

**WEEKLY CURRENT AFFAIRS MAGAZINE for**



**U.P.S.C. - C.S.E.**

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16 May to 22 May



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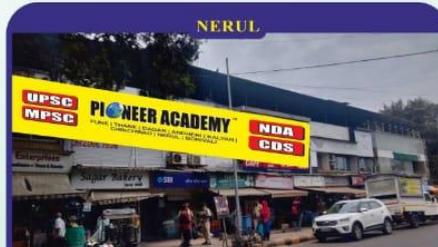
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*Success is born of action...*

## Topic 1. THE IMPORTANCE OF LUMBINI

### *Importance for prelims: History*



Prime Minister Narendra Modi's visit to Lumbini, Nepal. No Indian Prime Minister has visited Lumbini in the last few decades.

- **Importance of Lumbini:** The Lord Buddha was born in 623 BC in the sacred area of Lumbini located in the Terai plains of southern Nepal, testified by the inscription on the pillar erected by the Mauryan Emperor Asoka in 249 before Christ.
- Lumbini is one among the holiest places of 1 of the world's prominent religions, and its remains contain vital proof regarding the world of Buddhist pilgrim's journey centres from as early as the 3rd century BC.
- The complex of structures within the archaeological conservation area includes the Shakya Tank; the remains within the Maya Devi Temple consist of brick structures in a cross-wall system dating from the third century B.C. to this century and also the arenaceous rock Ashoka pillar with its Pali inscription in Brahmi script.
- Additionally there are the excavated remains of Buddhist viharas (monasteries) of the third century before Christ to the fifth century AD &

remains of Buddhist stupas (memorial shrines) from the third century before Christ to the fifteenth century AD.

- The location is currently being developed as a Buddhist pilgrim's journey centre, wherever the archeological remains collaborated with the birth of the Lord Buddha form a central feature.
- Unfortunately, India remains largely un- represented in Lumbini, but for a small museum building that was con- structed with Indian assistance in the late 1990s.
- A proposal for a ‘sound and light show’ remains in limbo.
- Both Lumbini and the Mahabodhi Temple in Bodh Gaya are UNESCO World Heritage sites.
- **Some important Buddhist sites in India:** India is home to some of the most sacred sites of Buddhism Bodh Gaya — Bodh Gaya is a holy landmark and pilgrimage destination linked with the Mahabodhi Temple Complex in Gaya, Bihar, India.
- It is well-known for being the location where Gautama Buddha is claimed to have acquired enlightenment under the Bodhi Tree.
- **Sarnath**– The deer Park adjacent the archeological apartment at Sarnath that the Buddha is believed to have delivered his 1st sermon when he obtain enlightenment below a Bodhi tree in Bodh Gaya and preached his first teachings known as Dharmachakrapravartana Sutra.
- **Rajgir**– It was the capital of Magadh Kingdom.
- It was here that Gautama Buddha spent several months meditating, and preaching at Gridhra-kuta, (Vulture peak).
- He additionally delivered a number of his known sermons and initiated king Bimbisara of Magadha and unnumerable others to Buddhism.
- It was here that Budhha delivered his famous Atanatiya Sutra.
- **Sravasti**– it was the capital of ancient Kosala kingdom and is sacred to

the Buddhists since it's here that Lord Buddha performed significant of his miracles to confound the Tirthika heretics.

- These miracles include Buddha creating multiple images of himself, which has been a favourite theme of Buddhist art.
- Buddha showed his divine prowess to impress upon the non-believers.
- The Buddha passed the greater part of his monastic life in Sravasti.
- **Vulture peak**– one of the various sites frequented by Buddha and his community of disciples for each coaching and retreat.
- **Kesariya** – Kesariya Stupa is a Buddhist stupa in Kesariya.
- The 1st construction of the Stupa is dated to the third century BCE.
- Kesariya Stupa has a circumference of almost 400 feet (120 m) and rises to a height of about 104 feet.
- **Vaishali**– it's said that Gautama Buddha visited this place thrice and spent quite very long time here.
- The Buddha also delivered his last sermon at Vaishali and announced his Nirvana here.
- **Kushinagar**– It is one of the four sacred places of Lord Buddha.
- Buddha delivered his last sermon, attained Mahaparinirvana (salvation) in 483 BC and was cremated at Rambhar Stupa.

## Topic 2. RESIDUE FARMING OVER ORGANIC FARMING

*Importance for prelims: Agriculture*



It entails the protection and growth improvement of seedlings and plants by using organically procured bio-fertilisers and biocides it's an agricultural system that depends on pest controls and bio-fertilisers that are obtained from animal and plant waste.

- Synthetic pesticides are applied at predetermined intervals conforming to the (MRL) Maximum Residue Level.
- It involves the plantation of nitrogenfixing cover crops.
- Advantages of Residue farming over Organic farming: Since Residue farming doesn't involve any poisonous substance throughout the assembly method, the nutritionary worth and quality of fruits and vegetables created is high.
- While there is no clear indicator that organic products are high in nutrition.
- The yield capacity of organic farming is poor and the markup of organic products is as high as 40% due to expensive production, while Residue-free techniques are economical, and they do not hamper production

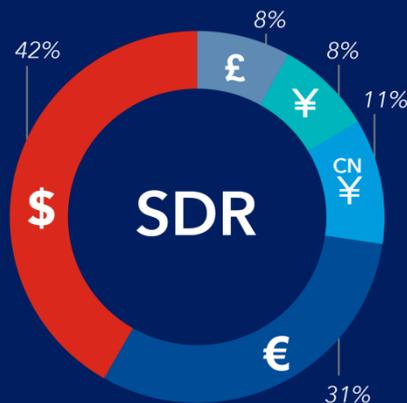
quantity.

- Though organic farming eradicates the use of chemical fertilizers and pesticides, the cost of doing so is very high as the yield is insufficient.
- Residue-free practices entail minimal or no usage of chemicals, and it leaves no harmful traces behind.
- Also, Developed countries encourage and promote residue-free crops, thus promoting them in India will boost Indian food exports.
- **Government efforts to promote Residue-free farming:** The ₹2,200-crore State of Maharashtra Agribusiness and Rural Transformation (SMART) project plans to supply the urban population of Pune residue-free produce.
- The Centre has launched the All India Network Project on Pesticide Residues (AINP-PR) to combat pesticide contamination in several food commodities.
- FSSAI has introduced a list of crop contaminants and their acceptable levels.
- To make indigenous produce more competitive in the export market, FSSAI has issued a set of MRLs for the compliance of domestic producers.

## Topic 3. SPECIAL DRAWING RIGHTS

*Importance for prelims: Economy*

### SDR allocations: what are they and how are they used?



#### What is an SDR?

Special Drawing Rights (SDRs) are international reserve assets created by the IMF to supplement the official reserves of member countries. The value of an SDR is based on a basket of five currencies.

#### How are SDRs used?

SDRs are allocated to IMF member countries in proportion to their relative share in the IMF. Countries can exchange SDRs for hard currencies with other IMF members.



#### Why in the news?

The IMF raised the yuan's weight to 12.28 per cent from 10.92 in its initial regular review of the SDR analysis since the Chinese currency was enclosed within the basket in 2016, the People's Bank of China said in a statement Sunday. The weighting of the US dollar rose to 43.38 per cent from 41.73 per cent, while those of euro, Japanese yen and British pound declined. The ranking of the currencies' weighting remains the same after the review as neither the pandemic nor developments in financial technology have had any major impact

on the relative role of currencies in the SDR basket. The change will be effective Aug 1, and the next review will be in 2027.

- The SDR is a global reserve plus, created by the IMF in 1969 to supplement its member countries' official reserves.
- The SDR was initially defined as equivalent to 0.888671 grams of fine gold—which, at the time, was also equivalent to one U.S. dollar.
- After the collapse of the Bretton Woods system, the SDR was redefined as a basket of currencies.
- The value of the SDR is based on a basket of five currencies—the U.S. dollar, the euro, the Chinese renminbi, the Japanese yen, and the British pound sterling.
- The yuan's entry into the SDR signaled it became one of the five global reserve currencies in 2016, after years of effort by Chinese authorities to promote its global use.
- Currencies involved within the SDR basket got to meet 2 criteria: the export criterion and the freely usable criterion.
- A currency meets the export criterion if its issuer is an IMF member or a monetary union that includes IMF members, and is also one of the top five world exporters.
- For a currency to be determined “freely usable” by the IMF, it's to be widely used to build payments for international transactions and widely traded in the principal exchange markets.
- Freely usable currencies can be used in Fund financial transactions.
- The SDR serves as the unit of account of the IMF and other international organizations.
- The SDR is neither a currency nor a claim on the IMF.
- Rather, it is a potential claim on the freely usable currencies of IMF members.

- SDRs can be exchanged for these currencies.
- The SDR basket is reviewed each 5 years, or earlier if secured, to make sure that the basket reflects the relative importance of currencies within the world's mercantilism and monetary systems.
- The actual weights of currencies in the basket fluctuate as cross-exchange rates among the basket currencies move.
- The value of the SDR is determined daily based on market exchange rates.
- **SDR allocation:** The Articles of Agreement, determine that under certain conditions the IMF may allocate SDRs to members participating in the SDR Department.
- A general allocation of SDRs must be consistent with the objective of meeting the long-term global need to supplement existing reserve assets.
- The allocation is distributed to member countries in proportion to their quota shares at the Fund.
- A special one-time allocation in 2009 enabled countries that joined the IMF after 1981 (i.e., after previous allocations) to participate in the SDR system on an equitable basis.
- Participating members and prescribed holders can buy and sell SDRs in the voluntary market.
- If required, the IMF can also designate members to buy SDRs from other participants.

## Topic 4. ASSET QUALITY REVIEW

### *Importance for prelims: Economy*

Why in the news?

The RBI governor will meet chiefs of public sector banks (PSBs) on May 17 to review credit flow and assess the outlook on asset quality. The Governor will also review PSBs' collection efficiencies, consumer grievance redress mechanism, digital banking units, lending to government entities, IT infrastructure and cyber security framework and any issue that the lenders may like to present along with strategies to deal with the rising interest rate scenario without upsetting growth dynamics.

- Background With the regulatory forbearance coming to an end in 2015, RBI started the Asset Quality Review to ensure that banks were taking proactive steps to clean up their balance sheets.
- The RBI together with the senior national supervisors carried out financial health checks of the banks it supervises directly.
- These comprehensive assessments help to ensure that the banks are adequately capitalized and can withstand possible financial shocks.
- **AQR:** Inspectors from the Reserve Bank of India (RBI) typically review bank records once a year as part of the Annual Financial Inspection (AFI) process.
- A small sample of loans is evaluated in a routine AFI to see if asset classification matches loan repayment and if banks have made necessary reserves.
- However, the sample size in the AQR, on the other hand, was substantially larger, and most of the large borrower accounts were investigated to see if categorisation complied with prudential standards.
- The most facet of AQR is that it's a random check instead of a periodic check.

- **Classification of assets:** Standard Assets-An asset which does not have more than normal risk attached to the business, and the one which does not disclose any problems is known as a standard asset.
- Non-Performing Assets (NPA) are loans and arrears lent by the banks or financial institutions whose principal and interests are delayed beyond 90 days.
- The Classification of NPA relies on the quantity of days the payment of principal and interest is due.
- It is classified as Substandard assets, Doubtful assets, and Loss assets:  
Sub-standard: When the NPAs have aged 12 months.
- **Loss assets:** When the bank or its auditors have identified the loss, but it has not been written off.
- **Stressed assets**-The classification of Special Mention Accounts (SMA) was introduced by the RBI in 2014, to identify those accounts that have the potential to become an NPA/Stressed Asset.
- As per the SMA rules, banks should determine potential stress within the account by making a new sub-asset class viz.
- ‘Special Mention Accounts’ (SMA).
- There are four types of Special Mention Accounts – SMA-NF, SMA 0, SMA1 and SMA 2.
- SMA-0-Principal or interest payment overdue between 1-30 days.
- SMA -1- Principal or interest payment overdue between 31-60 days.
- SMA-2-Principal or interest payment overdue between 61-90 days.
- SMA-NF-some ‘Special Mention’ assets are identified on the basis of other factors that reflect sickness/irregularities in the account (SMA -NF).

### **Impact of hike in repo rate on the fixed income investors Subject:**

- **Economy Section:** Monetary Policy RBI’s repo rate moves are supposed to send out signals for banks to follow: Bank fixed deposit (FD) rates are

usually quite slow to respond to RBI moves, especially when there is an increasing trend.

- **Post office schemes**-The interest rates on post office schemes such as Post Office Time Deposits, Monthly Income Account, National Savings Certificates (NSC), Senior Citizens Savings Scheme (SCSS) and PPF are reset every quarter by the government.
- The rates on post office instruments are supposed to be linked to market yields on government securities of different tenures.
- Therefore, given that market yields on government bonds have gone up sharply in the last six months, the rates on post office schemes are overdue for upward revision.

## Topic 5. FIRST INDIAN LAYMAN TO BE DECLARED SAINT

*Importance for prelims: History*



Devasahayam Pillai, who embraced Christianity in the eighteenth century, became the primary Indian common person to be declared a saint by Pope Francis during a powerful canonization ceremony at the Vatican on 15 May.

- Devasahayam Pillai was born in 1712 as Neelakanta Pillai into a Hindu Nair family, at Nattalam in Kanyakumari district (erstwhile Travancore kingdom), Tamilnadu.
- He was an official in the court of Travancore's Maharaja Marthanda Varma when he was instructed into the Catholic faith by a Dutch naval commander in 1745.
- He took the name "Lazarus", or "Devasahayam" in Malayalam, which translates to "God is my help".
- While preaching, he particularly insisted on the equality of all people, despite caste differences.
- This aroused the hatred of the higher classes, and he was arrested in 1749.
- After enduring increasing hardships, he received the crown of martyrdom

when he was shot on January 14, 1752.

- Devasahayam was recommended for the process of Beautification by the Vatican in 2004 and was declared Blessed on December 2, 2012, in Kottar, 300 years after his birth.

## Topic 6. UNOPS

*Importance for prelims: International Relations*



A \$60-million scandal involving loans and grants by a little-known UN company additionally included a \$2.5 million funding to construct reasonably priced homes in India in 2019 — none of which have been materialised.

- The United Nations Office for Project Services (UNOPS), which offers with operational initiatives, had entrusted complete sum to a single British businessman and now faces \$22 million in dangerous money owed, as per a New York Times Report.
- A Singapore-based agency, owned by the businessman was answerable for getting at the least 50,000 homes in-built Goa for \$2.5 million.

- The undertaking was underneath the Sustainable Infrastructure Impact Investments (S3I) initiative, launched in 2018.
- A senior Goa authority official confirmed that a presentation was created to officers by SHS Holdings (administrator of this agency) for the event of the projected housing models in Goa.
- However, officers had questioned how supporting infrastructure like energy and roads could be made out there for the housing models additionally and how the federal government may award such a big housing undertaking to a non-public agency with no tendering undertaking.
- **UNOPS:** It is an operational arm of the United Nations, (established in 1973) dedicated to implementing projects for the United Nations System, international financial institutions, governments and other partners around the world.
- **Headquarters:** Copenhagen, Denmark.
- It is in charge of disbursing more than \$2 billion worth of development projects and contracts for its partners every year.
- Its activities have ranged from managing the construction of schools in Afghanistan, to building shelters in Haiti, to procuring ambulances to support the Ebola response in Liberia.
- It is a member of UNSDG and works closely with UNDP, Department of Peace operations (DPO) and the World Bank.
- It is committed to helping find innovative financing solutions that will connect a wide range of stakeholders from both public and private sectors, as well as bilateral donors and governments, to form new partnerships for sustainable Financing: It is not-for-profit, self- financing organization.
- It covers direct and indirect costs by charging a fee on each project

supported.

- The following entities are currently under hosting agreements by UNOPS, grouped by theme: Health: RBM Partnership to End Malaria, Stop TB Partnership, Defeat-NCD Partnership Nutrition: Scaling Up Nutrition (SUN) Movement Water and sanitation: Water Supply and Sanitation Collaborative Council (since 2009) Sustainable urban development (Cities Alliance) Disaster displacement (Platform on Disaster Displacement) In addition, the Un- Water Secretariat is administered by UNOPS.

## Topic 7. NATO: NEW MEMBERSHIP

*Importance for prelims: IR*

### NATO

## NATO history and expansion

NATO was **founded in 1949** by 12 founding nations.  
Today it has grown to include **30 member states**.

**1949**



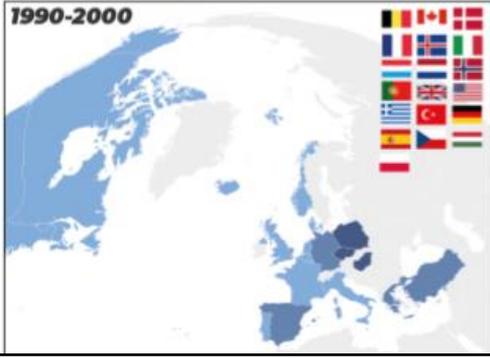
**1949:** Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, the UK and the US sign the North Atlantic Treaty

**1950-1990**



**1952:** Greece and Turkey join  
**1955:** West Germany joins  
**1982:** Spain joins

**1990-2000**



**2000-2020**



Finland and Sweden are poised to end decades of neutrality by joining NATO, a dramatic evolution in European security and geopolitics sparked by Russia’s invasion of Ukraine.

- NATO membership — Process NATO has what it calls an “open door policy” on new members — any European country can request to join, so long as they meet certain criteria and all existing members agree.
- A country doesn't technically “apply” to join; Article ten of its commencement pact states that, once a nation has expressed interest, the prevailing member states “may, by unanimous agreement, invite any other European State in a position to further the principles of this Treaty

... to accede.”

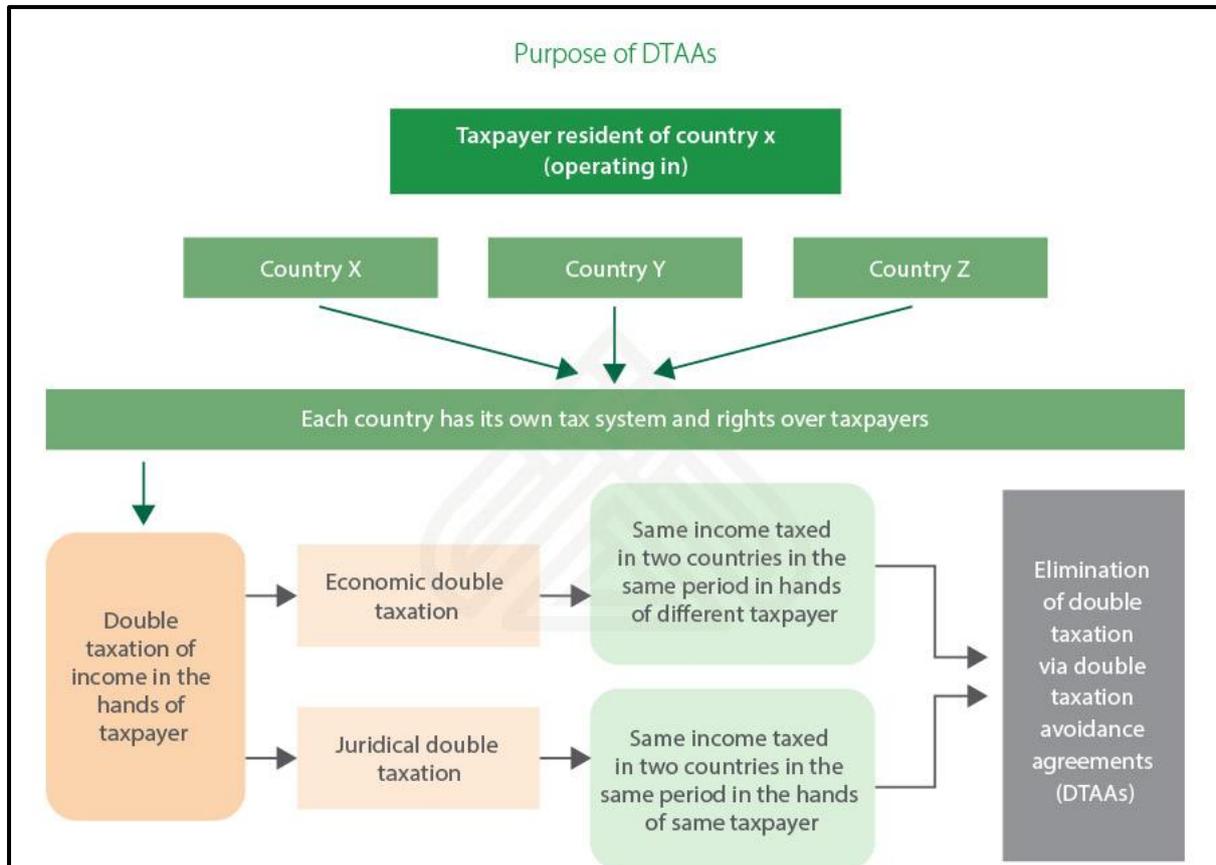
- Ratification of recent members might take a year, because the legislatures of all thirty current members should approve new candidates. to resolve conflicts peacefully; the ability and willingness to make a military contribution to NATO operations; and Committing to democratic civil-military relations and institutions.
- Both Finland and Sweden already meet several of the necessities for membership, which involve having a functioning democratic political system based on a market economy; treating minority populations fairly; committing.

### **What does NATO membership entail?**

- The reason most countries join NATO is because of Article 5 of the North Atlantic Treaty, which stipulates that all signatories consider an attack on one an attack against all.
- Article five has been a cornerstone of the alliance since NATO was founded in 1949 as a counterweight to the Soviet Union.
- The point of the treaty, and Article 5 specifically, was to deter the Soviets from attacking liberal democracies that lacked military strength.
- Article five guarantees that the resources of the full alliance — together with the huge USA military — may be wont to defend any single member nation, like smaller countries who would be defenceless without their allies.
- Iceland, for example, has no standing army.

## Topic 8. DOUBLE TAXATION AVOIDANCE AGREEMENTS (DTAA)

*Importance for prelims: Economy*



Holcim CEO Jan Jenisch on Monday talked about the company's \$10.5-billion sale of its stakes in Ambuja Cements and ACC to the Adani group won't attract any capital gains tax.

- **Details:** As it will sell the shares in the Indian companies to the Adani family's offshore special purpose vehicle (SPV) through a Mauritius-incorporated entity.
- This will seemingly provide Swiss company the cover of India's tax pact with the island nation. Capital gains from the sale of those stakes to the overseas SPV won't be taxed in India.
- Double Taxation Avoidance Agreements (DTAA) is a treaty signed between two or more countries and is applicable in cases where a taxpayer residing in one country has to earn his/her income from another

country.

- It is signed between two countries, which, through the elimination of international double taxation, promotes the exchange of goods, services, and investment of capital between the two countries.
- This implies that there are consented tax rates and jurisdiction on specified kinds of incomes arising in one country to a tax resident of another nation.
- India establishes DTAAAs with other countries through Section 90 of the Income Tax Act, 1961.
- India has DTAAAs with more than 80 countries.
- It is legislated on a reciprocal basis and covers residents of India as well as the residents of the negotiating country.
- An individual or a corporation not a resident of India or the country with which DTAA is signed cannot claim benefits under DTAAAs.
- DTAA can either cover all types of income or can target a specific type of income depending upon the types of businesses/holdings of citizens of one country in another.
- **The following categories are covered below the Double Taxation avoidance Agreements (DTAA):** services remuneration property capital gains savings/fixed deposit accounts Benefits: Sections ninety and ninety one income tax the revenue enhancement Act 1961 provide specific relief to taxpayers to avoid double taxation.
- Section ninety deals with those provisions involving taxpayers who have paid tax several country with that India features a DTAA.
- Section 91 is for those countries with which India does not have a DTAA.
- **Some of the main advantages of Double Taxation avoidance Agreements (DTAA) are mentioned below:** Relief on double taxation is provided by the exemption of incomes earned abroad from tax within the

resident country or by providing credit to the extent taxes that have already been paid abroad.

- In some cases, the DTAA also provides concessional rates of tax.
- DTAA can become an incentive for even legitimate investors to route investments through low-tax regimes to sidestep taxation.
- DTAA also provides tax certainty to the various investors and businesses of both the countries through the clear allocation of taxing rights between the contracting states by Agreement.

## Topic 9. Capital gains tax

*Importance for prelims: Economy*

**What is Capital Gains Tax?**

Any profit or gain generated from the sale of a capital asset is called Capital Gains Tax.

**Types of Capital Gains Tax**

- ▶ Short Term Capital Gains Tax
- ▶ Long Term Capital Gains Tax

**What is Indexation?**

Indexation refers to adjusting income payments by means of price index while maintaining the purchasing power of public even after inflation.



Under the revenue enhancement Act, gains from the sale of capital assets, each movable and immovable, are subject to 'capital gains tax'. It covers property, gold, stocks, mutual funds, and varied different monetary and non-financial assets. per the revenue enhancement Act, if an someone inherits property and doesn't sell it, no capital gains tax is needed. However, if the one that transmitted the property decides to sell it, he or she's going to have to be compelled to pay tax on the earnings.

- **Exclusions:** The following items are not considered capital assets: Any stock, consumables, or raw materials stored for business or profession.
- Personal items held for personal use, such as clothing and furniture  
Agricultural land in India's rural areas
- The central government's 6½% per cent gold bonds (1977) or 7 per cent gold bonds (1980) or national defence gold bonds (1980).
- Special bearer bonds (1991) A gold deposit bond or deposit certificate issued under the Gold Deposit Scheme (1999) or the Gold Monetisation

Scheme (2015).

- **Types:** Short-term capital gains tax Normally if an asset is held for less than 36 months, any gain arising from selling it is treated as a short-term capital gain (STCG).
- The term for immovable assets, such as real estate, buildings, and land, has been decreased from 36 to 24 months.
- Long-term capital gains tax If the asset is held for 36 months or more.
- However, Shares and equity mutual funds with a holding amount of twelve months or a lot of qualify as 'long-term'.
- Current tax laws state LTCG arising on the sale of listed equity shares or equity oriented mutual funds are exempt from tax if one pays Securities Transaction Tax (STT) on the sale transaction.
- **Any of the assets listed below are considered long-term investments if you own them for more than a year:** Zero-Coupon Bonds (not dependent on whether they are quoted or not) Units of the unit investment trust of India (UTI) (not keen about whether they are quoted or not) Units of equity-based mutual funds (not keen about whether they are quoted or Securities that are listed on a recognised Indian stock market. Government securities, bonds, and debentures are examples of such securities.
- Preference shares or stocks held in a corporation that is listed on a recognised stock exchange in India.
- **Tax rates:** Tax type Condition Rate Long-term capital gains tax Except on sale of equity oriented fund units/ equity shares 20% Long-term capital gains tax On sale of equity oriented fund units/ equity shares 10% over and above Rs.1,00,000 Short-Term capital gains tax When securities transaction tax is not applicable
- The STCGT is added to the ITR of the taxpayer and the individual is

taxed as per his income tax slab.

- Short-Term capital gains tax When securities transaction tax is applicable  
15%

## **Topic 10. FAIR AND AVERAGE QUALITY (FAQ) NORMS**

### ***Importance for prelims: Economy***

The Centre on Sunday (May 15) relaxed the Fair and Average Quality (FAQ) norms for wheat in the on-going rabi marketing season in Punjab, Haryana, and Chandigarh.

### **Reason and Changes:**

- The permissible limit of “shriveled and broken grains” is raised to 18% from the existing 6%.
- Due to unseasonal heat in March, when the rabi crop goes through its grain-filling stage, has led to shriveling, creating the grain unfit for procurement as per the standard quality norms.
- About Fair and Average Quality(FAQ) norms Every year, before procurement begins in this region in April, the Storage and Research (S&R) division of the Department of Food & Public Distribution in the Union Ministry of consumer Affairs, Food & Public Distribution, notifies specifications to make sure the standard of the procured wheat.
- This year, wheat containing up to 0.75% foreign matter, 2% damaged grain, 4% slightly damaged grain, 6% shriveled and broken grain, and 12% moisture was cleared for procurement.
- The specifications are enforced at the time of acquisition by qualified personnel from the standard management wing of the central government’s nodal agency for acquisition, the Food Corporation of India (FCI).
- The government has in the past relaxed norms for moisture content and loss of luster following heavy rain during the harvesting season, when ripe crops were flattened, and the grain turned blackish.
- This is for the primary time, however, that such a serious relaxation has been allowed for shriveled grain.

- This relaxation of procurement parameters is to “reduce the hardship of farmers and avoid distress sale of wheat” as there is no loss of quality.
- It is just that the wheat will now be called “Under Relaxed Specifications (URS) wheat” instead of FAQ.

## Topic 11. REPORT FLAGS RISK OF FORTIFIED RICE FOR SOME

*Importance for prelims: Science & Technology*

# Is rice the right choice?

## Number crunching

**Rs 2,700 crore** – The amount Centre will spend each year on preparing and distributing fortified rice

**6.8 kg** – The amount of rice consumed per person per month in India. Hence, the focus on fortifying rice with micronutrients to reduce malnutrition

## Need for fortification

- Malnutrition is prevalent among women and children. Every second woman in India is anaemic and every third child is stunted

## What is fortification of rice?

- A process to add essential micronutrients to boost nutritional quality of food.

## Nutrients added are...

- Iron, folic acid, vitamin B-12, zinc, vitamin A, vitamin B-1, vitamin B-2, vitamin B-3 and vitamin B-6 per kg

## Why choose rice for fortification?

- It is the staple diet for a vast majority of the country.

## Arguments against fortification of diet

- Iron deficiency is not that big a problem hence there is no need for a universal and mandatory solution
- Rice is not the only nutrient the body needs. A diverse and healthy food plate should not have more than 40 per cent calories from cereals, of which only a fraction should be from rice.
- What is needed is a sustainable solution which is gentle on the body, safe, involves the community and stimulates diet diversification.

‘Excess iron in fortified rice may result in adverse health effects in specific population’

- **Sickle cell anemia:** a bunch of disorders that cause red blood cells to

become malformed and break down.

- With RBC illness, an genetic family of disorders, red blood cells twist into a sickle formation.
  - The cells die early, leaving a shortage of healthy red blood cells (sickle cell anaemia) and can block blood flow causing pain (sickle cell crisis).
  - Infections, pain, and fatigue are symptoms of RBC illness.
  - Treatments involve medication, blood transfusions and barely a bone-marrow transplant. Sickle cell disease (SCD) is a genetic abnormality caused by a mutation in each copies of a person's HBB sequence.
  - This RNA encodes a element of haemoglobin, the oxygen-carrying macromolecule in red blood cells.
  - The mutation causes haemoglobin molecules to stick together, making sickle-shaped red blood cells.
  - Hemoglobin is that the protein in red blood cells that carries O.
  - It ordinarily has 2 alpha chains and 2 beta chains.
  - The four main types of sickle cell anemia are caused by different mutations in these genes.
1. Hemoglobin SS disease is the most common type of sickle cell disease. It happens once you inherit copies of the haemoglobin S RNA from each parents. This forms hemoglobin known as Hb SS.
  2. As the most severe kind of ScD, individuals with this manner conjointly expertise the worst symptoms at a higher rate.
  3. Hemoglobin SC disease is the second most common type of sickle cell disease.
  4. It occurs when you inherit the Hb C gene from one parent and the Hb S gene from the other. Individuals with Hb SC have similar symptoms to people with Hb SS.
  5. However, the anemia is less severe.

6. Hemoglobin SB+ (beta) thalassemia affects beta globin gene production. the dimensions of the red blood corpuscle is reduced as a result of less beta protein is created.
7. If inherited with the Hb S gene, you will have hemoglobin S beta-thalassemia. Symptoms are not as severe.
8. haemoglobin SB zero (Beta-zero) thalassaemia}: sickle beta-zero thalassemia is that the fourth form of red blood cell disease.
9. conjointly involves the beta-globin sequence. it's similar symptoms to hemoglobin SS anemia.
  - However, typically the symptoms of beta zero thalassemias are more severe.
  - It is associated with a poorer prognosis.
  - Hemoglobin SD, hemoglobin SE, and hemoglobin SO Thalassemia (thal-uh-SEE-me-uh) is an inherited blood disorder that causes your body to have less hemoglobin than normal.
  - Hemoglobin enables red blood cells to carry oxygen.
  - Thalassemia can cause anemia, leaving you fatigued.
  - If you have delicate thalassaemia, you may not would like treatment.
  - **The main cause of thalassemia:** Thalassemia is an inherited (i.e., passed from parents to children through genes) blood disorder caused when the body doesn't make enough of a protein called hemoglobin, a very important part of red blood cells.
  - **Types of thalassemia:** The specific part of hemoglobin that is affected (usually either "alpha" or "beta"), or the severity of thalassemia, which is noted by words like trait, carrier, intermedia, or major.
  - Hemoglobin, that carries o<sub>2</sub> to all or any cells within the body, is created of 2 completely different components, known as alpha and beta.
  - When thalassaemia is termed "alpha" or "beta," this refers to the a part of

Hb that isn't being created.

- If either the alpha or beta part isn't created, there aren't enough building blocks to create normal amounts of Hb.
- Low alpha is termed alpha thalassaemia.
- Low beta is termed beta-thalassaemia.
- Tuberculosis (TB) could be a probably serious communicable disease that primarily affects the lungs.
- The bacteria that cause tuberculosis are spread from person to person through tiny droplets released into the air via coughs and sneezes. A potentially serious infectious bacterial disease that mainly affects the lungs.
- The microorganism that cause TB are spread when an infected person coughs or sneezes.
- Most people infected with the bacteria that cause tuberculosis don't have symptoms.
- When symptoms do occur, they usually include a cough (sometimes blood-tinged), weight loss, night sweats, and fever.
- Treatment isn't always required for those without symptoms.
- Patients with active symptoms will require a long course of treatment involving multiple antibiotics.

### **What causes tuberculosis?**

- Tuberculosis (TB) is caused by a bacteria known as tubercle bacillus.
- The microorganism sometimes attack the lungs, however TB microorganism will attack any a part of the body like the urinary organ, spine, and brain.
- Not everybody infected with TB microorganism becomes sick.

### **Which food is good for TB patients?**

- Foods Rich in Vitamin A, C, and E Fruits and vegetables like orange,

mango, sweet pumpkin and carrots, guava, amla, tomato, nuts, and seeds are excellent sources of Vitamin A, C, and E.

- These foods must be included in the daily diet regime of a TB patient

### **Can TB medicine reduce iron?**

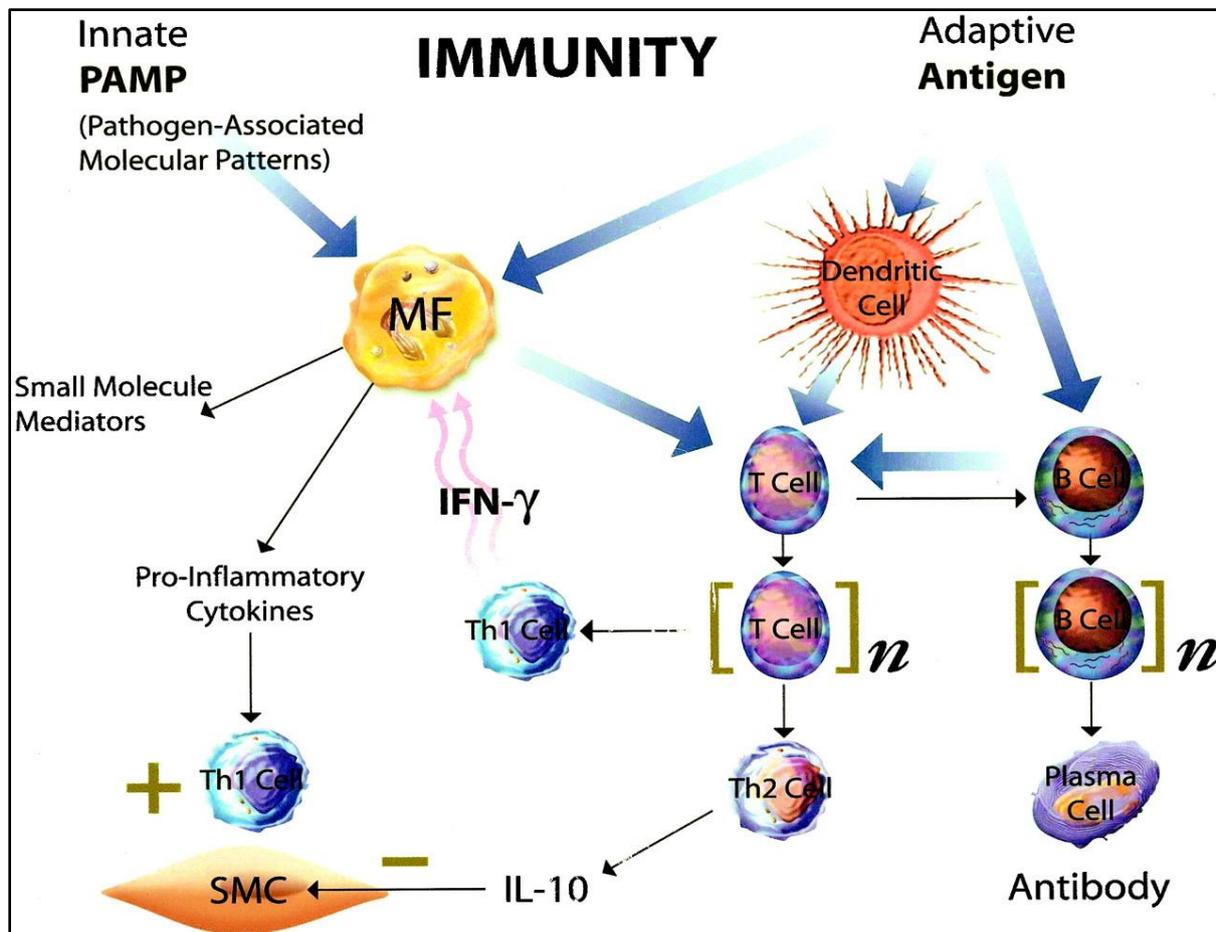
- Iron supplementation is commonly used to treat anaemia in TB patients, but may be unnecessary if inflammation is the cause.
- Body iron sequestered by TB inflammation is mobilized throughout treatment and accustomed correct the anaemia.
- Potential sources of host iron for Mtb.
- TB are contracted via inhalation of Mtb into the lungs.
- Mtb is primarily an intracellular organism, residing in the phagosome of lung macrophages during initial infection.

### **What is the concern about giving supplemental iron to patients with tuberculosis?**

- The low levels of iron in blood were linked with an increased risk of treatment failure for all patients and tuberculosis recurrence in HIV-infected patients.
- The high levels of iron were associated with an increased risk of death in all patients.
- Thalassemia, sickle cell anemia, and malaria are conditions where there is already excess iron in the body, whereas TB patients are unable to absorb iron.
- Consumption of iron-fortified foods among patients with these diseases can reduce the immunity and functionality of organs.
- The Right to Food implies the right to food at appropriate nutritional levels and the quantum of relief to those in distress must meet those levels in order to ensure that this right is actually secured and does not remain a theoretical concept.

## Topic 12. IMMUNITY

Importance for prelims: Science & Technology



‘Vaccine against 3 encephalitis viruses found safe, effective

- encephalitis (en-sef-uh-LIE-tis) is inflammation of the brain, typically because of infection.
- The infection may be bacterial or viral.
- Encephalitis may be the result of an immune system disorder.
- Symptoms of encephalitis may vary and they are as follows Mild cases may cause no symptoms or mild flu-like symptoms.
- Immediate medical attention is needed for symptoms like confusion, hallucinations, seizures, weakness and loss of sensation.
- Severe cases can be life-threatening.
- Infectious Encephalitis Infectious encephalitis is typically caused by a

viral infection.

- Vaccines for measles, mumps, rubella and chickenpox have reduced the rate of encephalitis from these diseases, but other viruses can cause encephalitis.
- The most common causes of viral encephalitis are herpes simplex virus types 1 and 2, varicella zoster virus and enteroviruses, which cause gastrointestinal illness.
- • Encephalitis can also result from certain viruses carried by mosquitoes, ticks and other insects or animals such as: West Nile virus Japanese encephalitis virus La Crosse virus Louis virus Equine viruses Powassan virus Zika Chikungunya A vaccine for eastern equine encephalitis virus (EEEV), western equine encephalitis virus (WEEV), and Venezuelan equine encephalitis virus (VEEV) was found to be safe, well-tolerated and induced a neutralising antibody response in adult volunteers, according to results from a phase 1 clinical trial.
- EEEV, WEEV and VEEV are expand to humans through the bites of infected mosquitoes.
- Horses are susceptible to infection, however horses cannot transmit the viruses on to humans.
- Infections in humans are rare however will result in flu-like symptoms and, in some cases, severe medicine harm or death.
- Virus-like particles (VLPs) Virus-like particles (VLPs) are virus-derived structures made up of one or more different molecules with the ability to self-assemble, mimicking the form and size of a virus particle however lacking the genetic material so that they don't seem to be capable of infecting the host cell.

### **How are virus-like particles made?**

- Virus-like particles (VLPs) are molecules that closely resemble viruses,

but are non-infectious because they contain no viral genetic material.

- They can be naturally occurring or synthesized through the individual expression of microorganism structural proteins, which may then self assemble into the virus-like structure.

### **What are particle based vaccines?**

- • Virus-like particles (VLPs) are built immunogen candidates that are studied for many years.
- • VLPs are made by infective agent supermolecule expression in varied expression systems that promote the self-assembly of proteins into structures resembling virus particles.

## Topic 13. THE MONK SKIN TONE (MST) SCALE TOOL

*Importance for prelims: Science & Technology*



‘Google’s new skin tone scale for refined search results and more’The

- Monk Skin Tone (MST) Scale may be a tool that may be primarily incorporated by Google into pc vision, that may be a form of AI that permits computers to visualize and understand images developed by in partnership with Dr Ellis Monk, associate professor of sociology at Harvard University.
- **Artificial intelligence (AI):** Computer actions that mimic human decision making based on learned experiences and data.
- **Machine learning (ML):** Processes that allow computers to derive conclusions from data.
- ml is a subset of AI that allows the power for computers to be told outside of their programming.

**What is the difference between AI and machine learning and ML?**

- • AI solves tasks that need human intelligence whereas ml is a subset of

artificial intelligence that solves specific tasks by learning from information and creating predictions.

- this implies that every one machine learning is AI, however not all AI is machine learning.
- Artificial Intelligence Machine Learning Artificial Intelligence Machine Learning AI manages more comprehensive issues of automating a system.
- This computerization should be possible by utilizing any field such as image processing, cognitive science, neural systems, machine learning, etc.
- Machine Learning (ML) manages to influence user's machines to gain from the external environment.
- This external environment can be sensors, electronic segments, external storage gadgets, and numerous other devices.
- It depends on the user input or a query requested by the client, the framework checks whether it is available in the knowledge base or not.
- If it is available, it will restore the outcome to the user related to that query, if it isn't stored initially, the machine will take in the user input and will enhance its knowledge base, to give a better value to the end-user
- Future Scopes of AI AI digs out the facts from algorithms for a meaningful execution of various decisions and goals predetermined by a firm.
- AI and ML are likely to replace the current mode of technology that we see these days, for example, traditional programming packages like ERP and CRM are certainly losing their charm.
- Firms like Facebook, Google are investment a hefty quantity in AI to urge the specified outcome at a comparatively lower computational time.
- AI is something that is going to redefine the world of software and IT in

the near future.

- Monk Skin Tone Scale is a 10-point skintone scale that aims to be more representative of those with deeper skintones.
- It is used to ensure all kinds of skin tones are accurately portrayed and represented. It provides a huge contrast from the more popular Fitzpatrick scale which was developed in the 1970s that simply demonstrate how fair skin would look with a tan.
- It is good for possibly expanding AI-powered skintone matching in beauty shopping.
- It also aims to change the game when it comes to skin type assessment in dermatology, as well as improved app development for other skin-related concerns.
- Google surveyed a significant number and said a 10-point scale matched their skin as well as a 40-shade palette did.
- It is additionally being deployed to confirm a spread of individuals square measure happy with filter choices in Google Photos which the company's face-matching software system isn't biased.

## Topic 14. SEOUL DECLARATION

### *Importance for prelims: Environment*

Need to triple investments for restoring degraded land by 2030 according to the “Seoul Declaration”

- **About Seoul Declaration:** The Declaration focuses on identifying key areas that can help combat multiple crises humanity faces
- It was adopted May 5, 2022, at the XV World Forestry Congress, held in Seoul, South Korea.
- **Declaration, signed by 141 participant countries About World Forestry Congress:** Since the first World Forestry Congress was held in Rome in 1926 And about every six years, the Congress has been providing a forum for comprehensive discussion on the key challenges and approach forward for the biological science sector.
- In 1954, Food and Agriculture Organization was entrusted with supporting Congress preparations in shut cooperation with the host country and with pride continues to try and do therefore nowadays
- The Congress functions are consultive, not government, and participants attend the Congress in their personal capability Congress isn't an intergovernmental meeting; it's neither formal constituencies nor country delegations
- **Key highlights of the Seoul Declaration:** vast areas of degraded land across the world need restoration.
- The investment in forest and landscape restoration globally must be tripled by 2030 to implement global commitments and meet internationally agreed goals and targets.
- The declaration stressed the need to scale up the financial and technical investments and strengthen partnerships and cross-sectoral collaboration.
- The responsibility over forests ought to be shared and integrated across

institutions, sectors and stakeholders in order to realize a property future.

- Forest-based solutions must be inclusive of the perspectives of family farmers, smallholders, forest communities, indigenous peoples, women and youth and respectful of their rights.
- The solutions must empower them to participate equitably in decision-making and sustainable forest value chains, the document said.
- Production and consumption have to be compelled to be sustainable and policies ought to foster innovative green finance mechanisms to upscale investment in forest conservation, restoration and sustainable use. Healthy, productive forest should be maintained to reduce the risk of, and improve responsiveness to, future pandemics and supply different essential goods for human physical and psychological state.
- The Declaration added that the full potential of sustainably produced wood can be utilised to transform the building sector, along with providing renewable energy and innovative new materials as wood was “renewable, recyclable and incredibly versatile.”

### **New initiatives taken at the World Forest Congress to boost international cooperation:**

1. Assuring the longer term of Forests with Integrated Risk Management (AFFIRM) Mechanism
  2. The Sustaining an Abundance of Forest Ecosystems (SAFE) initiative
  3. The Platform for REDD+ Capacity Building Other outcomes of the XV World Forest Congress: The Seoul declaration, as well as the Youth Call for Action and the Ministerial Call on maintainable Wood, ought to be transmitted to following COP of UNFCCC and the forthcoming COP to the Convention on Biological Diversity and to different necessary forest-related fora.
- What is Youth Call of Action During World Environment Day on 4th

June 2021 a flagship virtual event Organized in partnership with the UN Department of Global Communications (DGC) and the UNEP under the theme Reimagine, Recreate, Restore.

- Youth from different sectors, media personalities, entrepreneurs, and civil society leaders will participate in this virtual event and call to action for our ecosystems Ministerial call on Sustainable Wood Sustainable production and consumption of wood promotes forest conservation, enhances the worth of forests and mitigates global climate change. maintainable wood offers solutions across multiple price chains, together with construction, furniture, packaging, renewable energy, biomaterials for covering and biochemicals Ministerial turn property Wood was initiated by peninsula, Japan, Austria, Peru, Gabon

## **Topic 15. FAILURE TO CUT GHG EMISSIONS IS PUTTING SPECIES CONSERVATION IN EASTERN HIMALAYAS AT RISK**

### ***Importance for prelims: Environment***

A recent study on Eastern Himalayan protected areas exposed its vulnerabilities to climate change and emphasized the need for conservation. As much as 36% of 46 protected areas in the eastern Himalayas are highly vulnerable to climate change. Climatic changes in the past 50 years show up as a 1.3 degree Celsius rise in temperature, a decrease in summer monsoon rainfall and an increase in the frequency of extreme weather events.

- They are most pronounced in protected areas in Sikkim, Arunachal Pradesh, Assam and West Bengal.
- All protected areas (PAs) in the eastern Himalayas shelter at least one species at high risk of global extinction as per IUCN Red List of Threatened Species.
- wildlife corridors and connectivity corridors that enable functional connectivity between these protected habitats are under threat due to human footprint and climate change
- The eastern Himalayan region, is rapidly losing forested habitats, with even many protected tracts under siege from rapacious mining and illegal logging.
- The 47 PAs (80% area of the total PA network) in this region, often embedded in a mosaic of agricultural fields, pasture lands, human settlements and infrastructure.
- The findings have implications for India, party to the Convention on Biological Diversity, amid the push to conserve 30% of Earth's land and sea areas by 2030 ("30 by 30" plan of the proposed post-2020 Global Biodiversity Framework) Mouling National Park, on the bank of the Siang river in Arunachal Pradesh, home to takins, serrows and monals,

saw a 1 deg C rise in its average annual temperature and an increase of 1.5 deg C in the average temperature in the coldest season.

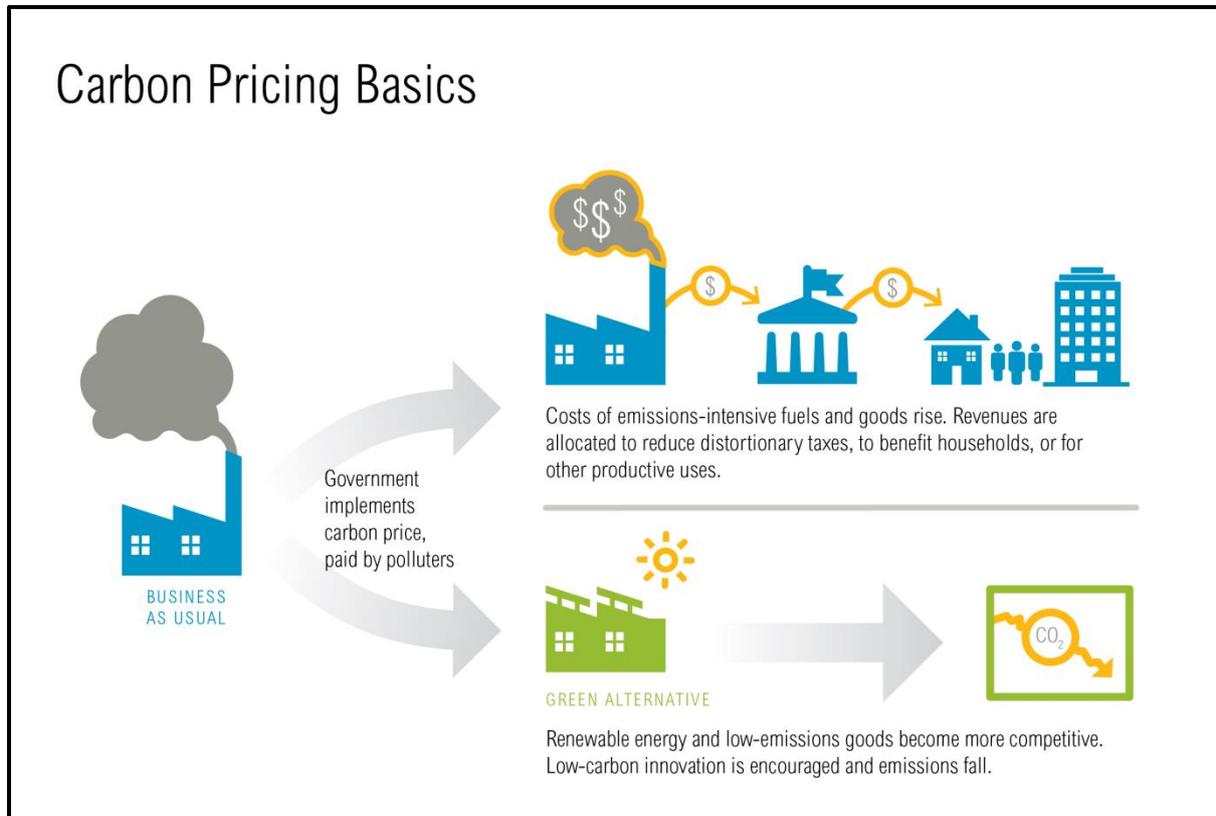
- Frog diversity along the Teesta river's path through the mountains and plains are vulnerable to a wavering climate PAs in Assam (Manas, Kaziranga), Arunachal Pradesh (Pakhui wildlife sanctuary- highway construction affects its tiger habitat) and West Bengal (Jaldapara National park – poaching threatened Rhino population ) High human population density is a major concern for Kaziranga National Park in Assam and Gorumara Wildlife Sanctuary in West Bengal.
- High Population density of forest fringe communities in little forest land or resources were available outside PAs such as in Buxa Tiger Reserve in north Bengal tiger population improved due to conservation activities Terai needs more attention PAs in Terai grassland and forest ecosystems at the foothills and low elevations, such as those in Assam, shelter a high number of threatened species requiring bigger conservation efforts and high species vulnerability.
- as an example, Manas Tiger Reserve is home to thirteen critically vulnerable, twenty eight vulnerable, and forty four vulnerable vertebrate species.
- Others in this league involve Kaziranga, Nameri park, and Amchang wildlife Sanctuary.
- a significant fastness of the one-horned rhino, Kaziranga is home to many species just like the Panthera tigris, Asian elephant, wild water ox, gaur, sambur deer, hog deer, and also the hoolock gibbon.
- The Terai's complexness in Assam conjointly reflects the Bramhaputra river's dynamic nature landscape that is “subject to each elevation effects yet because the plains effects and human interactions and high cultural diversity” that has also given rise to conflicts.

## What needs to be done?

- the Indian mountain chain region – “needs to be comprehensively managed by making certain species protection across the whole region” Protected areas can't be viewed in isolation and landscape property is “Corridors ought to be strengthened and secured through legal mechanisms (as within the case of Asian nation and Europe) and awareness, analysis and capability building to secure such areas are Eco regions are areas with similar ecosystems and also the same kind, quality and amount of environmental resources.
- While the Global Biodiversity Framework is still evolving, to secure larger areas, the OECM strategy (other effective area-based conservation measures) needs to be acknowledged and implemented at the earliest to formally recognise community conserved areas.
- “India is on a powerful wicket given the history of community preserved areas within the the Himalaya, it's currently time to formally recognise and strengthen such shared governance mechanisms

## Topic 16. CARBON PRICING

*Importance for prelims: Environment*



### What is carbon pricing?

- Carbon pricing is that the price ascribed to the external value – sometimes social value – of pollution emitted by an industry. Carbon pricing is completed either through a carbon tax or an emission trading system.
- Carbon tax is that the cost that governments impose on polluters for every metric weight unit of CO<sub>2</sub> emissions generated
- Carbon trading is a market-based approach in which each polluter is allotted a specific quota (permit) or allowance of pollution that it can emit and trade these permits.
- **Background:** In the 1920s, a British economist, Arthur Pigou, highlighted the social benefits of making industries pay for the costs of the pollution they caused.
- This concept was taken up in different ways in later stages and evolved

into the concept of ‘carbon pricing’.

- According to the world Bank, carbon valuation is that the worth ascribed to the external prices of pollution emitted by an business.
- External prices have an effect on the emitting trade the smallest amount, whereas the great harm done to planet earth Instead, public systems pay a socially tragic value – like losing crops due to poisoned air/water and health care costs due to heat/cold waves or extreme weather events from warming.
- Carbon valuation is an economic tool wont to push industries, households and governments to bring down emissions and invest in cleaner options.
- It helps in shifting the burden of harm caused by pollution onto those answerable for the pollution however doesn't dictate however or wherever emissions may be reduced.
- Instead, it puts an economic value to pollution and permits polluters to make a decision whether or not to cut back emissions or continue polluting however pay the value for it.
- Ideally, these taxes ought to be wont to either offset the additional burden of carbon taxation on low-income groups or on remedial projects to offset the consequences of pollution.

### **Why a price on carbon?**

- Carbon is priced because CO<sub>2</sub> being the most emitted GHGs According to the latest IPCC report, the window of action for reducing emissions to limit global warming to 1.5 – 2 deg C above pre industrial level is rapidly closing. And global warming & climate change create conditions beyond human tolerance Currently, Carbon pricing is done in two ways: (1) carbon tax, (2) Cap-andtrading or emission trading system (ETS).

### **What is Carbon tax?**

- Governments impose on polluters for each metric ton of CO<sub>2</sub> emissions

(mt CO<sub>2</sub>e) generated Levied on coal, oil products, and natural gases, according to their carbon content.

- It motivates industries to improve energy efficiencies, move towards low-carbon fuels and renewable energy sources. Carbon taxes are fairly easy to administer as add-ons to already existent fuel taxes Generate revenue for governments that can be utilised for achieving sustainable development goals.
- However, Carbon tax affects people of lower income groups as it increases fuel prices, and carbon taxes on industries trickle down to consumers.
- In addition, carbon taxes may discourage investment and economic process as businesses could shift production into countries without carbon taxes.
- Finally, the executive prices of observance and measuring emissions, and uncertainties in measuring the social value of carbon pollution will build carbon taxation a troublesome task.

### **What is carbon trading?**

- Market-based approach to valuation carbon emissions and to limit the entire quantity of carbon-based pollution which will be made.
- Governments assign a restricted range (set as a cap) of permits that permit a specific quantity of emissions over a period of your time.
- Polluters are then allowed to trade these permits with one another. if a polluter manages to maintains emission levels less than its allotted permit values, it will sell the correct to emit carbon to a different polluter which can be emitting a lot of that its quota

### **What are carbon credits?**

- A carbon credit could be a generic term for a tradeable certificate or allow to emit a one metric tonCO<sub>2</sub> or constant quantity of various GHGs.

- it's the fundamental mercantilism unit for carbon markets.
- The carbon mercantilism market was started in 1997, when the Kyoto Protocol was signed.
- Below this protocol, all taking part countries were to line and cling to a limit on their carbon emissions over a series of commitment periods.
- However, the protocol conjointly allowed countries to trade emissions permits with one another. aside from these permits, carbon removal units (from activities like reforestation), emission reduction units, and licensed emission reductions (from clean development mechanism projects) may be listed the costs in cap-and-trade schemes, that use carbon credits, are market driven (meaning that their costs vary in step with demand and supply), though the govt. controls how many units/credits are assigned to every industry/stakeholder, so how many credits are offered available on the entire.
- Criticisms of the carbon system presently, the Environmental Defense Fund states that the cap-and-trade system is that the most “economically and environmentally” sound approach to limit emissions and mitigate warming.
- This is as a result of the cap sets a firm limit on pollution and mercantilism encourages cutting emissions within the most cost-efficient manner.
- However, carbon mercantilism is insufficient to mitigate global climate change.
- Carbon valuation places a lot of importance on increasing potency than on effectiveness and encourages improvement of existing systems instead of on reworking them to cut back pollution.
- Moreover, it's been acknowledged that current problems with emissions are a basic systemic drawback of society, and not simply a market

problem; thus, they're going to need quite simply a 'price on pollution' to beat.

- “First and foremost, one should keep in mind that carbon valuation, particularly carbon taxation, may be a tool to form cutting carbon emissions a lot of economical – it's not essentially a tool to chop the full quantity of carbon produced” “If we take the instance of pollution from cars, a tax might not incentivise the owner-users to cut back the utilization of fossil fuels.
- After all, in urban areas, owning and exploitation several cars is a lot of of a standing image, similar to owning land within the rural areas.
- There are simply too several incentives – EMI (equated monthly installment) is that the most significant – that fits nicely with this ‘aspiration’.
- For many users, fuel is an ‘essential commodity’ and also the quantum of its use is freelance of worth changes.
- On the opposite hand, creating the emission standards stricter has the potential to cut back the pollution emitted by a running engine per unit of your time.
- However consistent with ‘Jevons Paradox’ or the ‘rebound effect’ (expounded by William Stanley Jevons at the House of Commons 2 and a 0.5 centuries ago), if the increase in automotive numbers will increase at a rate more than the speed at that emissions are reduced, total emission can increase.
- There are not any straightforward solutions here, given the economic science of carbon in India additionally to those problems, not like however the cap-and-trade program drove innovations to cut back sulfur dioxide emissions from power plants, the increase in technological innovations for reducing carbon emissions haven't met with a similar

success.

- Though there's some proof that innovations in low-carbon technologies are being driven by the eu Union's ETS (EU ETS) and China's ETS, there are doubts that this may facilitate in driving global climate change mitigation at the required rate.

### **what's the present rate at that carbon is priced?**

- According to the world Bank's international Carbon valuation Dashboard as of Apr 2021, world carbon valuation initiatives vary from but \$1 to as high as \$137 per mt CO<sub>2</sub>e.
- There are currently 65 carbon pricing initiatives across 45 national jurisdictions. In 2021, these initiatives would cover 11.65 Gmt CO<sub>2</sub>e, which represents 21.5% of the global GHG emissions.
- However, less than 1% of the global emissions (5 out of 65 initiatives) are currently priced at close to or above the least estimated social cost of carbon, which, according to the IMF, is seventy five USD per mt CO<sub>2</sub>e.
- A publication in 2021 within the journal Environmental research Letters, places the social value of carbon at a walloping >3000 USD per mt CO<sub>2</sub>e if climate-economy feedbacks and temperature variabilities are taken into account.
- As of November 2021, the average weighted price of carbon stood at 3.37 USD per mt CO<sub>2</sub>e.

### **How does carbon pricing work in India?**

- Currently, Asian nation doesn't have any specific carbon valuation or cap-and-trade mechanisms; instead, it's an array of schemes that place an implicit worth on carbon.
- The Perform, accomplish and Trade (PAT) scheme aims to cut back emissions from energy intensive industrial sectors by setting specific energy reduction targets. Industries that exceed the targets are awarded

Energy Saving Certificates (ESCerts), every of that is capable one metric tonne of oil.

- Those industries unable to fulfill the targets are needed to buy ESCerts (from units that have exceeded their targets) through a centralised mercantilism mechanisms hosted by the Indian Energy Exchange.
- The Coal Cess could be a tax on coal that was introduced in 2010, that aimed to use the collected revenue to finance clean-energy initiatives and analysis via the National Clean Energy Fund.
- However, the concept didn't win important outcomes as an oversized a part of the collected revenue remained unutilised.
- In 2017, the coal cess was abolished and replaced by the products and Services (GST) Compensation Cess; the return of this tax are accustomed compensate states for revenue losses due to a shift to the new revenue enhancement regime.
- Renewable Purchase Obligations (RPOs) and Renewable Energy Certificates (RECs) are aimed toward encouraging India's growing renewable energy sector.
- All electricity distribution agencies are needed to supply a particular minimum of their electricity needs from renewable energy sources.
- For every state, the RPO is fixed and controlled by the various State Electricity regulative Commission.
- The RECs are market-based instruments that aid in achieving RPOs through trading at power exchanges.
- Internal Carbon rating could be a tool utilized by the personal sector in India to cut back emissions voluntarily, so they'll channel investments into cleaner and a lot of energy-efficient technologies to satisfy corporate sustainability goals.
- presently several major Indian personal corporations like Mahindra and

Mahindra, Tata, Infosys, and Wipro, use ICP to lower their carbon footprints. the most issue with the carbon system presently, particularly for tiny businesses or individual land holders, is that agencies that offer credentials for and appraise carbon credit generation, charge terribly high fees, which cannot be offset by the financial gain generated from mercantilism the carbon credits themselves.

## **Topic 17. EXPORT PROMOTION ORGANIZATIONS**

### ***Importance for prelims: Economy***

A stable and sustained increase in India's export needs next generation reforms in its domestic trade establishments that act as catalysts to the expansion of exports.

Existing mechanism:

- Trade promotion bodies-The following is a list of Export Promotion Organisations in India, it includes Export Promotion Councils, Commodity Boards and Export development authorities.
- These are Non-Profit Organizations that are responsible for developing and promoting the export industry of India.
- Export Promotion Councils Presently, there are fourteen Export Promotion Councils below the executive management of the Department of Commerce.
- These Councils are registered as non-profit organizations under the Companies Act/ Societies Registration Act.
- The Councils perform each consultative and govt functions.
- The role and functions of those Councils are guided by the Foreign national trading policy, 2009-14.
- These Councils are also the registering authorities for exporters under the Foreign Trade Policy 2009-14.
- Commodity Boards There are five statutory Commodity Boards under the Department of Commerce.
- These Boards are accountable for production, development and export of tea, coffee, rubber, spices and tobacco.
- The coffee Board may be a statutory organisation official below Section (4) of the coffee Act, 1942 and functions below the executive management of the Ministry of Commerce and trade, Government of

Republic of India.

- The Rubber Board is a statutory organisation official below Section (4) of the Rubber Act, 1947 and functions below the executive management of the Ministry of Commerce and trade.
- The Tea Board was created as a statutory body on 1st Apr, 1954 as per Section (4) of the Tea Act, 1953.
- As an apex body, it's once the development of the tea trade.
- The Tobacco Board was official as a statutory body on 1st Jan, 1976 below Section (4) of the Tobacco Board Act, 1975.
- it's accountable for the event of the industry.
- The Spices Board was established as a statutory body on 26th Feb, 1987 below Section (3) of the Spices Board Act, 1986.
- The primary functions of the Board involve production development of tiny and huge cardamom, development and promotion of export of spices.
- Federation of India's Exporters Organization Federation of Indian Export Organisations popularly known as 'FIEO' is the apex body of the Government recognised Export Promotion Councils, Commodity Boards and Development Authorities in India.
- Set up in 1965 by the Ministry of Commerce, Govt. of India to focus the efforts of all stakeholders engaged in promotion of trade from the country, FIEO is a partner of Govt.
- of India to boost International Trade from India.
- FIEO provides the crucial interface between the International Trading community of India with the Central and State Governments, Financial Institutions, Ports, Railways, Surface Transport and all engaged in Export Trade Facilitation.
- The Federation directly and indirectly serves the interests of over 200,000 exporters from each business and Services sector within the country.

- The Export Development Authority looks into promotion of various other commodities not under the earlier Boards.
- Agriculture and Processed Food product Export Development Authority- It is about up below an act of Parliament of 1986, APEDA looks after the promotion of exports of agriculture and processed food product. Marine product Export Development Authority-Established in 1972, is an autonomous body below the Ministry of Commerce aimed toward increasing export-oriented production, specifying standards, process and export promoting of all
- kinds of fisheries and its products. Partner Government Agencies (PGAs), facilitates Indian Customs for compliance of product standards.
- There are total 63 PGAs including: Food Safety Standards Authority of India for food and eatables, Plant Quarantine for ensuring Sanitary-Phyto-Sanitary Standards in compliance to domestic as well as international rules/treaties

## **Topic 18. COUNCIL FOR TRADE-RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (TRIPS COUNCIL)**

### ***Importance for prelims: Defence***

It monitors implementation of the Agreement on Trade-Related Aspects of Intellectual Property Rights (the TRIPS Agreement).

- It is open to all World Trade Organization members and observers.
- It provides a forum within which World Trade Organization Members will consult on intellectual property matters, and carries out the particular responsibilities assigned to the Council within the visits Agreement.
- The trips Agreement: sets the minimum standards of protection for copyrights and connected rights, trademarks, geographical indications (GIs), industrial styles, patents, integrated circuit layout styles, and unrevealed data.
- Establishes minimum standards for the social control of property rights (IPRs) through civil actions for infringement, actions at the border, and at least in reference to copyright piracy and trademark counterfeiting, in criminal action.

## Topic 19. REVISED GUARANTEE POLICY AND FRBM

### *Importance for prelims: Economy*

Why in the news?

Finance Ministry has come out with a new Government Guarantee Policy, that aims to incorporate all the changes generally money Rules and money policies.

- **Need:** Such a policy is required as the volume of sovereign guarantees undertaken during a financial year is limited to 0.5 per cent of the GDP as per the Fiscal Responsibility and Budget Management Act, 2003.
- It intends to improve the viability of projects or activities undertaken by Central entities with significant social and economic benefits.
- It also enables Central PSUs to raise resources at lower interest charges or on more favourable terms.
- Its objective is to fulfill the requirement in cases where sovereign guarantee is a precondition for concessional loans from bilateral/multilateral agencies to Central PSUs.
- **Details:** Ministries and departments will have to submit the initial proposal on a dedicated portal and then send a physical copy to the budget division, which will process it.
- Approval or otherwise will be conveyed to ministries/departments through a guarantee portal.
- Once approved, the ministry/department might enter into a guarantee agreement.
- The ministry/department pays an applicable guarantee fee on the day of signing the agreement and thenceforth, on Apr 1 each year.
- **Guarantee fee has been categorised into two based on risk rating:** For category 'A', the fee will be 0.5-0.6 percent depending upon tenor For category 'B', it will be 0.7-0.9 percent.
- Details like loan drawn history, repayments, etc.

- needs to be updated on the portal and a review report sent to the budget division. Fiscal Responsibility and Budget Management Act, 2003.
- The FRBM Act is a law enacted by the govt. of India in 2003 to confirm fiscal discipline.
- It's considered collectively of the most important legal steps taken within the direction of fiscal consolidation in india.
- **He main objectives of the act were:** to introduce transparent fiscal management systems in the country.
- To introduce a more equitable and manageable distribution of the country's debts over the years.
- To aim for fiscal stability for India within the long-term The FRBM act conjointly provided certainly documents to be tabled within the Parliament of India, alongside Budget, annually with regards to the country's economic policy.

**This included the:**

- 1. Medium-term Fiscal Policy Statement,
- 2. Fiscal Policy Strategy Statement,
- 3. Macro-economic Framework Statement, and
- 4. Medium-term Expenditure Framework Statement Revenue Deficit Target – revenue deficit should be completely eliminated by March 31, 2009.
- The minimum annual reduction target was 0.5% of GDP.
- **Fiscal Deficit Target** – fiscal deficit should be reduced to 3% of GDP by March 31, 2009.
- The minimum annual reduction target was 0.3% of GDP.
- **Contingent Liabilities** – The Central Government shall not give incremental guarantees aggregating an amount exceeding 0.5 per cent of GDP in any financial year beginning 2004-05.

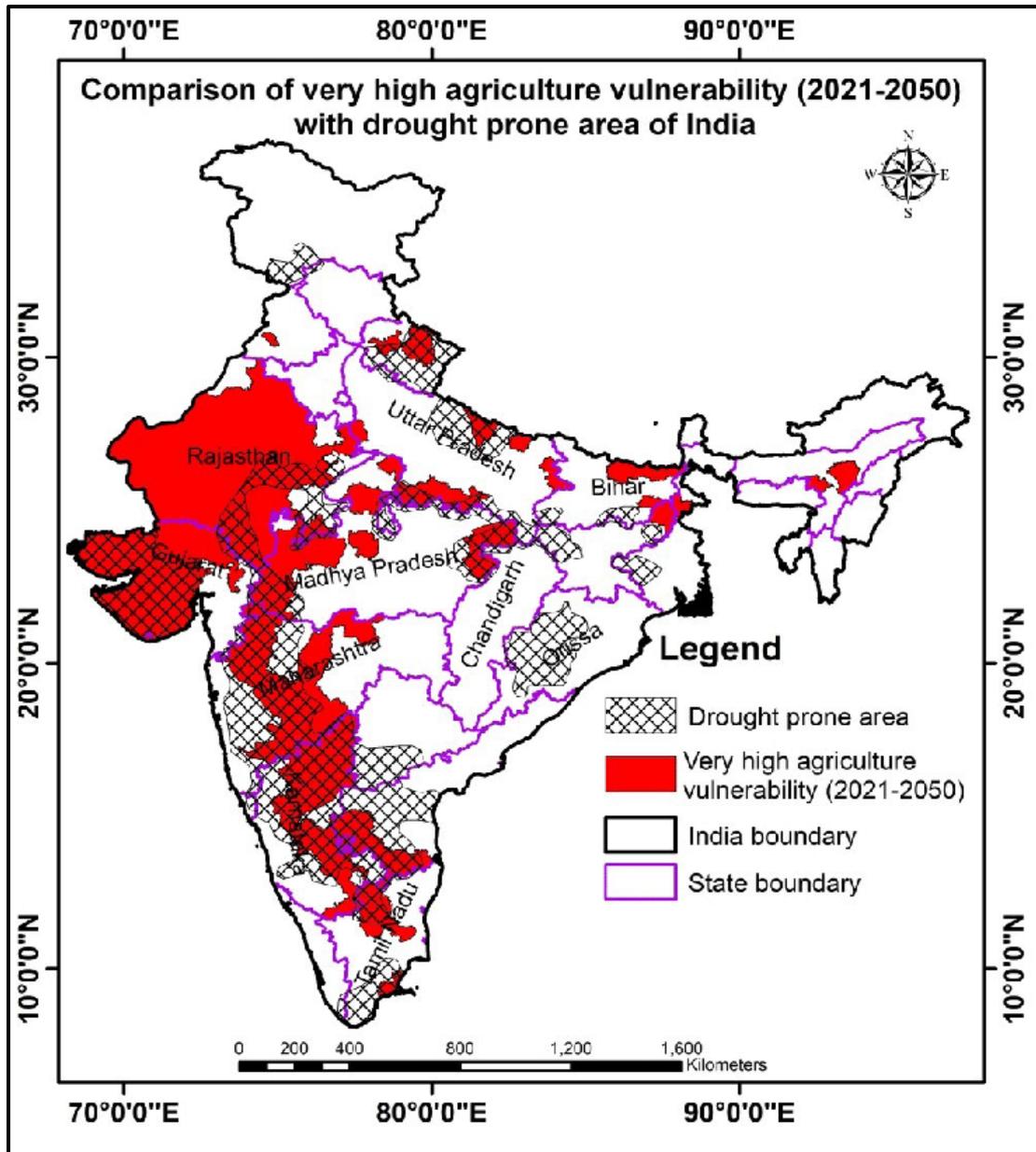
- **Additional Liabilities** – Additional liabilities (including external debt at current exchange rate) should be reduced to 9% of the GDP by 2004-05.
- The minimum annual reduction target in each subsequent year to be 1% of GDP.
- RBI purchase of government bonds – to cease from 1 April 2006.
- This indicates the govt. to not borrow directly from the rbi.
- The rules for implementing the Act were notified in July 2004.
- The rules were amended in 2008, 2015, 2018, and most recently to the setting of a target of 3.1% for March 2023 N.K. Singh Committee In May 2016, the government set up a committee under NK Singh to review the FRBM Act.
- The Committee instructed using debt because the primary target for fiscal policy.
- **The targets set by NK Singh: Debt to GDP ratio:** The review committee advocated for a Debt to GDP ratio of 60% to be targeted with a 40% limit for the centre and 20% limit for the states.
- Revenue Deficit Target – revenue deficit should be reduced to 0.8% of GDP by March 31, 2023.
- The minimum annual reduction target was 0.5% of GDP.
- Fiscal Deficit Target – fiscal deficit should be reduced to 2.5% of GDP by March 31, 2023.
- The minimum annual reduction target was 0.3% of GDP.
- **Escape Clause:** In 2018, the FRBM Act was further amended.
- The clause allows the government to relax the fiscal deficit target for up to 50 basis points or 0.5 per cent.
- Under FRBM, if the escape clause is triggered to permit for a breach of fiscal deficit target, the rbi is then allowed to participate directly within

the primary auction

- Of government bonds, thus formalising deficit financing.
- Under Section 4(2) of the Act, the Centre can exceed the annual fiscal deficit target citing certain grounds: National security, war National calamity Collapse of agriculture Structural reforms Decline in real output growth of 1 / 4 by a minimum of 3 share points below the typical of the previous four quarters.
- Fiscal Consolidation at State level: to make sure that the States too are financially prudent, the 12th Finance Commission's recommendations in 2004 joined debt relief to States with their enactment of comparable laws.
- The States have since enacted their own individual monetary Responsibility Legislation, that sets a similar three-dimensional of Gross State Domestic Product (GSDP) cap on their annual budget deficits.

## Topic 20. INDIA'S VULNERABILITY TO DROUGHT

*Importance for prelims: Geography*



Drought in Numbers, 2022 report conferred by the UN Convention to Combat desertification (UNCCD) has discovered that a lot of elements of India fall into the list of regions that are vulnerable to drought globally.

About Drought in numbers report:

- The report is a collection of data on the effects of droughts on our ecosystem and how they can be mitigated through efficient planning for

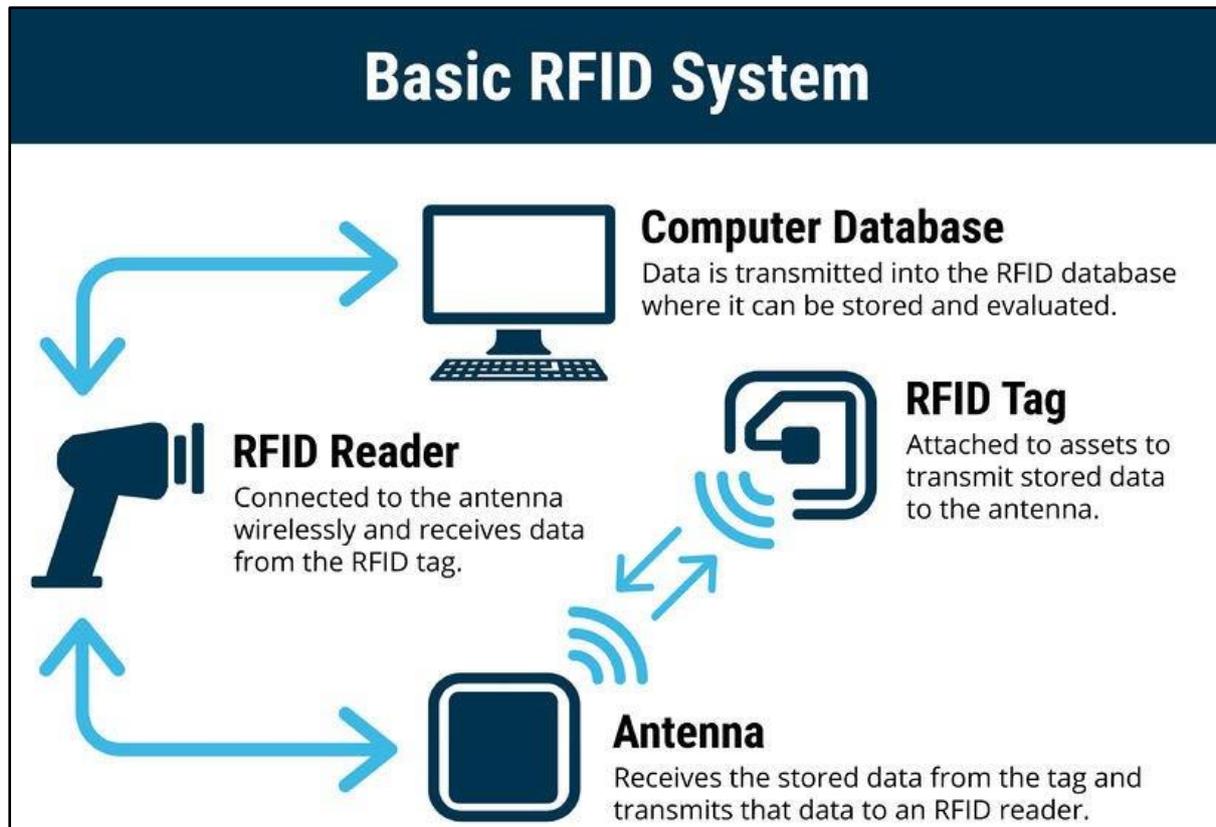
the future Other Key findings of the report India's GDP reduced by 2 to 5% between 1998 and 2017 due to severe droughts Economic losses of approximately \$124 billion occurred globally due to drought.

- Drought conditions can force up to 216 million people to migrate by 2050. (World Bank) Weather, climate and water hazards have accounted for 50% of all disasters and 45% of all reported deaths since 1970 (WMO) More than a billion people around the world were suffering from drought in 2000-19, making it the second-worst disaster when flooding.
- Globally, roughly 55 million individuals are directly suffering from droughts annually as per World Health Organization findings women and girls in rising and developing countries suffer a lot of in terms of education levels, nutrition, health, sanitation, and safety as a result of droughts.
- If global warming reaches 3°C by 2100, drought losses could be five times higher than today's levels.
- The largest increase in drought losses is projected in the Mediterranean and the Atlantic regions of Europe.
- Australia's megadrought in 2019-2020 contributed to 'megafires' leading to one amongst the foremost in depth losses of environs for vulnerable species.
- 84 of all terrestrial ecosystems are vulnerable by ever-changing and intensifying wildfires.
- **Regarding Drought:** Drought is a temporary reduction in water or wet accessibility below the conventional or expected quantity for a selected amount.
- Earth science drought is classed supported downfall deficiency w.r.t long term average – 25% or less is normal, 26-50% is moderate and more than 50% is severe.

- Hydrological drought is best defined as deficiencies in surface and sub-surface water supplies leading to a lack of water for normal and specific needs.
- Such conditions arise even in times of average (or above average) precipitation when increased usage of water diminishes the reserves.
- Agricultural drought is known by four consecutive weeks of earth science drought, weekly downfall is 50 millimetre from 15/5/ to 15/10, vi such consecutive weeks remainder of the year and crop planted is 80th in kharif season.
- In India, around 68 of the country is vulnerable to drought in variable degrees.
- IMD is that the selected agency for providing drought early warning and forecasting.
- About UNCCD COP 15 The UNCCD, together with the UN Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity, is one of three Rio Conventions (CBD).
- The UNCCD was adopted on 17 June 1994, and entered into force on 26 December 1996.
- It is the only legally enforceable international agreement that connects the environment, development, and sustainable land management.
- It is the sole convention that sprang directly from the Rio Conference's Agenda 21.
- The International Year of Deserts and Desertification was designated in 2006 to promote the Convention.
- **UNCCD COP 15 Agenda:** Drought, land restoration, and connected enablers like land rights, gender equality and youth direction are among the highest things on the Conference agenda.

## Topic 21. RADIO FREQUENCY IDENTIFICATION (RFID) TAGS

*Importance for prelims: Science and Technology*



The government has decided to track all pilgrims for the forthcoming Amarnath Yatra using Radio Frequency Identification (RFID) tags.

- The decision was taken amid heightened security threat to the pilgrimage.
- RFID Radio Frequency Identification: It's a wireless tracking system that consists of tags and readers.
- Radio waves are used to communicate information/identity of objects or people to nearby readers – devices that can be hand-held or built into fixed positions like poles or buildings.
- The tags can carry encrypted information, serial numbers and short descriptions.
- There also are high-memory tags just like the ones designed to be used within the aviation business.
- Types of RFID tags There are passive and active RFID tags.

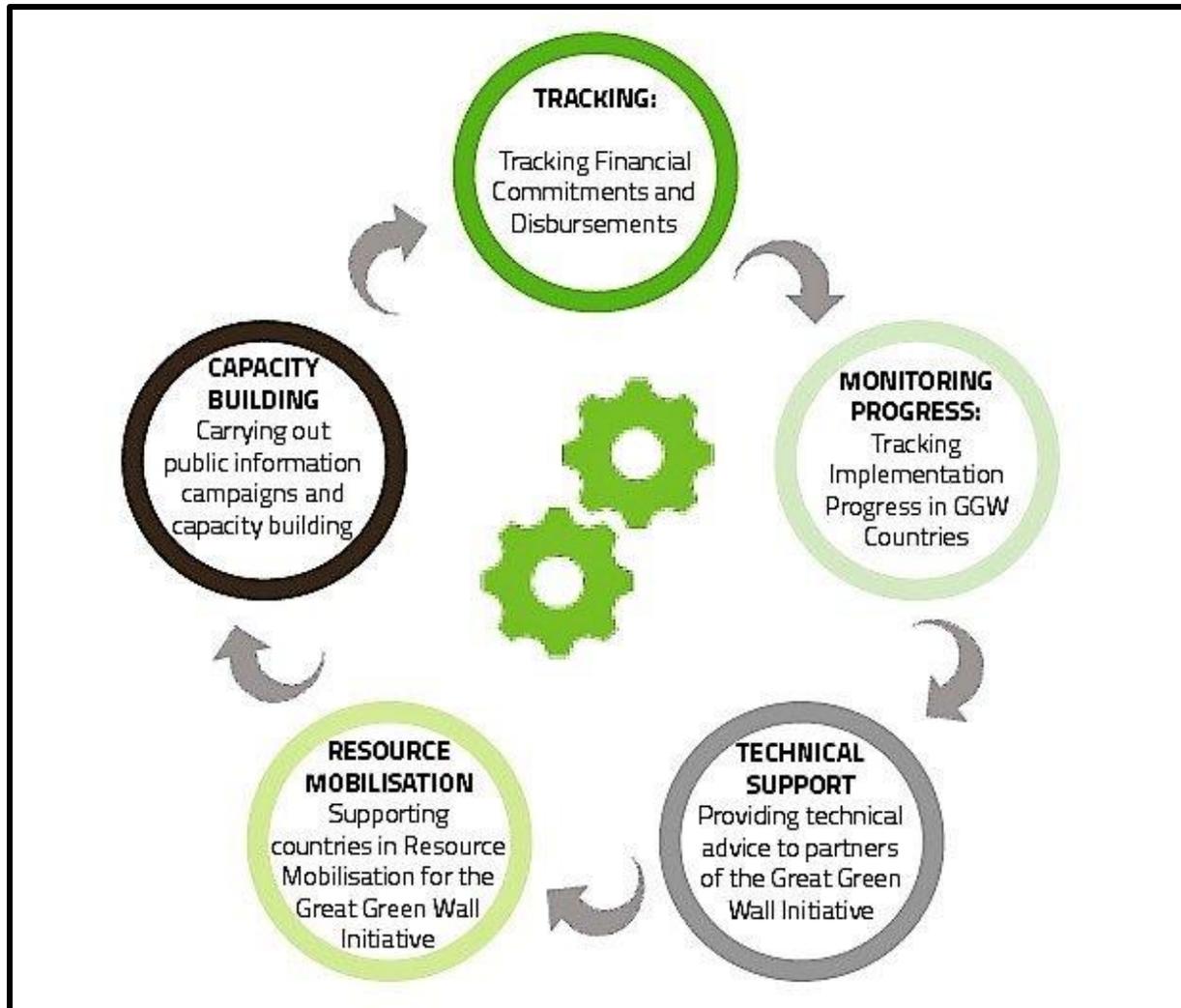
- Active RFIDs Passive RFIDs Active RFIDs use their own power source, mostly batteries.
- Passive RFIDs are activated through the reader using the magnetism energy it transmits.
- Active tags will ping data each few seconds like beacons, or they will get activated once a reader is within the proximity.
- This can be enough power for the tag to transmit data back to the reader. Active tags have a extended browse vary, around 300 ft.
- The message sent back by the tag within the variety of radio waves is translated into knowledge and analyzed by the host computing system.
- Not like Barcodes, RFIDs don't need direct line of sight to spot objects. They have a shorter range.

### **How do RFIDs work?**

- RFID tags use an integrated circuit and an antenna to communicate with a reader using radio waves at several different frequencies – low frequency (LF), high frequency (HF), and ultra-high frequency (UHF).
- They even have a much bigger vary.
- They're used for inventory chase in retail stores, toll payments, as access keys in labs and additionally engineered into credit cards and library books.
- To protect the data from hackers, grades of encryption can be introduced between the tag and the reader to verify credentials.

## Topic 22. GREAT GREEN WALL ACCELERATOR

*Importance for prelims: Environment*



Barely 18 percent of the Great Green Wall's objectives for 2030 have been achieved

- The Great green Wall multi-actor Accelerator, proclaimed by the President of France Emmanuel macron and alternative world leaders at the One Planet Summit on January 11th, 2021, seeks to facilitate the coordination and collaboration of donors and stakeholders concerned within the great green Wall Initiative.
- From an initial 14.3 billion U.S.A. dollars pledged in Jan 2021, to over 19 billion U.S.A. dollars up to now, pledges in funding for the initiative,

until 2025 were created by many multilateral and bilateral organizations at the Summit – a significant boost for the good green Wall.

- The good green Wall Accelerator aims to assist all actors for the good green Wall (GGW) Initiative to higher coordinate, monitor and measure the impact of their actions.
- The Great Green Wall Accelerator will be coordinated through the Pan Africa Agency for the Great Green Wall (PAAGGW), with initial support from the United Nations Convention to Combat Desertification (UNCCD).
- The Great green Wall (GGW) Project to deal with desertification, land degradation and global climate change within the Sahel region of Africa has hit a new low because of funds crunch.
- The Great Green Wall project is conceived by 11 countries (Senegal, Mauritania, Mali, Burkina Faso, Niger, Nigeria, Chad, Sudan, Ethiopia, Eritrea, Djibouti) .
- Located along the southern border of the Sahara and their international partners, is aimed at limiting the desertification of the Sahel zone.
- Led by the African Union, the initiative aims to transform the lives of millions of people by creating a mosaic of green and productive landscapes across North Africa.
- The initial plan of the GGW was to develop a line of trees from east to the west bordering the Saharan Desert.
- Its vision has evolved into that of a mosaic of interventions addressing the challenges facing the people in the Sahel and the Sahara.
- The African initiative is still only 15% complete.
- Once fully completed, the Wall will be the largest living structure on the planet – an 8,000 km natural wonder of the world stretching across the entire width of the continent.

- African countries during the UNCCCD COP14 sought global support in terms of finance to make the Wall a reality in the continent's Sahel region by 2030.
- Sahel is a semiarid region of western and north-central Africa extending from Senegal eastward to Sudan.
- It forms a transformation zone between the arid Sahara Desert (desert) to the north and also the belt of wet savannas to the south.

**Topic 23. COP 15 OF UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION (UNCCD)**

*Importance for prelims: IR*



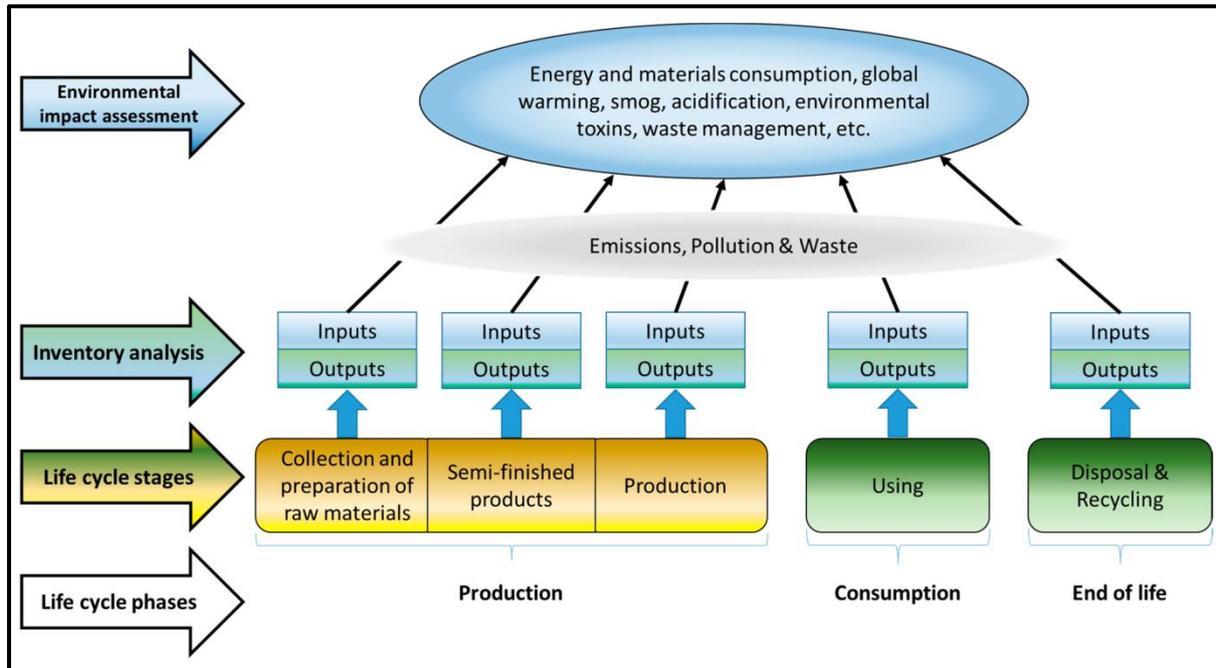
The 15th Conference of Parties (COP15) of the United Nations Convention to Combat Desertification (UNCCD), concluded May 20, 2022 significant outcomes of the COP 15 included three key declarations:

- 1) Abidjan Call issued by the Heads of State and Government to boost long-term environmental sustainability.
- 2) Abidjan Declaration on achieving gender equality for successful land restoration.
- 3) COP15 “Land, Life and Legacy” Declaration, which responds to the findings of the UNCCD’s flagship report, Global Land Outlook
- 4) 2. UNCCD’s COP15 is the first Conference of the Parties of the three Rio Conventions taking place in 2022, ahead of the UN Framework Convention on Climate Change COP27 and the UN Convention on Biological Diversity COP15.

## Topic 24. CARBON FARMING AND ITS SIGNIFICANCE

### INDUSTRIALISATION AND GLOBAL SUPPLY CHAINS

*Importance for prelims: Environment*



As transformed agriculture from “life source and a public common” into a global business opportunity.

- It has now become a surgical economic activity leading to the new epoch of ‘corporate-environmental food monopolies’.
- However it is a proven fact that industrial agriculture gets less food out of the ground, with fewer nutrients, less efficiently, more expensively, and with greater environmental devastation than small and organic farming.
- It has resulted in differentiated access to nutritious food, reducing the biodiversity of our diet, injudicious ecological practices like monocropping and systematic erosion of soil and mounting cost of technology, chemicals — exiling the farmers out of their fair share of the progress and most significantly, deepening the global climate change crisis.
- In such a scenario, Carbon farming promises a bold new agricultural

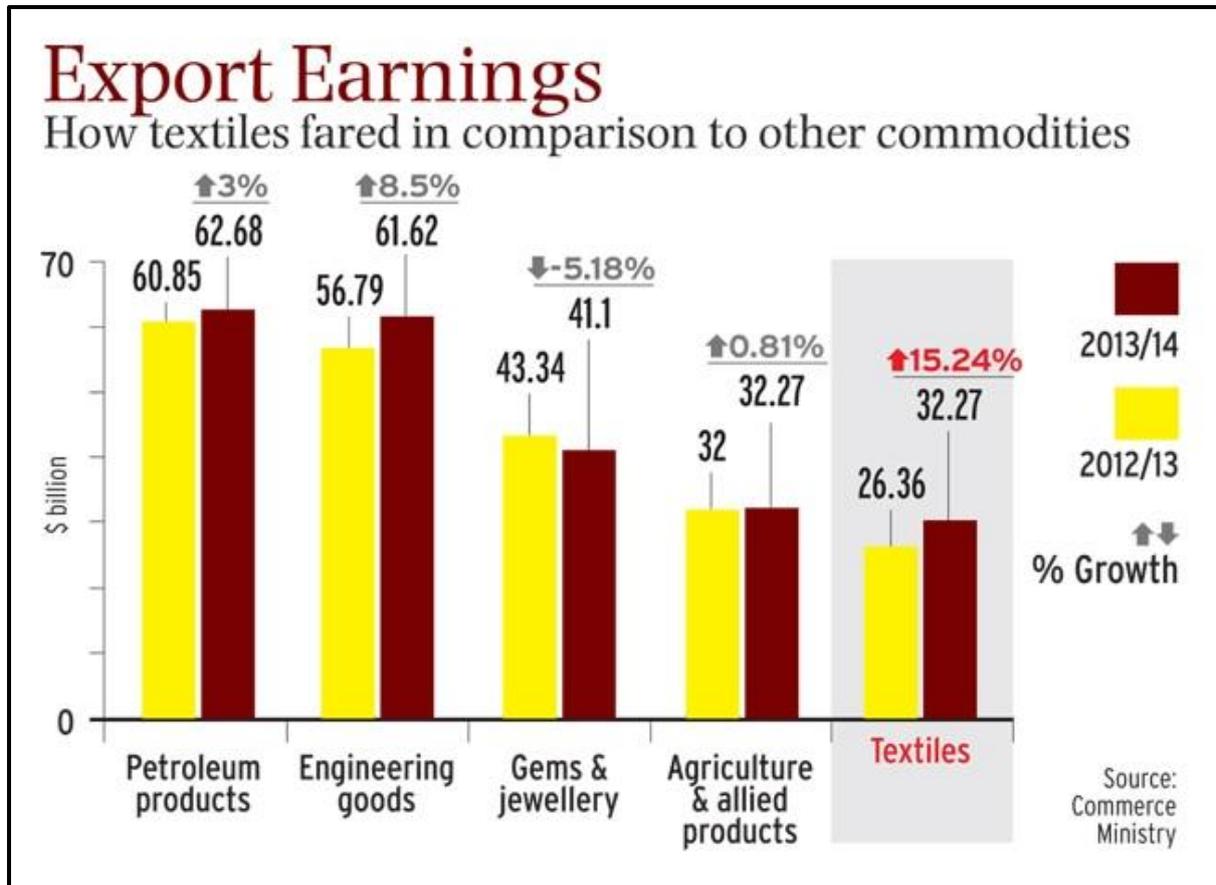
business model.

- Carbon Farming Carbon farming is a name for a variety of agricultural methods aimed at sequestering atmospheric carbon into the soil and in crop roots, wood and leaves with an aim to increase the rate of carbon sequestration into soil and plant material, creating a net loss of carbon from the atmosphere.
- **Advantages of Carbon Farming:** It can incentivise our farmers to shift from improving yields to functioning ecosystems and sequestering carbon that can be sold or traded in carbon markets.
- It not only improves the health of soil but can also result in improved quality, organic and chemical-free food.
- It boosts secondary income from carbon credits for the marginalized farmers. Statistics regarding Carbon Markets and GHG emission
- The total value of the global carbon markets grew by 20 per cent in 2020.
- The value of traded global markets for dioxide (CO<sub>2</sub>) permits grew by 164 per cent to a record €760 billion (\$851 billion) in 2021.
- Studies show that soil removes regarding 25 % of the world's fossil-fuel emissions annually.
- Consistent with the Third Biennial Update Report submitted by the Union government in early 2021 to the UNFCCC, the agriculture sector contributes 14 per cent of the entire GHG emissions.
- Amongst these, greenhouse gas emissions from rice cultivation during 2018-19 accounted for 72,329 million tonnes "CO<sub>2</sub> equivalent", Carbon Farming in India In India, Meghalaya is currently working on a blueprint of a 'carbon farming' Act to form an example of sustainable agriculture model for the complete North-East region.
- An extensive and pioneering carbon farming Act — with a robust transition plan can effectively demonstrate the idea of creating a carbon

sink on working land and farm our way out of climate crisis, improve nutrition, reduce the punishing inequalities within farming communities, alter the land use pattern and provide the much needed solution to fix our broken food systems.

**Topic 25. COTTON EXPORT AND EXPORT PRICE PARITY**

*Importance for prelims: Economy*



Why in the news?

technology, chemicals — exiling the farmers out of their fair share of the progress and most significantly, deepening the global climate change crisis. The value of traded global markets for dioxide (CO<sub>2</sub>) permits grew by 164 per cent to a record €760 billion (\$851 billion) in 2021. Studies show that soil removes regarding 25 % of the world’s fossil-fuel emissions annually. consistent with the Third Biennial Update Report submitted by the Union government in early 2021 to the UNFCCC, the agriculture sector contributes 14 per cent of the entire GHG emissions. blueprint of a ‘carbon farming’ Act to form a example of sustainable agriculture model for the complete North-East region.

- Export Parity value (EPP) is defined because the price a producer receives or will expect to receive for his/her product/produce once

exported, adequate to the Freight on Board worth minus the value of obtaining the merchandise from the farm or manufacturing plant to the border or destination country.

- Wherever a country or an area in a country has a surplus of a product that's exported, the EPP is set by considering the Import Parity worth or EPP represents the price which exporters would realize on export of a product.
- This includes FOB price + Advance License benefit or ALB for duty free import of crude oil pursuant to export of refined products.
- International Benchmark worth of the goods and alternative trade factors.
- The EPP applies solely to the amount that's exported and to not the amount that's sold domestically.
- A comparison of the time series of domestic wholesale prices of the main staple food, import parity prices and import quantities can give an indication whether traders are responsive to price changes.
- Thus, Import Parity Price (IPP) – IPP represents the price that importers would pay in case of actual import of product at the respective Indian ports and includes the elements of Free on Board (FOB) price + Ocean Freight + Insurance + Custom Duties + Port Dues, etc.
- EPP and IPP together define a range of the possible equilibrium prices for an equivalent domestically produced good.
- The Import Parity price (IPP) is that the worth of a product that's imported at the border, which has international transport prices and tariffs.
- The domestic worth is over the IPP, traders have a powerful incentive to import the item.

## **Topic 26. RAJA RAM MOHAN ROY: 250TH BIRTH ANNIVERSARY**

### ***Importance for prelims: Modern History***

One of the most influential social and spiritual reformers of the 19th century, Ram Mohan Roy, born on could 22, 1772 in what was then Bengal Presidency's Radhanagar in Hooghly district.

- Roy worked in the sphere of women's emancipation, modernizing education and seeking changes to religious orthodoxy.
- He was one of the first Indians whose thought and practice were not circumscribed by the constraints of kin, caste and religion.
- A polyglot, Roy knew Bengali and Persian, however conjointly Arabic, Sanskrit, and later, English.
- His exposure to the literature and culture of each of these languages bred in him a skepticism towards religious dogmas and social strictures.
- In explicit, he chafed at practices like Sati, that compelled widows to be immolated on their husband's funeral pyre.
- His education had whetted his craving for philosophy and theology, and he spent considerable time learning the Vedas and also the Upanishads, however conjointly spiritual texts of Islam and Christianity.
- He was significantly intrigued by the Unitarian faction of Christianity and was drawn by the precepts of monotheism that, he believed, lay at the core of all spiritual texts.
- Tagore called him a 'Bharatpathik' by which he meant to say that Rammohan combined in his person the underlying spirit of Indic civilisation, its spirit of pluralism, tolerance and a cosmic respect for all forms of life In 1814, he started the Atmiya Sabha (Society of Friends), to nurture philosophical discussions on the idea of monotheism in Vedanta and to campaign against idolatry, casteism, child marriage and other social ills.

- The Atmiya Sabha would make way for the Brahma Sabha in 1828, found out with Debendranath Tagore, Rabindranath Tagore's father.
- He campaigned for the modernization of education, particularly the introduction of a Western course of study, and commenced many academic establishments within the town.
- In 1817, he collaborated with Scottish philanthropist David Hare to set up the Hindu college (now, Presidency University).
- He followed it up with the Anglo-Hindu School in 1822 and, in 1830, assisted Alexander Duff to set up the General Assembly's Institution, which later became the Scottish Church College.
- It was his relentless advocacy alongside contemporaries such as Ishwar Chandra Vidyasagar that finally led to the abolition of Sati under the governor generalship of William Bentinck in 1829.
- Roy argued for the property rights of women, and petitioned the British for freedom of the press (in 1829 and 1830) Roy was given the title of Raja by the Mughal emperor Akbar II.

## Topic 27. INDIAN ANTARCTIC PROGRAMME (IAP)

### *Importance for prelims: Environment*

India's scientific contribution in Antarctic continent is crucial for advancing information on existing analysis on climate and earth science history within the region, similarly as its linkages with the Indian landmass.

- The Indian Antarctic Programme (IAP) is governed by the National Centre for Antarctic and Ocean Research (NCAOR), an autonomous organisation of the Ministry of Earth Sciences, Government of India, leading major scientific research spanning from biological sciences to glaciological, meteorological, and oceanographic research among other areas.
- In 1983, India signed the Antarctic Treaty and established its first research base, Dakshin Gangotri, 2,500 kilometres far from the South Pole.
- As of today, the research stations Maitri (1988) and Bharati (2012) are fully operational.
- **Antarctic Treaty:** The Antarctic Treaty was signed between 12 countries in Washington on 1 December 1959 for making the Antarctic Continent a demilitarized zone to be preserved for scientific research only.
- The twelve original signatories are Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the Union of Soviet Socialist Republics, the United Kingdom and also the United States.
- It entered into force in 1961 and has since been acceded by many other nations.
- **Members** – Currently it has 54 parties. India became a member of this treaty in 1983.
- **Headquarters** – Buenos Aires, Argentina.
- **Major Provisions:** Promoting the freedom of scientific research.

- Countries will use the continent just for peaceful functions.
- Prohibition of military activities, nuclear tests and also the disposal of radioactive material.
- Neutralising territorial sovereignty, this means a limit was placed on making any new claim or enlargement of an existing claim.
- The Treaty applies to the area south of 60° South Latitude, including all ice shelves, but nothing in the Treaty “shall prejudice or in any way affect the rights,
  - values, or ongoing or planned scientific research.
  - Any area, including any marine area, where activities are being conducted or may in the future be conducted, may be designated as an Antarctic Specially Managed Area to assist in the planning and co-ordination of activities, avoid possible conflicts, improve co-operation between Parties or minimize environmental impacts.
- **Requirements:** Antarctic Specially Protected Area Antarctic Specially Managed Areas areas kept inviolate from human interference representative examples of major terrestrial, including glacial and aquatic, ecosystems and marine ecosystems; areas with important or unusual assemblages of species, including major colonies of breeding native birds or mammals; the type locality or only known habitat of any species; areas of particular interest to on-going or planned scientific research; examples of outstanding geological, glaciological or geomorphological features; areas of outstanding aesthetic and wilderness value; sites or monuments of recognized historic value areas.

## Topic 28. RBI FUND TRANSFER

### *Importance for prelims: Economy*

The reserve bank of India (RBI) on Fri said its board had approved the transfer of ₹30,307 cr as surplus to the Union government for the year 2021-22, whereas deciding to take care of the Contingency Risk Buffer at 5.50%.

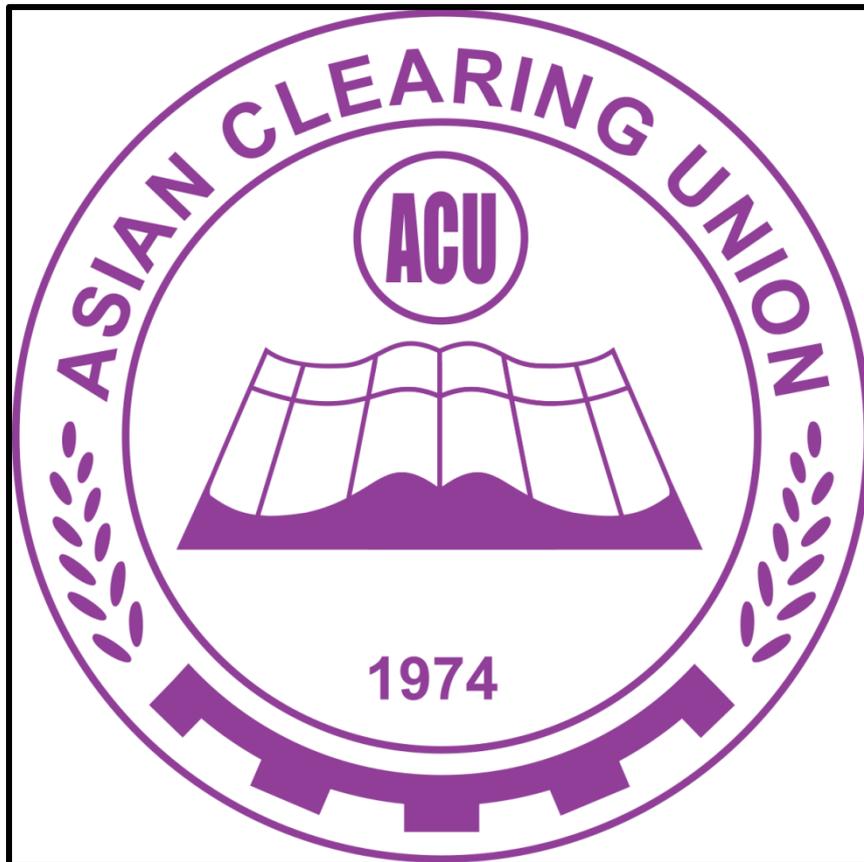
- The RBI, established in 1935, operates according to the Reserve Bank of India Act of 1934
- The act mandates that profits created by the central bank from its operations be sent to the Centre.
- RBI transfers the surplus – that's, the surplus of financial gain over expenditure – to the govt., in accordance with Section 47 (Allocation of Surplus Profits) of the reserve bank of india Act, 1934.
- As the manager of its finances, once a year the rbi conjointly pays a dividend to the govt. to assist with the finances from its surplus or profit.
- A technical Committee of the rbi Board headed by Y H Malegam (2013), which reviewed the adequacy of reserves and surplus distribution policy, suggested the next transfer to the govt..
- **Mechanism of Surplus transfer:** The Surplus Distribution Policy of RBI that was finalized is in line with the recommendations of the Bimal Jalan committee.
- The RBI has decided to set the CBR level at 5.5% of the balance sheet, while transferring the remaining excess reserves to the government.
- If CBR is below the boundary of demand, risk provisioning are going to be created to the extent necessary and solely the residual net profit (if any) transferred to the govt..
- Bimal Jalan committee that was formed by the RBI, in consultation with the Government, to review the extant Economic Capital Framework of the RBI: The panel recommended a clear distinction between the 2

elements of the economic capital of rbi i.e.

- Revaluation reserves comprise of periodic marked-to-market unrealized/notional gains/losses in values of foreign currencies and gold, foreign securities and rupee securities, and a contingency fund.
- Accomplished equity, that may be a kind of a contingency fund for meeting all risks/losses primarily designed up from maintained earnings.
- It is also called the Contingent Risk Buffer (CBR).
- The Jalan committee has given a range of 5.5-6.5% of RBI's balance sheet for Contingent Risk Buffer.
- RBI's Earning: Returns earned on its foreign currency assets, which could be in the form of bonds and treasury bills of other central banks or top-rated securities, and deposits with other central banks.
- Interest on its holdings of local rupee-denominated government bonds or securities, and while lending to banks for very short tenures, such as overnight.
- Management commission on handling the borrowings of state governments and the central government.
- **RBI's Expenditure:** Printing of currency notes and on staff, The commission it gives to banks for undertaking transactions on behalf of the government across the country, and to primary dealers, including banks, for underwriting some of these borrowings.

## Topic 29. ASIAN CLEARING UNION

*Importance for prelims: Economy*



In view of difficulties being faced by exporters in obtaining payments from crisis-hit Sri Lanka, the rbi on thursday allowed settlement of trade transactions in Indian rupee outside the Asian Clearing Union (ACU) mechanism.

- **Details:** In March, the government had guaranteed a term loan of \$1 billion extended by State Bank of India to Sri Lanka for financing purchase of essential goods by the island nation from India.
- Under the new arrangement, financing of export of eligible goods and services from India would be allowed subject to conditions and whose purchase may be agreed to be financed by SBI under the agreement.
- **Asian Clearing Union (ACU) mechanism:** The Asian Clearing Union (ACU) was established with its head-quarters at Tehran, Iran, on December 9, 1974 at the initiative of the United Nations Economic and

Social Commission for Asia and Pacific (ESCAP), for promoting regional cooperation.

- The main objective of the clearing union is to facilitate payments among member countries for eligible transactions on a multilateral basis, thereby economizing on the use of foreign exchange reserves and transfer prices, in addition as promoting trade among the taking part countries.
- **Thus, it aims:** To facilitate transactional settlement, on a multilateral basis, for the international transactions involved To ensure the effective the use of currencies used by the participants during the transactions, To ensure the cooperation among the participants on a monetary basis To facilitate currency exchange methods among the participants.

#### **What is the unit of settlement of ACU transactions?**

- Members-The Central Banks and therefore the monetary Authorities of Bangladesh, Bhutan, India, Iran, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka are presently the members of the ACU.
- The Asian Monetary Units (AMUs) is the common unit of account of ACU and is denominated as ‘ACU Dollar’, ‘ACU Euro’ and ‘ACU Yen’, which is equivalent in value to one United States dollar, one euro and one Japanese Yen severally.
- All instruments of payments under ACU have to be denominated in AMUs.
- Settlement of such instruments may be made by AD Category-I banks through the ACU Dollar Accounts, ACU Euro Accounts and ACU Yen Accounts, which should be distinct from the other U.S. dollar, euro and Japanese Yen Accounts severally maintained for non ACU transactions.

#### **What are the transactions which are eligible to be settled through the ACU?**

- for export / import transactions between ACU member countries on

deferred payment terms.

- Not declared ineligible as mentioned below.

**What are the payments that are not eligible to be settled through the ACU?**

- Payments between Nepal and India and Bhutan and India, exception being created within the case of products imported from India by an businessperson resident in nepal who has been permissible by the Nepal Rastra Bank to create payments in exchange.
- Such payments may be settled outside ACU mechanism; and Payments that are not on account of export / import transactions between ACU members countries except to the extent mutually agreed upon between the reserve bank and also the alternative participants; and all eligible current account transactions as well as trade transactions with Iran ought to be settled in any allowable currency outside the ACU mechanism till additional notice.

## Topic 30. PROJECT WARDEC – INDIA’S UPCOMING AI-POWERED WARGAME CENTRE

### *Importance for prelims: Science & Technology*

Development of simulation-based training centre in India that will use artificial intelligence to design virtual reality wargames – ‘WARDEC’.

- WARDEC is a first-of-its-kind simulation-based training centre in India that will use artificial intelligence to design virtual reality wargames in the project.
- Artificial Intelligence combined with geospatial analysis can aid in the extraction of useful information from linked devices like radars and autonomous identification systems.
- **Virtual reality** – A computer-generated simulation of a 3D image that enables the person to interact with a digital environment.
- VR can also be used more passively, to help treat Post-traumatic stress disorder (PTSD), or provide ‘boot camp’ experience to new recruits, helping them adapt quickly, and with less anxiety, to military life.
- Medics can view field surgery and front-line triage, helping them understand and empathise with injured patients.
- The Army Training Command on May 13 signed a memorandum of understanding (MoU) with Gandhinagar-based Rashtriya Raksha University (RRU) to develop a ‘Wargame Research and Development Centre’ in New Delhi.
- The RRU, an institute underneath the Ministry of Home Affairs (MHA), specialises in national security and policing.
- Located in Gandhinagar’s Lavad village, it is an “institute of national importance” – a status granted to it by an Act of Parliament.
- The Wargame analysis and Development Centre are going to be used by the military to coach its troopers and check their strategies through

“metaverse-enabled gameplay”.

- The wargame models will be designed to prepare for wars as well as counter-terror and counter-insurgency operations.
- Metaverse is a blockchain-based virtual reality platform.
- It's a 3D open world and digital assets are at its center.
- Digital assets are the core of the Metaverse ecosystem.
- The metaverse platform will allow developers to build anything from VR to AR.
- **Gaming metaverse:** It refers to shared, persistent digital space for meetings, games and socializing.
- People there are represented as avatars, usually cartoonlike 3D figures, and roam virtual spaces.
- The enemy will ambush you from 361 directions, wherever 360 sides are around the soldier, and one is above just in case there's an airdrop.
- So, wargame simulation helps the military think about all doable situations.
- Slope of terrain, weather, time, atmospheric pressure, enemy police investigation reach, reach of artillery, the position of troops, soldier's health and enemy's reaction capabilities are all taken into consideration by the employment of AI.

## Topic 31. RESEARCHERS SHARE DRAFT GENOME SEQUENCES OF MONKEYPOX VIRUS

### *Importance for prelims: Science & Technology*

‘The draft genome indicates that the virus circulating outside Africa belongs to the West African clade’

- Monkeypox is a rare zoonotic disease that is caused by the monkeypox virus, belonging to the Orthopoxvirus genus, which also includes the variola virus (causes smallpox).
- Although the natural reservoir of monkeypox remains unknown, rodents and non-human primates might harbor the virus and infect folks.
- It was firstly identified in 1958 when two outbreaks of a pox-like disease occurred in monkeys kept for research purposes and in 1970 in humans in the Democratic Republic of the Congo.
- Monkeypox is now endemic in some Central and West African countries, being rarely reported outside Africa.
- The virus is transmitted from one person to another by close contact with lesions, body fluids, respiratory droplets and contaminated materials  
Monkeypox virus (MPV) also known as the Moneypox virus, could be a double-stranded DNA, animal disease virus and a species of the genus Orthopoxvirus within the family Poxviridae.
- it's one among the human orthopoxviruses that has smallpox (VARV), pox (CPX), and vaccinia (VACV) viruses.
- **Draft genome assembly:** The genome assembly is just a preliminary result, and more work would need to be done to generate a more complete and accurate version of the genome.
- **The researchers from Belgium** — the Institute of Tropical Medicine, Antwerp, and the University of Antwerp, Antwerp were able to reconstruct 98.9% of the genome.

- Phylogenetic analysis is that the study of the organic process development of a species or a bunch of organisms or a specific characteristic of an organism.
- The researchers have found that the virus now spreading outside Africa belongs to the West African clade.
- The phylogenetic analysis of the draft genome indicates that the 2022 virus belongs to the West African clade and is most closely related to viruses associated with the exportation of monkeypox virus from Federal Republic of Nigeria to many countries in 2018 and 2019, particularly the uk, Israel and Singapore.
- Transmissibility is decided by the infectivity of the microorganism, the contagiousness of the infected individual, the status of the exposed individual, the contact patterns between the infected individual and also the exposed individual, and also the environmental stress exerted on the pathogen throughout transmission.
- Monkeypox has been detected in people who have not come in contact with those with monkeypox infection, which suggests that the virus might be spreading silently.
- As per the WHO, on May 20, the geographically dispersed nature of the cases across Europe and beyond suggests that transmission may have been ongoing for some time.
- If monkeypox can indeed spread asymptotically then it would make it harder to track the virus.