extremely high levels of metals in their tissues.

- The metals are concentrated at levels that are toxic to closely related species not adapted to growing on the metalliferous soils.
- Bioremediation is an effective method of treating heavy metal polluted soils.
- It is a widely accepted method that is mostly carried out in situ; hence it is suitable for the establishment/reestablishment of crops on treated soils.
- Using plants for the treatment of polluted soils is a more common approach in the bioremediation of heavy metal polluted soils.
- Combining both microorganisms and plants is an approach to bioremediation that ensures a more efficient clean-up of heavy metal polluted soils.

Topic 9. Engineering tomatoes to produce vitamin D

Importance for Prelims: Science & Technology

'A novel way to genetically modifying tomato plants to have fruits rich in a precursor to vitamin D'

- FlavrSavr (also called CGN-89564- 2; pronounced "flavor saver"), a genetically changed tomato, was the first commercially grown genetically engineered food to be granted a license for human consumption.
- The tomato has the distinction of being the very first widespread genetically modified food available in the United States.
- Starting in 1994, the FlavrSavr tomato was bred with a deactivated gene that kept the plant from producing polygalacturonase, an enzyme that's the starting point for rot.
- Genetically modifying tomato (Solanum lycopersicum) plants: The fruit contains a significant amount of provitamin D3 which is a precursor from which humans can make vitamin D.
- Provitamin D3 has the chemical name 7- dehydrocholesterol, or 7-DHC for short.
- Humans can synthesise Vitamin D from 7-DHC when they are exposed to ultraviolet B (UVB) light.
- Vitamin D is needed for a process called calcium homeostasis that is the maintenance of a constant concentration of calcium ions in the body.
- This is needed for, among other things, bone development and strength, and its deficiency is a cause of conditions such as rickets and osteoporosis.
- The diseases associated with vitamin D deficiency are Heart disease and high blood pressure. Diabetes Infections and immune system disorders.
- Falls in older people.
- Some sorts of cancer, like colon, prostate, and breast cancers.

- Multiple sclerosis.
- Mutant tomatoes: A recently discovered pathway in tomato plants to produce cholesterol and a substance called steroidal glycoalkaloid (SGA for short) using the CRISPR-Cas9 gene editing tool.
- A couple of cells divide incorrectly and make an extra fruit locule.
- This inhibits the conversion of 7-DHC to the cholesterol and instead the former accumulates in the leaves, green and ripe fruits.
- In untreated tomato plants, 7-DHC is present in leaves and to a lower extent in green fruit, but not in ripe fruit — which is the most consumed of the lot.
- In their modified plants, the suppression of the activity of a particular gene, "led to substantial increases of 7-DHC levels in leaves and green fruit," while levels of 7-DHC were lower in ripe fruits of the mutant, they remained high enough that if converted to Vitamin D3 by shining UVB light, the amount in one tomato would be equivalent to that in 2 eggs or twenty eight grams of tuna, both of that are recommended sources of vitamin D.
- In the mutants, a reduction in their leaves of a substance called alpha-tomatine may even be beneficial because of alpha-tomatine's reported toxicant or antinutritional activity.
- Alpha-tomatine is believed to have a role in the plant's resistance to viral, fungal, insect, and herbivoral attacks.
- Thereby it's important in safeguarding the plant and its self-preservation, and also the reduction of alpha-tomatine in the mutants may not necessarily be a good issue.
- Surprisingly, the cholesterol levels in both fruit and leaves of the mutants were higher than that of the wild-type.
- This was despite having blocked the conversion of 7-DHC to cholesterol.

- Small RNAs are short (approximately 18 to 30 nucleotides), non-coding RNA molecules that can regulate gene expression in both the cytoplasm and the nucleus via posttranscriptional gene silencing (PTGS), chromatin-dependent on gene silencing (CDGS) or RNA activation (RNAa).
- Role of Small RNAs In cellular processes such as cell differentiation, growth/proliferation, migration, apoptosis/death, metabolism, and defense.
- In the post-transcriptional regulation of gene expression.
- Though RNAi was initially discovered in nematodes and plants, RNA-mediated regulation is widely found in eukaryotic organisms, and Similar small RNA-guided regulatory pathways appear to be operative in Epigenetics is the study of how your behaviors and atmosphere will cause changes in the way your genes work.
- Environmental influences, such as a person's diet and exposure to pollutants, can impact the epigenome.
- Epigenetic modifications may be maintained from cell to cell as cells divide and, in some cases, can be inherited through the generations.
- A common type of epigenetic modification is called DNA methylation.

Topic 10. Battery-like device that captures carbon dioxide while charging

Importance for Prelims: Science and tech

- The supercapacitor device, which is similar to a rechargeable battery, is that the size of a coin, and is made in part from sustainable materials together with coconut shells and seawater.
- Researchers have developed a low-cost device that can selectively capture carbon dioxide gas while it charges.
- Then, once it discharges, the CO2 will be released in a controlled way and the collected to be reused or disposed of responsibly.
- The supercapacitor may help power carbon capture and the storage technologies at much lower cost.
- The most advanced carbon capture technologies currently require large amounts of energy and are expensive.
- The supercapacitor consists of two electrodes of positive and negative charge.
- The team tried alternating from a negative to a positive voltage to extend the charging time from the previous experiments.
- This improved the supercapacitor's ability to capture carbon.

Topic 11. Primitive forest at the bottom of a giant sinkhole in China

Importance for Prelims :Geography

- • A cave exploration team has discovered an ancient forest at the bottom of a giant karst sinkhole in the Leye County in south China's Guangxi Zhuang Autonomous Region.
- Giant sinkhole in China The sinkhole measures 306 metres in length, is 150 metres in width and 192 metres in depth, with its volume exceeding 5 million cubic meters.
- Given these dimensions, the sinkhole can be categorised as a large sinkhole.
- In Mandarin, giant sinkholes are known as Tiankeng or "heavenly pit".
- • The sinkhole has 3 huge caves in the walls and its bottom has a well-preserved primitive forest with trees nearly forty metres high.
- Earlier in November 2019, Xinhua Net had reported the discovery of a giant cluster of sinkholes in the same region.
- Before this, in 2016, scientists had discovered the world's largest cluster of sinkholes in northwest China's Shaanxi province.

What is a primitive forest?

- The primitive forest biome is characterized by being hot and wet year-round, though not to as extreme a degree as the tropical rainforests.
- Though the forest's range has decreased considerably since its original formation, many environments with a similar climate and biota still persist in many areas.
- How are sinkholes formed? Sinkholes are depressions formed in the ground when layers of the Earth's surface start collapsing into caverns.
- They'll occur suddenly and without warning, because the land under the surface of the earth will stay intact for a period of time till the spaces get too huge.

- Sinkholes will be formed because of natural processes or human activity.
- Generally, sinkholes form in areas of "karst" terrains, where the rock below the surface of the earth will be simply dissolved by groundwater.
- Essentially, this means that when rainwater seeps into the ground, the rock below the surface of the Earth starts dissolving, leading to the creation of spaces.
- This process could be a slow and gradual one and can typically take hundreds or thousands of years.
- As per NASA, karst geology covers about 13 per cent of eastern and south eastern Asia.
- According to the United States Geological Survey (USGS), karst terrain is created from the dissolution of soluble rocks, mostly limestone and dolomite and is characterised by distinctive landforms such as caves, sinkholes and springs.
- Sinkholes can even be formed because of human activity.
- According to the british geological Survey, this may happen because of broken land drains, water mains and sewerage pipes, increased rainfall, storm events, underlying limestone and diverted surface water, among other reasons.
- Sinkholes in China and around the world In China, the mining of coal, zinc, lead and iron ore deposits in karst areas are related to the formation of sinkholes due to human activity, according to a 1997 paper published in the journal Environmental Geology.
- Sinkholes aren't uncommon in other parts of the world.
- About 20 percent of the US is made up of karst landscapes.
- In Florida, in an area that is classified as a karst landscape, insurance agencies must provide homeowners coverage against damage that can accrue from ground cover collapse.

- The largest sinkhole in the US is called the "Golly Hole", which collapsed suddenly in 1972 and is over 325 ft long, 300 ft wide and 120 ft deep.
- Other sinkhole-prone areas around the world include Mexico, parts of the Italy and the Russia.

Topic 12. External Commercial Borrowing

Importance for Prelims :Economy

The rise in global interest rates and therefore the depreciation of the rupee is likely to reduce the appetite of India INC to mobilise funds through external commercial borrowings (ECBs) in the coming months. ECBs play a very important role in India by supplementing the funding needs of firms. ECBs account for a major share of India's external debt and form for 36.8 per cent of India's external debt as of end of December 2021

- • External commercial Borrowings are commercial loans raised by eligible resident entities from recognised non-resident entities and will conform to parameters like minimum maturity, permitted and non-permitted end-uses, maximum all-in-cost ceiling, etc.
- The framework for raising loans through ECB comprises the following two options: Parameter FCY denominated ECB INR denominated ECB Currency of borrowing Any freely convertible Foreign Currency Indian Rupee (INR) Forms of Foreign Currency Convertible Bond (FCCBs),
- Loans including bank loans; floating/ fixed rate notes/bonds/ debentures/ preference shares (other than fully and compulsorily convertible instruments); Trade credits beyond three years; Foreign Currency Exchangeable Bond (FCEBs) and Financial Lease.
- Also, plain vanilla Rupee denominated bonds issued overseas, which can be either placed privately or listed on exchanges as per host country regulations.
- Eligible borrowers All entities eligible to receive FDI. Further, the following entities are also eligible to raise ECB:

I. Port Trusts;

II. Units in SEZ;

III. SIDBI; and

IV. EXIM Bank of India.

- All entities eligible to raise FCY ECB; and
- Registered entities engaged in microfinance activities, viz., registered Not for Profit companies, registered societies/trusts/ cooperatives and NonGovernment Organisations.
- Recognised lenders: The lender should be a resident of a Financial Action Task Force (FATF) or International Organisation of Securities Commission's (IOSCO's) compliant country.
- Further: Multilateral and Regional Financial Institutions where India is a member country will also be considered as recognised lenders; Individuals as lenders can only be permitted if they are foreign equity holders or for subscription to bonds/debentures listed abroad; and Foreign branches / subsidiaries of Indian banks are permitted as recognised lenders only for FCY ECB (except FCCBs and FCEBs).
- Minimum Average Maturity period (MAMP): MAMP for ECB will be three years.
- End-uses (Negative list): The negative list, for which the ECB proceeds cannot be utilised, would include the following: Real estate activities. Investment in the capital market. Equity investment.
- Working capital purposes, except in some cases General corporate purposes, except in some cases Repayment of Rupee loans, except in some cases On-lending to entities for the above activities, except in some cases

Topic 13. Integrated Coal Gasification Combined Cycle (IGCC) plant and green hydrogen

Importance for Prelims: Environment

- Emphasising that green hydrogen can play an important role in India's energy transition, noted scientist and NITI Aayog Member VK Saraswat said it's the future fuel.
- Green hydrogen is not economical, but with technologies such as Carbon Capture Utilisation and Storage (CCUS), grey hydrogen can be made environment friendly Green Hydrogen: Hydrogen is one of the most abundant elements on the earth for a cleaner alternative fuel option.
- Green hydrogen is produced by electrolysis of water using renewable energy (like Solar, Wind). Electricity splits water into hydrogen and oxygen. By Products : Water, Water Vapor.
- Green hydrogen can drive India's transition to clean energy, combat climate change.
- India has a favourable geographic location and abundance of sunlight and wind for the production of green hydrogen.

How to reduce CO2 emissions for energy transition?

- From models developed by bodies like the IEA or the NITI Aayog, it is clear that thermal power plants (TPP) are still relevant for meeting demand.
- Since India does not have large quantities of gas, our thermal power will have to come from coal.
- the estimation is that even by 2070, around 8-10 per cent of power will come from coal.
- It can't be wished away, however it pollutes.
- To check emissions is to increase the efficiency of the plants.
- One way is that instead of running subcritical power plants, India should

go for super critical, ultrasupercritical, and advanced ultra-supercritical plants.

- • India has already developed the technology for the advanced ultra-supercritical plants.
- India can replace aged TPPs, with an installed capacity of around 25 gigawatts (GW), with new plants.
- Since the base load issue is there, replacement will be with Integrated Coal Gasification Combined Cycle (IGCC) plants and advanced ultrasupercritical plants.
- With this, India's efficiency will be more than 45 per cent and emissions will go down by 40- 50 per cent, as far as TPPs are con- cerned. India should also integrate the thermal plants with carbon capture utilisation and storage.
- With this green- house gas emissions, particulate matter etc will reduce to less than 1 percent.

What is Integrated Coal Gasification Combined Cycle (IGCC) plants?

- An integrated gasification combined cycle (IGCC) could be a technology using a high pressure gasifier to turn coal and other carbon based mostly fuels into pressurized gas—synthesis gas (syngas).
- It can then remove impurities from the syngas prior to the electricity generation cycle.
- It is a technology that aims to extract the maximum energy out of a fuel that is burnt.
- In the case of coal, the carbon conversion efficiency in an IGCC plant is significantly higher than that in a conventional pulverised coal (P.C.) fired power plant.
- This is achieved by gasification, which converts coal into synthetic gas or syngas.
- Syngas is a mixture containing mainly carbon monoxide (CO) and

hydrogen (H2) and some carbon dioxide as well.

- In an IGCC plant, high temperature syngas from the gasifier is used to run a gas turbine (G.T.) that generates power.
- This syngas may also be blended with natural gas, if required, to improve its calorific value.
- The waste heat in gasification and the hot gas coming out of the G.T are further used to produce steam by heating water, that in turn runs a steam turbine to produce extra electricity.

Topic14. Sugar Export ban

Importance for Prelims: Economy

Agriculture The Centre on Tuesday declared that sugar (raw, refined and white sugar) exports from June 1 would be allowed only through permits and fixed a maximum quantity of ten mt for this season (October-September).

- The notification issued by the Directorate General of Foreign Trade has moved sugar exports from "free" to the "restricted" category.
- With effect from June 1, Sugar mills and exporters need to take approvals in the form of an export Release Order (RO) from the Directorate of Sugar in the Ministry of Food and Public Distribution.
- Objective: These steps were taken to maintain "domestic availability and price stability of sugar".
- The decision was in the wake of "unprecedented growth in exports of sugar" and the need to maintain sufficient stock of sugar in the country.
- It's for the first time in six years that the Centre is regulating sugar exports.
- Exemption: Sugar mills and traders who have specific permissions from the government will only be able to export sugar (including raw, refined and white sugar) till 31st October, 2022 or until further orders.
- Additionally, the restriction isn't applicable for exports to the european Union (EU) and also the USA under cxl and tariff rate quota respectively.
- Fall out of curbs:

1. The present curbs would ensure the government keeps a tab on sugar stock real time and ensures there is no shortage at the start of the next season (October December).
2. There will a decrease in income of the sugar cane cultivating farmers. Already as a first reaction to the curbs there was a Rs.50 per tonne drop in

ex-mill prices. Hasty moves like this will impact investor sentiment and credibility of India as a food security provider to the globe. Certainty in policy is v vital for boosting agri-exports and doubling

- • Tariff-rate quota (TRQ) (also known as a tariff quota) could be a two-tiered tariff system that combines import quotas and tariffs to regulate import products.
- A TRQ allows a lower tariff rate on imports of a given product within a specified quantity and requires a higher tariff rate on imports exceeding that quantity.
- As an example, a country would possibly allow the importation of 5,000 tractors at a tariff rate of 100%. However, any tractor imported above this quantity would be subject to a tariff rate of half-hour.
- Not like a simple quota system, a TRQ regime doesn't restrict the quantity of imported products.
- • The "in-quota commitment" is complemented by an "out-of-quota to commitment".
- The out of quota commitment does not set any limit on the quantity or value of an imported product, but instead applies a different, normally higher, tariff rate to that product.
- Imports face this higher duty rate once the in-quota quantity or value has been reached, or if any requirement associated with the "in-quota commitment" is not fulfilled A TRQ is generally used to protect the domestic production by restricting imports.
- Under that regime, the quota component combines with a specified tariff level to provide the desired level of protection.
- In many cases, imports above the threshold may face a prohibitive "out-of-quota" tariff rate.
- India has emerged this year as the world's largest sugar producer, ahead

of Brazil is also the second biggest exporter.

- Exports have helped India reduce its sugar stock and ensured millers pay their farmers on time.
- Regarding eighty two lakh MT sugar has been sent from sugar mills for export and approximately seventy eight lakh MT are exported.
- Export of sugar in the current sugar season of 2021-22 is at its historic high.
- The closing stock of sugar at the end of sugar season remains 60-65 lakh MT which is equivalent to about three months' stocks required for domestic use.
- Sugar industry is an important Agro-based industry that impacts rural livelihood of about fifty million sugarcane farmers and around five lakh employees directly employed in sugar mills.
- India is that the second largest producer of sugar in the world after Brazil and is also the largest consumer.
- Nowadays Indian sugar industry's annual output is value approximately Rs.80,000 crores.
- There are 732 installed sugar factories in the country as on 31.07.2017, with sufficient crushing capacity to produce around 339 lakh MT of sugar.
- Sugarcane Temperature: Between 21-27°C with hot and humid climate. Rainfall: Around 75-100 cm.
- Soil Type: Deep rich loamy soil.
- Top Sugarcane Producing States: Uttar Pradesh > Maharashtra > Karnataka > Tamil Nadu > Bihar.
- Sugarcane Pricing: Sugarcane costs are determined by: Central Government: fair and Remunerative price (FRP) The Central Government announces fair and Remunerative costs that are determined

on the recommendation of the Commission for Agricultural costs and prices (CACP) and announced by the cabinet Committee on Economic Affairs (CCEA).

- CCEA is chaired by the Prime Minister of India.
- The FRP is based on the Rangarajan Committee report on reorganizing the sugarcane industry.
- State Government: State Advised Prices (SAP) The SAP is announced by the Governments of key sugarcane producing states.
- SAP is generally higher than FRP.

Topic 15. Gold pricing

Importance for Prelims: Economy

Inflation Gold prices are not moving up even as inflation is raging globally. Traditionally, gold is considered to be the best bet against inflation. However, in the current scenario gold prices seem to be the moving in a tight range even though the inflation is making waves globally.

Cause?

- Tighter monetary policy-The rising rates will make it quite attractive for investors to stay in the currency to earn the higher currency yield leading to non rising demand of gold.
- The appreciation in the US Dollar due to rising rates of interest.
- Gold being quoted in United States dollars, the price is bound to come down.
- Gold pricing: Gold is dealt with by the four types of firms in the industry.
- They are exploration or development, mining, consumers and recyclers.
- The 3 categories of consumers are industrial, jewellery producers and investors.
- Gold prices are fixed on a daily basis.
- • it's an agreement between the participants on the same side in the market to buy and sell gold at a fixed price or to maintain the market conditions to make the price stay at a certain level by controlling the supply and demand. Gold Fixing is done at London Bullion Market Association-The prices are set daily at 10:30 am GMT and 3pm GMT in US dollars.
- Kinds of prices There are two kinds of prices, spot price and futures price: Spot price-This is that the current market price at that gold was bought or sold for immediate payment and delivery.
- Futures price-This is the price at which the participants in a futures

contract agree to transact on the date of settlement.

- Sources of pricing: The spot prices are sourced at: OTC markets-This is a decentralized market of securities that is not listed in an exchange.
- Large banks and bullion traders-They buy and sell gold as part of the trading process and thus resulting in a reliable source of spot pricing for gold.
- The Futures prices are sourced at The exchanges are the primary source of gold futures prices.
- The major gold exchanges are: TOCOM, Japan Shanghai Gold Exchange, China MCX, Mumbai DGCX, Dubai Istanbul Gold Exchange, Istanbul COMEX, New York Drivers to determine the gold rates There are six fundamental drivers that help determine the gold rates.
- They are as follows: Price movements of other commodities and the demand for these commodities. Indirect pricing of the production cost.
- US and Global inflation which is driven by the rising money supply.
- Twin deficits that result from trade and growth imbalances against the US. This culminates in a fear factor.
- Activities of the central bank like money printing, gold purchases and sales.
- Real interest rates in the United States, compared to inflation and wages.
- This culminates in financial repression.
- Using the production or demand or inventory formula in the type of demand and supply.
- Gold pricing in India: International prices do have a bearing on gold rates in India, though the rates might not be the exact same as they are internationally.
- Gold in India is primarily imported by banks at an internationally determined rate.

- Banks supply this gold to dealers after adding their fee to that.
- The Indian Bullion Jewellers Association IBJA then gets into the act of determining prices by speaking to the ten biggest gold dealers in the country.
- These dealers give their respective 'buy' and 'sell' quotes, depending on the rate at which they purchased gold.
- IBJA then takes the average of those 'buy' and 'sell' quotes and determines the gold rate for a particular day based on this average.
- This average rate is adjusted for local taxes and a rate fixed accordingly.
- 7/18 Dealers generally arrive at their 'buy' and 'sell' rates by taking the international cost of gold and multiplying/adjusting it to the exchange value of the Rupee and adding any import duties and taxes like VAT.
- Dealers make sure that they add their margin to the rates they give, keeping in mind their requirements.
- This procedure ensures that gold rates in India are on par with international trends and customers can buy gold without any worry of being cheated with regards to gold rates.

Topic 16. WTO and Fisheries

Importance for Prelims:Economy

- External sector India can endorse a proposal at the world Trade Organization (WTO) on fishery subsidies if the agreement is equitable and doesn't tie the member-countries to a disadvantageous position in perpetuity, official sources aforesaid on Wednesday.
- Demands: India favours a 25-year exemption from over-fishing subsidy prohibition for developing countries that are not engaged in distant-water fishing.
- It suggests big subsidisers abolish their dole-outs within these 25 years, setting the stage for most developing nations to follow suit.
- Background: World Trade Organization negotiations on the fisheries subsidies were launched in 2001 at the doha Ministerial Conference, with a mandate to "clarify and improve" existing World Trade Organization disciplines on fisheries subsidies.
- It was elaborated in 2005 at the Hong Kong Ministerial Conference, including with a call for prohibiting certain forms of fisheries subsidies that contribute to overcapacity and overfishing.
- At the 2017 Buenos Aires Ministerial Conference (MC11), ministers decided on a work programme to conclude the negotiations by aiming to adopt, at the next Ministerial Conference, an agreement on fisheries subsidies which delivers on Sustainable Development Goal 14.6 SDG 14.6 targets to "by 2020, prohibit certain forms of fisheries subsidies .
- That contribute to overcapacity and the overfishing, and eliminate subsidies that contribute to IUU fishing, and refrain from the introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral a part of the World Trade Organization fisheries subsidies

negotiation."

- The chair of the fisheries subsidies negotiations, Ambassador Santiago Wills of the Colombia, on 24 November 2021 submitted a draft agreement on fisheries subsidies for the consideration of ministers.

Topic 17. Capital expenditure

Importance for Prelims :Economy

Fiscal Policy The Centre has raised the capital expenditure target by 35.4% on year to Rs 7.5 trillion for FY23 to continue the public investment-led economic recovery of the pandemicbattered economy. The capex last year was the Rs 5.5 trillion.

- To keep the momentum of government spending, the finance ministry has allowed all ministries to utilize the unspent portion of the funds released to them in a quarter in the subsequent quarter.
- The flexibleness will be availed by the ministries and departments in the first quarter of a fiscal year after intimating the budget division of the finance ministry.
- The unspent balances from the second and third quarters will be utilized in the third and fourth quarters respectively only with "formal and prior approval of the expenditure secretary.
- Usually, the ministries and departments are allowed to spend 25% of their budget in each quarter.
- No more than 33% and 15% of expenditure of the Budget Estimates during a financial year would be permissible in the last quarter and last month of the financial year, respectively.
- Capital expenditure (CAPEX) is defined by the Union government as money spent on the acquisition of assets such as land, buildings, machinery, and equipment, as well as stock investments.

What are the examples of Capital Expenditure?

- Capital expenditure is that the a part of the govt. spending that goes into the creation of the assets like schools, colleges, hospitals, roads, bridges, dams, railway lines, airports, and seaports.
- Capital expenditure also covers the acquisition of equipment and

machinery by the government, including those for defense purposes.

- Capital expenditure also includes investment by the government that yields profits or dividends in the future.
- Benefits of Capital expenditure: Multiplier effect – Capex has the maximum multiplier effect (change in rupee value of output with respect to a change in rupee value of expenditure).
- This multiplier effect works through the expansion of ancillary industries and services and job creation.
- According to the National Institute of Public Finance and Policy, every rupee spent as a revenue expenditure has a multiplier effect of Rs 0.98 while Capex delivers a multiplier effect of Rs 2.25 in the year it's incurred and Rs 4.80 throughout the course of the entire expenditure.
- Labour productivity – On the supply side, Capex can facilitate labor productivity. Macroeconomic stabilizer – Capital expenditure is an effective tool for countercyclical fiscal policy and acts as a macroeconomic stabilizer Revenue generation – Capital expenditure leads to the creation of assets that are long-term in nature and allow the economy to generate revenue for several years and boosts operational efficiency.
- Liability reduction – Along with the creation of assets, repayment of loans is also capital expenditure as it reduces liability.
- Economic growth – Government CAPEX catalyzes private investment, increases production capacity thereby speeding up economic growth which in turn creates a lot more jobs.
- Crowd in private investment- by making available inputs and social overhead capital.

Topic 18. Icebergs and fog to beat global water scarcity

Importance for Prelims :Environment

- climate change As climate change worsens and with population rising worldwide, water shortages are a top threat to human development and security, making use of unconventional water resources both timely and important.
- Unconventional Water Resources involve 5 methods such as: Harvesting water from air and ground Tapping deep groundwater Reusing used water Moving water physically Developing new water.
- Fog harvesting and micro-catchment rainwater harvesting have been marked as low-cost and low-impact methods.
- Efficient fog harvesting systems — whereby moisture in fog is collected through rocks, flora or mesh nets — will yield among twenty litres per square metre per day, for a decade.
- Micro-catchments, on the other hand, have shown potential for households or farmlands in dry environments with low rainfall. Icebergs, the world's largest source for freshwater can be towed to water scarce countries for use.

Topic 19. Share of non-CO pollutants contributing to global warming almost as much as CO

Importance for Prelims :Environment

- Global temperatures are likely to exceed 1.5 degrees Celsius over pre industrial levels by 2035 and 2°C by 2050 if the focus is merely on decarbonisation efforts.
- • The working group III report of the Intergovernmental Panel for climate change (IPCC), that deals with mitigating global climate change, focuses on CO2 and a couple of greenhouse gases, however excludes other non-CO2 pollutants.

- There is a need to urgently bend the emission curve of methane, HFCs, black carbon soot and a few other precursor gases that increase lower atmosphere ozone.
- Green House effect: Some atmospheric gases absorb and re-emit infrared energy from the atmosphere down to the Earth's surface.
- This process, the greenhouse effect, leads to a mean surface temperature that is 33 °C greater than it would be in its absence.
- If it were not for the greenhouse gas effect, Earth's average temperature would be a chilly -18 °C. The Earth has a natural greenhouse effect due to trace amounts of water vapour (H O), carbon dioxide (CO), methane (CH) and nitrous oxide (N O) in the atmosphere.
- These gases let the solar radiation reach the Earth's surface, but they absorb infrared radiation emitted by the earth and thereby lead to the heating of the surface of the planet.
- One has to distinguish between the natural greenhouse effect and therefore the increased greenhouse effect.
- The natural greenhouse effect is caused by the natural amounts of greenhouse gases, and is important to life.
- In the absence of the natural greenhouse effect the surface of the Earth would be approximately 33 °C cooler.
- The enhanced greenhouse effect refers to the additional radiative forcing resulting from increased concentrations of greenhouse gases induced by human activities.
- The main greenhouse gases whose concentrations are rising are carbon dioxide, methane, nitrous oxide, hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs) and ozone in the lower atmosphere.
- The Global Atmosephere Watch (GAW) observes, analyses and publishes greenhouse gas data collected by fifty countries around the globe from

the High Arctic to the South Pole.

- The greenhouse gases monitored include:

1. Carbon Dioxide (CO) (incl. Δ14C, δ13C and δ18O in CO , and O /N Ratios)
2. Methane (CH)
3. Nitrous Oxide (N O)
4. Halocarbons and SF
5. Molecular Hydrogen (H) Without tackling non-CO2 pollutants, these gases will continue to trap heat and keep the warming above 1.5°C, as there are not many cooling aerosols to mask the warming.

- The Glasgow Climate Pact, an agreement signed during the 2021 United Nations Climate Change Conference (CoP26), recognised the need to consider further actions to reduce non-carbon dioxide greenhouse gas emissions, including methane, by 2030.

Topic 20. System of Rice Intensification: An water efficient production process

Importance for Prelims:Agriculture

The Punjab government is promoting the Direct Seeding of Rice (DSR) technique of paddy

- The System of Rice Intensification was first developed in Madagascar in the 1980s and since then, several countries in the world have been practicing it.
- System of Rice Intensification (SRI) is a methodology for increasing the productivity of irrigated rice by changing the management of the plants, soil, water and the nutrients particularly by eliciting greater root growth.
- The System of Rice Intensification involves cultivating rice with as much organic manure as possible, starting with young seedlings planted singly at wider spacing in a square pattern; and with intermittent irrigation that keeps the soil moist however not inundated, and frequent inter cultivation with weeder that actively aerates the soil.
- • SRI is based on the following principles: Young seedlings between 8-12 days old (2-3 leaf stage) are the transplanted to preserve potential for tillering and rooting ability; Careful planting of single seedlings rather than in clumps that are often plunged in the soil; v Wider spacing at 25 cm x 25 cm.
- in square planting rather than in rows; Use of cono-weeder/ rotary hoe/power weeder to aerate the soil as well as controlling weeds; v Alternate wetting and dry method rather than continuous flooding in the field; Use of organic manure or vermicompost / FYM Benefits : It promises to save 15 to 20% ground water, and improves rice productivity, which is almost at a stagnant point now.
- It gives equal or more produce than the conventional rice cultivation, with less water, less seed and less chemicals, thus reducing investments on

external inputs.

- Unlike DSR, that is suitable only for mid to heavy textured soils, SRI is suitable in all kinds of soil including less fertile soil as in such soil the number of seedlings is increased to double.
- Under SRI 2kg seed is required to grow a nursery for one acre against 5kg seed required in the traditional method. In traditional sowing from the day of transplanting till the crop turns 35-40 days fields are kept under flood-like conditions, but SRI doesn't require continuous flooding, it needs intermittent irrigation.
- Irrigation is given to maintain soil moisture near saturation initially, and water is added to the field when the surface soil develops hairline cracks.
- It also maintains soil health, lowers input costs by 10-20% as it requires 25% less urea and its root system is quite strong due to young plants' transplantation which prevents lodging from rain or wind.
- Also small and marginal farmers can increase their income by spending less and getting more yield.
- This matures in the 5-15 days less time.
- However, SRI permits greater weed growth because of alternate wetting and drying of fields and for that cono-weeder can be employed.
- Higher yields – Both grain and straw Reduced duration (by 10 days) Less chaffy grain % Grain weight increased without change in grain size Higher head rice recovery Withstand cyclonic gales Cold tolerance Soil health improves through biological activity Disadvantages Higher labour costs in the initial years Difficulties in acquiring the necessary skills Not suitable when no irrigation source available

Topic 21. Cases of Buffalopox, India's latest emerging viral threat, underline the need to understand evolutionary biology

Importance for Prelims :Science & Technology

Outbreaks of the buffalopox that belongs to the same family of viruses as monkeypox in west India'

- Buffalopox is caused by Buffalopox virus (BPXV), it is a Poxviridae. The natural host is buffalo, they are known to infect the cows and humans too.
- These infects are sporadic and epidemic usually seen in domestic and commercial farm setting.
- Buffalopox was first described in India, later in an countries, associated has become an emerging contagious viral zoonotic disease infecting milkers with high morbidity among affected domestic buffalo and cattle.
- BPXV is a member of the genus Orthopoxvirus and the close variant of the vaccinia virus (VACV). BPXV shares a most recent common ancestor of the VACV Lister strain, that's had been used for inoculating buffalo calves to produce a smallpox vaccine.
- Over time, the VACV evolved into BPXV by establishing itself in buffaloes to be increasingly pathogenic to this host and to make infections in cattle and humans.
- Incubation period: The incubation period in animals is 2-4 days and 3-19 days in humans.
- The signs and symptoms of Buffalopox: Usually the mild form of disease exists, it is very rare to find a severe form. In mild form: – The febrile illness with vesicular lesions are localized usually in inguinal region hands, forearms, over the parotid and found in base or inner surface of ears and eyes.
- It is occasionally accompanied with lymphadenopathy& Severe Malaise.
- In severe form: -The lesions ar generalized and might result in high

morbidity.

- Investigations: The lesions samples are taken via swab test and electron microscopy. The PCR (Polymerase chain reaction) test is also done.
- Treatment: Broad spectrum antibiotics along with antiseptic dressing on the affected lesions.
- Prognosis of Buffalopox: Usually the mild form exists, rarely the severe form is seen.
- The prognosis is good.
- Complications: The complication is Necrotic tissue formation usually occurs in few cases.
- Differential diagnosis: – cowpox|pox} disease Management: -Wearing gloves whereas milking and handling is an effective management.- Treating the infected host also reduced chances of more sporadic or epidemic spread.

Topic 22. RBI Risk Provisioning

Importance for Prelims: Economy

- The six-fold increase in RBI's transfer to the Contingency Fund reduced the central bank's surplus transfer to the govt.
- Central bank's risk provision: The central bank's main risk provision accounts are – Contingency Fund– This is a specific provision meant for meeting unexpected and unforeseen contingencies It includes among other things-depreciation in the value of securities, risks arising out of monetary/exchange rate policy operations, systemic risks and any risk arising on account of the special responsibilities enjoined upon the Reserve Bank.
- Section 47 of the RBI Act states-Profits or surplus of the RBI are to be transferred to the government, after making various contingency provisions. Currency and Gold Revaluation Account (CGRA)– It is maintained by the Reserve Bank to take care of currency risk, interest rate risk and movement in gold prices.
- Unrealised gains or losses on valuation of foreign currency assets (FCA) and gold aren't taken to the income account however instead accounted for in the CGRA.
- Net balance in CGRA, varies with the size of the asset base, its valuation and movement in the exchange rate and price of gold.
- CGRA provides a buffer against exchange rate/ gold price fluctuations.
- It will come under pressure if there's an appreciation of the rupee vis-à-vis major currencies or a fall in the price of gold.
- When CGRA is not sufficient to fully meet exchange losses, it is replenished from the CF.
- Investment Revaluation Account Foreign Securities (IRA-FS)– The unrealised gains or losses on revaluation in foreign dated securities are

recorded in the Investment Revaluation Account Foreign Securities (IRAFS) Investment Revaluation Account-Rupee Securities (IRA-RS)- The unrealised gains or losses on revaluation is accounted for in Investment Revaluation Account-Rupee Securities (IRA-RS).

Topic 23. National Bank for Financing Infrastructure and Development (NABFID)

Importance for Prelims: Economy Section: Monetary Policy

The central bank also observed that the setting up of the National Bank for Financing Infrastructure and Development (NABFID) is expected to shift the burden of long-term financing away from banks.

- National Bank for Financing Infrastructure and Development (NABFID) NBFID will be set up as a corporate body with authorised share capital of one lakh crore rupees.
- Objectives: To directly or indirectly lend, invest, or attract investments for infrastructure projects located entirely or partly in India.
- It intends facilitating the development of the market for bonds, loans, and derivatives for infrastructure financing.
- Functions of NBFID: Extending loans and advances for infrastructure projects.
- Taking over or the refinancing such existing loans.
- Attracting investment from private sector investors and institutional investors for infrastructure projects.
- Organising and facilitating foreign participation in infrastructure projects.
- Facilitating negotiations with the various government authorities for dispute resolution in the field of infrastructure financing.
- Providing consultancy services in infrastructure financing.
- Source of Funds: It may raise money in the form of loans or otherwise both in Indian rupees and foreign currencies, or secure money by the issue and sale of various financial instruments including bonds and debentures.
- It may borrow money from the central government, Reserve Bank of India (RBI), scheduled commercial banks, mutual funds, and multilateral

institutions such as the World Bank and Asian Development Bank.

- Initially, the central government will own 100% shares of the institution which may subsequently be reduced up to 26%.
- Management of NBFID: NBFID will be governed by a Board of directors. The chairperson are going to be appointed by the central government in consultation with Reserve Bank of India.
- 6/13 A body constituted by the central government will recommend candidates for the post of the Managing Director and Deputy Managing Directors.
- The Board will appoint independent directors based on the recommendation of an internal committee.
- Support from the Central Government: The central government will provide grants worth Rs. 5,000 crore to the NBFID by the end of the first year.
- The government will also provide guarantee at a concessional rate of up to 0.1% for borrowing from multilateral institutions, sovereign wealth funds, and other foreign funds.
- Costs towards insulation from fluctuations in foreign exchange (in connection with borrowing in foreign currency) may be reimbursed by the government in part or full.
- Upon request by NBFID, the govt. may guarantee the bonds, debentures, and the loans issued by NBFID.
- Prior Sanction For Investigation And Prosecution: No investigation can be initiated against employees of NBFID without the prior sanction of the central government in case of the chairperson or other directors, and the managing director in case of other employees.
- Courts will also require prior sanction for taking cognisance of offences in matters involving employees of NBFID.

Topic 24. Sela Pass

Importance for Prelims :Geography

- Sela Pass The Sela Pass is a high-altitude mountain pass located on the border between the Tawang and West Kameng districts in the Indian state of Arunachal Pradesh.
- It has an elevation of 4170 m (13,700 ft) and connects the Indian Buddhist town of Tawang to Dirang and Guwahati.
- The pass supports scarce amounts of vegetation and is usually snow-covered to some extent throughout the year.
- Sela Lake, near the summit of the pass, is one of approximately 101 lakes in the area that are sacred in Tibetan Buddhism.
- Whereas Sela Pass does get heavy snowfall in winters, it's usually open throughout the year unless landslides or the snow require the pass to be shut down temporarily.
- Recently, a species of a new monkey found in Arunachal is named after Sela mountain passe. Sela macaque.

Topic 25. Kosi River course change

Importance for Prelims :Geography

- Kosi River course change Content In India, a large flood forced the Kosi River to abandon its established channel for an older one in 2008, displacing 3 million people and claiming more than 250 human lives; such events are called avulsions.
- Based on satellite data on 113 such avulsions, in 33 instances, rivers changed routes in the bases of mountains while descending onto unconfined valleys or open oceans.
- Kosi river belongs to this category.
- In the other 2 categories, the change occurs in the delta regions.
- One is along the backwater zones, part of the river that flows differently because of the effects of the downstream sea.
- The last category occurs in rivers with extreme sediment load.
- Kosi River The Kosi is a trans-boundary river which flows through China, Nepal and India.
- It drains the northern slopes of the Himalayas in Tibet and the southern slopes in Nepal.
- From a major confluence of tributaries north of the Chatra Gorge onwards, the Kosi river is also called Saptakoshi for its seven upper tributaries.
- These include the Tamor River originating from the Kanchenjunga area in the east and Arun River and Sun Kosi from Tibet.
- The Saptakoshi crosses into northern Bihar, India wherever it branches into distributaries before joining the Ganges near Kursela in Katihar Its unstable nature has been attributed to the heavy silt it carries throughout the monsoon season, and flooding in India has extreme effects.
- Peaks located in the basin include Mount Everest, Kangchenjunga,

Lhotse, Makalu, Cho Oyu and The Kosi alluvial fan is one of the largest in the world.

- It shows evidence of lateral channel shifting exceeding a hundred and twenty km (75 mi) throughout the past 250 years, via at least twelve major channels.
- The river, that flowed close to Purnea in the eighteenth century, currently flows west of Saharsa.

Topic 26. PM Swamitva Yojana

Importance for Prelims: Governance

- Survey of Villages and Mapping with Improvised Technology in Village Areas (SVAMITVA) scheme aims to map residential land ownership in the rural sector using modern technology like the use of drones.
- It will create property ownership record of land in villages and empower rural population with grant of official document confirming their ownership of land titles.
- Measurement: The residential land in villages will be measured using drones to create a non-disputable record.
- It is the latest technology for surveying and measuring of land.
- Drones will draw a digital map of the every property falling within the geographical limits of a village and demarcate the boundaries of each revenue area.
- The scheme will be carried out in close coordination with the Central Panchayati Raj ministry, Survey of India, Panchayati Raj departments and Revenue departments of various states.
- Property card: Property card for each property in the village are going to be prepared by states using accurate measurements delivered by drone-mapping.
- These cards will be given to property owners and will be recognised by the land revenue records department.
- The scheme is piloted by the Panchayati raj ministry of the Union government.
- The property records for a village will also be maintained at the Panchayat level, allowing for the collection of associated taxes from the owners.
- The money generated from these local taxes will be used to build rural

infrastructure and facilities.

Topic 27. Fertilizer subsidy

***Importance for Prelims: Government* Schemes**

- Prime Minister Narendra Modi on Saturday said the central government's subsidy Bill for fertilisers can cross an estimated Rs 2 lakh crore this fiscal year — twenty five per cent more than the fertiliser subsidy of the last fiscal year.
- Fertilizer subsidy 2/6 Farmers buy fertilisers at MRPs (maximum retail price) below their normal supplyand-demand-based market rates or what it costs to produce/import them.
- The difference between the retail price and production cost/domestic price is given as subsidy to manufacturers.
- Present regime of fertilizer subsidy – Partial DBT (Since April 2018) The subsidy goes to fertiliser companies, although its ultimate beneficiary is the farmer who pays MRPs less than the market-determined rates.
- Manufacturers of fertilizers (urea) receive 100% of subsidy after fertiliser is delivered to the farmer, and the latter's identity viz.
- Aadhaar is captured on the point of sale (PoS) machine at the dealer's shop. Therefore, the subsidy continues to be routed through manufacturers even though the sale of fertilizer is being verified using Aadhar ecosystem The manufacturers sell urea at the maximum retail price (MRP) controlled by the Centre, that is kept at a low level.
- They also get subsidy reimbursement on unitspecific basis under the new pricing scheme (NPS). The MRPs of non-urea fertilisers are decontrolled or fixed by the companies.
- The Centre, however, pays a flat per-tonne subsidy on these nutrients to ensure they are priced at "reasonable levels (based on Nutrient based Subsidy scheme)

How much subsidy does a farmer really get per acre?

- For three bags urea, one bag DAP and half-a-bag MOP per acre, the farmer would spend a total of Rs 2,437 at existing MRPs.
- The corresponding subsidy value – at an average of Rs 13,000 per tonne (Rs 585/bag) for urea, Rs 511.55/bag for DAP and Rs 303.5/bag for MOP – will add up to Rs 2,418.3 per acre.
- But then, farmers are taxed on other inputs.
- Take diesel, where the incidence of excise and value added tax is Rs 42.19 on a litre retailing at Rs 70.46 in Delhi.
- On 30 litres of average per-acre consumption for paddy or wheat, that will be nearly Rs 1,266.
- So, for every Re one spent on fertiliser subsidy, over half is recovered as diesel tax.
- In addition, farmers pay goods and service tax (GST) on inputs, ranging from 12% on tractors, agricultural implements, pumps and drip/sprinkler irrigation systems to 18% on crop protection chemicals.
- Fertiliser itself is taxed at 5%. And since there's no GST on farm produce, they cannot claim any input tax credit on their sales, unlike other businessmen. Urea is being provided to the farmers at a statutorily notified Maximum Retail Price (MRP).
- The MRP of 45 kg bag of Urea is Rs. 242 per bag (exclusive of charges towards neem coating and taxes as applicable) and therefore the MRP of fifty kg bag of urea is Rs. 268 per bag (exclusive of the charges towards neem coating and taxes as applicable).
- The difference between the delivered cost of the fertilizers at farm gate and net market realization by the urea units is given as subsidy to the urea manufacturer / importer by the govt. of India. As far as Phosphatic and Potassic (P&K) fertilizers are concerned, Government is implementing Nutrient based subsidy (NBS) scheme w.e.f 1.4.2010.

- Underneath the said scheme, a fixed amount of subsidy decided on annual basis, is provided on each grade of subsidized Phosphatic and Potassic (P&K) fertilizers depending upon its nutrient content.
- This subsidy is given by Goverment of India to the P&K fertilizer companies which are therefore able to provide P&K fertilizers to the farmers at a subsidized MRP, which is lower than it would have been.
- Accordingly, farmers across the country who are procuring fertilizers at MRP, is availing the benefit of subsidy.

Topic 28. 30th anniversary of the Panchayati Raj

***Importance for Prelims: Government* Schemes**

3 decades ago, in 1992, the Constitution 73rd (on panchayat Raj) and 74th amendment Acts (on Nagarpalika or urban local bodies) were enacted.

- These amendments were to give expression to Article forty of the Constitution that enshrines one among the Directive Principles of State Policy, which needs the State to take steps to organise the village panchayats and endow them with such powers and authority as could also be necessary to enable them to function as units of self government.
- Historical Background India has a long history of 'democratic' institutions from ancient times.
- Marked by shared sovereignty, the separation of power and authority left the villages to a great extent to function as self-governing village republics.
- REGULATING ACT OF 1773 The earliest efforts in municipal Government in India were made in the Presidency towns of Madras, Calcutta and Bombay.
- In 1687, an order of the Court of Directors directed the formation of a Corporation of European and Indian members of the city of Madras.
- However, the Corporation did not survive.
- Under the Regulating Act of 1773 the Governor-General nominated the servants of the Company and other British inhabitants, to be the Justice of Peace, to appoint for the cleaning and repairing of the street of calcutta, Madras and Mumbai.
- In the year 1817 and 1830, sporadic attempts were made in Madras and Calcutta to undertake works paid out of the lottery funds and much was done with this money in laying out these towns.
- In1840, an Act widened and in the year 1841 an Act was passed for

Madras.

- These Act widened the purpose for which the municipal assessment was to be utilized.
- The inhabitants of the towns were given control over the assessment and collection of taxes. There was no response from the public.
- Charles T. Metcalfe, the acting Governor-General of India in the year (1835-38) recorded that "The village communities are very little republics, having nearly everything that they'll want within themselves.
- Dynasty after dynasty tumbles down. Revolution succeeds to revolution.
- but the village communities remain the same.
- This union of the village communities, every one forming a separate little state in itself, has contributed more than any other cause to the preservation of the peoples of India."
- MAYO'S RESOLUTION OF 1870 It was only after 1870 that real progress was made in direction of local-self government.
- Lord Mayo's government in their Resolution of 1870 dealing with decentralization of finance, referred to the necessity of talking further steps to bring local interests and supervision to bear on the management of funds devoted to the education, sanitation, public works, etc.
- • New municipal Acts were passed in the various provinces between the year 1871 and 1874.
- The Acts extended the elective principle.
- The results of the policy of 1870 were described in the Resolution of the Local self-government, 1882, thus considerable progress had been made since 1870.
- A large income from the local rates and the cesses had been secured, and some provinces the management of the income had been freely entrusted to local bodies.

- • RIPON'S RESOLUTION OF 1881 the next step was taken throughout the tenure of Lord Ripon who has been rightly known as the father of local self-government in India.
- His resolution on Local Self-government is a great landmark in the growth of Local Self-government in the country.
- after pointing out the beneficial effects on the local finance of the resolution of the year 1870, the resolution of 1881 stated that the Governor-General of India thought time had come when further steps should be taken to develop the idea of Lord Mayo's Government.
- It was asserted that agreements with the provincial Government regarding finance should not ignore the question of Local Self-revenues to the local bodies.
- RESOLUTION OF 1882 In this Resolution of Lord Ripon took special pains to make it clear that the expansion of the system of Local Self-government.
- Would not bring about a change for the better from the point of view of efficiency in municipal administration.
- Lord Ripon's resolution enunciated the following principles which were henceforth to inform and guide local government in India:

1. local bodies should have mostly elected non-governmental members and chairman.
2. The state control over local bodies should be indirect rather than direct.
3. These bodies must be endowed with adequate financial resources to carry out their functions.
4. local government personnel should operate under the administrative control of the local bodies.
5. The government personnel who are deputed to the local government must be treated as employees of the local government and subject to

government its control.

6. The resolution of 1882 should be interpreted by the provincial government according to the local conditions prevalent in provinces. Another significant stage in the history 0f local government was the publication in 1909 of the report of Royal commission upon Decentralization, set up in 1906. It made the following principal recommendations:
   I. The village should be regarded as the basic unit of local self-government institutions and every village should be constituted in urban areas.
   II. There should be a substantial majority of elected members in the local bodies.
   III. The municipality should elect its own president, but the district collector should continue to be the president of the district local board.
   IV. Municipalities should be given the necessary authority to determine the taxes and to prepare their budgets after keeping a minimum reserve fund. The government should give grants for public works like water-supply, drainage scheme, etc.
   V. the bigger cities should have the services of full-time nominated officer.

- Local bodies should enjoy full control over their employee's subject, of course to certain safe-guards for the security of services.
- INDIA ISSUED THE RESOLUTION RE-AFFMING 1918 In 1918 the object of self government is to train the people in the management of their own local affairs and the political education of this kind must in the main take precedence over consideration of departmental efficiency.
- • It follows from this that local bodies should be as representative as

possible of the people whose affairs they're known as upon to administer, that their authority in the matter entrusted should be real and not nominal and that they should not be subjected to unnecessary control, should learn mistakes and profiting bt them.

- The resolution contained the following:

1. Panchayats should be levied in the villages.
2. local bodies should contain a large elective majority.
3. local government should be made broad-based by suitably extending the franchise.
4. The president of the local body should be a member of the public and elected, rather than nominated.
5. Local should be allowed freedom in the preparation of the budget, the imposition of taxes and sanction of works.

- The govt. OF India ACT OF 1935 The diarchic system of government at the provincial level was replaced by provincial autonomy.
- The national movement for independence was also reaching new proportions.
- With the growing strength of the national movement in India ceased to be a mere experimental station of self-government.
- The central provinces set up on enquiry committee in 1935, the united provinces in 1938, and Bombay in 1939.
- Although the recommendations of the municipal enquiry committees were unevently carried out in various provinces, there was a definite trend towards democratization of local government by further lowering of the franchise and abolition of system of nominations, and secondly by the separation of deliberative functions from govt ones. after Independence: panchayat raj didn't find a place in the draft Constitution.

- As a result of the efforts of M.K. Gandhi, Article 40 was inserted in the Directive Principles of State Policy of the Constitution and thus, was left for the future governments to deal with.
- After the 1950's, many states created a new three-tier system or a two tier system of local governance, but they all faced neglect.
- Numerous official committees examined the issue of effective rural governance.
- The Balwant Rai Mehta Committee (1957) recommended the transfer of decisionmaking powers from the state to the village panchayats.
- The National Development Council (1958) wanted democracy to be extended to the grassroots and people's participation in all governmental processes and development.
- The Ashok Mehta Committee (1977) proposed a two-tier system with the district panchayats to be the power centre below the state.
- The V.K. Rao committee (1985) recommended a three-tier structure.
- Recognising the gram sabhas to be incarnations of direct democracy, the L.M. Singhvi Committee (1986), favored a new chapter to be brought in through constitutional amendment, with the gram sabha as the base of decentralized democracy.
- This resulted in the 73rd Amendment Act on Panchayat Raj and Constitution 74th Amendment Act on Nagarpalika, passed on December 22 and 23, 1992 respectively. The amendments Two new parts were added to the Constitution: Part IX 'The Panchayats' and Part IXA 'The Municipalities'.
- The Acts transferred 29 subjects to the panchayats and 18 subjects to the municipalities.
- Rural governance was to be handed over to a three-tier panchayat raj institutions (PRIs), and urban governance to three sorts of

municipalities, one each for the large and smaller urban areas, and the towns in transition from rural to urban area.

- As the subject of 'local government' is under the State list in the Seventh Schedule of the Constitution, the States were to enact suitable laws for operationalising Panchayats.
- Exemptions Nagaland, Mizoram, Meghalaya, hill areas of Manipur, hill areas of Darjeeling district in West Bengal, and the scheduled areas and tribal areas referred to in Article 244 (1) and (2) of the Constitution were exempted from the appliance of the 73rd change.
- The special Constitutional provisions under Article 371A for Nagaland and 371G for Mizoram provide exclusive power to their state assemblies on matters concerning religious or social practices, customary law and procedure of the concerned communities, administration of the civil and the criminal justice in areas covered by customary law, and ownership and transfer of land and its resources.
- Similar arrangements exist in the Sixth Schedule Areas, dominated by tribal populations.
- Such areas are in assam (six of the twenty one districts), Meghalaya (except for the municipality and cantonment of Shillong), Tripura (about sixty eight of the State) and Mizoram (three districts).

29. Planetary boundaries and biodiversity Biodiversity

Importance for Prelims: Environment

- has been defined as one of 9 planetary boundaries that help regulate the planet's operating system. however humanity is crossing those boundaries, threatening life on Earth.
- The planetary boundary for biodiversity loss was initially measured by extinction rates, but this, as well as other measurements, have proved to be insufficient in determining a global threshold for biodiversity loss.
- While the planetary boundary framework provides one way of understanding biodiversity or biosphere integrity loss, there are many other measures of biodiversity loss — and all point toward the fact that we are continuing to dangerously destabilize life on Earth.
- Planetary Boundary theory according to this theory, a theory that argues Earth has 9 biophysical subsystems or processes with clear limits beyond that they can not withstand anthropogenic pressure.
- These were described as climate change, the rate of biodiversity loss, interference with the nitrogen and phosphorus cycles, ozone depletion, ocean acidification, global freshwater use, land use changes, chemical and other pollution, and atmospheric aerosol loading.
- If humanity stays within the "safe operating space" of these boundaries, life can thrive, the theory suggests.
- If the thresholds are crossed, humanity can push Earth into a new, dangerous state that isn't as accommodating to life as we know it.
- whereas it's difficult, if not impossible, to identify a global threshold for biosphere integrity, many researchers suggest that biodiversity boundaries can be defined at local or regional scales through something called "regime shifts," also known as "tipping points."
- A regime shift is an abrupt change that fundamentally alters the structure and function of an ecosystem, changing it from one state to another.

- In most cases, such shifts are irreversible.
- However, in most cases, regime shifts aren't identified until after the process has occurred.
- Despite all these uncertainties, researchers argue that biosphere integrity acts as a core boundary in the planetary boundary framework, providing capacity for the planet to adjust to changes that occur in other boundaries, such as elevated levels of ocean acidification, and therefore the onslaught of plastic pollution and other man-made chemicals.
- However if the biosphere becomes too compromised through anthropogenic pressures, other boundaries can weaken as a result.
- Despite the many uncertainties surrounding biosphere integrity and the approaches to measuring it, experts agree that biodiversity loss is happening now at unacceptable rates.

30. The West Nile Virus

Importance for Prelims: Science

- is a mosquito-borne, single-stranded RNA virus.
- According to the World Health Organization, it's "a member of the flavivirus genus and belongs to the japanese encephalitis antigenic complex of the family Flaviviridae".
- Transmission Culex species of mosquitoes act as the principal vectors for transmission.
- It is transmitted by infected mosquitoes between and among humans and animals, including birds, which are the reservoir host of the virus.
- WNV can also spread through blood transfusion, from an infected mother to her child, or through exposure to the virus in laboratories.
- • it's not known to spread by contact with infected humans or animals.
- Mosquitoes become infected when they feed on infected birds, which circulate the virus in their blood for a few days.
- The virus eventually gets into the mosquito's salivary glands.
- During later blood meals (when mosquitoes bite), the virus may be injected into humans and animals, where it can multiply and possibly cause illness.
- WNV outbreak sites are found along major bird migratory routes.
- Symptoms The disease is asymptomatic in 80% of the infected people.
- The rest develop what's called the West Nile fever or severe West Nile disease.
- In these 20% cases, the symptoms include fever, headache, fatigue, body aches, nausea, rash, and swollen glands.
- Severe infection will lead to the encephalitis, meningitis, paralysis, and even death.
- It usually turns fatal in persons with comorbidities and immuno-

compromised persons (such as transplant patients).

- Prevention This vector-borne disease can be prevented by protecting one-self from mosquito bites.
- Other steps are wearing clothing that acts as a barrier to exposure to bites, reducing breeding sites, covering water storage containers, eliminating puddles and drainage of places where water accumulates, eliminating unusable containers where the water pools, and controlling garbage in yards and gardens.

Topic 31. UN-Habitat

Importance for Prelims:Polity

- The united nations habitat Program (UN-Habitat) is a global programme for the Urban development that promotes sustainable human settlements.
- It's mandated by the United Nations General Assembly to promote socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all.
- As an inter-governmental policy-making and decision-making body, the Governing Council of the UN-Habitat seeks to promote an integral and comprehensive approach to human settlements, assist the countries and regions in addressing human settlement problems and the strengthen cooperation among all countries on the human settlement issue.
- It was established with a vision to provide well-governed, well-planned and efficient cities and other human settlements.
- These settlements would have adequate housing and infrastructure along with enough basic necessities like water, sanitation and electricity.
- UN-Habitat Publications/Reports The State of the World's Cities The Global Report on Human Settlements New Urban Agenda Sustainable Development Goals and Urban Local Bodies – The Future We Want

32. Linkage between WPI and CPI

Importance for Prelims: Economy

- Wholesale price inflation hit 15.08% in April, the highest since September 1991, having grown at double-digit rates for the 13th month in a row.
- Meanwhile, inflation based on the consumer price index (CPI), scaled an 8-year high of 7.79% in April and breached the upper band of the RBI's medium-term target for a fourth straight month.
- Wholesale Price Index Consumer Price Index Published by Economic Advisor in the Ministry of Commerce and Industry.
- Central Statistical Office in the Ministry of Statistic and Programme Implementation Definition It measures the average change in price in the sale of goods in bulk quantity by the wholesaler.
- • It measures the average change in price in the sale of goods or services in retail or the price of products or services sold directly to consumers.
- Constituents The primary index that tracks the change in wholesale prices of goods only.
- The primary index that tracks the change in retail prices of essential goods and services consumed by Indian households Feature Look at the price at which wholesaler supplies the product Look at the price at which the consumer buys the product.
- Stage of transaction reflect 1st stage of transaction-WPI is that the 1st level where the first price will increase in goods reflect final stage of transaction-CPI is that the final level where the price increases of goods or services Items It is restricted to goods covered under WPI, primarily fuel, power, and manufacturing products.
- Education, food, transport, communication, recreation, apparel, housing, and medical care.
- Interval It releases weekly for primary articles, fuel, and power. It

releases monthly.

- Base year The base year for WPI is the financial year-2011 The base year for CPI is the calendar year- 2011-12

How is WPI unrelated to the CPI (likely causes of the divergence)?

- There are various layers between the wholesale price and retail price: One is that the additional cost of transportation from the wholesale to the point of sale– an increase in this cost of transportation would be translated into a higher CPI but no effect on the WPI.
- Another is the retail mark-up– if there is scarcity, the retail margin goes up, adding to the price. Exclusion of services- the wholesale market is only for goods, you cannot buy services on a wholesale basis. Differential weighing-Certain items on WPI, such as fuel, are also closely linked to international prices, creating a gap between the figures on this index and the CPI.
- Differences in the indirect taxes-WPI is the wholesale price index hence, excludes indirect taxes levied on various goods.

How is the CPI linked to the WPI?

- Input prices and cost of production- WPI includes the price of intermediate goods, if these are dearer, goes on increasing the CPI in the longer run.
- Imported inflation-WPI reflects the imported inflation- especially in the crude oil price rise which is again a basic intermediate good in various goods measured under the CPI.
- Rise in transportation cost-due to rise in crude oil prices.

33. Rule of origin

Importance for Prelims: Economy

The directorate general of foreign trade has tweaked the import policy of major paper products from 'free' to 'free subject to compulsory registration under the Paper Import Monitoring System

- The local paper industry has been raising issues of dumping of paper products in the domestic market by way of under-invoicing, entry of prohibited goods by fake declaration, re-routing goods through other countries in the lieu of trade agreements.
- Customs officials have long suspected that Chinese firms may be diverting their supplies of various products to India through Asean nations, abusing rules of origin, to illegally take advantage of duty-free market access under the free trade agreement.
- Dumping is said to occur when the goods are exported by a country to another country at a price lower than the price it normally charges in its own home market.
- This is an unfair trade practice which can have a distortive effect on international trade.
- Imposition of anti-dumping duty is a measure to rectify the situation arising out of the dumping of the products and its trade distortive impact.
- In the long-term, anti-dumping duties can reduce the international competition of domestic companies producing similar goods.
- It is a protectionist tariff that a domestic government imposes on foreign imports that it believes are priced below fair market value.
- The use of anti-dumping measures as an instrument of fair competition is permitted by the World Trade Organisation.
- Rule of Origin: Rules of origin are the criteria needed to determine the national source of a product.
- Their importance is derived from the fact that duties and restrictions in

several cases depend upon the source of imports.

- Mentioning Countries of origin in the Bill is relevant for regulating various areas of customs.
- Rules of origin are used: to implement measures and instruments of commercial policy like anti-dumping duties and safeguard measures; to determine whether imported merchandise shall receive most-favoured-nation (MFN) treatment or preferential treatment; for the purpose of trade statistics; for the application of the labelling and marking requirements; and for government procurement.
- Non-preferential rules of origin Non-preferential rules of origin are those which apply in the absence of any trade preference — that's, when trade is conducted on a most-favoured nation basis.
- Not all countries apply specific legislation related to non-preferential rules of origin.
- However, some trade policy measures such as quotas, anti-dumping or "made in" labels may require a determination of origin and, therefore, the application of non-preferential rules.
- Preferential rules of origin Preferential rules or origin are those which apply in reciprocal trade preferences (i.e. regional trade agreements or customs unions) or in the non-reciprocal trade preferences (i.e. preferences in favour of the developing countries or least-developed countries).
- the rules of origin that apply under reciprocal trade preferences or regional trade agreements conform change with the general disciplines of Annex II of the Agreement on Rules of Origin.
- Additionally, the General Agreement on Tariffs and Trade and therefore the Agreement on Trade Facilitation contain some provisions related to origin requirements.

- Law in India: Finance Act of 2020, introduced Section 28DA under the Customs Act, 1962 as an enabling provision for administration of Rules of Origin under trade agreements.
- Customs (Administration of Rules of Origin under Trade Agreements) Rules, 2020 -provide specific provisions and outline a roadmap for governance of claims made under the trade agreements by the importers of goods in India.
- Further the onus of maintaining the requisite documents and checking the correctness & accuracy of the Countries of origin is through reasonable care has been placed on the importer.
- Rules of origin and WTO: Article 1 of the WTO Agreement defines rules of origin as those laws, regulations and administrative determinations of general application applied to determine the country of origin of goods except those related to the granting of tariff preferences.
- Thus, the Agreement covers only rules of the origin utilized in non-preferential commercial policy instruments, like MFN treatment, anti-dumping and the countervailing duties, safeguard measures, origin marking requirements and any discriminatory quantitative restrictions or tariff quotas, as well as those used for trade statistics and government procurement.
- It is, however, provided that the determinations made for purposes of defining domestic industry or "like products of domestic industry" shall not be affected by the Agreement.
- The agreement aims at long-term harmonization of rules of origin, other than rules of origin relating to the granting of tariff preferences, and to ensure that such rules do not themselves create unnecessary obstacles to trade.
- The agreement sets up a harmonization programme, to be initiated as

soon as possible after the completion of the Uruguay round and to be completed among 3 years of initiation.

34. Maharashtra overtook UP as top sugar producer

Importance for Prelims: Environment

- After a five-year gap, Maharashtra has overtaken Uttar Pradesh (UP) to regain its position as India's top sugar producer. It is due to three factors:

1. Bountiful Rainfall: Maharashtra has been receiving enough rainfall since the 2019 southwest monsoon season (June-September) filling up of reservoirs and recharging groundwater aquifers.
2. Higher yields from farmers taking extra care of their crop: Farmers have harvested an average per-acre cane yield of 60 tonnes this year, as against 50 tonnes in 2020-21.
3. Huge jump in "unregistered" cane cultivation: In 2020-21, the state reported a total area of 11.42 lakh hectares (lh) planted under cane while this year it increased to 12.4 lh.

- This means that there is un-harvested cane still in the fields and mills will continue to crush till the first week of June who closed their operations by April-end.
- It isn't Maharashtra alone. Karnataka, too, is poised to produce a record 60 lt of sugar this year, while Gujarat's 12 .

1. lt would be its best since the 12.35 lt of 2010-11. Reasons for UP's sugar production declining after the 2019-20:
2. Diversion of cane for making ethanol this year: UP has, in fact, become India's largest ethanol producer, while also achieving the highest blending-in-petrol ratio among all states .
3. Crop loss from excess rains and water-logging in many low-lying canegrowing areas of eastern UP:
4. Variety of sugarcane planted in UP: 87% of UP's cane area being planted under a single variety, Co-0238, which has become susceptible to red rot fungal disease.

- UP's sugar output falling to a five-year-low in 2021-22 has, however,

has been more than offset by Maharashtra's and Karnataka's soaring to all-time-highs.

- However interestingly, this is hasn't resulted in any price drop.
- It is due to exports having crossed 75 lt – surpassing the 71.9 lt record of 2020-21 – and are likely to reach 100 lt in the current sugar year.

35. Tokenisation

Importance for Prelims: Economy

The Reserve Bank of India has extended the implementation date of card-on-file (CoF) tokenisation norms by six months to June 30, 2022. In September 2021, the RBI prohibited merchants from storing customer card details on their servers with effect from January 01, 2022, and mandated the adoption of card-on-file (CoF) tokenisation as an alternative to card storage. It applies to domestic, online purchases.

- Tokenisation refers to replacement of actual credit and debit card details with an alternate code called the "token", which will be unique for a combination of card, token requestor and device.
- Example-when you make online payments through your credit card (or debit cards), it will be mandatory to enter your card details in full, that is, your card number, CVV and authenticate with OTP.
- But if you don't want to go through this hassle each time, you can opt to create a token.
- The process is called card-on-file tokenisation (CoFT).
- In case of multiple cards, each can have to be tokenised.
- 3 steps have to be completed for smooth implementation of tokenisation: Token provisioning: the consumer's card number should be convertible into a token, which means the card networks have to be ready with the relevant infrastructure.
- Token processing: consumers should be able to complete their transaction with success through the tokens.
- Scale-up for multiple use cases: consumer should be able to use the token for things like refunds, EMIs, recurring payments, offers, promotions, guest checkouts etc.

How does it work ?

- When you enter the card details to process the payment, the payment

gateway will check with you if you want to create a token.

- If yes, it would forward the request to the card network — Visa, MasterCard, Rupay, Amex or Diner's Club.
- Authorised by the issuer bank, upon verification of the user's credentials. The card network issues the token and shares it with the user.
- Every token is unique to the payment gateway or the merchant, card network and the card.
- Therefore, if you have stored your card details across five merchants — say for ordering food, online shopping, booking movie tickets, OTT platforms and paying for utilities, you have the convenience of generating 5-6 tokens for each app.

De-tokenisation involves cancelling the token Is it mandatory?

- It is not mandatory.
- A merchant cannot force the user to create a token.
- It needs explicit consent and an additional factor of authentication like an OTP or PIN to generate a token.
- One can set limits for each token, including daily transaction limits.
- Likewise, one can renew the token just like you would do with the card.
- Card issuers cannot charge a fee for issue tokens.
- However, interest charges, taxes and fees, including renewal fee applicable on the card, will remain.
- Tokens can be generated for both credit and debit cards. Impact: Merchants and payment gateways cannot store details of their users' credit or debit cards.
- A tokenised card transaction is considered safer as the actual card details are not shared with the merchant during transaction processing.