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The PESA Act

- **Aam Aadmi Party (AAP)** leader **Arvind Kejriwal** on 7 August 2022 declared a **six-point “guarantee”** for **tribals** in Gujarat’s **Chhota Udepur district**, including the “strict implementation” of The **Panchayats (Extension to the Scheduled Areas) Act (PESA Act)**.
- The PESA Act was enacted in 1996 “**to provide for the extension of the provisions of Part IX of the Constitution** relating to the Panchayats to the Scheduled Areas”. (Other than Panchayats, Part IX, comprising **Articles 243-243ZT** of the Constitution, contains provisions relating to Municipalities and Cooperative Societies.)
- Under the PESA Act, **Scheduled Areas are those referred to in Article 244(1)**, which says that the **provisions of the Fifth Schedule** shall apply to the **Scheduled Areas and Scheduled Tribes** in states other than **Assam, Meghalaya, Tripura, and Mizoram**. The **Fifth Schedule provides for a range of special provisions** for these areas.

How is the PESA Act, 1996 supposed to work?

- The **PESA Act** was enacted **to ensure self-governance** through Gram Sabhas (village assemblies) for people living in the Scheduled Areas. It recognises the **right of tribal communities**, who are **residents of the Scheduled Areas**, to govern themselves through their own systems of self-government, and also acknowledges their traditional rights over natural resources.
- In pursuance of this objective, **the Act empowers Gram Sabhas** to play a key role in approving development plans and controlling all social sectors. This includes the processes and personnel who implement policies, **exercising control over minor (non-timber) forest resources**, minor water bodies and minor minerals, managing local markets, preventing land alienation and regulating intoxicants among other things.
- State governments are **expected to amend their respective Panchayati Raj Acts** without making any law that would be inconsistent with the mandate of PESA.

- **Ten states** — Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, and Telangana — have notified **Fifth Schedule areas** that cover (partially or fully) several districts in each of these states.
- **After the PESA Act was enacted**, the central Ministry of Panchayati Raj circulated model PESA Rules. So far, **six states have notified these Rules**, including Gujarat.

What is the issue in Gujarat?

- **Gujarat notified the State PESA Rules in January 2017**, and made them applicable in 4,503 gram sabhas under 2,584 village panchayats in 50 tribal talukas in eight districts of the state.
- At an event held in the **tribal district of Chhota Udepur in December 2020**, then Chief Minister Vijay Rupani hailed the Act as the “**golden period of tribal development**”, promising a separate security force for the Gram Sabhas that would have “**complete power to decide their issues**”.
- However, while the provisions of the law deem the Gram Sabhas as “**most competent**” to deal with matters related to their territories for safeguarding their customs, traditions as well as the **natural resources in the tribal areas**, the Act has not been enforced in letter and spirit, legal experts say.
- Advocate Bhushan Oza, who has been representing tribal groups in their petitions pending before authorities and courts with respect to the tribal rights, says that the implementation of the Act is in contrast to what it promises.
- Oza had told The Indian Express in 2020 that “**Despite section 4(a) and 4(d)** stating explicitly that the government cannot make **any law at the state level** or the **Central level** in matters concerning the tribal areas...tribals have never been taken into confidence before their lands are acquired or projects planned in their places of habitat. **The PESA Act is rooted in the cultural and traditional practices** of the tribal community, and vests ultimate power to the Gram Sabha to make administrative decisions. But that is not the ground reality.”
- Oza also said that although the PESA Act lays down that the state must conduct elections in such a way that the **tribal representation is to be**

dominant in the Gram Sabha Committees, there has been no attempt to proportionally increase the representation.

- **Robust implementation of PESA** in areas notified under the **Fifth Schedule** in Gujarat has been a major contention of the Bharatiya Tribal Party (BTP) led by MLAs Chhotu Vasava and Mahesh Vasava. BTP chief Chhotu Vasava has said the implementation of PESA was an “**absolute condition**” for his party’s alliance with the AAP for the Assembly elections scheduled for later this year.

Corporal punishment against children and the law

- **Three private school teachers** in Pune have been booked under the **Juvenile Justice Act** over allegedly thrashing **three Class 10 students**, and threatening to grade them poorly in internal assessments. A look at the legal provisions that bar corporal punishment, and who has the responsibility to protect children against abuse.

What is corporal punishment?

- By definition, **corporal punishment** means punishment that is **physical in nature**. While there is **no statutory definition of ‘corporal punishment’** targeting children in the Indian law, the **Right of Children to Free and Compulsory Education (RTE) Act 2009** prohibits ‘physical punishment’ and ‘mental harassment’ under Section 17(1) and makes it a punishable offence under Section 17(2).
- According to the **Guidelines for Eliminating Corporal Punishment** in Schools issued by the **National Commission for Protection of Child Rights (NCPCR)**, **physical punishment is understood** as any action that causes pain, hurt/injury and discomfort to a child, however light.

Examples include **hitting, kicking, scratching**, pinching, biting, pulling the hair, boxing ears, smacking, slapping, spanking, hitting with any implement (cane, stick, shoe, chalk, dusters, belt, whip), giving electric shock and so on. It includes making children assume an **uncomfortable position** (standing on bench, standing against the wall in a chair-like position, standing with school bag on head, holding ears through legs, kneeling, forced ingestion of anything, detention in the classroom, library, toilet or any closed space in the school.

- **Mental harassment**, meanwhile, is understood as **any non-physical treatment** that is detrimental to the academic and psychological well-being of a child including **sarcasm, calling names** and **scolding using humiliating adjectives, intimidation**, using derogatory remarks for the child, ridiculing or belittling a child, shaming the child and more.

What are provisions under the law against such punishment?

- **Section 17 of the Right to Education Act, 2009**, imposes an absolute bar on corporal punishment. It prohibits **physical punishment and mental harassment** to children and prescribes disciplinary action to be taken against the guilty person in accordance with the service rules applicable to such person. **Section 75 of the Juvenile Justice Act** prescribes punishment for cruelty to children.
- Whenever a child is assaulted, abused, exposed or neglected in a manner to cause physical or mental suffering by any person employed by or managing an organisation, which is entrusted with the **care and protection of the child**, the punishment would be rigorous imprisonment upto five years and **fine up to Rs 5 lakh**.
- If the child is **physically incapacitated or develops a mental illness** or is rendered mentally unfit to perform regular tasks or has risk to life or limb, then imprisonment may **extend upto ten years**.
- **Section 23 of the JJ Act, 2000** states: "Whoever, having the actual charge of, or control over, a **juvenile or the child**, assaults, abandons, exposes or wilfully neglects the juvenile or causes or procures him to be assaulted, abandoned, exposed or neglected in a manner likely to cause such juvenile or the child unnecessary mental or physical suffering shall be punishable with imprisonment for a term which may extend to six months, or fine, or with both."

- While **Section 23** is likely to be applied most often to personnel in childcare institutions regulated by the **JJ Act**, it arguably applies to cruelty by anyone in a position of authority over a child, which would include parents, guardians, teachers and employers.
- Meanwhile, **the RTE Act does not preclude the application of other legislation** that relates to the violations of the rights of the child, for example, booking the offenses under the IPC and the **SC and ST Prevention of Atrocities Act of 1989**.
- In theory, **corporal punishment is covered by all the provisions under Indian law** that punish perpetrators of physical harm. While these provisions make no distinction between **adults and children**, in practice, corporal punishment in schools and other institutions tends not to be prosecuted because it is still accepted socially at several places.
- Several provisions of the **Indian Penal Code (IPC)** relating to varying degrees of physical harm and intimidation can be used to prosecute perpetrators of corporal punishment against children in an institutional setting, depending on the situation and extent of the crime/act, including **Section 305 pertaining to abetment of suicide committed by a child**, **Section 323** pertaining to voluntarily causing hurt or **Section 325** which is about voluntarily causing grievous hurt, and so on.

What do NCPCR guidelines say about eliminating corporal punishment?

- The **NCPCR guidelines** for eliminating corporal punishment against children require every school to develop a **mechanism and frame clear cut protocols** to address grievances of students.
- **Drop boxes** are to be placed where the aggrieved person may drop his complaint and anonymity is to be maintained to protect privacy.
- Every school has to constitute a '**Corporal Punishment Monitoring Cell**' consisting of two teachers, two parents, one doctor, one lawyer (nominated by DLSA), counsellor, an independent child rights activist of that area and two senior students from that school. This CPMC shall look into complaints of **corporal punishments**.

Who is entrusted with the responsibility to ensure children are protected?

- While a parent or caregiver can take the **protection of the IPC and the JJ Act** to file a police complaint in cases of corporal punishment, there are relevant authorities earmarked to ensure the protection of children in schools.
- **Under Section 31 of the RTE Act**, the **National Commission for Protection of Child Rights (NCPCR)** and the **State Commissions for Protection of Child Rights (SCPCRs)** have been entrusted with the task of monitoring children's right to education. The state governments under their RTE rules have also notified **block/district level grievance redressal** agencies under the RTE Act.
- In 2018, Maharashtra state education department issued a circular asking schools to adopt the **NCPCR guidelines** and conduct workshops for principals, teachers, support staff of all schools affiliated to any board on a priority basis. It asked schools to take an undertaking from teachers that they would not resort to any physical or mental harassment or discrimination against students.
- In his written reply to a question in the Lok Sabha on corporal punishment, then union MHRD minister Prakash Javadekar had said on 18 July 2016 that "the **Affiliation Byelaws of the Central Board of Secondary Education (CBSE)** empower the **School Managing Committee** to place an employee under suspension if charged with cruelty with any student or employee of the school. CBSE has also issued guidelines to schools for ensuring an atmosphere free from fear in each affiliated school".

What it will take to fulfill India's Solar Power Dream?

- **Solar photovoltaic (PV) has** driven India's push towards the **adoption of cleaner energy generation technologies**. From **less than 10 MW in 2010**, India has added significant PV capacity over the past decade, achieving over **50 GW by 2022**.
- **By 2030**, India is **targeting about 500 GW of renewable energy deployment**, out of which **~280 GW is expected from solar PV**. This necessitates the deployment of nearly **30 GW of solar capacity every year** until 2030.
- However, there are challenges that need to be overcome for the **sustainability of the PV economy**. Indian solar deployment or installation companies depend heavily on imports, as India currently does not have enough **module and cell manufacturing capacity**.

Key components

- A typical **solar PV value chain** consists of **first fabricating polysilicon ingots** which need to be transformed into **thin Si wafers** that are needed to manufacture the **PV mini-modules**. The **mini-modules** are then assembled into market-ready and field-deployable modules.
- **India's current solar module manufacturing capacity** is limited to **~15 GW per year**. The demand-supply gap widens as we move up the value chain — for example, **India only produces ~3.5 GW of cells currently**. India has no manufacturing capacity for **solar wafers** and **polysilicon ingots**, and currently imports **100% of silicon wafers** and around 80% of cells even at the current deployment levels.
- Also, out of the 15 GW of module manufacturing capacity, **only 3-4 GW of modules** are technologically competitive and worthy of deployment in **grid-based projects**. India remains dependent on import of solar modules for field deployment.

Current govt policy

- The government has **identified this gap**, and is rolling out various policy initiatives to push and motivate the industry to work towards **self-reliance in solar manufacturing**, both for **cells and modules**. Key initiatives include a **40% duty on the import of modules** and **25% duty on the import of cells**, and a **PLI scheme** to support manufacturing capex.
- Also, it is mandatory to procure modules only from an **approved list of manufacturers (ALMM)** for projects that are connected to state/ central government grids; so far, only **India-based manufacturers** have been approved. While this will certainly help to motivate industry, the major challenges are related to size and technology.

Size and technology

- Most of the Indian industry is **currently tuned to handling M2 wafer size**, which is roughly 156 x 156 mm², while the global industry is already moving towards M10 and M12 sizes, which are 182 x 182 mm² and 210 x 210 mm² respectively. The bigger size has an advantage in terms of **silicon cost per wafer**, as this effectively means lower loss of silicon during ingot to wafer processing.
- In terms of cell technology, most of the manufacturing still uses **Al-BSF technology**, which can typically give efficiencies of **~18-19% at the cell level** and **~16-17% at the module level**. By contrast, cell manufacturing worldwide has moved to PERC (22-23%), HJT (~24%), TOPCON (23-24%) and other newer technologies, yielding module efficiency of >21%.
- **Producing more solar power** for the same module size means more solar power from the same land area. Land, the most expensive part of solar projects, is scarce in India — and Indian industry has no choice but to move towards newer and superior technologies as part of expansion plans.

Raw materials supply

- There is a **huge gap on the raw material supply chain** side as well. **Silicon wafer**, the most expensive raw material, is not manufactured in India. India will have to work on technology tie-ups to make the **right grade of silicon for solar cell** manufacturing — and since **>90% of the**

world's solar wafer manufacturing currently happens in China, it is not clear how and where India will get the technology.

- Other **key raw materials** such as **metallic pastes of silver and aluminium** to form the electrical contacts too, are almost **100% imported**. India is more of an assembly hub than a manufacturing one, and in the long term, it would be beneficial to move up the value chain by making components that could drive the price and quality of both cells and modules.

Academics plus industry

- Establishing **state-of-the-art manufacturing facilities** for cells, modules, and raw material needs access to technology. It is unlikely that companies that have spent millions of dollars on in-house and external R&D would make it easy for India to access the **latest technologies easily** or at a lower cost. India has hardly invested in creating high-quality high-TRL technology centres such as **IMEC Belgium** or the Holst Centre in the Netherlands, which can help the industry to try and test the technologies in a **cost-effective manner**. India needs to create such industry-like centres to work on specific technology domains with clear roadmaps and deliverables for the short and long term, monitored by a right mix of specialists from industry and academia.

In nutshell

- Although India is making great progress in the **deployment of solar PV modules** for power generation, its path to become a manufacturing hub for the same requires more than just putting some tax barriers and commercial incentives in the form of **PLI schemes, etc.** It will warrant strong industry-academia collaboration in an innovative manner to **start developing home-grown technologies** which could, in the **short-term**, work with the industry to provide them with trained human resource, process learnings, **root-cause analysis through right testing** and, in the long term, develop India's own technologies. **High-end technology development** requires substantial investment in several clusters which

operate in **industry-like working and management conditions, appropriate emoluments, and clear deliverables.**

Behind the systemic roots of urban flooding in India.

- As India reaches the tipping point of **transitioning from a mostly rural to an urban society, Urbanisation is intrinsic to development** and often serves as a major driver of economic growth. By **2030**, 40.76% of the country's population is expected to reside in urban areas.
- However, Urban planning machinery has not evolved at the pace of urbanisation and technological advancements. **Unplanned development and climate change** are driving many tragic events, including **urban flooding**, requiring serious attention.
- In the **2020 floods in Hyderabad**, thousands of houses were submerged. The **2015 Chennai flood** is a stark reminder of how rapid urbanisation is making cities prone to urban floods. And most recently, **Bengaluru has been the site of many such flooding incidents** during this **monsoon**

Urban Flooding

- Urban flooding is the **inundation of land or property in a built environment**, particularly in **more densely populated areas (like cities)**, caused by rainfall overwhelming the capacity of drainage systems.
- Unlike **rural floods (Heavy rain over a flat or low-lying area)**, urban flooding is not only caused by just higher precipitation but also unplanned urbanisation (catchments) that:
 - increases the flood **peaks from 1.8 to 8 times**
 - increases the flood **volumes by up to 6 times.**

Causes of Urban Flooding in India

- **Encroachments on Drainage Channels:** In Indian cities and towns, due to **increased land prices** and **less availability of land** in the city centre. New developments are coming up in low-lying areas, usually as **encroachments over lakes, wetlands and riverbeds.**
 - Ideally, the natural drains should have been widened (**similar to road widening for increased traffic**) to accommodate the higher flows of stormwater.
- But on the contrary, **there have been large scale encroachments without widening the natural drains.** Consequently, the capacity of the natural drains has decreased, **resulting in flooding.**
- **Climate Change:** Exacerbated by changing climate, resulting in extreme events. The **climate change has caused an increase in the frequency of short duration heavy rainfall** leading to higher water run-off.
 - **NASA** studies indicate that the **urban heat island effect also results in increased rainfall over urban areas that in turn leads to flooding.**
- Whenever the rain bearing clouds pass over the urban heat island, **the hot air pushes the clouds up, resulting in highly localised rainfall** which may sometimes be of high intensity.
- **Unplanned Tourism Activities:** Water bodies have been used as an attraction for **tourism** development for decades. Water plants that reduce the **runoff speed** are being removed from rivers and lakes for maintaining tourism activity.
 - Throwing **non-bio degradable matter** into the rivers and lakes during religious and cultural activities reduces the water quality. In the event of floods, the **suspended particles and pollutants** overflow into the cities posing health risks.
- **Example:** Ashtamudi Lake in Kollam, Kerala polluted from **oil spillage** from boats.
- **Uninformed Release of Water from Dams:** Unplanned and **sudden release of water from dams** and lakes lead to floods in an urban area, without giving the public enough time to respond.
 - **Example: Chennai Floods 2015** due to release of water from Chembarambakkam Lake.
- **Illegal Mining Activities:** Illegal **mining of river sand and quartzite** for use in building construction **deplete the natural bed of the rivers and lakes.**

- It causes **soil erosion** and **reduces the water retention capacity** of the waterbody increasing the speed and scale of water flow.
- **Example:** Jaisamand Lake- Jodhpur, Cauvery river- Tamil Nadu.

What are the Impacts of Urban Flooding?

- **Loss of Life and Property:** Urban floods are often associated with loss of life and physical injury either directly due to the effect of floods or indirectly due to **infections by water-borne diseases spreading during the inundated period.**
 - Urban flooding has localised impacts like structural damage to buildings, property, crops. Besides, it causes disruptions of **water supply, sewerage, power and transmission lines, communication**, traffic- road and railways and other infrastructure.
- **Ecological Impacts:** Trees and plants are washed away during extreme flood events and **riverbank erosion** is caused by high-speed flood water.
- **Impact on Animal and Human Health: Stagnation of stormwater** in the localities, and **contamination of consumable water** leads to various health problems resulting in plagues/epidemics.
 - **These sewage and solid waste** washing into houses and neighbourhoods also causes a variety of diseases to spread.
- **Psychological Impacts:** Loss of shelter and relatives creates emotional turmoil in the mental health of the stranded. The **recovery process in case of such incidents is a tiresome process** and time consuming that often leads to long lasting **psychological trauma.**

Looking ahead

- **Developing Blue Green Infrastructure: Blue Green Infrastructure** is an effective way of providing a sustainable natural solution to urban and climatic challenges.
 - **Water management and robust infrastructure developments** should be emphasised equally, in order to create more pleasant, less stressful living environments.

- Also, ensuring every building in the city shall have **Rainwater Harvesting** as an integral component of the building utility
 - **Blue** indicates water bodies such as rivers and tanks
 - **Green** indicates trees, parks, and gardens.
- **Flood vulnerability Mapping: Identification of the vulnerable areas** can be done by analysing topography and historical data of inundations at city level.
 - Maintaining **a record of all the water bodies** and wetlands at city and village levels is equally important for **flood-avoidance, tolerance and resilience**.
- **Effective Water-Shed Management: Construction of flood walls, raised platforms along flood prone river basins, timely cleaning and deepening of drainage channels** should be **taken up along the whole river basin instead of just the urban areas**.
 - **Bioswales** can be made along roadsides so that rainwater from the road flows towards them and percolates into the ground.
 - Also, **catchment areas** of water bodies need to be maintained well and should be **free from encroachment and pollution**, thus keeping the course of water free from obstructions.
- **Disaster Resilient Public Utility:** Public facilities like **hospitals and schools** and basic services such as **food, water, health and sanitation** should be made disaster resilient.
 - They should be located or relocated such that they are able to function without hindrance during inundations.
- **Sensitization and Rehabilitation:** Awareness should be created about flood preparedness and mitigation measures along with **response drills**.
 - **Educating residents** on the risks involved in illegal constructions along drains and water bodies is necessary. The government should also consider **relocation of the poor to other areas**.
- **Institutional Arrangements-** It is essential to form a **unified flood control implementing agency** at city level, which will include **city administrative officials, doctors, police, firefighters, NGOs**, and other emergency services providers.

What Future Holds For Non-Fungible Tokens?

- NFT stands for non-fungible token. Non-fungible is a monetary term that you can use to describe such things as your fixtures, a music record, or your computer. These matters are not interchangeable with other gadgets due to the fact they have unique properties. NFTs can be unique digital art assets, real estate, collectibles, event tickets, website domains, or even tweets that are sold to investors on the blockchain. They can include any kind of art that can be rendered in digital form — music, video, imagery, memes, or a combination of media.
- NFTs are specific objects confirmed and secured via a blockchain, the identical technology used for cryptocurrencies.

Future of NFTs

- The artwork international is usually evolving and converting, but it's rare to look at so much development in any industry within one of these short periods. Yet NFT and blockchain era can offer new methods for artists to connect to shoppers, boom gets right of entry to and democratization of the artwork international, and provide new ways of considering a trade of fee within the artwork space.
- 2021 became the year for NFTs. Top sales included CryptoPunk for \$11,754,000, Beeple's "Human One" for \$28,985,000, and Pak's NFT drop "Merge," which set the record for biggest sale by using a dwelling artist.
- There are upwards of 40,000 buyers of art NFTs in step with month, and upwards of \$20 million in sales are generated per week. But past the numbers, 2021 became the 12 months the world became privy to what NFTs are and their ability to change processes and wondering in the art area.

The following are some of the areas of NFT uses:

1. **1. The Metaverse:** The Internet has developed to the point in which one can proportion and communicate almost something that is needed throughout space and time. The evolution of the Internet is the metaverse- a result of the shared Internet and the boundless opportunities in augmented and virtual truth technology. The Internet has completed a variety of the grunt work in bringing data, services, and reports online.
- 2.
3. A Metaverse is a virtual illustration of fact. Users can use a virtual self, a custom-made avatar that may look any way they need to wait for events, go to art galleries, or go to remote places in these digital worlds.
- 4.
5. There is likewise a couple of Metaverses. And several corporations are working on a spread of them, each with its very own set of community protocols. These Metaverses all have the identical aim in thoughts, to permit more overlap between our bodily and virtual lives.
- 6.
7. The most commonplace comparable for the metaverse is The Oasis inside the film *Ready Player One*. The Oasis is an internet global handy through digital truth headsets. Kids pass to high school in The Oasis. Entrepreneurs construct businesses in The Oasis. Generally talking, the whole lot takes place in The Oasis.
- **Livestream Metaverses:** Livestreaming can be an important gateway to exploring and growing the whole capability of the Metaverse. As a tech-first platform, live streaming hosts vital technological equipment like synthetic intelligence (AI), AR, and VR, which are the essential constructing blocks of the Metaverse.
 - It can function as a gateway to full VR occasions in which you'll be able to create completely online personas or virtual 'avatars' to symbolize their likeness, or as an extension to their being.
 - This integrates perfectly into the Metaverse, where virtual occasions permit for an infinite target market and where avatar personas, with state-of-the-art technology that makes reasonable gestures and expressions feasible, can foster an attractive co-presence that human beings can relate to.

- Live streaming is lacking the immersive element that we see with video games and VR. But those live streamers are just a VR app far away from constructing an immersive metaverse.
- So, in this experience, they've built remarkable foundations for an immersive metaverse inside the destiny.
- **VR Metaverses:** There are many VR apps built around this concept of a new social enjoy.
 - Altspace VR, as an instance, permits buddies and strangers to hang around at live shows, meetups, and instructions.
 - Orbus VR affords a unique social VR experience in which you may explore the virtual international, degree up your individual, and connect with other players.
 - Virtual truth will handiest ever update certain components of the human revel in.
 - Critics declare that counting on a handful of VR devices and content manufacturers to build the metaverse will reflect, or even give a boost to, the 'walled gardens' that exist on the net today, wonderful, closed ecosystems that are managed by using the operator.
- **Video Game Metaverses:** The role of NFT in metaverse would end up greater distinguished with new models such as the play-to-earn gaming version. It now not most effective offers the opportunity for the use of NFTs to force engagement inside the metaverse but also offers to empower chances to players. On the pinnacle of it, play-to-earn games provide a truthful gameplay experience by using allowing entire ownership and management of belongings to the players.
 - Video games are possibly the nearest real- world comparable we must a thriving metaverse with its very own economies.
 - Many of the following games permit players to exist in a fictional global and express themselves in competitive and original methods.
 - One of the foremost entries most of the excellent metaverse video games proper now could point closer to the
 - It gives a digital international wherein you may create, take possession, and even capitalize on monetization potentialities with their gaming revel in.
 - Based on the Ethereum blockchain, the *Sandbox* remains in the early stages of development.
 - However, the Sandbox has been a success in garnering players with its attractive layout and gaming experience.

- There are masses of metaverses being constructed within the form of video games—*League of Legends, Sorare, Minecraft, Ultra, Red Dead Online*—the list is going on.
 - Many of these online game metaverses even have their forex with which to transact specific in- sport gadgets.
2. **NFT and finance:** The globe witnessed the energy of virtual technologies within the chaos resulting from a worldwide pandemic. Digital technologies served as the primary platforms for communicate in faraway operating eventualities along assisting many different traditional tactics. As of now, the concept of a digital international that users can explore using virtual avatars is beneath development.
- One of the most concerns regarding the selection of metaverse wallets is the dearth of a clear category of metaverse wallets.
 - The metaverse is still under development, and few wallets associate openly with the emerging paradigm of technology.
 - For example, say Taco Bell is debuting a new meals item. Instead of blasting the message out on Facebook ads or all through TV industrial breaks, they might take a special approach.
 - They should layout a piece of virtual artwork providing the new meals object, mint it as an NFT, upload a few perks around owning the NFT, and then ship the promotional NFT at once to thousands of people's digital wallets.
 - The subsequent huge access within the metaverse wallet list for 2022 would be
 - It has been the favorite choice of many crypto holders for changing cryptocurrency. In addition, the Coinbase Wallet also gives a garage for NFTs and metaverse tokens.
3. **New Trends for Real Estate:** Virtual worlds mean a lot of digital areas and real estate. One ought to use NFTs for gaining complete ownership of digital areas inside the metaverse. With the help of the blockchain, users should effortlessly show possession of the asset along with developing digital real estate.
- Creators can take advantage of the decentralized social media element to speak approximately their NFTs to a target market. After all, decentralization as an idea may be very a great deal in step with what NFTs are seeking to do, that's to deliver the possibility of owning art, a privilege that's been reserved for the wealthy for years to the masses.
 - Even the valuation of art, which has usually been a challenge for a noticeably small institution of connoisseurs, has now become a democratic system.

- At decentralized exchanges, such as Uniswap, trades are drawn from pools of tokens.
 - For instance, if one wanted to buy AMP tokens, one will ship Ethereum to the pool of Ethereum on Uniswap, and will acquire AMP from the pool of AMP tokens on Uniswap.
 - The liquidity swimming pools are provided through people who stake their tokens on Uniswap.
 - Staking is like lending, and it allows Uniswap to apply the staked tokens for trades. These pooled resources create the markets.
4. **Gaming:** Globally, there are presently 2.81 billion video gamers, with the number predicted to exceed 3 billion by 2023. However, whilst enterprise incumbents take advantage of this robust growth, players generate little lasting value for themselves.
- After investing in expensive consoles, PCs, or cellular gadgets, gamers enter gaming environments that provide a tiered-get entry to consumers revels in. In those traditional games, money flows in a single path: Players ought to spend cash to access in-recreation content and one-of-a-kind features.
 - Underlying blockchain networks enable the technology and deployment of these NFTs inside more than one gaming environment.
 - Because NFTs are precise and may be designed to hold price past the game wherein they originated, blockchain-built video games can expand gaming economies dramatically, establish new gaming categories, and gasoline improvement of recent video games.
 - In a variety of popular games, like Counter-Strike: *Global Offensive (CS: GO)* and *Dota2*, in-game items such as guns, armor, and skins are available for purchase.
 - NFTs of in-game goods are currently being created by some game developers. *F1 Delta Time*, for example, is an Animoca Brands game with NFTs as in-game objects.
 - To compete, players must have NFTs for their car, driver, and tires. NFTs for the game also includes driver's equipment including helmets, suits, shoes, and gloves, as well as car upgrades like front and rear wings, transmission, suspension, and brakes.
5. **Event Tickets:** NFT tickets are digital assets that maintain get admission to credentials and precise perks on your occasions. NFT gives physical and digital ticketing talents for occasion markets. This property could make the concern of further transactions, permitting you to without difficulty generate new revenue streams for yourself and your community.

- Tickets have been an increasing number of going virtual, though bodily tickets are nonetheless widely used. Even virtual tickets maybe just a bar code for your device that you print out and present as a bodily price ticket.
 - Digital belongings are becoming more treasured as we circulate towards Web 3.0. There also are ticket scalpers who will purchase up blocks of tickets with the cause to create scarcity and resell these tickets at a profit.
 - The NFT tokenized tickets will allow attendees to get the right of entry to each in-person and virtual enjoy. With eternal virtual belongings, one can keep earning royalties even after the event is over.
6. **AI NFTs:** Digital forms such as photos, video, text, and audio are used to create NFT digital representations. Different AI sub-fields can be nicely matched to these representations.
- AI-generative NFTs become a new art genre, as those nonfungible tokens are becoming an increasing number of famous within the artwork network, alongside those interested in emerging technology like synthetic intelligence, blockchain, and the Metaverse.
 - To create AI-generative NFTs, one might typically use generative antagonistic networks or GANs.
 - These are algorithms that leverage computer systems to apply records to educate models to provide machine-made photographs such as artwork
 - Deep learning is a branch of artificial intelligence that uses deep neural networks to generalize data. Deep learning can have a big impact on enabling intelligence capabilities in NFTs in a few important ways.
 - *For Example,* To create AI-generative NFTs, Silver explained that she leverages a textual content-to-art generator known as “Eponym.” Developed through the AI-generated artwork business enterprise Art AI, the Eponym tool permits users to create art based totally on their textual content of choice after which mint those creations without delay to the largest NFT market, OpenSea.
 - Although AI-generative art is a fairly new concept, the first Eponym project sold overnight on OpenSea, it is one of the largest collaborative art projects created by 3,500 different artists.
7. **PFP and Avatar NFTs:** PFP stands for Profile Picture as these NFTs are used for profile pictures on social media sites such as Twitter, Facebook.
- PFP NFTs are a set of avatars, normally about 10,000, in which every avatar has a combination of unique attributes which might be randomly generated and combined.

- NFT avatar is a digitally generated photo this is made in a cartoonish or pixelated fashion. The market for NFT avatars has highly extended within a previous couple of years. Since no avatars look similar, there will continually be something unique in your avatar.
 - *For example*, The former and legend Chelsea club captain John Terry bought an NFT from the BAYC collection and put it on his avatar.
8. **NFT Streaming:** Streaming platforms are the most useful platform to spread facts and make traits.
- The market for NFT avatars has enormously prolonged inside the last few years. Here inside the ordinary world, the streaming platform will very own video content, and that they provide it for the subscribers where tough strong cash will be transmitted to assert the rights.
 - The possibility provided by way of the platform uplifts the life standards of many human beings and serves the film industry by introducing rising stars to the enterprise.
 - The movies will get recognized even though they're pirated and uploaded on unique areas or with exclusive debts.
 - Kings of Leon was the primary popular band to launch an album as an NFT, and it generated more than \$2 million in income.
 - For example, Streaming has ended up the dominant layout for a song these days, via Apple, Amazon, Tencent Music, and the clean class winner — The goal of distribution offerings and structures like Spotify is to permit and empower artists to create extra without stress approximately something except honing their craft.
9. **NFTs and fine art:** Arts of both shapes bodily and digital property are tokenized into an NFT, that's unique and indivisible. They have an impact of art on the people could be very excessive. NFTs Art has a very huge target market within the crypto space.
- Some NFT artwork comes with royalties to the artist, issued based totally on the recursive sales of the art, and the creator or artist who created it'll obtain a royalty on every sale.
 - For example, Digital and NFT art reign supreme at Art Dubai. Art Dubai breaks new ground with a new section dedicated to digital and NFT art.
 - It appeared as a response to major changes in the global art scene, which has seen a growing interest in digital media and the growth of NFT art.
 - "We've been observing how the digital universe has been developing and having a stronger voice during the lockdown," said Art Dubai's artistic director Pablo del Val.
10. **NFTs Meme:** Memes are trendsetters currently, have been one of the driving forces inside the surroundings sector on social media.

- Memes are represented in several in lots of methods such as video clips, audio clips, and pix clips.
- *For example*, Shiba Inu announced its metaverse. The popular meme coin announced its intentions to launch Shiberse in 2022. The project's tweet depicts a Shiba Inu dog in the middle of a forest with a hammer in his teeth.
- Even though Shiberse is still in its early stages of development, it has been praised for its high-quality graphics as a great start to what could become an “exciting world” worth remembering for generations to come.

Benefits of NFT

NFT technology is revolutionizing digital possession rights and the number of use instances is exploding. Several key benefits NFT provide:

1. **Security:** Traditional art collectors need to be aware of the risks of transacting artwork. The blockchains are decentralized in nature, because of this that the statistics they maintain are hosted in exceptional nodes around the world. There is constantly the same report of the database at each of the nodes. Even when the community is down, there is usually going to be a document of it somewhere. The NFT era assures you in understanding that irrespective of what occurs to the blockchain itself, there are continually nodes going for walks. Thus nothing can happen to the data.
2. **Authenticity:** The advantage of non-fungible tokens depends in large part on the uniqueness of the tokens. The authenticity of an NFT is verified by the blockchain. NFTs are created on the blockchain, thereby implying the association of particular information with them. The specific developments of NFTs show off their capability for contributing price. At the same time, NFT creators have the privilege of issuing the most effective a specific range of NFTs to introduce scarcity of delivery.
3. **Decentralized marketplace:** NFTs permit creators to make money immediately from their work. A superb example is an art, wherein someone could require an agent to sell and market their work. NFTs dispose of these middlemen and allow the artists or the authentic creators to have interaction and transact immediately with their customers. This version in addition advantages the creators by using letting them earn a commission each time the NFT exchanges.

4. **Royalties:** Some NFTs will automatically pay out royalties to their creators whilst they may be bought. This continues to be a growing concept however it's one of the maximum effects. They empower a brand new market for artists, allowing them to sell without delay to creditors and get hold of royalties on every occasion the art is resold. With NFT generation, royalties can be tough-coded into the NFT itself, meaning that each time an NFT is bought or resold, a percentage of the proceeds is robotically despatched to the author.
5. **Growth:** The very last and maximum crucial entry of some of the benefits of NFTs refers back to the assist for inclusive growth. As NFTs bring content material creators from all fields into one environment, they can facilitate new avenues for inclusive growth for all members. Some NFTs come up with real-global perks such as access to high-cease occasions, companies, or associations relying on who the creators are. For example, the usage of NFTs for precious metals is a distinguished example of making sure liquidity. NFTs representing ownership of a particular share of actual-international assets along with belongings may want to show the power for increase. Real estate marketers should problem listings as NFTs with fractional possession of belongings.

Major Challenges to NFT Mass Adoption

The following are the major challenges in the mass adoption of NFT:

1. **Fragmented User Experience and Steep Learning Curve:** Like most blockchain creations, NFT become created via developers and computer engineers before it became followed via the artwork network. Popular NFT buying and selling platforms along with OpenSea and Nifty Gateway nonetheless have a completely humble bootstrap look and feel. Navigation and on-web page copies are written in tech jargon without tons of preparation or rationalization. A new taxonomy is needed. Users often ought to bounce between a couple of crypto websites and go through lengthy signup and verifications, giving up distinct non-public information together with an address, phone numbers, and government IDs to gain a user account, earlier than buying and selling NFTs. Therefore the design and fashion of the NFT Websites also are essential components of convincing innovative customers that the NFT market is constructed for artwork and creativity.

2. **Artists' lack of creative freedom and expression:** Most NFT marketplaces have moderation and censorship, not allowing artists to express their creative freedom as what the blockchain decentralization movement has promised. The future of the NFT ecosystem may very well be more personal and decentralized as opposed to resorting to a few behemoth platforms that model Amazon. A well-designed, intuitive, and truly decentralized NFT marketplace engine is needed to enable any artist / creative to take advantage of blockchain digital art exchange.
3. **High Fees and the environmental impact:** For the first-time NFT shoppers and sellers aren't aware of is the hidden high fees with NFT transactions, known as "gasoline prices". Since blockchain miners want consistent power to generate tokens, every NFT transaction comes with expenses referred to as 'gasoline costs', which may additionally notably cut into your profit margins. Some NFT transactions may additionally even bring about a loss if the consumers and sellers aren't aware of the hidden gas charge. Most of these days are primarily based on the Ethereum blockchain tokens (ERC-20, ERC-721 or ERC-1155, ETH token standards used for developing and issuing smart contracts at the Ethereum blockchain)
4. **No Copyright Protection:** NFTs are correct for digital artists because it permits creatives to receive a commission for their paintings. However, because snapshots can be easily duplicated and unfold online, regularly no credit score is given to the authentic author. Also, there is a lack of legal framework and priority to validate and improve the authentic copyright and ownership of NFTs. Unfortunately, there's currently nothing preventing people from tokenizing a person else's art, claiming it, and profiting off it. This poses a large danger to each buyer and seller, as a purchaser of an NFT artwork might be unknowingly sued for copyright infringements.

Real-life Examples of NFT

1. **Twitter Integrates NFTs With New Profile-Picture:** Twitter has brought NFT integration to its platform, also working to latch onto the growing hobby in NFTs, which has visible virtual artworks take on a new life in their personal, generating billions in income as customers appearance to shop for up the maximum different portions, which they can use as repute symbols across social networks.

- Users can link their ether-primarily based wallets to their accounts and show their virtual collectibles as their profile photographs.
 - These wallets encompass Coinbase Wallet, LedgerLive, MetaMask, Rainbow, and Trust Wallet.
 - Profiles with hexagon-formed snapshots have had their NFTs proven with the social media large. That might then permit Twitter to offer a mark of authenticity and/or ownership on any NFTs displayed, as you can see within the final show, with a symbol on the NFT image noting that it's far, in truth, owned through the account holder.
 - However the use of the new function, users must pay \$2.99 per month for the company's Twitter Blue subscription service and have an iOS smartphone. Twitter's also growing a brand new 'Collectible' tab, wherein users could be able to show their owned NFTs to profile visitors.
 - The focal point on NFTs as avatars additionally ties into the development of the Metaverse idea, with those consultant pictures likely to be expanded into digital characters which could then be utilized in other virtual programs as a shape of identification.
 - Twitter's no longer the most effective platform experimenting with NFT display alternatives, with Instagram also growing a comparable profile exhibit option on your owned NFTs, while Facebook is likewise investing big inside the broader Metaverse concept, which ties into the equal subject matters.
2. **Facebook is taking part in the building of a metaverse:** Mark Zuckerberg, CEO of the company formerly known as Facebook, announced ambitious plans to build the "metaverse", digital truth assemble intended to supplant the net, merge virtual existence with real-life and create endless new playgrounds for each person.
- Facebook has made building the metaverse one of its big priorities, making plans something very just like what those gaming products provide; extremely like taking the player inside a digital world wherein conferences can be held the use of virtual reality (VR) headsets, in a delegated avatar and heritage putting.
 - Facebook has additionally long past a step in advance and created a VR world with the launch of Facebook Horizon in 2019.
 - But for now, it is an invitation-most effective immersive environment that users can input with the aid of putting on an Oculus headset.
 - An increase in the number of search queries indicates a growing interest of people, which eventually affects the growth of prices or the expansion of the user base.

- Since the announcement that Facebook would focus on this technology, large companies have begun to explore and create their initiatives in this space. These include Apple, Microsoft, and even McDonald's.
- 3. **Nike is creating NFT verification on shoes:** Nike just bought a virtual shoe agency that makes NFTs and footwear 'for the metaverse'. Nike is suing an internet marketplace for launching non-fungible tokens (NFTs) primarily based on Nike footwear, testing the limits of crypto trademark law and what an NFT is. StockX is a reseller for streetwear, bags, and footwear, among other objects. The problem is that Nike footwear is extremely famous on StockX, and its Vault tokens are related to the call and image in their corresponding products. Nike notes that StockX has launched 9 restrained-edition Vault NFT series, and 8 are related to Nike footwear. Nike, for one, maybe very a good deal on board, viewing its buy of RTFKT as a method to help amplify its virtual footprint and competencies, hastens Nike's digital transformation and permits us to serve athletes and creators at the intersection of recreation, creativity, gaming, and lifestyle," said Nike's President and CEO John Donahoe.
- 4. **Coinbase is launching an NFT marketplace:** Coinbase, one of the largest cryptocurrency systems within the world, desires to change that.
 - Coinbase NFT, a is peer market to make minting, purchasing, showcasing, and coming across NFTs simpler than ever.
 - Just as Coinbase helped thousands and thousands of human beings access Bitcoin for the primary time in an easy and trusted way, one needs to do the same for the NFTs.
 - Buying and selling can be core capabilities of Coinbase NFT. One will have a vibrant, comfortable marketplace.
 - There are already several NFT marketplaces, but Coinbase ought to permit tens of millions more human beings to come to be NFT owners, similar to it did with cryptocurrencies.
 - To build out this task, Coinbase partnered with Mastercard to offer human beings more payment alternatives and make it simpler for absolutely everyone to buy NFTs the usage of a Mastercard card.
 - Ahead of the Coinbase NFT marketplace release, the Mastercard Newsroom chatted with Hariramani through Zoom about his company's NFT aims, its paintings with Mastercard, and his favorite NFT tasks.

The numerous ability related to the NFT metaverse combination might rework the destiny. One can see how NFTs carry possession and area of expertise while the metaverse gives a digital international where everything is possible. The aggregate of the digital world and a manner to represent actual and digital property inside the world would exchange the financial system and social studies. While many expect that NFTs are part of the metaverse, and a few suppose that NFTs are the constructing blocks of the metaverse, it is certainly evident that NFTs and metaverse would open up an extensive variety of opportunities. Learn greater approximately the metaverse and discover the possible methods for the use of NFTs in it.

AGM-88 HARM missile.

- United States Under Secretary of Defence for Policy Colin Kahl confirmed on 8 August 2022 that Washington has supplied some “**anti-radiation missiles**” to Ukraine, which could be fired from some **Ukrainian Air Force aircraft**. The statement has put meat on Russian allegations that an **American anti-radar missile, AGM-88 HARM**, which is part of NATO’s inventory, has been used in the theatre of conflict. What kind of missile is this and what impact can it have in the ongoing war in Ukraine?

What is the AGM-88 HARM missile?

- The **acronym ‘HARM’** in the **AGM-88 HARM air-to-surface missile** stands for **High-Speed Anti-Radiation Missile**. It is a tactical weapon fired from fighter aircraft, and has the capability to detect and home in on radiation emitted by **hostile radar stations** that have **surface-to-air detection capabilities**.
- The missile was originally developed by the **Dallas-headquartered Texas Instruments**, but is now produced by the major American defence contractor Raytheon Corporation. An advanced version of the weapon is manufactured by Dulles, Virginia-based Northrop Grumman.
- The **AGM-88 HARM is 14 metres in length**, but **only 10 inches in diameter**. It weighs **around 360 kg** and carries a fragmentation type warhead that is optimised for radar targets. It also has an anti-radar

homing seeker broadband RF antenna and receiver, and a **solid state digital processor**. The missile has a range of more than 100 km.

- **How do we know that it was being used against Russia?**
- For the past several days, Russian social media users have been sharing **open-source information** on Telegram to the effect that remnants of the AGM-88 HARM have been found near a Russian surface-to-air missile site. The pictures of the seeming remnants of the missile appeared to show **genuine serial numbers**, which were traced to **AGM-88 HARM** by open source intelligence analysts. The statement by the US has now confirmed these deductions.

Do the Ukrainians have a platform to use these missiles?

- This is a question that military analysts have pondered over. It would appear that **only Western military groups** have the required fighter aircraft to use these missiles and that the **AGM-88 HARM** cannot be fitted and used on the **Russian-origin aircraft** that Ukraine has in its fleet. Several NATO aircraft in Europe — including the Tornado ECR, F-16CM Block 50, and F/A-18-EA-18G — can fire the AGM-88 HARM missiles.
- A CNN report noted that the **Russia-Ukraine war** is the first in which the weapon has been confirmed to have been used by a military other than the US. However, its usefulness, considering the limited number of aircraft in the **Ukrainian Air Force**, remains in question. The same CNN report also said given that Ukraine does not have aircraft known to be **compatible with the missile** there is speculation that the missiles may have been fired by NATO aircraft secretly supporting the Ukraine military in combat roles.

Is there no way the missile can be used by Ukraine's Russian-origin aircraft?

- Theoretically, it is possible to use the **AGM-88 HARM** in a limited mode in a Russian-origin aircraft. However, this would have required a **lot of fast-moving research and development** which may not have been possible in Ukraine itself due to the extended conflict. Northrop

Grumman had tested a **land-based version of the missile**, but it did not achieve the required parameters.

Precision farming.

The **Green Revolution in India** that started in the **1960s** enabled the nation to make great strides in **domestic food production** and significantly contributed to progress in agriculture and allied sectors. It transformed India **from a food-deficit nation to a food-surplus, export-oriented country**.

In India, **70% of rural households still depend primarily on agriculture** for their livelihood, with 82% of farmers being small and marginal.

However, now India is facing second-generation problems, especially related to sustainability, nutrition, the **adoption of new agricultural technologies** and income levels of the population dependent on farming.

Significance of Agriculture in the Indian Economy

- **Food Security and Induced Growth of Industrial Sector:** Flourishing Agricultural production in India is the main factor behind the food security of the large Indian population.
 - Agriculture supplies raw materials to various agro-based industries like **sugar, jute, cotton textile and vanaspati industries**. **Food processing** industries are similarly dependent on agriculture.
 - Increase in rural purchasing power is very necessary for industrial development as two-thirds of the Indian population live in villages.
 - After the **green revolution the purchasing power of the large farmers increased due to their enhanced income**.
 - **Source of Government Revenue:** Agriculture is one of the major sources of revenue to **both the central and State government** of the country. The government is getting a substantial income from **rising land revenue**.
 - Some other sectors like railways, roadways are also deriving a good part of their income from the movement of agricultural goods.

- **Contribution to International Trade:** Agriculture plays an important role in international trade. **Jute, tea, coffee and spices are the country's well known conventional exports.**

Current Challenges Confronting Indian Agriculture

- **Degrading Soil Health:** Due to wind and water erosion, deforestation, and **urbanisation**, removal of natural vegetation, converting forests to farms is degrading soil health to a large extent.
 - The analysis of the **Soil Health Card Schemes** shows alarmingly **low levels of soil organic carbon (SOC) across India** (an important indicator of soil health).
- **Shrinking Farm Size:** Labour productivity is constrained owing to land sizes. The **average farm size in India has been consistently becoming smaller**, hampering labour productivity, and limiting economies of scale.
 - Farm size of the majority of the rural household has declined to unviable levels inducing **farmers to leave land and look for better job opportunities in cities.**
- **Per Drop More Crop:** At the national level, only **52% of India's gross cropped area (GCA) is under irrigation coverage.**
 - Despite significant strides since independence, a large proportion of farms in India still depend on the **monsoon** for irrigation, limiting their ability to increase cropping intensity.
- **Lack of Convenient Access to Credit:** A convenient line of credit is not available to small and marginal farms. As per the **NABARD 2018 survey**, **farmers with smaller plot sizes took a greater share of loans from the non-institutional lenders** than did farmers with larger plot sizes (> 2 hectares)
 - This indicates that more **small and marginal farmers rely on (expensive) informal sources of credit than large ones.**
- **Crop Insecurity:** Despite the rapid **commercialisation of Indian agriculture**, most farmers, especially small and marginal farmers, tend to **place cereals at the centre of their cropping system** (because of **Minimum Support Price**) and neglect **crop diversification.**
- **Ineffective Percolation of Policies:** Land leasing laws in India have taken forms that discourage formal leasing contracts between the owner and the tenant.

- There are **large number of unofficial tenancies in the country**. Due to the lack of identification of tenants, benefits intended for tenant farmers such as **disaster relief and direct benefit transfers** are at risk of being distributed to the land owner who appears to be the cultivator on official records.

Recent Government Initiatives for the Development of the Agriculture Sector?

- **E-NAM Portal**
- **Paramparagat Krishi Vikas Yojana (PKVY)**
- **Pradhan Mantri Fasal Bima Yojana (PMFBY)**
- **Micro Irrigation Fund (MIF)**
- **AgriStack**

Looking Ahead

- **Blending Traditional and Frontier Technologies:**Traditional technologies in the field of **rainwater harvesting and recycling of organic waste for plant nutrient, pest management, etc.** have been found to be very useful and relevant.
 - In order to bring a **synergistic impact**, traditional technologies should be blended with the modern frontier technologies like **tissue culture, genetic engineering**, to achieve higher productivity.
- **Input Intensive to Knowledge Intensive Agriculture:**India is known for its **diversity of farming practices**. It is important **to get diverse points of view engaged in a national-level dialogue** to find suitable solutions for the future.
 - Also, the **Advanced world is moving towards precision farming** using sensors and other scientific tools for exact practices and application of inputs.
 - A **smart and precise move towards high-tech farming in India** will reduce average cost, raise farmers' income, and address many other challenges of scale.

- **Investing in Research and Innovation:** In order to **offset the impact of climate change on agriculture** and work towards **sustainable agriculture**, an increase in research and innovation in the agricultural sector is necessary.
 - For instance, **the livestock sector contributes the greatest amount of carbon emissions within the agriculture sector in India**, therefore, assessing their impacts is crucial to finding sustainable solutions.
 - Innovative Technologies like **GIS (Geographical Information System) and AIML (Artificial Intelligence and Machine Learning)** are all bursting out to provide the basis for a revolutionary epoch in agriculture.
- **Towards Biosecurity:** Since, **India is susceptible to pest and weed attacks**, there is a need for a strategic and integrated approach to deal with the risks posed to animal and plant life and their health along with food safety of consumers.
 - **M S Swaminathan**, chairman of the **National Farmers Commission**, had also recommended establishing a **National Agricultural Biosecurity Program**.
- **Upgrading Agricultural Surplus Management:** An infrastructure upgrade and development program are needed for **post-harvest handling, seed, fertiliser and agrochemical quality regulation**.
 - Additionally, it is necessary to promote **grading and standardisation of procurement centres**.
- **Harvesting Rich Returns Through Market Integration:** There is a need to streamline domestic markets and put in place the infrastructure and institutions to **connect local markets with national and global markets**.
 - To facilitate smooth integration between domestic and world markets, and to manage trade liberalisation more effectively, India needs a **nodal institution that can monitor world and domestic price movements** closely and take timely and appropriate measures to avoid major shocks.

What is ONDC ?

- Open Network for Digital Commerce (ONDC) is a network based on open protocol and will enable local commerce across segments, such as mobility, grocery, food order and delivery, hotel booking and travel, among others, to be discovered and engaged by any network-enabled application.
- The platform aims to create new opportunities, curb digital monopolies and by supporting micro, small and medium enterprises and small traders and help them get on online platforms. It is an initiative of the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry.

Features of ONDC

- ONDC, a UPI of e-commerce, seeks to democratise digital or electronic commerce, moving it from a platform-centric model to an open-network. Through ONDC, merchants will be able to save their data to build credit history and reach consumers.
- The proposed government-backed platform aims to create a level playing field for e-commerce behemoths such as Amazon, Flipkart, and offline traders who have been crying foul at the unfair trade practices of these e-tailers. The platform will also be compliant with the Information Technology Act, 2000 and designed for compliance with the emerging Personal Data Protection Bill.
- In this system, ONDC plans to enable sellers and buyers to be digitally visible and transact through an open network, regardless of what platform or application they use. It will also empower merchants and consumers by breaking silos to form a single network to drive innovation and scale, transforming all businesses from retail goods, food to mobility.
- The new framework aims at promoting open networks developed on open-sourced methodology, using open specifications and open network protocols independent of any specific platform.
- It is expected to digitise the entire value chain, standardise operations, promote inclusion of suppliers, derive efficiencies in logistics and enhance value for consumers.

- According to the government's official statement, ONDC shall take all measures to ensure confidentiality and privacy of data in the network. ONDC shall not mandate sharing of any transaction-level data by participants with ONDC. Will work with its participants to publish anonymised aggregate metrics on network performance without compromising on confidentiality and privacy.
- Presently, ONDC is in its pilot stage and the government has set up a nine-member advisory council, including Nandan Nilekani from Infosys and National Health Authority CEO R S Sharma, on measures needed to design and accelerate the adoption of ONDC.

Biofuels, their future.

Biofuels

- Any hydrocarbon fuel that is produced from an organic matter (living or once living material) in a short period of time (days, weeks, or even months) is considered a biofuel.
- Biofuels may be solid, liquid or gaseous in nature.
 - **Solid:** Wood, dried plant material, and manure
 - **Liquid:** Bioethanol and Biodiesel
 - **Gaseous:** Biogas
- These can be used to replace or can be used in addition to diesel, petrol or other fossil fuels for transport, stationary, portable and other applications. Also, they can be used to generate heat and electricity.
- Some of the main reasons for shifting to biofuels are the rising prices of oil, emission of the greenhouse gases from fossil fuels and the interest for obtaining fuel from agricultural crops for the benefit of farmers.

Categories of Biofuels

- **First generation biofuels:**
 - These are made from food sources such as sugar, starch, vegetable oil, or animal fats using conventional technology.

- Common first-generation biofuels include Bioalcohols, Biodiesel, Vegetable oil, Bioethers, Biogas.
- Though the process of conversion is easy, but use of food sources in the production of biofuels creates an imbalance in food economy, leading to increased food prices and hunger.
- **Second generation biofuels:**
 - These are produced from non-food crops or portions of food crops that are not edible and considered as wastes, e.g. stems, husks, wood chips, and fruit skins and peeling.
 - Thermochemical reactions or biochemical conversion process is used for producing such fuels.
 - Examples include cellulose ethanol, biodiesel.
 - Though these fuels do not affect food economy, their production is quite complicated.
 - Also, it is reported that these biofuels emit less greenhouse gases when compared to first generation biofuels.
- **Third generation biofuels:**
 - These are produced from micro-organisms like algae.
 - Example- Butanol
 - Micro-organisms like algae can be grown using land and water unsuitable for food production, therefore reducing the strain on already depleted water sources.
 - One disadvantage is that fertilizers used in the production of such crops lead to environment pollution.
- **Fourth Generation Biofuels:**
 - In the production of these fuels, crops that are genetically engineered to take in high amounts of carbon are grown and harvested as biomass.
 - The crops are then converted into fuel using second generation techniques.
 - The fuel is pre-combusted and the carbon is captured. Then the carbon is geo-sequestered, meaning that the carbon is stored in depleted oil or gas fields or in unmineable coal seams.
 - Some of these fuels are considered as carbon negative as their production pulls out carbon from environment.

Major Types of Biofuels

Bioethanol

§ It is derived from corn and sugarcane using fermentation process.

§ A litre of ethanol contains approximately two thirds of the energy provided by a litre of petrol.

§ When mixed with petrol, it improves the combustion performance and lowers the emissions of carbon monoxide and sulphur oxide.

Biodiesel

§ It is derived from vegetable oils like soybean oil or palm oil, vegetable waste oils, and animal fats by a biochemical process called "Transesterification."

§ It produces very less or no amount of harmful gases as compared to diesel.

§ It can be used as an alternative for the conventional diesel fuel.

Biogas

§ It is produced by anaerobic decomposition of organic matter like sewage from animals and humans.

§ Major proportion of biogas is methane and carbon dioxide, though it also has small proportions of hydrogen sulfide, hydrogen, carbon monoxide and siloxanes.

§ It is commonly used for heating, electricity and for automobiles.

Biobutanol

§ It is produced in the same way as bioethanol i.e. through the fermentation of starch.

§ The energy content in butanol is the highest among the other gasoline alternatives. It can be added to diesel to reduce emissions.

§ It serves as a solvent in textile industry and is also used as a base in perfumes.

Biohydrogen

§ Biohydrogen, like biogas, can be produced using a number of processes such as pyrolysis, gasification or biological fermentation.

§ It can be the perfect alternative for fossil fuel.

Advantages of Biofuels

- **Availability:** biofuels are produced from biomass and thus are renewable.
- **Source material:** Whereas oil is a limited resource that comes from specific materials, biofuels can be manufactured from a wide range of materials including crop waste, manure, and other byproducts.
- **Environment Pollution:** Biofuels do not release as much carbon as fossil fuels do but fertilizers that are used in the growing bio fuels lead to greenhouse emissions. Also, biofuels can help in managing the municipal solid wastes i.e. the waste can be converted into fuel.
- **Security:** Biofuels can be produced locally, which decreases the nation's dependence upon foreign energy. By reducing dependence on foreign fuel sources, countries can protect the integrity of their energy resources and make them safe from outside influences.
- **Economic stimulation:** Because biofuels are produced locally, biofuel manufacturing plants can employ hundreds or thousands of workers, creating new jobs in rural areas. Biofuel production will also increase the demand for suitable biofuel crops, providing economic stimulation to the agriculture industry.

Disadvantages of Biofuels

- **Efficiency:**Fossil Fuels produce more energy than some of the biofuels. E.g. 1 gallon of ethanol produces less energy as compared to 1 gallon of gasoline (a fossil fuel).
- **Cost:**Pumping fossil fuels from the ground is a difficult and expensive process leading to high costs. Production of biofuels require land, this impacts cost of biofuels as well as that of food crops. Also, though growing engineered biofuel crops can benefit farmers commercially but the excess number of such crops can also lead to loss of biodiversity.
- **Food shortages:**There is concern that using valuable cropland to grow fuel crops could have an impact on the cost of food and could possibly lead to food shortages.
- **Water use:**Massive quantities of water are required for proper irrigation of biofuel crops as well as to manufacture the fuel, which could strain local and regional water resources.

International Initiatives on Sustainable Biofuels

Production of sustainable biofuels is required to reduce their impact on environment and economy.

- **Roundtable on Sustainable Biomaterials (RSB):**
 - It is an international initiative which brings together farmers, companies, governments, non-governmental organizations, and scientists who are interested in the sustainability of biofuel production and distribution.
 - In April 2011, it launched a set of comprehensive sustainability criteria - the “**RSB Certification System.**”Biofuels producers that meet these criteria are able to show buyers and regulators that their product has been obtained without harming the environment or violating human rights.
- **Sustainable Biofuels Consensus:**
 - It is an international initiative which calls upon governments, the private sector, and other stakeholders to take decisive action to ensure the sustainable trade, production, and use of biofuels.
- **Bonsucro:**
 - It is an international not for-profit, multi-stakeholder organization established in 2008 to promote sustainable sugar cane.

- Its stated aim is to reduce "the environmental and social impacts of sugarcane production while recognising the need for economic viability".
- It does that through setting sustainability standards and certifying sugar cane products including ethanol, sugar and molasses.

Evolution of Biofuels in India

- 1975** India began examining the feasibility of blending ethanol with petrol. Six technical committees and four study groups were set up for the same.
- 1980** The Indian Oil Corporation conducted trials on 15 passenger cars & 21 two & three wheelers using 10% and 20% anhydrous ethanol blends.
- 2002** The government mandated blending of 5% ethanol in nine states and four union territories with a Rs 0.75 excise duty exemption. A Committee on Development of Biofuels was also constituted.
- 2003** The committee recommended strengthening the ongoing programme of blending of ethanol with petrol & launching a **National Mission on Biodiesel** based on jatropha plantation. Meanwhile the **National Auto Fuel Policy** recommended commercialisation of biofuel vehicles.
- 2004** Problems related to feedstock supply of molasses forced the Indian government to suspend mandatory blending of ethanol in petrol.
- 2005** The resurgence in sugar and molasses production in 2005 resulted in renewed interest in ethanol programme. The

government fixed the purchase price of ethanol by oil companies at Rs 18.25 per litre.

- 2006** The government announced a **Biodiesel Purchase Policy**, fixing the purchase price for oil companies at Rs 25 per litre.
- 2007** The **National Biofuels Draft Policy** came to light. A **Biofuel Mission** focusing specifically on pongamia and jatropha plants was also launched.
- 2009** **National Biofuel Policy, 2009** launched.

Recent Initiatives

- **Initiatives by Department of Biotechnology, Ministry of Science and Technology:**
 - The department successfully developed **2G Ethanol** and transferred the technology to Oil Marketing Companies (OMCs).
 - Developed **Indigenous Cellulolytic Enzyme** for the production of biofuels.
 - Demonstrated micro algae based sewage treatment technology.
 - It has strengthened the international collaboration to accelerate innovation in Sustainable Biofuel through multilateral programs like **Mission Innovation and Biofuture Platform**.
 - It is training & encouraging young researchers in the field of Bioenergy through Fellowships/Awards.
- **Pradhan Mantri JI-VAN Yojana, 2019:** The objective of the scheme is to create an ecosystem for setting up commercial projects and to boost Research and Development in 2G Ethanol sector.
- **Ethanol blending:**
 - The **2018 Biofuel Policy** has the objective of reaching 20% ethanol-blending and 5% biodiesel-blending by the year 2030.
 - The Government has reduced GST on ethanol for blending in fuel from 18% to 5%.
 - The Ministry of Petroleum & Natural Gas is making all efforts to increase ethanol supply for petrol.
- **GOBAR (Galvanizing Organic Bio-Agro Resources) DHAN scheme, 2018:** It focuses on managing and converting cattle dung and solid waste

in farms to useful compost, biogas and bio-CNG, thus keeping villages clean and increasing the income of rural households. It was launched under **Swachh Bharat Mission (Gramin)**.

- **Repurpose Used Cooking Oil (RUCO)** launched by Food Safety and Standards Authority of India (FSSAI) aims for an ecosystem that will enable the collection and conversion of used cooking oil to biodiesel.
- **National Policy on Biofuels, 2018:**
 - The Policy categorises biofuels as "**Basic Biofuels**" First Generation (1G) bioethanol & biodiesel and "**Advanced Biofuels**"- **Second Generation (2G)** ethanol, Municipal Solid Waste (MSW) to drop-in fuels, **Third Generation (3G) biofuels**, bio-CNG etc. to enable extension of appropriate financial and fiscal incentives under each category.
 - It expands the scope of raw material for ethanol production by allowing use of sugarcane juice, sugar containing materials like sugar beet, sweet sorghum, starch containing materials like corn, cassava, damaged food grains like wheat, broken rice, rotten potatoes, unfit for human consumption for ethanol production.
 - The Policy allows use of surplus food grains for production of ethanol for blending with petrol with the approval of **National Biofuel Coordination Committee**.
 - With a thrust on Advanced Biofuels, the Policy indicates a viability gap funding scheme for 2G ethanol Bio refineries of Rs.5000 crore in 6 years in addition to additional tax incentives, higher purchase price as compared to 1G biofuels.
 - The Policy encourages setting up of supply chain mechanisms for biodiesel production from non-edible oilseeds, Used Cooking Oil, short gestation crops.
 - Roles and responsibilities of all the concerned Ministries/Departments with respect to biofuels have also been captured in the Policy.

Looking ahead

- Promotion of the use of biofuels in transportation in the countries like India will help in reducing the crude import bill.

- Biofuels can help in rural and agricultural development in the form of new cash crops.
- Efforts for producing sustainable biofuels should be made by ensuring use of wastelands and municipal wastes that get generated in cities.
- A properly designed and implemented biofuel solution can provide both food and energy.
- A community-based biodiesel distribution programme that benefits local economies, from the farmers growing the feedstock to local businesses producing and distributing the fuel to the end consumer, can be tried.

Murder in the sewer.

The **occupation of sanitation work in India is intrinsically linked with the system of hierarchy and exclusion: The Caste System.** As **B R Ambedkar** pointed out, caste leads not only to the division of labour but of labourers as well.

All cleaning jobs are viewed as lowly and are assigned to people from the lowest rung of the social hierarchy. **Dalits** are mainly employed as sanitation workers – **manual scavengers**, drain cleaners, garbage collectors, and road sweepers. As per recent data by the government, **97 percent of manual scavengers in India are Dalits.**

Although the practice of manual scavenging is banned under the **Prohibition of Employment of Manual Scavengers Act, 2013**, the inhumane exercise continues.

Manual Scavenging Still Prevalent in India, because

- **Inefficient Sewage Management System:**In India, **most municipalities do not have the latest machines for cleaning the sewage systems** and thus sewage workers are required to enter the underground sewerage lines through manholes.
 - The **unskilled labourers**, meanwhile, are much **cheaper to hire** and contractors illegally employ them at a daily wage.
- **Ineffective Implementation of Policies:**Government programmes have majorly **emphasised the financial aspect of rehabilitation** and failed to address the **caste-based oppression** and related social conditions that have perpetuated this practice for centuries.

- Also, there are **no proper strategies put forward that liberate manual scavengers psychologically**. This pushes those in the practice to get even deeper into the practice of manual scavenging.
- **Lack of Social Mobility:** Due to **lack of basic amenities, education, and employment** opportunities, manual scavengers are compelled to their job, and even society does not accept them for community activities.
 - No one offers them a job and landlords forbid them from renting their houses. This leaves them vulnerable and **prevents them from moving upward in the strata**.

Effects of Manual Scavenging

- **Social Discrimination:** Most manual scavengers are stigmatised by the community due to the nature of their job.
 - They are **regarded as untouchable** and they are forced to accept their condition.
 - This problem is much deeper as **their children are also discriminated** against and forced to occupy the same work as their parents.
- **Caste Based Inequalities:** The caste is still regarded as a lower class and is excluded from moving to a better occupation.
 - As a result, the **scavenging work is seen as part of their natural occupation**.
 - Also, the marginal caste from rural areas moving to urban areas to seek a better livelihood always end up in the same occupation.
- **Health-Related Problems:** The scavengers are exposed to gases such as **carbon dioxide, ammonia and methane**. Long exposure to these gases may lead to serious health diseases or even death.
 - They are also **exposed to various infections** in the sewer, which is also common due to the numerous bacteria residing in the sewers.
 - As per the **National Commission for Safai Karamcharis (NCSK)** database, 608 manual scavengers have died between 2013 and 2017 while cleaning septic tanks.

Steps taken to tackle the Menace of Manual Scavenging

- The Prohibition of Employment as Manual Scavengers and their Rehabilitation (Amendment) Bill 2020
- The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013
- The Building and Maintenance of Insanitary Latrines Act of 2013
- Prevention of Atrocities Act, 1989
- Safaimitra Suraksha Challenge
- Swachhta Abhiyan App

How can India Curb Manual Scavenging?

- **Proper Identification:** Manual scavenging is both a **violation of human rights** and a **disgrace to humanity at large**. State governments should therefore identify the workers who clean toxic sludge on a priority basis to ensure effective policy implementation.
- **Proactive Involvement of Stakeholders:** In order to tackle this problem it would be necessary to involve all the major stakeholders involved.
 - They include the **District Administrative Officers, Chief Medical Officer, NGOs and Municipal Corporation** among other relevant officials.
 - The inclusion of the community around the areas that are most affected into the program is also of equal importance.
 - Seeking information from officials and the community will help in coming up with an informed decision on the best way to proceed with the initiative.
- **Mass Awareness:** Conducting a workshop with locals would assist the officials in spreading awareness regarding the legal implications that are related to engaging in scavenging and having dry toilets as well as **understanding the cause of the practice**.
 - The **awareness campaigns should not only address the dangers of scavenging** but also **give the community affected an alternative method of making money**.
 - Locals can also be allowed to suggest solutions they feel comfortable with.
- **Rehabilitation and Compensation of Manual Scavengers:** Creation of more employment is one of the most important rehabilitation processes.

- The jobs created would aim to offer equal opportunities to the locals. The jobs created also act as a means to assimilate manual scavengers into the community.
- In 2014, a **Supreme Court** order made it mandatory for the government to identify all those who died in sewage work since 1993 and provide **10 lakh each as compensation to their families.**
- **Investing in Proper Human Waste Management: Solving solid and liquid waste segregation** problems, as well as **bio composting at Municipal level**, are some of the ways through which we can utilise waste for the **benefit of humanity.**
 - By **treating waste as an asset, rather than a liability**, manual scavenging will be reduced in the future making a way to **Swachh Bharat and Swasth Bharat.**
- **Robotic Scavenging:** With the help of robotics and artificial intelligence, machines can be devised that can replace humans in manual labour.
 - **Bandicoot** is one such robotic machine that is engineered for cleaning any type of sewer manholes
- **Towards Social Integration:** The scavenging work generates little money that is not enough to educate a child. The child ends up **dropping** out and joining their parents in the same line of work.
 - Implementation of schemes that would help these children finish their studies would be an effective strategy in discarding the theories and myths associated with manual scavenging.

Rainbow of Hope: LGBTQIA+

- In recent years, several countries, including **India**, have **legally recognized third sex and homosexuals as equal citizens**, after a long struggle of several different movements and protests around the world.
- The **Preamble of Indian Constitution** recognises its citizens impartially as "**We the people of India**" and ensures **justice - social, economic, and political.**
- In **September 2018**, in the review of **Section 377 of Indian Penal Code**, the **Supreme Court** gave the **judgment to decriminalize adult**

consensual same-sex marriages. This decision is considered a landmark, both in terms of its **expansive interpretation of constitutional rights** and in terms of **empowering LGBTQIA+ community.**

- While it was a big achievement, it **does not mean that LGBTQIA+ people in India are absolutely free or treated equally to their fellow citizens.** It undermines the amount of work that remains to be done in India and around the globe.

LGBTQIA + Stands For

- While no term can fully capture the spectrums of genders and sexual identities in the world. LGBTQIA+ mainly stands for:

Recognition of LGBTQIA+ In India

- **Ancient India was about acceptance and celebration of all forms of love** and neutrality to the idea of homosexuality.
 - Visual example is the **Khajuraho Temple of Madhya Pradesh,** showcasing the existence of **sexual fluidity between homosexuals.**
- In **1861,** Britishers considered sexual activities **“against the order of nature”** including all **homosexual activities were criminalized under section 377** of the **Indian Penal Code.**
- In **1977,** **Shakuntala Devi** published the first study of homosexuality in India, called **“The World of Homosexuals”.**
 - It called for “full and complete acceptance and not just tolerance and sympathy”.
- In **1994,** they were **legally granted voting rights** as a **third sex.**
- In **2014,** the **Supreme Court of India** ruled that transgender people should be treated as the **third category of gender.**
- In **2017,** the **Supreme Court** gave the country’s LGBTQ community the **freedom to safely express their sexual orientation.**
 - An individual’s sexual orientation was protected by the **Right to Privacy.**

- On **6 September 2018**, the **Supreme Court struck down the part of Section 377 which criminalized consensual homosexual activities.**
- In **2019**, Parliament enacted **Transgender Persons (Protection of Rights) Act** with an objective to provide for **protection of rights** of transgender people, their **welfare**, and other related matters.

Cases - LGBTQIA+ Community

- **Navtej Singh Johar Vs. Union of India:** The SC held that **Article 14 of the Constitution guarantees equality before law** and this applies to all classes of citizens.
 - It restores **'inclusiveness'** of LGBTQ Community and **homosexuality was decriminalised.**
- **Shafin Jahan Vs. Asokan K.M. and Others (2018):** In this case, the SC observed that **choice of a partner is a person's fundamental right**, and it can be a same-sex partner.
- **National Legal Services Authority Vs. Union of India (2014):** The SC observed that **"recognition of transgenders as a third gender is not a social or medical issue, but a human rights issue"**.

Problems Faced by LGBTQIA+ Communities in India

- **Marginalisation:** LGBTQIA+ individuals may experience multiple forms of marginalisation—such as **racism, sexism, poverty** or other factors – alongside **homophobia or transphobia** that negatively impact their mental health.
 - Often, such marginalisation leaves LGBTQIA+ people **without access to the basic services such as medical care, justice and legal services, and education.**
- **Impact of Family Reactions on LGBT Children:** Rejection and serious negative reactions kept many LGBTQIA+ youngsters from telling their parents about their feelings.
 - In a society **bound by a rigid set of social and cultural norms** that dictate the **terms and conditions of education, career and marriage**, the lack of family support can prove to be a big blow to the **mental and physical health of LGBTQIA+ people.**

- **Unheard Rural Voices:** The voices of urban LGBTQIA+ people are heard through several online and real-world platforms.
 - Whereas rural LGBTQIA+ people often suppress their feelings due to **lack of exposure, comfort and internet connectivity** in their area because their **refusal to marry brings more physical abuse**.
- **Homelessness:** Most of the homeless LGBTQIA+ youth are **thrown out of their homes** for being queer, or they **ran away to escape an abusive situation**.
 - They **miss out on education and social support during critical formative years**.
 - And without any economic support, they often engage in **drug use** and risky sexual behaviors.
 - **Problems of Terminology:** LGBTQIA+ people are **labelled with negative stereotypes** and made fun of, thereby **robbing them of their goal of getting recognition** and making them feel socially excluded.
 - **Socially Unrecognised:** School uniforms, dress code and appearance, access points for travel (including ticket booking forms, security screening and toilets) are often gendered.
 - Frequently, LGBTQIA+ individuals are **forced to negotiate their gender identity** in public while on public transportation.
 - **Lack of Employment Opportunities:** Difficulties in obtaining accurate gender identity documents, including school records, adversely affect employment prospects.
 - **Discriminatory eligibility requirements** place **gender restrictions** on some jobs, which effectively exclude transgender and gender non-binary persons from getting the job.

Looking Ahead

- **Changing Social Attitude Toward LGBTQIA+ People:** As TV and movies are accessible to rural populations where social media has not yet penetrated, they are likely to be the **best tools for redefining family roles and attitudes through programs and stories that educate and**

enlighten, as well as relay LGBTQIA+ experiences in authentic and diverse ways

- Movies like **Badhaai Do, Shubh Mangal Zyada Saavdhan, Aligarh** can play a big role in changing the negative attitude of society towards LGBTQIA+ Community.
- **From Special Treatment to Equal Treatment: LGBTQIA + people don't seem to be aliens, they're not sick and their sexual preference is innate and being homosexual is a normal phenomenon and not a disease.**
 - **They deserve to be treated equally, not specially** and once they are included in Indian society as equals, they will get fully blended in collective development.
- **Gender Neutrality:** There is a need to **treat all genders as equal** with none discrimination.
 - It conjointly means **policies, language, associated social behaviour** should avoid characteristic roles per an individual's gender.
- **Towards Better Parenting:** Fundamental responsibility of any parent to accept their children's identity.
 - It is by accepting the child that they will transform society into one that values diversity and **accepts the uniqueness of each individual.**
- **Awaring and Empowering LGBTQIA+ Youth:** An open and accessible forum is needed so they feel recognized and comfortable sharing their feelings.
 - Platforms like **Gaysi and Gaylaxy** have helped carve out spaces for LGBT people to interact, share and collaborate.
 - **The Pride Month and Pride Parade Initiative** is also a good step in this direction.

The return of nuclear weapons on the global platform.

Recently the **tenth international conference to review the Nuclear Non-Proliferation Treaty (NPT)** concluded at the **United Nations** in New York. The

conference, however, **ended without a consensus document** which was quite unexpected in present times when several major powers are in conflict.

Another disappointing fact is that India, despite being one of the nuclear powers, has shown **little interest in NPT review**. What the need of the hour is for **India to pay a lot more attention to the international nuclear discourse** that is acquiring new dimensions and **take a relook at its own civilian and military nuclear programmes**.

NPT

- **About Nuclear Non-Proliferation Treaty:**The NPT is an international treaty whose **objective is to prevent the spread of nuclear weapons** and weapons technology, to **foster the peaceful uses of nuclear energy**, and to further the goal of disarmament.
 - It was **signed in 1968 and entered into force in 1970**. Presently, it has **191 member states**.
 - India is not a member.
 - The treaty requires countries to give up any present or future plans to build nuclear weapons in return for access to peaceful uses of nuclear energy.
 - It represents the **only binding commitment** in a multilateral treaty to the goal of disarmament by the **nuclear-weapon States (NWS)** (those who manufactured/ exploded a nuclear weapon or other nuclear explosive devices before 1st January, 1967).
 - **NPT Review Conference:**The parties to the NPT, which came into force in 1970, undertake a **review of the treaty's implementation every five years**.
 - The Tenth Review Conference, scheduled for 2020, was delayed because of the Covid-19 pandemic.

India's Nuclear Developments

§ **Historical Background:** Nuclear programme of India was **initiated in the late 1940s** under the guidance of **Homi J. Bhabha**.

- The **first nuclear explosion** undertaken by India in **May 1974**.
- India conducted a **series of nuclear tests in May 1998**, demonstrating its capacity to use nuclear energy for military purposes.
- After the 1998 tests, India enunciated a **doctrine of "No First Use" (NFU)** of nuclear weapons which was formally adopted in January, 2003.
- It says that **nuclear weapons will only be used in retaliation against a nuclear attack** on Indian territory or on Indian forces anywhere.

§ **Major Obstruction:** In the immediate aftermath of the **Cold War**, the US attempted to roll back India's nuclear and missile programmes which generated serious concerns in the latter.

- After the nuclear tests in May 1998, **India also faced economic sanctions from the US**.

§ **India-US Nuclear Deal:** Few years after the sanctions, the historic **India-US civil nuclear initiative** in 2005 produced a framework that ended India's extended conflict with the NPT system.

- The deal resulted in the **separation of India's civil and military nuclear programmes**.
- It was after a few years of this deal when **India regained the freedom to develop its nuclear arsenal and resume civilian nuclear cooperation with the rest of the world** (which was blocked since India's first nuclear test in May 1974).

§ **Current Scenario:** In 2018, **India completed its Nuclear Triad** as stated in its Nuclear Doctrine.

- o A Nuclear triad is a three-sided military-force structure consisting of land-launched nuclear missiles, nuclear-missile-armed submarines, and strategic aircraft with nuclear bombs and missiles.

- o However, it needs to be noted that even about a decade-and-a-half since the Indo-US Nuclear deal, **India has not bought a single nuclear reactor from the US.**

Issues Related to the Failure of NPT Review Conference

- **Deepening Divide among Powers:**The failure of the 10th Review Conference reveals a deepening **divide between the main sponsors of the NPT – the US and Russia**, a strong support for the NPT, even at the peak of the Cold War, was one **major area of cooperation between the US and the erstwhile Soviet Union.**

- In the conference, **Russia objected to critical references to its military control over the Zaporizhzhia nuclear power plant** in Ukraine.
- The **nuclear problems of the Middle East involving Israel and Iran** have also prevented successful outcomes at the NPT review conferences.
 - The 9th Review conference in 2015 ended without an agreement due to major differences over establishing a **Middle East zone free of weapons of mass destruction.**
- **Apprehensions of Non-Nuclear State Parties:** These parties have usually complained about the **lack of progress in implementing the disarmament** provisions of the NPT. The **absence of any dialogue on the arms control** by the nuclear powers has only worsened the situation.
 - The NWS, rather than reducing the salience of nuclear weapons, have started **putting greater emphasis on their strategic utility.**
 - Moreover, the **invasion of Ukraine**, a non-nuclear weapon state by Russia, a nuclear weapon power, further exacerbated the threat that non-nuclear states face.
 - The **Russian President threatened the use of nuclear weapons** on Ukraine.
 - **China as a Special Threat:** For the countries in Asia, **China's growing assertiveness** is a similar concern. The fear that **China might use its nuclear strength to seize the territories** of its neighbours, is real.
 - China is **also critical of the southeast Asian countries approving of the AUKUS grouping** and claims it as **violative of the provisions of the NPT.**
 - In the 10th Review conference, **Indonesia and Malaysia too raised concerns** about the implications of the AUKUS deal for the NPT.

Current Global Nuclear Discourse Result in

- Rising energy demands have led to a growing number of countries pursuing nuclear energy, and many countries wish to be energy-independent, in order to ensure a sustainable and dependable domestic energy supply.
 - Thus, the **international community should focus on reconciling the states'** desire for energy independence with their desire to both reduce the intrusiveness of **International Atomic Energy Agency (IAEA)** safeguards and **diminish the possibility of proliferation.**
- Although the non-nuclear weapon states (NNWS) welcome **New START** and other initiatives, they are **willing to see more concrete actions on reducing the role of nuclear weapons in national security doctrines**, reducing alert levels, and **increasing transparency.**
- More regions in the world, preferably comprising NWS, should enter into an **arrangement of establishing Nuclear-weapon-free zones.**

Key Areas of Focus for India

- **Enhancing Nuclear Power:** India must **recognise and adapt to the changing global nuclear discourse** as major instruments of great power military strategy. It must also **examine the potential** of its nuclear weapons, **if it is capable of deterring the expanding atomic arsenal of its rivals.**
 - After 1998, India premised its strategy on building **“credible minimum deterrence”**.
 - The time has come to reflect on the “credible” side of that strategy and redefine what the ‘minimum’ might be.
 - Also, India must **gradually revise its posture of ‘active deterrence’ to ‘dissuasive deterrence’** by building up its infrastructure along the border and improving the surveillance and warning capabilities among other things.
- **Enhancing Nuclear Energy Potential:** India, which commissioned Asia’s first nuclear power station more than 50 years ago, is currently stuck with a total generating capacity of barely 7,000 MW.
 - **India must find ways to end the current dormancy in its civilian nuclear power generation**, especially at a time when it has outlined an ambitious programme to reduce the share of fossil fuels in its energy consumption.

- **Revisiting Civil Nuclear Liability Act:** India's civil nuclear initiative was meant to **open up international collaboration to boost the production** of atomic electric power.
 - However, the **Civil Liability for Nuclear Damage Act of 2010 made it impossible for private players — internal and external — to contribute** to the programme.
 - **Revisiting that law is an urgent imperative** for any Indian strategy to rapidly raise the contribution of nuclear power to India's energy mix.

The evolving role of CSR in funding NGOs.

COVID-19 spurred a nationwide lockdown in India in 2020. Hence, a grave need for **localised social support emerged**. Both **private and public funds flowed to NGOs** working towards combating pandemic-induced challenges like loss of livelihood for vulnerable communities, food banks, and health and medical support.

Issues faced by NGOs pertaining to Funding

- In any such social effort, **programme is funded in huge amount through corporate social responsibility (CSR)** initiatives in India.
 - **For example:** An NGO working on education outcomes might receive funding for books, other online resources, teacher training, curriculum design, etc.
- NGOs have other expenses too such as rent, electricity, technology and human resource costs.
- Underfunding an NGO's costs **reduces the efficacy** and impact of the very programmes that funders support.
- NGOs **don't have clear financial reporting standards** and many **lack the internal capabilities to undertake a true-cost analysis**.

Impact of Pandemic:

- The pandemic exposed how vulnerable NGOs are to **financial stress**.

- **According to research**, 54% of NGOs had less than three months in reserve funds in September 2020.
- This number stood at 38% before the pandemic.
 - **Without adequate reserves**, NGOs cannot pay salaries or bills when faced with an unexpected funding shortfall.

Types of Funders:

- According to a recent survey of nearly 80 diverse social sector funders, there are **three distinct funder archetypes**:
 - **Programme proponents**: They value programme outcomes above all.
 - **Adaptive funders**: They support indirect costs and organisational development.
 - **Organisation builders**: See value in investing in stronger organisations in addition to programmes.

Impact of funding NGO through CSR:

Organisational development

- CSR funders account for **1/5th of all private funds in India**, mainly fund the NGO for its program running (instead of other administrative costs).
- They mostly **contribute little or no money to organisational development** and limit what they pay for indirect costs to a fixed rate often below 5%.
- NGOs' indirect costs range from 5% to 55%, depending on their mission and operating model.

Regulatory compliance

- CSR funders mostly **focus on regulatory compliances** because of the amendment in CSR law 2021.

- The amendment includes **penalties for non-compliance of the law.**

Shifting of resources

- Roughly 90% of the CSR funders are relatively **small, unlisted companies.**
- Companies that spend less than ₹ 50 lakh annually on CSR are **not required by law to have a CSR committee.**
- They generally leave **decision-making and action plans to company boards**, who may have little to no experience working with NGOs or on social impact.
 - Hence, their priorities tend to **sway towards risk avoidance, compliance, and cost minimisation.**
- Several larger companies have added CSR to the responsibilities of their **HR or administration or communications head**, rather than hiring professional leads, experienced in the social sector.

Lack of awareness

- Further, **not every company is aware of all the facets of the CSR rules** they are complying with.
- Many CSRs make errors on safety with the unintended consequence of leaving an NGO with unpaid bills.

Suggestions to Improve the current Situation:

- **Companies can pool their resources** with other mission-aligned CSR or social sector stakeholders, increasing their collective impact potential, and tap into professionals with experience working with NGOs.
- **CSR funders could learn from peers** who view organisational development and indirect costs differently.
 - **For instance:** ASK Foundation, the CSR arm of ASK Group, is working to enable better livelihoods for rural communities.

- In addition to funding support, corporates can aid the NGOs by offering their substantial accounting and finance capabilities.
 - NGOs **don't have clear financial reporting standards** and many lack the internal capabilities to undertake a true-cost analysis.
- A corporate that has developed a relationship of mutual trust with an NGO could offer **volunteer financial analysis services** to help the NGO calculate true costs.
 - It should communicate with other funders, and build **financial resilience**.

CSR practices are maturing and more CSR decision-makers are shifting their focus from compliance with CSR laws to the social impact they are making. It is need of the hour to move beyond signing cheques to recognising that, ultimately, what's good for Indian society is also good for business.

Public health need not be led by doctors alone.

- In India, it is believed that **becoming a public health professional does not require specific competencies** and thus anyone can do this work.
 - This can be explained from the fact that many medical experts such as cardiac surgeons are heads of health services at national, state or district levels who have **no training in public health**.
 - During the pandemic, many doctors with no training in public health provided expert advice on public health issues.
- This false belief comes from **not being able to differentiate between public health as a discipline and the public health sector**.
- Public sector health 'workers' working in State/Central government only provide grassroots-level services and thus are not public health professional.

- Thus, there is urgent need to **recognize Public Health Worker as a separate profession** that requires a specific set of competencies.

Public Health

- Public health is the science and art of **promoting, protecting, and improving health and wellbeing** through organised efforts of society.
- It encompasses all influences throughout life and, because the diversity is crucial, must be **multidisciplinary**.
- Public health approach **aimed** at working with communities or health systems.

Requirements of Public Health Worker

- **Four 'A' s** to describe public health workers-
 - academics,
 - activism,
 - administration and
 - advocacy.
- **Academics:**
 - It refers to a good understanding of evidence generation and synthesis by having a good grounding in **epidemiology and biostatistics**.
 - It is the **brain behind the discipline**.
 - These competencies are **crucial for monitoring and evaluating** programmes, conducting surveillance, and interpreting data and routine reporting.
- **Activism:**
 - It is the **heart behind the discipline**.
 - Public health is inherently linked to '**social change**' and an element of activism is core to public health.
 - Public health requires **social mobilisation** at the grassroots level by understanding community needs, community organisation, etc.
- **Administration:**
 - It refers to administering health systems at different levels: from a primary health centre to the **district, State, and national level**.

- This includes **implementing and managing** health programmes, addressing human resource issues, supply and logistical issues, etc.
- It includes **microplanning** of programme delivery, team building, leadership as well as financial management to some extent.
- A good understanding of the principles of organisational management and health administration is key for acquiring this competency.
- **Advocacy:**
 - Public health is a complex issue that requires **cooperation between different levels** of government in order to change the status quo.
 - It requires clear **enunciation of the need, analysis of alternative set of actions** and the cost of implementation or non-implementation.
 - It requires **4 competencies:** good communication and negotiation skills, health policy, health economics, health advocacy and global health.

Public Health services in India

- Public Health workers in India are **trained through:**
 - **a 3-year MD (Doctor of Medicine) in Community Medicine:** It is exclusively reserved for doctors (the extra year is devoted to provision of medical care) and
 - **a 2-year Masters in Public Health:** It is open to non-medical persons as well.
- Trainees in public health are placed in communities and at **various levels of the healthcare system** in addition to receiving classroom instruction.
- The trainees **develop a systems approach** and a **long-term perspective** that are the foundations of this discipline.
- A clinical approach is focused on individuals, while a public health approach is **broader in scope** and **aims to address larger issues**.
- In India, public health has been **medicalised** as it was largely a medical college-driven discipline.

Issues in Public Health professional in India

- **Resistance of the professionals:**
 - Despite the fact that none of the core public health functions need a medical qualification, public health has been medicalised in India as it was historically a medical college-driven discipline.
 - The resistance of the **medicalised public health fraternity** is why public health professionals continue to need a medical degree.
 - It also denies nursing, dental, and other health care professionals from contributing more to public health.
- **Lack of Skills:**
 - Because of their inclination to work at the community level, many doctors and other health professionals become **well-versed in public health**.
 - However, they do not pursue careers as public health professionals because they might **lack the necessary skills**.
 - **Clinicians with backgrounds in epidemiology and biostatistics** would not be qualified to work in the field of public health professionals because they lack not only other crucial and essential knowledge but also the proper perspective.
- **Lack of training:**
 - A **year of distance learning** or even a **brief training** programme cannot produce a public health professional in the same way that it cannot produce a doctor or a cardiologist.
- Furthermore, the practise of public health is dominated by medicine, which inevitably **introduces bias into how its primary goal is understood**.
- Public health is too often **out of reach** of where the real needs are.
- **Political interference**, which is frequently seen as interfering by experts, prevents the Public Health Workers from being free to identify issues with public health, set priorities, and offer solutions.

Suggestions

- Health professionals, the government, and the general public must **recognise public health as a distinct set of skills** and accord it the weight it rightfully bears.

- A major advance is the **recent proposal from the Health Ministry** to establish cadres for public health professionals and health management at the **State, district, and block levels**.
- The **quality of the public health training** being offered must also be considered.
- Today's conditions for successful public health strategies allow for key disciplines to **collaborate in the public and private sectors**, laying the groundwork for citizen action.
- Separate the public health functions of public health workers and public health professionals by creating an **independent organization** capable of spreading awareness on the differences of the functions of both groups.
- **Public health research** must be encouraged and funded at all levels in order to provide more clarity between public health worker and public health professional.

Public health needs to be **led by genuine, knowledgeable, lifetime and committed enthusiasts**, from whatever background. However, more needs to be done to attract the best and the brightest people into this discipline, which is very important for the nation's health.

IBBI amends regulations to boost value of stressed companies

- The Insolvency and Bankruptcy Board of India (IBBI) has said that its latest regulations on corporate rescue allow administrators and lenders of bankrupt firms to invite bids for individual assets of the distressed company.

Insolvency and Bankruptcy Board of India (IBBI)

- The Insolvency and Bankruptcy Board of India was established in October, 2016 under the Insolvency and Bankruptcy Code, 2016 (Code).

- The Bankruptcy Code consolidates and amends the laws relating to reorganization and insolvency resolution of corporate persons, partnership firms and individuals in a time bound manner.
- The Code aims to promote entrepreneurship, availability of credit and balance the interests of all the stakeholders.
- IBBI is a unique regulator. It regulates a profession as well as processes.
 - It has regulatory oversight over the Insolvency Professionals, Insolvency Professional Agencies, Insolvency Professional Entities and Information Utilities.
 - It writes and enforces rules for processes, namely, corporate insolvency resolution, corporate liquidation, individual insolvency resolution and individual bankruptcy under the Code.

Composition

- IBBI is constituted by ten-member committee which includes –
 - Chairman,
 - Three members from Central Government who cannot be below the rank of Joint Secretary or equivalent,
 - One member is nominated by RBI (Reserve Bank of India) in this committee,
 - Rest five members are nominated by Central Government.

Powers & Functions

- The IBBI has wide powers for administering the insolvency and bankruptcy regime in the country. These include –
 - Registration of insolvency agencies and professionals,
 - Levying fees from them,
 - Specifying the regulations and standards for agencies and professionals,
 - Monitoring and carrying out inspections and investigations on these entities etc.

IBBI Regulations, 2017

- **Insolvency and Bankruptcy Board of India (Grievance and Complaint Handling Procedure) Regulations, 2017:**
 - It provides a mechanism for **redressal of complaints and grievances** filed against insolvency professionals, insolvency professional agencies and information utilities.
- **Insolvency and Bankruptcy Board of India (Inspection and Investigation) Regulations, 2017:**
 - It provides a mechanism for **carrying out inspections and investigations** on insolvency professional agencies, insolvency professionals and information utilities and passing orders by Disciplinary Committee.

Key Highlights of the Amendment

- **Revisions in various timelines** related to **enforcement process** provided in the **(Grievance and Complaint Handling Procedure) Regulations, 2017 and (Inspection and Investigation) Regulations, 2017** for addressing the issue of delay in present mechanism.
 - **Effective participation of IPAs** (Insolvency Professional Agency) in regulating the IPs (Insolvency Professional) through **examination of grievances received against IPs.**
 - **Intimation to Committee of Creditor (CoC)/ Adjudicating Authority (AA)** about the outcome of Disciplinary Committee (DC) order.
- **Reason for Amendment:**
 - To have **expeditious redressal and also to avoid placing an undue burden** on the service providers.

Summing up

- The Insolvency and Bankruptcy Board of India (IBBI) has amended the regulations with the "objective to maximise value in resolution".

- IBBI will now allow administrators/lenders of bankrupt firms to invite bids for individual assets of the distressed company if they received no rescue plan for the entity as a whole the first time.
 - This will ensure that better quality information about the insolvent company and its assets is available to the market, including prospective resolution applicants, in a timely manner.
- The amendment also makes it mandatory for Resolution Professionals to provide an opinion on whether the company has been subject to avoidance transactions within 75 days of the start of corporate insolvency resolution process.
 - The Avoidance transactions are the financial deals done by a debtor, which put the creditors at a disadvantage or give preference to some creditors over others.
- Such provisions would allow stakeholders to claw back lost value and would disincentivise stakeholders from entering into such transactions.

Has the emissions deadline been extended?

- Recently, the Ministry of Environment, Forests and Climate Change (MoEF&CC) extended the deadline for coal-fired power plants to install equipment to cut sulphur emissions by two years.
- This was the third time that the Ministry has extended the deadline for the installation of pollution control technologies.

Coal-fired power plants in India

- At present, thermal power accounts for almost 60 per cent of India's total installed power generation capacity.
 - It is produced by burning fossil fuels like coal, gas, etc.
- It has been the centrepiece of India's energy ecosystem for several decades largely because it is the cheapest natural resource and is abundant in India.

Potential

- India's coal reserves are expected to last 100 years, compared to around 50 years for gas and about 16 years for oil.
- An expert group formed by NITI Aayog expects India's coal-based power generation capacity to touch 250 gigawatts by 2030 from around 202 gigawatts currently.

Emissions from coal-fired power plan

- Several principal emissions result from coal combustion. These include:
 - Sulphur dioxide (SO₂), which contributes to acid rain and respiratory illnesses
 - Nitrogen oxides (NO_x), which contribute to smog and respiratory illnesses
 - Particulates, which contribute to smog, haze, and respiratory illnesses and lung disease
 - Carbon dioxide (CO₂), which is the primary greenhouse gas produced from burning fossil fuels (coal, oil, and natural gas)
 - Mercury and other heavy metals, which have been linked to both neurological and developmental damage in humans and other animals
 - Fly ash and bottom ash, which are residues created when power plants burn coal

Why is the world turning against coal-fired power plants?

- The 2018 report by the IPCC warned against climate changes in the coming decades.
 - It stressed on severely limiting the operation of coal-fired power plants by 2050 to limit global warming.
- Coal-based power plants are also a significant contributor to pollutants such as particulate matter (PM), nitrogen oxides (NO_x) and sulphur dioxide (SO₂).

Genesis

- The environment ministry had in 2015 set new emission norms and fixed deadlines to meet them.
 - Since then, the deadlines have been extended thrice.
- A task force was constituted by the Central Pollution Control Board (CPCB). It was mandated with the task of:
 - categorising the existing thermal power plant of India and
 - fixing a deadline by which power plants of each category are supposed to meet the new emission norms.
- The task force recommended creation of three categories of power plants based on their locations.
 - The categorisation of power plants was done in April 2021 on the basis of an amendment to The Environment (Protection) Act, 1986.

Summing up

- Through a government notification, India extended a deadline for coal-fired power plants to install equipment to cut sulphur emissions by two years.
 - The process of eliminating sulphur compounds from the exhaust emissions of fossil-fuelled (coal-fired) power plants is known as flue gas desulphurisation (FGD).
 - This is accomplished by including absorbent materials, which can eliminate up to 95% of the sulphur from the flue gas by scrubbing.

Key highlights

- In the notification, the Ministry set up three different timelines for three categories of thermal power plants for ensuring the installation of pollution-control technologies.
- For power plants within a 10 km radius of Delhi-NCR and million plus cities (Category A):
 - The deadline has been extended to December 31, 2024, from the earlier deadline of December 2022.

- For power plants within a 10 km radius of critically polluted cities (Category B):
 - The deadline has been extended to December 31, 2025, from the earlier December 31, 2023.
- For all other power plants across the country (Category C):
 - The new deadline stands at December 31, 2026. The earlier timeline for such plants was December 31, 2024.
- The notification also extends the timeline until 2027 for retiring units (power plants that are over 25 years old or more) and 2026 for non-retiring units.

Concerns

- Environmentalists have raised red flags over the deadline extensions as it could potentially dent India's emission targets.
- They argue that India's National Clean Air Programme's target of reducing air pollution by 20-30% by 2024 will never be achieved if the government gives repeated leeway to violators.
- With this extension, a clear message has gone from the Central Government to all power companies that they should not take environmental norms seriously.

Challenges in implementing flue gas desulphurisation (FGD) technology

- As per the government, following are the challenges in implementing FGD technology:
 - Time period available for FGD commissioning was not sufficient if the deadlines were to be followed strictly.
 - Limited availability of vendors.
 - Price escalation due to the limited supply of components.
 - The COVID-19 pandemic had an impact on the supply chain and manpower availability.

Colour revolutions.

- Chinese President Xi Jinping appealed to members of the SCO to cooperate with each other in order to prevent foreign powers from destabilizing their countries by inciting colour revolutions.
- He was speaking in the city of Samarkand in Uzbekistan at the annual Shanghai Cooperation Organisation (SCO) summit.

Colour revolutions

- Colour revolutions refer to a series of uprisings that first began in former communist nations in Eastern Europe in the early 2000s.
- They are also used in reference to popular movements in the Middle East and Asia.
- Most of these revolutions involved large-scale mobilisation on the streets, with demands for free elections or regime change, and calls for removal of authoritarian leaders.
- Protesters often wear a specific colour, such as in Ukraine's Orange Revolution.
 - The term has also been used to describe movements named after flowers like the Jasmine Revolution in Tunisia.

Few examples of colour revolutions

- **Orange Revolution**
 - Yanukovich was backed by Russia while Viktor Yushchenko was an ally of the West.
 - The election commission had declared Yanukovich the winner of the election, drawing criticism from the US and European Union.
 - It refers to a series of protests that occurred in Ukraine between November 2004 and January 2005.
 - The movement was in response to reports that claimed that the country's 2004 Presidential election was rigged in favour of the incumbent President Viktor Yanukovich.

- In the aftermath of the elections, protesters wearing orange took to the streets across the country.
- The results were subsequently annulled and the Ukrainian Supreme Court ordered a re-vote, in which Yushchenko emerged victorious and the movement was concluded.
- **Tulip Revolution**
 - Also called the First Kyrgyz Revolution, the movement led to the ouster of Kyrgyzstan's President Askar Akayev in early 2005.
 - These protests were in response to the parliamentary elections in February 2022, in which Akayev's allies and family members won.
 - Protests erupted in the country against Akayev who had been President since 1990.
 - Finally, Akayev fled the country with his family and resigned later.
- **Jasmine Revolution**
 - The term Jasmine revolution was used in reference to Tunisia's national flower, to describe the movement.
 - This was the popular uprising that occurred between December 2010 to January 2011 in Tunisia.
 - It was in response to the underlying corruption, unemployment, inflation and lack of political freedoms in the country.
 - Tunisians were facing hardship and injustice under the reign of longtime President Zine el-Abidine Ben Ali.
 - The protests not only led to Ali's ouster in January 2011, but also inspired a wave of protests in North Africa and the Middle East, which came to be known as the Arab Spring.

Why China is worried of Colour Revolution?

- In 2019, Beijing had said the protests in Hong Kong had taken on colour revolution characteristics.
 - Critics feared this could undermine judicial independence and endanger dissidents.
 - Hong Kong's protests started in June 2019 against plans to allow extradition to mainland China.
 - Until 1997, Hong Kong was ruled by Britain as a colony but then returned to China.

- Under the "one country, two systems" arrangement, it has some autonomy, and its people has more rights. The new extradition bill was considered to be against these freedoms.
- Russia and China have long criticised colour revolutions for being destabilising influences.
- As per them, these revolutions have been orchestrated by the United States and its Western allies to overthrow regimes in order to further their own geopolitical interests.

Geopolitics without geoeconomics, a fool's errand.

- Over the past few years, New Delhi has managed to emerge as a major pivot of the global Indo-Pacific grand strategic imagination, avoided the temptations to militarise/securitise the **Quad (Australia, Japan, India, and the United States)**, and has ensured that the **Association of Southeast Asian Nations (ASEAN)** states do not feel uneasy by the ever-increasing balance of power articulations in the Indo-Pacific.

Indo-Pacific (IP) Region

- The term '**Indo-Pacific**' has gained currency as a new construct in recent times. The Indo-Pacific provides a geographic and strategic expanse, with the two oceans being **linked together by the ten ASEAN countries**.

Significance of Indo-Pacific region for India

- **Strategic significance:** Indo-Pacific is a multipolar region, contributing more than half of the world's GDP and population. A stable, secure, and prosperous Indo-Pacific Region is an important pillar of India's strategic partnership with the other countries especially USA.

- **Mineral Resources:** Maritime territories have also emerged as depositories of vital resources ranging from fish stocks to **minerals and offshore oil and gas**. The **South China Sea**, for instance, is estimated to hold some **10 per cent of the global catch of fish as well as 11 billion barrels of oil and 190 trillion cubic feet of gas**.
- **Economic Growth:** According to a report of the **Asian Development Bank (ADB)**, countries in the **Indo-Pacific produce over 60% of global GDP**, making the region the largest single contributor to global growth.
- **Commerce:** The region consists of many of the world's vital choke points for global commerce, including the Straits of Malacca which is very critical for the growth of world economy. The **Indo-Pacific region** also stands at the intersection of international trade, with around **32.2 million barrels of crude oil** pass through annually and **40% of global exports come from the region**.
- **Maritime Trade:** Pacific islands are strategically significant from New Delhi's point of view as they sit astride important sea lines of communication through which important maritime trade is conducted.

Chinese threat and increasing presence

- The **Chinese regime claims** that it has historical ownership over nearly the entire region, which gives it the right to manufacture islands, **declare defensive perimeters around its artificial islands**, and to chase ships from other nations out of the South China Sea. The **International Court of Arbitration at Hague** rejected this claim in 2016 but China rejects the authority of PCA, Hague.
- **China's increasingly active presence in the Indian Ocean region** as well as its efforts to expand geopolitical reach in Asia and beyond by the use of trade and military **Demand rule-based order** to secure India's interests and free trade. In the present time, the control of sea lanes and ports would be the game.

New Delhi is missing

- And yet, New Delhi's vision for the **Indo-Pacific appears half-baked**. Policymakers in New Delhi today do not appear to appreciate the inescapable linkages between geopolitics and geoeconomics.
- China's share in **global trade today is 15% and India accounts for 2%**.
- India's decision to take to the **Indo-Pacific and Quad** in a big way while unwilling to join two of the region's key multilateral trading agreements goes to show that **geoeconomics and geopolitics** are imagined and pursued parallelly in New Delhi, not as complimenting each other.
- The most recent example is **India's refusal to join the trade pillar of the Indo-Pacific Economic Framework (IPEF)** while deciding to join the three other pillars of the IPEF — **supply chains, tax and anti-corruption, and clean energy**.
- India's move to stay out of IPEF, a **U.S.-sponsored soft trade** arrangement at best, comes two years after India walked out of the negotiations on the **Regional Comprehensive Economic Partnership (RCEP)** which came to effect earlier this year. Both the agreements lay at the heart of the Indo-Pacific and could potentially shape the economic character of the broader Indo-Pacific region.

A regressive step, China factor

- There are several reasons why New Delhi's decision to **stay out of various regional trading agreements is a regressive policy decision**.
 - For one, the absence of the **world's fifth largest economy** from various regional trading platforms will invariably boost **China's geo-economic hegemony in Asia**.
- Given the growing fear in India about the **negative implications of China-India trade**, it is important to have a nuanced view of this.
 - For one, the fear **in India of China dominating the Indian market is not entirely unreasonable**.
- The reality is that despite the military stand-off on the **Line of Actual Control (LAC)**, India-China trade has only increased in the past year.
 - Therefore, if it is not possible for India to avoid trading with China; it is better for India to deal with the issue sooner rather than later .
- The optimism that many of the **foreign investments and businesses in China** would **relocate to India** after COVID-19, did not materialise.
 - Most of them went to countries such as Vietnam thereby highlighting the fact that we need to get our house in order; joining

some of these multilateral trading arrangements will force us to do precisely that.

- if **India is indeed serious about its maritime grand strategy**, which cannot be solely military in nature, it needs to get the states in the region to create economic stakes in India (something China has done cleverly and consistently) and vice-versa.
 - More so, without creating economic stakes with the states of the region, India's 'Act East' policy will revert to its earlier avatar — 'Look East'.

Looking ahead

- New Delhi should rethink its **geo-economic choices** if it is serious about enhancing its geopolitical influence in the region. Given that India has not closed the door on the trade pillar of the IPEF, we have an opportunity to rethink our position.
- India should also rethink its decision not to join the RCEP and seek to join the **Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)** from which the U.S. walked out and China is seeking to join.
- India should also **proactively lobby to become a part of the Minerals Security Partnership**, the U.S.-led 11-member grouping to secure supply chains of critical minerals.

The gender pay gap, hard truths and actions needed.

- India holds significant position with regards to the global economic growth and structural transformation story. But the asymmetries are still abound (exist in large numbers) in the country's labour market.
- A commensurate improvement in its labour market outcomes and a fair distribution of the fruits of economic progress will spur further economic growth and the benefits it brings.

Background

- The **Third International Equal Pay Day 2022** was observed on 18 September
- The symbolic day aims at highlighting issues and raising worldwide awareness to put an end to the history of gender discrimination that women are generally subjected to by getting paid less than their male counterparts.

Impact of the pandemic

- While the full impact of the pandemic is yet to be known, it is clear that its impact has been uneven, with **women being among the worst affected** in terms of their **income security**.
 - This is partly due to their representation in **sectors hard hit** by COVID-19, combined with the **gendered division** of family responsibilities.
 - Many women reverted to full-time care of children and the elderly during the pandemic, foregoing their livelihoods to do so.

Statistics

- **A wider pay gap:** The International Labour Organization's (ILO) "**Global Wage Report 2020-21**" suggests that Covid-19 crisis inflicted massive **downward pressure on wages**.
 - The **COVID-19 pandemic** had a **disproportionate effect** on women workers in terms of job and income losses which indicates that the pre-existing gender pay gap has widened.
- **Back pedaling progress:** The preliminary estimates from the Periodic Labour Force Survey (PLFS) 2020-21 show an increase in the gap by 7% between 2018-19 and 2020-21 owing to pandemic.
 - The data further suggests that **faster decline in female wages** during the pandemic contributed to this gap, compared to a faster growth in male wages.

- **Behind global standards:** Despite notable progress in closing the gender pay gap over time in India, the gap remains high by international standards.
 - Indian women earned, on an average, 48% less compared to their male counterparts in 1993-94.
 - The gap declined to 28% in 2018-19 as in the labour force survey data of then National Sample Survey Office (NSSO).

Discrimination as factor

- Globally, women on average, are paid about 20 per cent less than men. Though the gender pay gap is **vastly** attributed **purely** to **discrimination** based on one's gender or sex, though **individual characteristics** such as education, skills or experience also play a part.
- The **Gender-based discriminatory practices** include the following:
 - **Lower wages** paid to women for work of equal value
 - **Undervaluation** of women's work in highly feminised occupations and enterprises,
 - **Motherhood pay gap**, i.e. lower wages for mothers compared to non-mothers.

Steps to address gender inequality

- **International level:** The **United Nations** has put the challenge of closing various forms of gender inequality at the heart of its actions.
 - The **ILO** has enshrined 'equal pay for work of equal value' in its **Constitution**
 - The Convention on the Elimination of All Forms of Discrimination against Women (**CEDAW**) provides an international legal framework for realising gender equality and addressing the intersecting forms of discrimination and vulnerabilities among women and girls.
- **Sustainable Development Goals:** One of the targets of the **UN SDG 8** is "achieving full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value" by 2030.

- In support of this Goal, the **Equal Pay International Coalition (EPIC)** was launched in **2017** as a multi-stakeholder initiative led by the ILO, UN Women and the Organisation for Economic Co-operation and Development (OECD) that seeks to achieve equal pay for women and men everywhere.

Indian strategy

- **Legislative actions:** To close the gender pay gap, especially at the low-end of the wage distribution, India was one of the pioneering countries to enact the **Minimum Wages Act in 1948** followed by adoption of the **Equal Remuneration Act in 1976**.
 - In **2019**, India carried out comprehensive reforms in both the above legislations and enacted the **Code on Wages**.
- **Policy initiatives:** As per evidence, the Mahatma Gandhi National Rural Employment Guarantee Act (**MGNREGA**) in 2005 benefited rural women workers and helped reduce the gender pay gap, both directly and indirectly.
 - **Directly** by raising the pay levels of women workers who participated in the programme
 - **Indirectly** benefits accrued to women involved in agricultural occupations through higher earnings, as MGNREGA contributed to the rapid rise in overall rural and agricultural wages in the country.
- **Maternity Benefit (Amendment) Act:** In **2017**, the Government amended the **Maternity Benefit Act of 1961**, which increased the 'maternity leave with pay protection' from 12 weeks to 26 weeks for first two children for all women working in establishments employing 10 or more workers.
 - This is expected to **reduce the motherhood pay gap** among mothers in the median and high-end wage earners working in the **formal economy**.
- **Government schemes:** The efforts are being made through the **Skill India Mission** to equip women with market-relevant skills to bridge the learning-to-livelihood gap and the gender pay gap.

Looking ahead

- The full and productive economic growth requires a **human-centred recovery** from the pandemic, which will be made possible by improving women's employment outcomes and reducing the gender pay gap.
- While the **gender pay gap** is slowly narrowing, at the current rate of progress it will take **more than 70 years to close it completely**.
- Accelerated and bold action is needed to prevent a widening of the gender pay gap and closing the existing gap. Equal pay for work of equal value is key to achieving social justice for working women, as well as economic growth for the nation as a whole.

India's encounter with 'e-waste'.

India is now **planning a shift to two standard chargers across mobile phone brands and portable-electronic devices** which in turn will help in tackling the issue of **e-waste**.

- According to an ASSOCHAM-EY report on electronic waste management, India is estimated to have generated **five million tonnes of e-waste in 2021**, ranking only behind after China and the USA.
- This shift towards common chargers will not only simplify things for consumers but also **cut down on massive amounts of e-waste generated in the country**. Many advanced economies are already moving toward standard charging devices.
- The **European Union (EU)** has ordered the USB-C port as standard for all devices by mid-2024, including Apple's iPhone, which at present uses its own standard.
- Under the new rule, European Block consumers would **no longer require different charging devices and cables** every time they purchase a new mobile phone.
 - Also, European law would reportedly end the need for providing chargers with new phones and similar devices since **users would already have the necessary accessories**.

E-Waste

- E-Waste is **short for Electronic-Waste** and the term is used to describe old, end-of-life or discarded electronic appliances. It includes their components, consumables, parts and spares.
- Laws to manage e-waste have been in **place in India since 2011, mandating that only authorised dismantlers and recyclers collect e-waste.** E-waste (Management) Rules, 2016 was enacted in 2017.
- **India's first e-waste clinic** for segregating, processing and disposal of waste from household and commercial units has been **set-up in Bhopal, Madhya Pradesh.**
- Originally, the **Basel Convention (1992)** did not mention e-waste but later it addressed the issues of e-waste in 2006 (COP8).
 - The **Nairobi Declaration was adopted at COP9** of the Basel Convention on the Control of the Trans-boundary Movement of Hazardous Waste. It aimed at creating innovative solutions for the environmentally sound management of electronic wastes.
- The hazardous and toxic substances found in e-waste include lead (Pb) and cadmium (Cd) in printed circuit boards (PCBs). Lead is primarily found in all electronic products/ assembly, cathode ray tubes (CRT) etc. Cadmium is found in monitor/ CRTs while there may be mercury in switches and flat screen monitors. Mercury is also found in CFL, relays and some other specific products. Besides the cadmium in computer batteries, cadmium is also used for plating metal enclosures/ metal parts in sub assemblies. Polychlorinated biphenyls are found in capacitors and transformers and as brominated flame retardant on printed circuit boards, plastic casings, cable and polyvinyl chloride (PVC) cable sheathing for insulation and PBD/PBDE in plastic parts of electronics.

Impact of E-wastes

The consequences of improper e-waste disposal in landfills or other non-dumping sites pose serious threats to current public health and can pollute ecosystems for generations to come. When electronics are improperly disposed and end up in landfills, toxic chemicals are released, impacting the earth's air, soil, water and ultimately, human health.

The Negative Effects on Air

Contamination in the air occurs when e-waste is informally disposed by dismantling, shredding or melting the materials, releasing dust particles or toxins, such as dioxins, into the environment that cause air pollution and damage respiratory health. E-waste of little value is often burned, but burning also serves a way to get valuable metal from electronics, like copper. Chronic diseases and cancers are at a higher risk to occur when burning e-waste because it also releases fine particles, which can travel thousands of miles, creating numerous negative health risks to humans and animals. Higher value materials, such as gold and silver, are often removed from highly integrated electronics by using acids, desoldering, and other chemicals, which also release fumes in areas where recycling is not regulated properly. The negative effects on air from informal e-waste recycling are most dangerous for those who handle this waste, but the pollution can extend thousands of miles away from recycling sites

The air pollution caused by e-waste impacts some animal species more than others, which may be endangering these species and the biodiversity of certain regions that are chronically polluted. Over time, air pollution can hurt water quality, soil and plant species, creating irreversible damage in ecosystems. For instance, an informal recycling hub in Guiyu, China that was formed by parties interested in extracting valuable metals from e-waste, and subsequently has caused the region to have extremely high lead levels in the air, which are inhaled and then ingested when returned to water and soil. This can cause disproportionate neurological damage to larger animals, wildlife and humans in the area.

The Negative Effects on Soil

When improper disposal of e-waste in regular landfills or in places where it is dumped illegally, both heavy metals and flame retardants can seep directly from the e-waste into the soil, causing contamination of underlying groundwater or contamination of crops that may be planted near by or in the area in the future. When the soil is contaminated by heavy metals, the crops become vulnerable to absorbing these toxins, which can cause many illnesses and doesn't allow the farmland to be as productive as possible.

When large particles are released from burning, shredding or dismantling e-waste, they quickly re-deposit to the ground and contaminate the soil as well, due to their size and weight. The amount of soil contaminated depends on a range of factors including temperature, soil type, pH levels and soil composition. These pollutants can remain in the soil for a long period of time and can be harmful to microorganisms in the soil and plants. Ultimately, animals and wildlife relying on nature for survival will end up consuming affected plants, causing internal health problems.

The Negative Effects on Water

After soil contamination, heavy metals from e-waste, such as mercury, lithium, lead and barium, then leak through the earth even further to reach groundwater. When these heavy metals reach groundwater, they eventually make their way into ponds, streams, rivers and lakes. Through these pathways, acidification and toxification are created in the water, which is unsafe for animals, plants and communities even if they are miles away from a recycling site. Clean drinking water becomes problematic to find.

Acidification can kill marine and freshwater organisms, disturb biodiversity and harm ecosystems. If acidification is present in water supplies, it can damage ecosystems to the point where recovery is questionable, if not impossible.

The Negative Effects on Humans

As mentioned, electronic waste contains toxic components that are dangerous to human health, such as mercury, lead, cadmium, polybrominated flame retardants, barium and lithium. The negative health effects of these toxins on humans include brain, heart, liver, kidney and skeletal system damage. It can also considerably affect the nervous and reproductive systems of the human body, leading to disease and birth defects. Improper disposal of e-waste is unbelievably dangerous to the global environment, which is why it is so important to spread awareness on this growing problem and the threatening aftermath. To avoid these toxic effects of e-waste, it is crucial to properly e-cycle, so that items can be recycled, refurbished, resold, or reused. The growing stream of e-waste will only worsen if not educated on the correct measures of disposal.

Challenges Related to the Management of E-Waste in India

- **Less Involvement of People:**
 - A key factor in used electronic devices **not being given for recycling** was because consumers themselves did not do so.
 - However, in recent years, countries around the world have been attempting to pass effective "**right to repair**" laws.
 - **Involvement of Child Labor:**
 - In India, about **5 lakh child laborers in the age group of 10-14 are observed to be engaged in various E-waste activities** and that too without adequate protection and safeguards in various yards and recycling workshops.
 - **Ineffective Legislation:**
 - There is absence of any public information on most State Pollution Control Boards (SPCBs)/PCC websites.
 - **Health Hazards:**

- E-waste **contains over 1,000 toxic materials**, which contaminate soil and groundwater.
- **Lack of Incentive Schemes:**
 - No clear guidelines are there for the unorganized sector to handle E-waste.
 - Also, no incentives are mentioned to lure people engaged to adopt a formal path for handling E-waste.
- **E-waste Imports:**
 - Cross-border flow of waste equipment into India- 80% of E-waste in developed countries meant for recycling is sent to developing countries such as India, China, Ghana and Nigeria.
- **The Reluctance of Authorities' Involved:**
 - Lack of coordination between various authorities responsible for E-waste management and disposal including the non-involvement of municipalities.
- **Security Implications:**
 - End of life computers often contain sensitive personal information and bank account details which, if not deleted leave opportunity for fraud.

Provisions regarding E-waste in India

- India has a formal set of rules for electronic waste management, first announced **these rules in 2016 and amended it in 2018**.
 - Recently, the Ministry of Environment, Forest and Climate Change has released the **draft notification for Electronic Waste Management**
- The Ministry of Environment, Forest and Climate Change notified the **E-Waste Management Rules, 2016** in supersession of the **E-waste (Management & Handling) Rules, 2011**.
- Over 21 products (Schedule-I) were included under the purview of the rule. It included **Compact Fluorescent Lamp (CFL) and other mercury containing lamps**, as well as other such equipment.
- For the first time, the rules brought the **producers under Extended Producer Responsibility (EPR), along with targets**. Producers have been made responsible for the collection of E-waste and for its exchange.

- Various producers can have a separate **Producer Responsibility Organisation (PRO)** and ensure collection of E-waste, as well as its disposal in an environmentally sound manner.
- **Deposit Refund Scheme** has been introduced as an additional economic instrument wherein the producer charges an additional amount as a deposit at the time of sale of the electrical and electronic equipment and returns it to the consumer along with interest when the end-of-life electrical and electronic equipment is returned.
- The role of **State Governments has been also introduced** to ensure safety, health and skill development of the workers involved in dismantling and recycling operations.
- A provision of **penalty for violation of rules** has also been introduced.
- **Urban Local Bodies** (Municipal Committee/Council/Corporation) have been assigned the duty to collect and channelize the **orphan products to authorized dismantlers or recyclers**.
- Allocation of **proper space to existing and upcoming industrial units for e-waste dismantling and recycling**.

E-waste Recycling Practices in India

- **Informal Sector:**
 - 95% of the e-waste in India is being recycled in the non-formal sector and 5% of the e-waste volume is handled in the formal unit.
 - Non-formal units generally follow steps such as a collection of the e-waste from the rag pickers, disassembly of the products for their useable parts, components, modules, which are having resell value.
 - The rest of the material is **chemically treated to recover precious metals**. Due to inadequate means, it may cause **leaching of hazardous substances** to the air, soil, and water.
 - This recycling method has low efficiency and **recovery is carried out only for valuable metals** like gold, silver, aluminum, copper, etc.
 - Other materials such as tantalum, cadmium, zinc, palladium etc. could not be recovered.
- **Formal Sector:**
 - The recycling/ recovery of valuable substances by units in the formal sector is **carried out in a protected**

environment and with due care to minimise any damage to the environment or society.

- The use of advanced processes and technologies leads to the efficient recovery of metals.
 - Recovery technology by units in formal sector will be economically viable as the high cost of capital equipments and needed techniques could be shared by the volume of products.
- Efficiency of recovery in formal recycling is high and metals at the trace level can also be recovered. Some technology works with a zero-landfill approach.
- Most of the e-waste in India is channelised to non-formal sector, whereas the formal sector is **facing the problem of not having sufficient input materials.**

Preliminary Steps in the Disposal and Management of E-waste

- **Purchase Fewer Items**
 - The most common source of e-waste is the purchase of items that people do not require. Avoid buying new electronic devices that the maker can't reuse or discard. Opting for recyclable or long-lasting electronic products is a sustainable step toward e-waste management.
- **Donate or Give Away of E-waste**
 - If the consumer doesn't need something he/she can donate it so that it can be appreciated by someone else. Donations are excellent tax deductions since the amount is generally close to the worth of the asset if sold.
- **Selling Unused Products**
 - Selling electronics as soon as there is no need to keep them; newer models quickly depreciate in value. There is a plethora of companies that will gladly buy the old electronic equipment. They offer to provide 'money in exchange for product' services.
- **Awareness about the Recycling Possibilities**
 - There's a need to be aware of rules and regulations regarding the e-waste management on which the government is working. As e-waste is not hazardous if it is stocked in safe storage or recycled by

scientific methods or transported from one place to the other in parts or in totality in the formal sector.

- The e-waste can, however, be considered hazardous if recycled by primitive methods.

Looking ahead

- **Policies and Better Implementation:** There are various startups and companies in India that have now started to collect and recycle electronic waste. We need better implementation methodologies and inclusion policies that provide accommodation and validation for the informal sector to step up and help us meet our recycling targets in an environmentally sound manner.
- **Need of Inclusion:** Also, successfully raising collection rates required every actor to be involved, including consumers.
- **Encouraging Informal Sector:** It is needed to come up with a strategy to engage with informal sector workers because doing so will not only go a long way in better e-waste management practices but also aid in environmental protection, improve the health and working conditions of labourers and provide better work opportunities to over a million people.
 - This will make management environmentally sustainable and easy to monitor.
- **Increase in Employment:** The need of the hour is to generate employment, which can be done through identifying and promoting cooperatives and expanding the scope of the E-Waste (Management) Rules, 2016 to these cooperatives or the informal sector workers.

Solomon Islands and China pact.

After refusing access to US and UK ships to its ports earlier this month, the Solomon Islands has now temporarily halted all naval visits.

- The country's move is a departure from the norm and is seen as an attempt to appease China.

- This raises concerns about China's growing influence in the country and the region at large.

Solomon Islands

- The Solomon Islands is a sovereign country consisting of six major islands and over 900 smaller islands in Oceania, to the east of Papua New Guinea and northwest of Vanuatu.
- Its capital, Honiara, is located on the largest island, Guadalcanal.
- It is part of the ethnically Melanesian group of islands in the Pacific and lies between Papua New Guinea and Vanuatu.
- The country takes its name from the Solomon Islands archipelago, which is a collection of Melanesian islands that also includes the North Solomon Islands (a part of Papua New Guinea).
- It excludes outlying islands, such as the Santa Cruz Islands and Rennell and Bellona.
- The islands, which were initially controlled by the British Empire during the colonial era, went through the hands of Germany and Japan.
- It then went back to the UK after the Americans took over the islands from the Japanese during World War II.
- The islands became independent in 1978 to become a constitutional monarchy under the British Crown, with a parliamentary system of government.
- Nevertheless, its inability to manage domestic ethnic conflicts led to close security relations with Australia, which is the traditional first responder to any crisis in the South Pacific.

China in picture

- Earlier this year, the Solomon Islands established a security agreement with China, saying it needed Beijing's assistance with its domestic security situation.
- But the announcement had rattled the west, esp. the US, Australia and others in the Indo-Pacific region.

- The concerns were that the agreement could potentially lead to a Chinese military base on the island nation and a gain in power-projection capabilities.
- At that time, following intense scrutiny, the Solomon Islands had denied that the agreement would allow China to establish a naval base.
- The Island insisted that the agreement was only to assist the Solomon Islands with what he called “hard internal threats”.

Solomon Islands’ stance

- The government has asked all partner countries with plans to conduct naval visits or patrols to put them on hold until a revised national mechanism is in place.
- The revised national mechanism applied to all foreign vessels seeking access to the country’s ports.
- The nation wanted to build up its own naval capacity.
- It has some unfortunate experiences of foreign naval vessels entering its waters without any diplomatic clearance.

China’s growing influence

- There is no dispute that China has been rapidly increasing its presence and influence in the region for over three decades, particularly in the South Pacific.
- Certainly Beijing views the Pacific Island region as an important component of its Belt and Road Initiative (BRI).
- Specifically, it sees the region as a critical air freight hub in its so-called Air Silk Road, which connects Asia with Central and South America.

Concerns of the West

- The United States and its regional allies, such as Australia and New Zealand, are concerned that the China-Solomon Islands security pact allows Chinese naval vessels to replenish there.

- That could open the door to a Chinese naval base, which would significantly extend China's military reach in the South Pacific.”
- It is likely that this security agreement between China and the Solomon Islands has been driven by, what the CFR calls, Beijing's “sense of vulnerability” in the region.

Rationale for the Solomon Islands' increasing proximity to China?

- The Solomon Islands had cultivated strong ties with Taiwan, which ended with the emergence of the current government in Honiara.
- In 2019, the regime change switched Taiwan for China.
- This was supposedly after Beijing offered half a billion US dollars in financial aid, roughly five times what Taiwan spent on the islands in the past two decades.
- It has been alleged by the pro-Taiwan Opposition that the incumbent government has been bribed by China.

China interested in the Solomon Islands

- Isolating Taiwan: The Solomon Islands was one among the six Pacific island states which had official bilateral relations with Taiwan.
- Supporter in UN: The small Pacific island states act as potential vote banks for mobilising support for the great powers in international fora like the United Nations.
- Larger EEZ: These states have disproportionately large maritime Exclusive Economic Zones when compared to their small sizes.
- Natural resources: Solomon Islands, in particular, have significant reserves of timber and mineral resources, along with fisheries.
- Countering US: But more importantly, they are strategically located for China to insert itself between America's military bases in the Pacific islands and Australia.

Geopolitical configuration in the region

- Diminishing western influence: The Pacific islands, in the post-World War II scenario, were exclusively under the spheres of influence of the Western powers, in particular, the US, UK, France and Australia and New Zealand.
- Inserting into western hegemony: All of them have territorial possessions in the region, with the three nuclear powers among them having used the region as a nuclear weapons testing ground.
- Shifting of dependencies: The smaller island nations of the region are heavily dependent on them, especially Australia as it is a resident power.

Damage control by West

- Australia has reacted with boosted finances, and by extending its current security mission till 2023 when the islands will host the Pacific Games.
- The US has responded by considering reopening its embassy in Honiara after a long 29-year gap.
- New Zealand has shed its typical restraint about China and has criticised it for attempting to militarise the Pacific islands.

Comparing Indian Constitution with British constitution.

- The British constitution is a **queer mixture of the monarchical, aristocratic and democratic principles.**
- The institution of Kingship shows that there is **monarchy** in England. The existence of House of Lords gives an idea that England has an **aristocratic type of government.** The House of Common reflects actual working of a **full-fledged democracy** in this country. But all these **diverse political elements have been beautifully welded together** to produce the final effect of perfect representative democracy. Moreover Britain has an official state religion.
- However, Indian Constitution is **republic in nature** and it **strictly adheres to the principles of democracy, secularism and socialism.**

MAIN FEATURES OF BRITISH CONSTITUTION

- **Legislature:**
 - Parliament is bicameral but has three parts, consisting of the **sovereign (Crown-in-Parliament)**, the **House of Lords**, and the **House of Commons** (the primary chamber).
 - Both houses of Parliament meet in separate chambers at the **Palace of Westminster**.
 - In theory, the **UK's supreme legislative power is officially vested in the Crown-in-Parliament**. However, the **Crown normally acts on the advice of the prime minister**, and the powers of the House of Lords are limited to only delaying legislation; **thus power is de facto vested in the House of Commons**.
 - **House of Lords (strength is not fixed):**
 - It includes two different types of members: the **Lords Spiritual**, consisting of the **most senior bishops of the Church of England**; and the **Lords Temporal**, consisting mainly of life peers, appointed by the sovereign, and of 92 hereditary peers, sitting either by virtue of holding a royal office, or by being elected by their fellow hereditary peers.
 - Prior to the opening of the **Supreme Court in October 2009**, the **House of Lords also performed a judicial role through the Law Lords**.
 - **House of Commons:**
 - It is an **elected chamber with elections to 650 single-member constituencies** held at least **every five years under the first-past-the-post system**.
 - The party with the largest number of members in the Commons forms the government.
 - By constitutional convention, all government ministers, including prime minister, are members of the House of Commons and are accountable to the house.
- **Executive:**
 - The executive in Britain is called as Crown. **The Crown, as an institution, consists of the following:**
 - Queen/King
 - Prime Minister
 - Council of Ministers (CoM)
 - Permanent Executive/Civil Servants

- Privy Council
 - Executive power in the United Kingdom is exercised by the Sovereign, Queen Elizabeth II, via **Her Majesty's Government** and the **devolved national authorities** - the Scottish Government, the Welsh Assembly Government and the Northern Ireland Executive.
 - The **monarch appoints a Prime Minister as the head of Her Majesty's Government** in the United Kingdom.
- **Judiciary**
 - Judiciary originated in Britain when Henry II had assigned five members to listen to complaints and give remedy in 1178.
 - The objective of independence of the judiciary from the power of the executive branch did not secure the success over arbitrary Royal prerogative **until the Act of Settlement in 1701**.
 - Then the Glorious Revolution which **laid down the concept of Rule of Law instead of the will of the monarch**.
 - In the absence of the written Constitution, **it highlighted the relevance of parliamentary sovereignty**.
 - Then came the **Constitutional Reform Act 2005** and in the next year the new Judicial Appointment Commission. In 2007 the Ministry of Justice was created. **Finally, in 2009 the judicial function of parliament ended as the independent UK Supreme Court was established**.
 - Supreme Court got its jurisdiction from **the Appellate Committee of the House of Lords and the devolution jurisdiction from the Privy Council**. SC is presided by twelve independent judges.
 - For historical reasons, as a state made up of several separate jurisdictions, the **United Kingdom does not have a single unified legal system**.
 - Instead, there is one system for England and Wales, another for Scotland, and a third for Northern Ireland.
 - **In most cases, The Supreme Court sits above all of these as the final court of appeal**.
 - However **Judicial Committee of the Privy Council** is the highest court of appeal **in some cases**.

SIMILARITIES:

- **Parliamentary system of government:**

- Both India and Britain has a Parliamentary form of government
- The Prime Minister and his Ministers are responsible to the legislature for their acts and policies. In this system, **the executive and legislature are not separated.**
- Ministers, who belong to the majority party in the Parliament remains in office as long as they retain its confidence.
- **Rule of Law:**
 - Another important feature of the British constitution is the Rule of Law. Constitutionalism or limited government is the essence of Rule of Law. This checks the arbitrary action on part of the Executive
- **Similarities in the organs of government:**
 - **Executive:**
 - **Presence of real and nominal executive:**
 - **In India**, The President is the nominal executive while the Prime Minister is the real executive
 - Thus, the President is head of the State, while the Prime Minister is head of the government
 - **In Britain, Crown is the nominal executive** while the Prime Minister is the real executive.
 - **Cabinet form of government**
 - Britain and India **has a Cabinet form of government.**
 - A cabinet is a plural or collegiate form of government.
 - The power **doesn't lie in one person, but the entire Council of Ministers.**
 - The principle is, "all Ministers sink and swim together".
 - It is **based on collective responsibility towards the Lower House.**
 - **Appointment of Prime Minister:**
 - Leader of the political party with an absolute majority of seats in the Lower House is chosen to be the Prime Minister in both countries.
 - If no party has an absolute majority, the leader of the largest party is given the first opportunity to form a coalition.
 - **Position of the Prime Minister**
 - Constitutional position of the **Indian P.M. is modeled on the British P.M.**
 - In both the country **PM is the head of the Cabinet.**

- He/She is the connecting link between the Queen/President and the Cabinet as well as the King/President and the Parliament.
- The life of the House depends on the P.M. He may advise the dissolution of the House.
- The other Ministers are appointed on the advice of the P.M.
- **Permanent Civil Servants/Bureaucrats**
- Indian bureaucracy is modeled on the British bureaucracy.
- **Some common features are** recruited through competitive exams, they are expected to be politically neutral etc.
- **Legislature**
 - Both the British and Indian Parliament is **bicameral** i.e there are two houses or chambers. Just like **Lok Sabha** (Lower House) and **Rajya Sabha** (Upper House) in India, British Parliament consists of **House of Commons** (Lower House) and the **House of Lords**.
- **Independence of Judiciary**
 - The actions of Executive **can be declared ultra vires in both the systems**
 - The judiciary is **considered the highest interpreter of the Constitution**
 - Off late, there has been a splurge in judicial activism in Britain and judiciary is becoming more and more active.
 - **For example: Miller case of 2017**
 - It is constitutional law case decided by the UK Supreme Court in 2017, which **ruled that the British Government (the executive) may not initiate withdrawal from the European Union** without an Act of Parliament. The case was seen as having constitutional significance in **deciding the scope of the royal prerogative in foreign affairs**.
 - **A similar evolution of judiciary has been noticeable in the Indian case** too.
 - **Security of tenure of judges:**
 - The Rule of Law in Britain is safeguarded by the provision that **judges can only be removed from office for serious misbehavior** and according to a procedure **requiring the consent of both the Houses of Parliament**.

- So, the judges are able to give their judgments without any fear or favor.
- The same has been adopted in India, where independence of Judiciary is hailed as an unmistakable part of the Constitution
- **Similarities in elections:**
 - The **first-past-the-post system** is used for general elections to the House of Commons as well as Lokh Sabha
- **Presence of Fundamental Rights:**
 - The history of human rights in the United Kingdom is one of the oldest. **An integral part of the UK Constitution, human rights derive from** common law, from statutes such as the Magna Carta, the Bill of Rights of 1689 and the Human Rights Act 1998, from membership of the Council of Europe, and from international law.
 - In India, the **fundamental rights are provided for in Part III of the Constitution** i.e., in Articles 12-35.

DIFFERENCES

Unwritten Constitution:

One of the most important features of the British constitution is its **unwritten character**. There is no such thing as a written, precise and compact document, which may be called as the British constitution.

The main reason for this is that **it is based on conventions and political traditions**, which have not been laid down in any document, unlike a written constitution, which is usually a

Written

Indian Constitution, in comparison, is the lengthiest written constitution in the world.

product of a constituent assembly.

Evolutionary

The British constitution is a specimen of evolutionary development. **It was never framed by any constituent assembly.** It has an unbroken continuity of development over a period of more than a thousand years.

Flexible

The British constitution is a **classic example of a flexible constitution.** It can be passed, **amended and repealed by a Simple Majority** (50% of the members present and voting) of the Parliament, since no distinction is made between a constitutional law and an ordinary law. Both are treated alike. The element of flexibility has provided the **virtue of adaptability and**

Framed by a constituent assembly

Indian Constitution is framed by a constituent assembly and it has well defined provisions

Both flexible as well as rigid

Indian Constitution, in contrast, is **both flexible as well as rigid.** This compliments the basic ideology of the Indian Constitution quite well, wherein certain features like Sovereignty, Secularism, and Republic et al have been held sacrosanct, but otherwise the Constitution is amendable.

adjustability to the British constitution.

Constitutional monarchy

The Head of the State in Britain (that is, King or Queen) enjoys a hereditary position.

Unitary:

The British constitution has a unitary character as opposed to a federal one. **All powers of the government are vested in the British Parliament**, which is a sovereign body. There is only one legislature. England, Scotland, Wales etc. are administrative units and not politically autonomous units.

Republic

India has a republican system in place of British monarchical system. the Head of the State in India (that is, President) is elected.

Federal in nature:

The Constitution of India **establishes a federal system of government**. It contains all the **usual features of a federation, viz.**, two government, division of powers, written Constitution, supermacy of Constitution, rigidity of Constitution, independent judiciary and bicameralism

Sovereignty of Parliament

The term Sovereignty means Supreme Power. A very important feature of the British Constitution **is sovereignty of the British Parliament** (a written constitution being absent).

The British Parliament is the only legislative body in the country with unfettered power of legislation. **It can make, amend or repeal any law. The courts have no power to question the validity of the laws passed by the British Parliament.** The British Parliament may amend the constitution on its own authority, like an ordinary law of the land.

Vital role of conventions:

A necessary corollary to the unwritten character of the British Constitution is that **conventions play a very vital role in the British political system.**

For example, while the Queen has the prerogative to refuse assent to a measure passed by the British Parliament, but by convention, she doesn't do so and the same has become a principle of the constitution itself.

Parliamentary powers are restricted:

The Parliament is not supreme in India and enjoys limited and restricted powers due to a written Constitution, federal system, judicial review and fundamental rights.

Minimal role for conventions:

In Indian political system, **conventions have minimal role.** Rules and Procedure are detailed in Constitution, and it is further backed by numerous statutes.

Official religion:

The official religion of the United Kingdom is Christianity, with the Church of England being the state church of its largest constituent region, England.

Prime Minister will always be from Lower House:

It is a convention in Britain that the P.M. will always be a member of the Lower House (House of Commons) only.

Minister should be a member of Parliament:

The members of Parliament alone are appointed as ministers in Britain

Legal responsibility of Ministers

Britain has the system of legal responsibility of the minister. They are required to countersign the official acts of the Head of the State

The Constitution of India **stands for a secular state**. Hence, **it does not uphold any particular religion** as the **official religion** of the Indian State

Prime Minister can be from both the houses:

In India, the PM can be a member of either House of Parliament, i.e. Lok Sabha or Rajya Sabha.

In India, **a person who is not a member of Parliament can also be appointed as minister**, but for a maximum period of six months

India has no such system. Unlike in Britain, **the ministers in India are not required to countersign the official acts** of the Head of the State

Privy Council

It has been one of the advisory bodies to the Crown. It has **lost relevance because of the emergence of the Cabinet**. It has some supervisory role w.r.t. University of Oxford, Cambridge etc. It also has some role in resolution of disputes related to the Church as well as a Court of Appeal in some admiralty cases.

India does not have such a mechanism.

Shadow cabinet

It is a unique institution of the British cabinet system. It is formed by the opposition party to balance the ruling cabinet and to prepare its members for future ministerial office.

There is no such institution in India

Hereditary members in Parliament

Upper house of British Parliament (**House of Lords**) has hereditary members.

Indian Parliament **doesn't have hereditary members.**

Weaker upper house

The House of Lords can propose and make changes, known as amendments. **However its powers are limited**; if it doesn't approve of a piece of legislation, **it can only delay its passage into law for up to a year.**

In fact, the **House of Lords could be labeled as one of the weakest upper house in the world.** Since the passage of the Act of 1919 and 1949, the **House of Lords has lost all real legislative powers. It is simply a delaying chamber now.**

It can delay an ordinary bill for a maximum period of one year and money bill for a maximum period of one month.

Leader of lower house:

The Prime Minister, although head of the Government and an MP, **is now not usually the Leader of the House of Commons.** The Leader of the House of Commons, a member of the Government, is the chief spokesman for the majority party on matters of the internal operation of the House of Commons.

Rajya Sabha has equal powers with Lok Sabha, as far as an ordinary bill and Constitution amendment bill is concerned.

All bills (except money bills) **need to be passed in both the houses** to become an Act

Under the Rules of Lok Sabha, the **'Leader of the House' means the prime minister**, if he is a member of the Lok Sabha, or a minister who is a member of the Lok Sabha and is nominated by the prime minister to function as the Leader of the Hous

Features of British Speaker

In UK, there is a **convention that once a Speaker, always a Speaker**. It means that a Speaker's constituency is unchallenged. Once a person is appointed as a **Speaker he gives formal resignation from his political parties**. He has a casting vote and ultimate disciplinary powers with respect to the conduct of the House and MPs.

Speaker of Lok Sabha

Though our position is midway between the British and the US model, it is theoretically closer to the British model. But similar conventions do not exist. For instance:

- **It is not necessary for the Speaker to resign from his party**
- If he decides to resign, he will not be disqualified under the Anti-defection law.
- No convention in India that he will be elected uncontested.

Limited scope for judicial review

Under the **doctrine of Parliamentary sovereignty**, the judiciary **lacks the intrinsic power to strike down an Act of Parliament**. However, the subordination of common law to statute law does not mean the subordination of the Judiciary to the executive. **Courts in Britain retain certain powers:**

- Of interpreting the precise meaning of a statute.
- Of **reviewing the actions of ministers and other public officials** by applying the **doctrine of ultra vires** (beyond powers).
- Of applying the concept of natural justice to the actions of ministers and others.

However the lack of concept of 'Basic Structure' makes **amending power of the Parliament supersede** any judicial pronouncement.

The Supreme Court and High Court **can declare the parliamentary laws as unconstitutional** through its power of judicial review.

British Constitution **does not mentions Directive Principles and Fundamental Duties**

The **Directive Principles of State Policy**, embodied in Part IV of the Indian Constitution, are directions given to the state to guide the establishment of an economic and social democracy.

The fundamental duties (embodied in Part IVA) **serve as a reminder to citizens that while enjoying their rights, they have also to be quite conscious of duties** they owe to their country, their society and to their fellow-citizens

Feminist Foreign Policy for India.

- The debate on the participation and role of women in foreign affairs is being raised with increasing frequency at both **national and international levels**.
- There is **growing attention to the imbalances** in the representation of women in leadership and other key positions in the area of foreign policy.
- There has been evidence of the **positive effect of including women** in several key areas of foreign policy.

Female Centric Foreign Policy/ Feminist Foreign Policy

- **Feminist foreign policy (FFP)** is based on the recognition that women and men experience conflict and war differently.
- Different social roles and positions in society lead to **different consequences** from war, and each gender contributes differently to peacebuilding.
- **Traditional approaches** to foreign and security policy do not take into account the unique challenges faced by women, which can lead to significant disparities in outcomes.

- This imbalance leads to **incomplete political analyses** and continued gender inequalities.
- FFP takes a **bottom-up approach** to re-thinking traditional power structures to include a more intersectional ideology.
- The approach rests on **two important pillars**:
 - Greater representation at the decision-making table.
 - Policy outputs that consider the impact on women and the marginalised.

Gender lens in foreign policy is needed

- It will provide **fresh perspective** to foreign policy machinery and will strengthen outcomes for a **sustainable future**.
- It will offer an opportunity for India to place some of its existing efforts in a **wider strategy** on gender mainstreaming with a **stronger long-term impact**.
- It will influence **change in existing systems** for the country.
- It will have a **deep and positive impact** on the fast-changing world order.

Efforts of Indian government

Climate Change and Disaster Management:

- For the very first time, solar business models developed by the **International Solar Alliance (ISA)** took into consideration gender equity, especially for **the solar pumping program**.
- **India's Solar Grandmother's Programme**, where non-literate older women from remote rural areas are trained in basic engineering to ensure proper functioning of solar panels in their communities.

Development Cooperation and Assistance:

- From 2015 to 2017, **USAID (United States Agency for International Development)** partnered with the Governments of India and Afghanistan to support the **Self-Employed Women's Association (SEWA)**.
 - It is an Indian women's cooperative.
 - The cooperation aimed to implement the Afghan Women's Empowerment Program.

Multilateral Institutions:

- India has deployed the first-ever all **female police** unit to the **United Nations Mission in Liberia (UNMIL)**.

International efforts

- The **G20's national gender equality plans** and strategies are aimed at advancing the agenda of women at work.
- The **BRICS (Brazil, Russia, India, China and South Africa) Gender Forum 2018** and BRICS Dialogue on the future of work: **Towards a women-led growth framework, 2021** is also a progressive step.

Areas where India has an opportunity to adopt a feminist approach:

Emerging Non-Traditional Regional Challenges:

- **Centralising the role of women** in non-traditional security policies in India's neighbourhood and South Asia should be given a priority.
- FFP should be applied to unpack the perceived demarcation between **"hard" and "soft"** issues and engage across issues and sectors from a position of equity and inclusion.

Health Sector:

- Health diplomacy has been a prominent feature of India's Foreign Policy.

- Many of India's actions during the pandemic **resonate with the core principles of inclusion of the FFP discourse.**
- India should increase support for proposals dedicated to women's empowerment and include gender as a criterion for the assessment of its **High Impact Community Development Projects.**

Regional and Global Trade:

- It is necessary to **build allies** among working within institutions, to include the gender lens within the **overall agenda setting process.**
- There has been increase in both the number of **FTAs (Free Trade Agreement)** signed and the number of gendered considerations in these agreements.
- But they are **non-binding and non-mandatory**, and require gender to be incorporated as a trade issue for women to reap the full benefits of free trade and open market access.

Economic cooperation

- Various studies have shown that when women gain access to better economic opportunities, the **benefits multiply across society.**
- South Asia is marred by **cross-border trade barriers** that render opportunities **unequal for women and men.**
- Thus, to facilitate the participation of women, there is a need to:
 - Improve digitisation at India's land ports,
 - Increase transportation access to trade centres in remote areas, and
 - Invest in border infrastructure

Invest in reviving the gender track in regional multilateralism

- South Asian Association for Regional Cooperation (SAARC) is at stagnation point since 2016.

- Thus, mechanisms to prevent the trafficking of women, technical committees on women and children, and gender policy advisory group have all stalled.
- India should restart these initiatives through SAARC or other institutions such as the **Bay of Bengal Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)**, or **Bangladesh, Bhutan, India and Nepal (BBIN)**.

Disaster and emergency response

- India's regional role as the first responder for humanitarian assistance and disaster relief can be complemented with a **strong gender policy component**.
- This should include **discussions with the host government on addressing the specific needs of women and children** in crisis areas.
 - This could include deployment of the Indian Army's all-women corps, the Indian military nursing service.
- India also needs to place its **asylum policies within a feminist framework**.
- India can play a proactive role in the implementation process of the **global compact on refugees**, which it signed in 2018.
- Through this compact and other multilateral institutions, India could offer greater support to the **women refugee community organisations based in India**.

Centralizing women in foreign policy should **not be a superficial attempt** by Indian diplomats to look good in public or satisfy some arbitrary checklist. It should **not be treated mere as a moral duty**. India needs to look at **three principles**: "Getting more women to engage with foreign policy issues, reflect women's interests in foreign policy, and bring in a feminist perspective to foreign policy."

Declining fertility rate - A curse?

- Although the world's population has been **growing steadily**, some reports indicate that it could reach 8.5 billion people in 2030.
- However, on the contrary, Average **global fertility** has been consistently **declining** over the past 70 years.
- This is the result of speeding up the social phenomenon of demographic transition.

Global levels of fertility

- According to **World Population Prospects 2022**, the average number of children per woman in the reproductive age group has **declined by 50%**, from an average of **5 children per woman in 1951 to 2.4 children in 2020**.
 - It is released by United Nations population estimates and projections.
 - It is prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat.
- Britain took 130 years to transition from a fertility rate of five per woman in 1800 to two in 1930, whereas South Korea took 20 years from 1965 to 1985 to achieve the same.
 - This shows that **poorer countries seem to be speeding up the transition ladder** a lot faster than the richer ones.
- As per **World Population Prospectus 2022**, global fertility rate fell from **3 in 1990 to 2.3 in 2021**.
- **Most advanced economies** have their fertility rate below the replacement rate of 2.1.
 - **South Korea** has the lowest at 1.05 children per woman.
- **Sub-Saharan African countries** are expected to contribute more than half the population growth after 2050 and grow through 2100.

Indian levels of fertility

- According to the latest **National Family Health Survey (NFHS)**, the fertility rate is projected to fall below the replacement level for the first time **in 2021 to 2.0**.
- The rate has dipped **10% in just 5 years**.
- At the time of **Independence**, India's fertility rate was **6 children per woman**.
- It took **25 years to reach 5**, with the launch of the first ever family planning program in the world in 1952.
- India's fertility further declined to **4 in the 1990s** when **Kerala** became the first State in India to have a fertility rate below replacement level.
- As per **NFHS 2021**, only 5 States have a **fertility rate above the replacement rate: Bihar (3)**, Meghalaya (2.9), Uttar Pradesh (2.4), Jharkhand (2.3) and Manipur (2.2).
- The decrease in fertility rates is mainly due to the **increase in contraceptive use, longer schooling years, better health care, and the increasing average marriage age of women**.

Key Findings of NFHS 5:

- **Total fertility rate:** is 2.0 children per woman, which declined from 2.2 children in 2015- 16 and is currently below the replacement level of fertility of 2.1 children per woman.
- **Birth intervals:** The median birth interval is 33 months since the preceding birth.
- **Age at first birth:** The median age at first birth among women age 25-49 is 21.2 years.
- **Teenage childbearing:** Seven percent of women age 15-19 have begun childbearing, which is just a one percent decline from 2015-16.
- **Desire for another child:** About one-fourth (23%) of currently married women age 15-49 want to have another child.
- **Wanted fertility rate:** The wanted fertility rate is 1.6 children per woman and ranges from 0.9 children in Sikkim to 2.7 children in Meghalaya.

Positive implications of lower fertility rates

- Countries in the early stages of demographic transition experience a number of **economic benefits** as a large portion of the workforce moves into modern sectors with decreasing fertility.
- Lower fertility **impacts women's education positively**, which in turn lowers the fertility of the next generations.
- The spiral of lower fertility leads to a window of time when the **ratio of the working-age population is higher** than that of the dependent age groups.
 - The high percentage of people in the workforce has a positive impact on income and investment, as savings are higher due to less dependence.
- It will lead to **lower pressure on land, water and other resources** and would also contribute to achieving environmental goals.
- A **rise in education and independence** among women would enhance their labour participation, which could arrest the fall in labour participation up to a limit.
- **Lowering unemployment** through higher wages will have a positive effect on inflation, as now there is a trade-off between low inflation and low unemployment.
- There will be **fall in government debt** is partly due to people saving less and companies borrowing more, as well as the government running a surplus instead of a deficit.
 - This situation will arise due to higher inflation.

Negative implications of lower fertility rates

- A fall in fertility rate beyond replacement level would have a negative impact on the **level of economic output**.
- There will be a phase where the **huge working age population moves to old age, supported by fewer workers**.
 - **Japan** was the first country to experience the implications of falling fertility rates.
 - The increasing dependency ratio has led to near zero GDP growth since the 1990s, and the country is facing fiscal challenges to meet rising social security costs.
- Falling fertility could **diminish the creative capacity of humankind**.

- There is need for ideas in technological advancement and productivity boost, which even artificial intelligence is still not capable of.
- An ageing population will also **affect global interest rates** negatively as the share of people over 50 years will form almost 40% of the population by 2100.
- **Increased pressure on governments** due to a high dependency ratio.
- Low fertility produces an age structure that creates a momentum for **future population decline**.
 - The problem with low fertility is that it reduces population size not at all ages but only among the young.
- The decrease in fertility rate will **worsen medical dependency**.
 - Increasing proportion of dementia, especially Alzheimer's and other forms of morbidity, such as Parkinson's and arthritis.

Suggestions to improve fertility decline

- **Reforms in the labour market** to induce more flexibility in the labour market would encourage working women to have more children and non-working mothers to enter the labour market.
- **Supporting parental leave** at the birth of children and encouraging the sharing of leave.
 - **Germany** found success in boosting births through liberal labour laws, allowing more parental leave and benefits.
- **Subsidizing the hospital bills**
 - **Denmark** offers state-funded IVF (In vitro fertilization) for women below 40 years, and **Hungary** recently nationalised IVF clinics.
- Letting employees **switch to part-time work**, with the right to return to full-time work.
- **Providing quality, affordable child care, including after-school care**.
 - Poland gives out monthly cash payments to parents having more than two children.
 - Russia makes a one-time payment to parents when their second child is born.
 - It also reinstated the Soviet-era 'Mother Heroine' title, who bore and raised more than 10 children amounting to almost a one-time payment of ₹ 13 lakh.

- **Access to family planning counselling** and technology ensures that women and men can make informed choices about reproduction.
- **Reducing infant and child mortality.**

The fall in fertility around the globe has been a result of decades of demographic process, and hence needs scientific and sustainable policies for mitigation. Although India's working-age population will continue to grow for many more decades, liberal labour reforms, encouraging higher female labour force participation rate, and a higher focus on nutrition would ensure sustained labour supply and output despite lower fertility.

Life and times of Subhas Chandra Bose.

A black granite statue of Netaji Subhash Bose, constructed in Telangana's Khammam, was inaugurated by PM Modi at the new Central Vista on Thursday.

Bose's early life

Born to an **upper-class Bengali family** in 1897 in Cuttack, Subhas Chandra Bose was the ninth child of **Janakinath** and **Prabhavati Bose**. A well-known lawyer, Janakinath sent his sons to an English-medium school where Bengali was not taught, so that they could learn perfect English which he considered essential for assimilating into English society. Prabhavati, on the other hand, was a devout Hindu and observed Bengali Hindu customs and pujas which all her children had to attend.

In 1909, **Subhas Chandra Bose** moved to **Ravenshaw Collegiate School**, where he completed his secondary education. Here, he was taught Bengali and Sanskrit, as well as the **Vedas and Upanishads**. While he continued his European education throughout his life, he became less drawn to **Anglicized ways** than his family members during his schooling, and according to **historian Leonard Gordon**, "began to make his own synthesis of the cultures of the West and India".

Influenced by the **teachings of Ramakrishna** and his disciple Swami Vivekananda, as well as the themes of **Bengali novelist Bankim Chandra**

Chatterjee in his novel *Ananda Math*, Gordon notes that Subhas found what he was looking for: “his Motherland’s freedom and revival” (in *Brothers Against the Raj: A Biography of Indian Nationalist Leaders Sarat and Subhas Chandra Bose*). After school, **he entered the Presidency College in Calcutta in 1913**, where he studied philosophy. His earliest battle with **British authority** occurred while he was a student, against Professor of History **E F Oaten**, who had once in class spoken about England’s civilizing mission in India.

The students felt insulted by his remarks and their anger later boiled over after a run-in with the teacher, leading him to be beaten with sandals by Bose and his friends. Expelled for his actions, he resumed his studies at the **Scottish Church College** in Calcutta.

Bose’s Disagreements with Gandhi

Afterwards, Bose went to **Cambridge University** to prepare for the **Indian Civil Services (ICS) exam** in 1920. But later, determined to join the struggle for India’s freedom, he abandoned the project and resigned from the ICS to join the Mahatma Gandhi-led national movement.

After reaching Bombay, now Mumbai, in 1921, he obtained an audience with Gandhi to get a **better understanding of his plan of action**. While he had great respect for the Mahatma, **Bose left the meeting dissatisfied with the answers he received**.

About the **ideological divide** between the two leaders, historian Satadru Sen notes that while “**Gandhi was willing to wait a long time for Independence**, Bose wanted immediate action, if not immediate results. Gandhi was **anti-materialistic** and hostile to modern technology; Bose saw **technology and mass production** as essential to survival and dignity. Gandhi wanted a **decentralized society** and disliked the modern state; Bose wanted a strong central government and saw the modern state as the only solution to India’s problems. And finally, **Bose did not share Gandhi’s dedication to non-violence.**”

Despite tensions between the two, Bose was well aware of the significance of a leader like Gandhi. Bose was the first to call him the “**father of the nation**” during an address from the **Azad Hind Radio** from Singapore in July 1944.

The rift within the Congress

Over the next two decades, **Bose devoted his life to the nationalist movement**, gaining considerable political influence and becoming one of the most powerful leaders in the Congress party.

In 1938, he was elected Congress president in the **Haripura session**, where he tried to push for swaraj as a “**National Demand**” and opposed the idea of an Indian federation under British rule. He stood for **re-election in 1939** and

defeated **Dr Pattabhi Sitaramayya**, the Gandhi-backed candidate. Sekhar Bandhopadhyay notes that Gandhi took this as a “personal defeat” and 12 of the 15 members of the Working Committee resigned from their roles (in *Plassey to Partition: A History of Modern India*). These included Jawaharlal Nehru, Vallabhbhai Patel and Rajendra Prasad.

Bose tried to set up another working committee, but after being unable to do so, was forced to resign and was replaced by Prasad. Within a week, he proposed the creation of the “**Forward Bloc**” within the Congress Party, in order to bring the radical-left elements of the party together. According to historian Sugata Bose, his political aim was **to convert the majority of the Congress members towards his radical point of view** and provide the Indian people with an **alternative leadership** that was based on an “**uncompromising anti-imperialism in the current phase of Indian politics** and undiluted socialism once freedom was achieved” (*His Majesty's Opponent: Subhas Chandra Bose and India's Struggle Against Empire*).

A dramatic escape

Bose was arrested in 1940 before he could launch a campaign to remove the monument dedicated to the victims of the **Black Hole of Calcutta**, an incident when a number of European soldiers died while imprisoned in 1756.

After going on a hunger strike, he was released from jail in December. Historian Ishita Banerjee-Dube writes that he soon began his escape from India, travelling by road, rail, air and foot in various disguises to avoid British surveillance. He entered **Soviet-controlled Kabul via the northwest of India** and finally reached **Nazi Germany**, where he remained for two years. He was provided assistance to defeat the British, and Bose was allowed to start the **Azad Hind Radio** and was provided with a few thousand Indian prisoners of war captured by Germany (from *A History of Modern India*).

Bose soon turned his focus to **South East Asia**, specifically Singapore, a British stronghold that had been taken over by Japan, which according to Ishita Banerjee-Dube had shown increased interest in Indian independence from the British. However, leaving Europe at the **peak of World War II** was no easy task. **In February 1943**, he left Germany with his aide **Abid Hasan** in a submarine and travelled down the Atlantic Ocean, crossing the **Cape of Good Hope in Africa** before entering the Indian Ocean past Madagascar. Here, Bose and Hasan were taken on a small rubber boat provided by the Japanese, before taking them to Sumatra and finally arriving in Tokyo by air, marking the end of a gruelling and dangerous 90-day journey.

The INA and World War II

The **Indian National Army was formed in 1942**, consisting of thousands of Indian prisoners of war captured by the Japanese, and supported by Japanese troops.

After his arrival in Singapore, Bose announced the formation of the **provisional government of the Azad Hind** in October 1943. Sugata Bose notes that the headquarters of the provisional government was moved to Rangoon in January 1944, and after fighting at the **Arakan Front**, the INA crossed the **Indo-Burma border** and marched towards **Imphal and Kohima** in March.

The **Chalo Delhi campaign** ended at Imphal however, as the British and British Indian armies, along with American air support were able to defeat the Japanese forces and the INA and push them out of Kohima as well.

In April-May 1945, Bose, along with the **INA soldiers** as well as women he had recruited for the **Rani of Jhansi regiment** was forced to retreat on foot to Thailand, while facing incessant enemy fire. After the atomic bombs were dropped on Hiroshima and Nagasaki in August 1945, the war came to an end.

After the **Japanese surrendered on August 16**, Bose left **South East Asia** on a Japanese plane and headed toward China. The plane, however, crashed, leaving Bose badly burned, but still alive, according to historian Satadru Sen.

India threaten Lahore to stop Pakistan's moves in J&K.

On **6 September in 1965**, Indian Army launched an attack in the **Lahore sector of Pakistan** taking the Pakistan Army by surprise and advancing to the outskirts of the **second largest city** of the country. Explained here are the contours of the **offensive operation** undertaken by the Army during the **1965 Indo-Pak war** and the reasons for **opening up a front in Punjab**.

How the events unfolded on 6 Sept 1965?

Pakistan Army had been waging an **undeclared war in Jammu and Kashmir** since August 1965. On 1 September, it launched an attack in the **Akhnoor sector** near Jammu. In retaliation to the **Pakistani aggression** in this sector, the Indian Army launched an attack across the **International Border in Punjab**. Shortly after midnight on the intervening night of 5 and 6 September, Indian Army troops crossed the International Border at several places in Punjab in an attack which caught the Pakistan Army by surprise in the Lahore sector.

Why was an attack in the Lahore sector needed?

As per the then Western Army Commander **Lt Gen Harbaksh Singh** the strategic concept of this offensive was **to force Pakistan Army** to deploy its forces in this sector and **prevent their deployment** in aid of their offensive in **Akhnoor**. The Indian plans also included capturing **huge chunks of Pakistani territory** which would give a bargaining advantage in future talks. **Lt Gen Harbaksh Singh** wanted to pose a threat to the important Pakistani city of Lahore by occupying the **Ichhogil Canal**, a water obstacle which provided security to Lahore from an attack by Indian forces.

The eventual attack down the **Grand Trunk Road** by the Indian Army's 15 Infantry Division easily overwhelmed the border guarding forces of Pakistan at Wagah and elements of an infantry battalion reached as far as Batapur on the **outskirts of Lahore** down the same road.

Why did the Indian Army not fully exploit its initial gains?

After the initial success by the **Indian forces** attacking in the area of **15 Infantry Division** and **4 Mountain Division** the momentum of the attacking forces could not be maintained. Poor leadership at higher levels resulted in the removal from command of many senior officers. The Pakistanis sought to take advantage of the lull in Indian advance by launching an attack of their own in **Khemkaran sector** and managed to succeed in gaining ground till they were checked by Indian Army at the historic Battle of **Asal Utar** where the **Patton tanks of Pakistan Army** were decisively routed.

What was the fallout of the Lahore sector operation?

The Pakistan government as well as the military never expected that **India would open a front in Punjab**. They only expected Indian retaliation in Jammu and Kashmir. Hence, when the attack on 6 September took place, the **Pakistan Army was caught by surprise**.

The Pakistan Army was forced **to rush reinforcements** to the **Lahore sector** to fend off the Indian attack. It also had to **divert the Pakistan Air Force** from its focus on the **Akhnoor front** and employ the aircraft to attack **Indian troops** advancing in the direction of Lahore. As per military historians, including former Punjab CM Capt Amarinder Singh, the **capture of Lahore** was not envisaged by the **Indian military planners** because of the large number of troops it would have required to hold on to the city. However, there were plans to destroy the **bridge over River Ravi** in **Shahdara area of Lahore** and to interdict the **Lahore-Wazirabad highway** in case the success in Lahore sector was to be exploited further.

Permanent membership of the UNSC is another story.

The process of **decolonisation**, in which the United Nation and its Security Council played an important role, radically changed the geopolitical landscape of the world. In the past quarter century, the **global order has seen massive changes, from American unilateralism to the rise of multilateral institutions and multipolarity.**

Developing nations, including India, now **play a larger role in both the international economy and politics.** But **these changes are not reflected in the UNSC**, where all critical decisions are still being taken by the **veto-wielding permanent members of the Security Council.**

In his address to the **77th Session of the United Nations General Assembly**, the **Indian External Affairs Minister** highlighted the **anachrony and ineffectiveness** in the current architecture of the UNSC.

Hence, it is essential to go beyond **P5's prerogatives** and look for a more **democratic and representative security council.**

United Nations Security Council

- The **United Nations Security Council** was established by the **UN Charter in 1945.**
 - It is one of the **6 principal organs** of the United Nations.
- UNSC has 15 members: **5 permanent members (P5) and 10 non-permanent members** selected for **2-year**
 - The 5 permanent members are: **United States, Russian Federation, France, China and the United Kingdom.**
- India has been a non permanent member of the Council during **1950-51, 1967-68, 1972-73, 1977-78, 1984-85, 1991-92, 2011-12** and for the **8th time**, has entered the UNSC in 2021 and will stay on the council for the term **2021-22.**

Procedure for Amending UNSC Membership

- Changing the membership of the UNSC requires amending the UN Charter.
 - This involves **consent of two-thirds of the total membership of the U.N, including the concurring votes of P-5.**
 - This means that each of the **P5 has a veto.**

- The **Charter was amended once in the 1960s** to enlarge the Council by additional **non-permanent seats**.

Issues Related to UNSC

- **Lack of Adequate Representation:** It was argued by several speakers that the UN Security Council is **less effective because it is less representative**, the most pertinent **absence being that of Africa, a continent of 54 countries**.
 - Current global issues are complex, and interconnected. Lack of representation of **geopolitical and geo-economically important countries** is leaving out a large segment of global opinion to have a voice in the **highest security summit**.
 - Furthermore, It is matter of concern that globally important countries such as **India, Germany, Brazil, and South Africa** are not represented on the UNSC permanent members list.
- **Misuse of Veto Power:** Veto power has been always criticised by many experts as well as by most States calling it a **"self-chosen club of the privileged"** and **non-democratic** and **not allowing the Council to make necessary decisions** whenever it **displeases any one of the P-5**.
 - It is also **not appropriate for the current global security environment** to be guided by **elite decision-making**
- **Geopolitical Rivalry within P5:** The geopolitical rivalry among the permanent members has **prevented the UNSC from coming up with effective mechanisms to deal with global issues**.
 - Taking the current world order as an example, the **P5 members: United States, Russia, and China** are **three poles on the periphery of the globe having several geopolitical issues revolving around them (Taiwan Issue and Russia-Ukraine War)**.
- **Threat to State's Sovereignty:** As the principal organ of **international peacekeeping** and conflict resolution, the **UNSC** is responsible for keeping peace and managing conflict. Its **decisions (referred to as resolutions) are binding on all member countries, unlike the General Assembly's**.
 - This means that any state's sovereignty can be encroached upon if necessary by taking action, such as **imposing sanctions**.

Looking Ahead

- **Welcoming Voices Across the Globe:** It is perceived as deeply unfair, denying **entire continents (Africa) and regions a voice in a forum that deliberates their future.**
 - To decentralise UNSC governing power and authority over nations, it is essential that **all regions are represented equally in the UNSC.**
 - With this transformation, **nations of all regions will have the opportunity to raise concerns** affecting peace and democracy in their countries.
 - Also, introducing **decentralisation** to UNSC decision-making will make it more **representative, participatory, and democratic.**
- **Global Consonance for Global Governance:** UNSC should realise there are more pressing issues to be tackled at the global level than merely preserving the **prerogatives of P5 nations.**
 - There needs to be urgent **correction of the power imbalance between the P5 and the rest of the world.**
 - It is necessary for the UNSC **to be more democratic and more legitimate to govern**, ensuring the universal respect of **international peace, security, and order.**
- **Re-energizing Intergovernmental Negotiation (IGN):** Serious negotiations on such critical matters should proceed sincerely. They must **not be blocked by procedural tactics.**
 - The **IGN process**, which is the principal framework through which UNSC reform is discussed and debated, needs to be revised and **re-energised.**
 - Recommendation of the President of the **76th UN General Assembly** to gradually **move the IGN process towards text based negotiations** is a **welcoming step.**
- **Towards Reformed Multilateralism:** Calling for **reformed multilateralism** with reforms of the Security Council at its core enjoys considerable support among UN members.
 - In order to **protect faith in the principles of the United Nations, in its charter**, and in reformed multilateralism as a key to achieving global goals, the core issues in UNSC must be critically examined and addressed with global cooperation.
- **India From the Lens of UNSC Reforms:** India's candidature for permanent seat in UNSC is legitimate and justified as it fulfils all the objective criteria for the permanent membership.

- India has initiated the **International Solar Alliance in 2015** to reduce the exploitation of fossil fuels and encourage the use of solar energy and has been a frontrunner in **Vaccine Diplomacy**.
- With one among the largest individual contributors to the **UN Peacekeeping Force**, India is prepared to take up greater responsibilities at the highest security cooperation forum.
- As the same time, it also seeks **to ensure that the injustice faced by the Global South is decisively addressed**. India is **willing and able to contribute on both counts**.

Rediscovering the Bay of Bengal.

- Recently, at the 4th BIMSTEC summit, Prime Minister of India announced the opening of the Centre for Bay of Bengal Studies (CBS) at Nalanda University.
- The CBS demonstrates India's commitment to **advancing constructive agendas** by forging connections and setting up platforms for all those with an interest in the Bay.

Significance of CBS

- It will offer **collaborations in areas** such as geo-economics, geopolitics, ecology, trade, maritime security & law, cultural heritage, and blue economy to generate opportunities for the Bay region.
- It will strengthen India's overall framework for **maritime engagement**, which aims to advance **sustainable economic growth** for all by fostering closer nautical ties.

Significance of Bay of Bengal region

- **Commerce hub:** It has long been a major commerce hub for the Indian Ocean. It created a conduit between the East and the West in terms for trade and culture.
- **Sea trade:** The key sea lanes of communication in this area are lifelines for global economic security and are crucial to the energy security that powers the economies of many countries in the region.
- **Energy resources:** It provides an opportunity for greater regional cooperation in the environmentally friendly exploration of marine and energy resources.
- **Biodiversity:** It has a biodiverse marine environment.
 - It is home to many rare and endangered marine species and mangroves, which are essential to the survival of the ecology and the fishing sector.
- **Hydrocarbons:** It has abundance of hydrocarbon resources due to deposition of tonnes of sediment from some of the **world's largest rivers**.
 - It is also a partially enclosed sea that has given rise to several **geological characteristics**.
- **Geopolitical:** An Indo-Pacific orientation and the realignment of global economic and military power towards Asia have had a considerable impact on the Bay region.

Challenges in Bay of Bengal region

- **Non-traditional dangers** such as **terrorism and climate change** have become more prevalent.
- Its maritime environment has changed as a result of **major powers expanding their economic and geopolitical influence**.
- Its ecosystem is going through a crisis brought on by **widespread environmental exploitation and geopolitical unrest**.
- It faces **species extinction** threat due to careless exploitation of the maritime environment.
- Factors that are leading to degradation of Bay's environment include:
 - Population growth,
 - Altered land use,
 - Excessive resource exploitation,
 - Salinisation,
 - Sea level rise and climate change,

- Factors that have led to: i) Dead zone, and ii) Degradation of mangrove trees (that protect the shore from natural disasters) include:
 - Discharge from feeder ships,
 - Shipping collisions,
 - Unintentional oil spills,
 - Industrial waste, pollution, and
 - Accumulation of non-biodegradable plastic litter.

Dead zones

- Dead zones are low-oxygen, or hypoxic, areas in the world's oceans and lakes.
- As most organisms need oxygen to live, few organisms can survive in hypoxic conditions.

Looking ahead

- **Developing partnership and cooperating with the nautical neighbors:** It is essential that nautical neighbors come together and cooperate for the maritime domain's interdependent nature, transnational character, and cross-jurisdictional engagement.
- **Cooperation in maritime safety and security:** Standardizing and harmonizing data on maritime connectivity and the ease of maritime transit, needs to be enhanced through the investment possibilities in the maritime connectivity sector.
 - The will require addressing the problem of illegal, unreported, and unregulated fishing.
- **Role of Littoral Government:** They need to support and promote skill-building, research, and training by helping regional marine entities to balance opportunities and goals on a national, regional, and international scale.
- **Countries mobilization of incentives and investments:** Working together to manage oceanic affairs more effectively and support people to switch to the alternative lifestyles.

CBS gives India a unique interdisciplinary research centre devoted to Bay-focused teaching, research, and capacity building. However, for a better knowledge of challenges, and strategies to overcome them for the sustainable development of the region, more focused and interdisciplinary study is required on these issues.

Ponniyil Selvan - UPSC Version - Decoded.

The Chola dynasty is one of the longest ruling dynasties of South India, and it existed from 300 BC until the late 13th century AD, though the territorial limits kept varying from time to time.

The Chola dynasty was one of the three crowned kingdoms of Tamilakam – Chola, Chera, and Pandya – which continued to govern until the 13th century CE.

The Chola Dynasty time period of around 1500 years is divided into Early Cholas, Medieval Cholas (Imperial Cholas), and Later Cholas.

(1) Early Cholas

Not much authentic information is available about the Early Chola Kingdom.

The earliest datable references to this Tamil dynasty are in inscriptions from the 3rd century BCE left by Ashoka, of the Maurya Empire.

Karikala Chola is recognised as the greatest of the Early Cholas. He ruled in southern India during the Sangam period.

(2) Imperial Cholas:

After the decline of the Sangam period, the Cholas became feudatories in Uraiyur. They became prominent in the ninth century and established an empire comprising the major portion of South India.

The founder of the Imperial Chola line was **Vijayalaya Chola**. He captured Tanjore from Muttaraiyars in 815 A.D. and built a temple for Durga.

His son **Aditya Chola** put an end to the Pallava kingdom by defeating Aparajita and annexing Tondaimandalam. Chola Country or Cholamandalam was the area bound by the Pennar on the North, the Vellaru River on the South, the Bay of Bengal on the East and Coorg on the West.

Parantaka I was one of the important imperial Chola rulers. He defeated the Pandyas and the ruler of Ceylon. In the famous battle of Takkolam Rashtrakutas defeated him. Parantaka I was a great builder of temples. He provided the golden roof of the Vimana of Nataraja Temple at Chidambaram.

The two famous Uttiramerur inscriptions give a detailed account of the village administration under the Cholas that belong to his reign.

Their capital was Tanjore. They also extended their sway in Sri Lanka and the Malay Peninsula. Therefore, they are called the Imperial Cholas. Thousands of inscriptions found in the temples provide detailed information regarding the administration, society, economy and culture of the Chola period.

It was under Rajaraja I and his son Rajendra I that the Chola power reached its highest point of glory.

Rajaraja I aka Ponniiyl Selvon (985 – 1014 A.D)

Rajaraja I is also known by the name Ponniiyl Selvon.

His military conquests were:

§ The defeat of the Chera ruler Bhaskararavivarman in the naval battle of Kandalursalai and the destruction of the Chera navy.

§ The defeat of the Pandya ruler, Amarabhujanga and the establishment of Chola authority in the Pandya country.

§ The conquest of Gangavadi, Tadigaipadi and Nolambapadi located in the Mysore region.

§ The invasion of Sri Lanka was entrusted to his son Rajendra I. As the Sri Lankan king Mahinda V fled away from his country, the Cholas annexed northern Sri Lanka. The capital was shifted from Anuradhapura to Polanaruva where a Shiva temple was built

§ The Chola victory over the growing power of the Western Chalukyas of Kalyani. Satyasraya was defeated and Rajaraja I captured the Raichur Doab, Banavasi and other places. Hence the Chola power extended up to the river Tungabhadra.

§ The restoration of the Vengi throne to its rulers Saktivarman and Vimaladitya by defeating the Telugu Chodas. Rajaraja gave his daughter Kundavai in marriage to Vimaladitya.

§ Rajaraja's last military achievement was a naval expedition against the Maldiv Islands which were conquered.

After Rajaraja I

Through these conquests, the extent of the Chola empire under Rajaraja I included the Pandya, Chera and Tondaimandalam regions of Tamil Nadu and the Gangavadi, Nolambapadi and the Telugu Choda territories in the Deccan and the northern part of Ceylon and the Maldiv Islands beyond India.

Rajaraja assumed a number of titles like Mummidi Chola, Jayankonda and Sivapadasekara. He was a devout follower of Saivism. Rajaraja completed the construction of the famous Rajarajeswara temple or Brihadeeswara temple at Tanjore in 1010 A.D. And also helped in the construction of a Buddhist monastery at Nagapattinam.

Rajendra I (1012-1044 A.D)

Rajendra demonstrated his military ability by participating in his father's campaigns. He continued his father's policy of aggressive conquests and expansion. His important wars were:

§ Mahinda V, the king of Sri Lanka attempted to recover from the Cholas in the northern part of Ceylon. Rajendra defeated him and seized southern Sri Lanka. Thus the whole of Sri Lanka was made part of the Chola Empire.

§ He reasserted the Chola authority over the Chera and Pandya countries.

§ He defeated Jayasimha II, the Western Chalukya king and the river Tungabhadra was recognised as the boundary between the Cholas and Chalukyas.

§ His most famous military enterprise was his expedition to north India. The Chola army crossed the Ganges by defeating a number of rulers on their way. Rajendra defeated Mahipala I of Bengal. To commemorate this successful north-Indian campaign Rajendra founded the city of Gangaikondacholapuram and constructed the famous Rajesvaram temple in that city. He also excavated a large irrigation tank called Cholagangam on the western side of the city.

§ Another famous venture of Rajendra was his naval expedition to Kadaram or Sri Vijaya. It is difficult to pinpoint the real object of the expedition. Whatever its objects were, the naval expedition was a complete success. A number of places were occupied by Chola forces. But it was only temporary and no permanent annexation of these places was contemplated. He assumed the title Kadaramkondan.

§ Rajendra I had put down all rebellions and kept his empire intact.

After Rajendra I

At the death of Rajendra I the extent of the Chola Empire was at its peak. The river Tungabhadra was the northern boundary. The Pandya, Kerala and Mysore regions and also Sri Lanka formed part of the empire. He gave his daughter Ammangadevi to the Vengi Chalukya prince and further continued the matrimonial alliance initiated by his father.

Rajendra I assumed a number of titles, the most famous being Mudikondan, Gangaikondan, Kadaram Kondan and Pandita Cholan. Like his father, he was also a devout Saiva and built a temple for that god at the new capital Gangaikondacholapuram. He made liberal endowments to this temple and to the Lord Nataraja temple at Chidambaram. He was also tolerant of the Vaishnava and Buddhist sects.

After Rajendra I, the greatness of the Chola power was preserved by rulers like Kulottunga I and Kulottunga III. Kulottunga I was the grandson of Rajendra I through his daughter Ammangadevi. He succeeded the Chola throne and thus united the Vengi kingdom with the Chola Empire. During his reign Sri Lanka became independent. Subsequently, Vengi and the Mysore region were captured by the western Chalukyas. Kulottunga I sent a large embassy of 72 merchants to China and maintained cordial relations with the kingdom of Sri Vijaya.

Under Kulottunga III the central authority became weak. The rise of the feudatories like the Kadavarayas and the emergence of the Pandya power as a challenge to Chola supremacy contributed to the ultimate downfall of the Chola Empire. Rajendra III was the last Chola king who was defeated by Jatavarman Sundarapandya II. The Chola country was absorbed into the Pandya Empire.

(3) Later Cholas

Around the 7th century, a Chola kingdom flourished in present-day Andhra Pradesh. These Telugu Cholas traced their descent to the early Sangam Cholas. However, it is not known if they had any relation to the early Cholas.

It is possible that a branch of the Tamil Cholas migrated north during the time of the Pallavas to establish a kingdom of their own, away from the dominating influences of the Pandyas and Pallavas.

The Chinese pilgrim Xuanzang, who spent several months in Kanchipuram during 639–640 writes about the “kingdom of Culi-ya”, an apparent reference to these Telugu Cholas.

Salient features of the Chola Administration:

Central Government of Chola:

The Cholas had an excellent system of administration. The emperor or king was at the top of the administration. The extent and resources of the Chola Empire increased the power and prestige of the monarchy.

The big capital cities like Tanjore and Gangaikondacholapuram, the large royal courts and extensive grants to the temples reveal the authority of the king. They undertook royal tours to increase the efficiency of the administration.

There was elaborate administrative machinery comprising various officials called perundanam and sirudanam. The balance between central control and local independence was maintained and non-interference in local government was sacrosanct

Revenue:

The land revenue department was well organized. It was called puravubarithinaikkalam. All lands were carefully surveyed and classified for assessment of revenue.

The residential portion of the village was called ur-nattam. These and other lands such as the lands belonging to temples were exempted from tax.

Besides land revenue, there were tolls and customs on goods taken from one place to another, various kinds of professional taxes, dues levied on ceremonial occasions like marriages and judicial fines.

During the hard times, there was a remission of taxes and Kulottunga I became famous by abolishing tolls and earned the title – Sungam Tavirtta Cholan.

The main items of government expenditure were the king and his court, army and navy, roads, irrigation tanks and canals.

Military Administration of Chola:

The Cholas maintained a regular standing army consisting of elephants, cavalry, infantry and navy. About seventy regiments were mentioned in the inscriptions.

The royal troops were called Kaikkolaperumpadai. Within this, there was a personal troop to defend the king known as Velaikkarar. Attention was given to the training of the army and military cantonments called kadagams existed.

The Cholas paid special attention to their navy. The naval achievements of the Tamils reached their climax under the Cholas. They controlled the Malabar and Coromandal coasts. In fact, the Bay of Bengal became a Chola lake for some time.

The Chola king's retinue included the padimagalir — women bodyguards who protected and attended to the king. A verse describes a king's skin as covered with "handsome scars" (from battle) "that have grown together as if he were a tree with its bark stripped for use in curing."

Provincial Administration of Chola:

The Chola Empire was divided into Mandalams and each Mandalam was into Valanadus and Nadus. In each Nadu there were a number of autonomous villages.

The royal princes or officers were in charge of Mandalams. The valanadu was under periyannattar and nadu under nattar. The town was known as Nagaram and it was under the administration of a council called Nagarattar.

Village autonomy:

The system of village autonomy with sabhas and their committees developed through the ages and reached its culmination during the Chola rule.

Two inscriptions belonging to the period of Parantaka I found at Uttiramerur provide details of the formation and functions of village councils. That village

was divided into thirty wards and each was to nominate its members to the village council.

The qualifications to become a ward member were:

- a. Ownership of at least one-fourth veli of the land.
- b. own residence.
- c. Above thirty years and below seventy years of age.
- d. Knowledge of Vedas.

However, certain norms of disqualification were also mentioned in the inscriptions. They were:

- a. Those who had been members of the committees for the past three years.
- b. Those who had failed to submit accounts as committee members.
- c. Those who had committed sins.
- d. Those who had stolen the property of others.

Of the persons duly nominated, one was to be chosen for each ward by kudavolai system for a year. The names of eligible persons were written on palm leaves and put into a pot. A young boy or girl would take out thirty names each for one ward.

They were divided into six variyams such as samvatsaravariyam, erivariyam, thotta variyam, pancha variyam, pon variyam and puravuvari variyam to take up six different functions of the village administration.

The committee members were called Variyapperumakkal. They usually met in the temple or under a tree and passed resolutions. The number of committees and ward members varied from village to village.

Socio-Cultural life:

The caste system was widely prevalent during the Chola period. Brahmins and Kshatriyas enjoyed special privileges. The inscriptions of the later period of the Chola rule mentioned two major divisions among the castes – Valangai and

Idangai castes. However, there was cooperation among various castes and sub-castes in social and religious life.

The position of women did not improve. The practice of 'sati' was prevalent among the royal families. The devadasi system or dancing girls attached to temples emerged during this period.

Both Saivism and Vaishnavism continued to flourish during the Chola period. A number of temples were built with the patronage of Chola kings and queens. The temples remained centres of economic activity during this period. Mathas had a great influence during this period.

Economic Life:

Both agriculture and industry flourished. Reclamation of forest lands and the construction and maintenance of irrigation tanks led to agricultural prosperity. The weaving industry, particularly the silk-weaving at Kanchi flourished.

The metal works developed owing to the great demand for images for temples and utensils. Commerce and trade were brisk with trunk roads or peruvazhis and merchant guilds. Gold, silver and copper coins were issued in plenty in various denominations.

Commercial contacts between the Chola Empire and China, Sumatra, Java and Arabia were extensively prevalent. Arabian horses were imported in large numbers to strengthen the cavalry.

The 'daughters of god,' the Devanar Makkal or temple women, had their names inscribed in temples for donations received in their names, and inscriptions suggest that Chola women had at least some control over the resources of their households. Women were witnesses and signatories for land grants to temples, as well as land transactions.

Property, when owned by the woman, could not be spent by her husband without her permission, temple inscriptions refer to cases where husbands were fined and asked to repay the wife for having sold her property without her knowledge.

Education and Literature:

Education was also given importance. Besides the temples and mathas as educational centres, several educational institutions also flourished.

The inscription at Ennayiram, Thirumukkudal and Thirubhuvanai provide details of the colleges that existed in these places. Apart from the Vedas and Epics, subjects like mathematics and medicine were taught in these institutions.

The endowment of lands was made to run these institutions. The development of Tamil literature reached its peak during the Chola period. Sivakasintamani written by Thiruthakkadevar and Kundalakesi belonged to the 10th century.

The Ramayana composed by Kamban and the Periyapurana or Tiruttondarpuranam by Sekkilar is the two masterpieces of this age. Jayankondar's Kalingattupparani describes the Kalinga war fought by Kulotunga I.

The Moovarula written by Ottakuthar depicts the life of three Chola kings. The Nalavenba was written by Pugalendi. The works on Tamil grammar like Kalladam by Kalladanar, Yapperungalam by Amirthasagarar, a Jain, Nannul by Pavanandhi and Virasoliyam by Buddhmitra were the products of the Chola age.

Art and Architecture:

The Dravidian style of art and architecture reached its perfection under the Cholas. They built enormous temples. The chief feature of the Chola temple is the vimana.

The early Chola temples were found at Narthamalai and Kodumbalur in Pudukottai district and at Srinivasanallur in Tiruchirappalli district. The Big Temple at Tanjore built by Rajaraja I is a masterpiece of South Indian art and architecture. It consists of the vimana, ardhmandapa, mahamandapa and a large pavilion in the front known as the Nandimandapa.

Another notable contribution made by the Cholas to temple architecture is the Siva temple at Gangaikondacholapuram built by Rajendra I. The Airavathesvara temple at Darasuram in Tanjore District and the Kampaharesvara temple at Tribhuvanam are examples of later Chola temples.

The Cholas also made rich contributions to the art of sculpture. The walls of the Chola temples such as the Tanjore and Gangaikondacholapuram temples contain numerous icons of large size with fine execution.

The bronzes of the Chola period are world-famous. The bronze statues of Nataraja or dancing Siva are masterpieces.

The Chola paintings were found on the walls of Narthamalai and Tanjore temples.

PERIOD	KING	MAJOR EVENTS	INSCRIPTION/ BOOKS
Early Chola s: 300B C- 200 AD	Karikala Chola 190 CE	Ruled in southern India during the Sangam period He is recognised as the greatest of the Early Cholas. He built the world's earliest water-regulator structure in stone at Kallanai (Grand Anicut) on River Cauvery In the Battle of Venni, he defeated both Pandyan and Chera	Pattiniappalai, Poruṇ arār ṛ uppa ṭ ai Akananūr u Purananuru- books Melapadu plates of Panyakumara
Medieval Chola s: 850A D- 1070 AD	Vijayalaya Chola 850- 870	Vijayalaya Chola re-established the Chola Dynasty Captured Tanjavur from Mutharaiyars (a feudal lord of Pandya). He also renovated Thanjavur and built the Solesvara temple at Padukottai. The majority of his kingdom was located in the Lower Kaveri Delta area	The Thiruvallangadu copperplates Title of Parakesarivarman .

Aditya Chola 870- 907	At the Battle of Sripurambiyam, he defeated Pandya Aditya Chola I attacked the Pallavas and killed Aparajita- the end of the Pallava Dynasty Friendly relations between the Cheras Great Shiva devotee who built a number of Shiva Temples on the banks of river Cauvery.	Kanyakumari inscription Kodandarameshva raa The Conquest of Tondai Mandalam gave him the title Tondainadu pavina Rajakesarivarman
Parant aka Chola 907- 955	He attacked the Pandyas and captured Madura, and assumed the title Madurain- Konda This victory earned him the title of Maduraiyum Elamum Konda Parakesarivarman (The conqueror of Madura and Ceylon He was a great militarist who had made extensive conquests He laid out the rules for the conduct of the village assemblies in an inscription.	Tiryvoyyur Inscriptions Tirunavalur Inscription He assumed many titles: Viranarayana, Virakirti, Vira- Chola, Vikrama- Chola
Rajadit ya Chola 949- 950	Defeated in the Battle of Takkolam to the combined force of Western Gangas Banas and Vaidumbas led by Rashtrakuda KIng Krishna III	

Raja Raja Chola I 985- 1014	During his reign, the Cholas expanded beyond South India with their domains stretching from Srilanka in the south to Kalinga in the north.	He is known as Tirumurai Kanda Cholan meaning one who saved the Tirumurai
aka Ponniyi 1 Selven	The birth name of Rajaraja Chola-I was Arulmozhi Varman Also known as Rājakesarī, Coins had on the obverse the figure of the standing king and on the reverse the seated goddess.	Rajaraja assumed the title Mummudi Chola” a title used by Tamil kings who ruled the three kingdoms of Cholas, Pandyas and Cheras

Rajendra Chola I 985-1014

Rajendra's conquests included the Andaman and Nicobar Islands, Sri Lanka, and the Maldives, and he successfully invaded the territories of Srivijaya in Malaysia, Southern Thailand and Indonesia in South East Asia.

The whole of Sri Lanka (Iramandalam) was conquered by Rajendra Chola-I in a naval expedition

He defeated Jayasimha II, the Western Chalukya king & Tungabadhra was recognised as the boundary between the Cholas and Chalukyas.

His most famous military enterprise was his expedition to north India. The Chola army crossed the Ganges by defeating a number of rulers on their way. Rajendra defeated Mahipala I of Bengal. Victory over the Chalukyas, Kalinga, Gangas and Palas etc. led him to assume the title "Gangaikonda". To commemorate this successful north-Indian campaign Rajendra founded the city of Gangaikondacholapuram

Rajadhiraja Chola 1044-1052

Performed Ashwamedha Yajna.

He was killed in the Battle of Koppam near Mysore while fighting with the Chalukyas

He was killed on the back of the elephant and this is why he came to be known as Yanai-Mel-

thunjina Devar
(The king who
died on the
elephant).

Art and Architecture of Chola Dynasty

The Chola Dynasty, a Tamil dynasty, ruled primarily in southern India until the thirteenth century. Under the Cholas, Tamil Nadu reached new heights of excellence in art, religion, and literature. In all of these areas, the Chola period marked the culmination of movements that had begun earlier under the Pallavas. **Monumental architecture** in the form of majestic temples and sculpture in stone and bronze reached a level of finesse never before seen in India.

Art and Architecture - Features

§ The period of the imperial Cholas (c. 850 CE - 1250 CE) in South India was one of continuous improvement and refinement of Chola art and architecture.

§ They used the wealth gained from their extensive conquests to construct long-lasting stone temples and exquisite bronze sculptures in an almost entirely Hindu cultural setting.

§ The Cholas built their temples in the style of the Pallava dynasty, which was influenced by the Amaravati school of architecture.

§ Chola artists and artisans drew further inspiration from other contemporary art and architectural schools, elevating the Chola temple design to new heights.

§ The Chola kings constructed numerous temples throughout their kingdom, which typically included the plains, Central and Northern Tamil Nadu, and at times the entire state of Tamil Nadu, as well as adjoining parts of modern Karnataka and Andhra Pradesh.

§ We can roughly see three major phases in the evolution of Chola temple architecture, beginning with the early phase of Vijayalaya Chola and continuing until Sundara Chola, the middle phase of Rajaraja Chola and Rajendra Chola when achievements scaled heights never reached before or since, and the final

phase during the Chalukya Chola period of Kulottunga I until the Chola empire's demise.

§ In addition to temples, the Cholas constructed hospitals, public utility buildings, and palaces. Many such structures are mentioned in inscriptions and in contemporary accounts.

§ The golden palace allegedly built by Aditya Karikala for his father Sundara Chola is an example of such a structure.

§ However, such structures were made of perishable materials, such as wood and fired bricks, and have not withstood the test of time.

Chola Sculpture

§ Stone and metal sculptures abound in Chola temples. They depict Chola period socio-religious ideas. The **Nataraja sculpture** is famous not only for its beauty, but also for its spiritual significance.

§ In Vaishnava temples, there is a Vishnu idol. In sculptural representations of Alvars, a spiritual calmness is depicted. The Cholas used sculptures to decorate the walls, pillars, and roofs.

§ The importance of sculpture is palpable in Chola works. The decorative sculptures are still in place.

§ During the Chola period, realism dominated sculpture. Scenes from the Ramayanam Mahabharatam, Puranas, and the lives of the 63 Nayanmars are sculpted in narrative panels on temple walls.

Chola's Contribution to Art

Portraits

§ In the art of portraiture, the Cholas outperformed the Pallavas. The best portraits can be found on the walls of Koranganatha and Nageswarasamy temples.

§ In Kalahasti temple, there are portraits of Cholamadevi and Kulothunga-III. They are excellent examples of Chola portraiture.

Paintings

§ Paintings flourished, and figures were painted with realism. The Chola painters' skill can be seen in their paintings. Paintings in the Big Temple are excellent examples.

§ Scenes from Periyapuram are beautifully depicted, and the Kailasanathar temple in Kanchipuram and the Vishnu temple in Malaiyadipatti both house fine examples of Chola paintings.

§ During the Chola period, Rajaraja-I and Rajendra made greater contributions to the development of the art of painting.

Music

§ The art of music flourished during the Chola period. In music, twenty-three pannas were used. The seven music alphabets were used: sa, ri, ga, ma, pa, da, and ni. In every temple, **Aiwar and Nayanmar hymns** were sung.

§ **Nambiandar nambi and Nathamuni** made significant contributions to the advancement of music.

§ Music has inspired the creation of books. In the Brahadeeswarar temple, several musicians were appointed. Drums, udukkai, veena, and flute were well-known musical instruments.

§ Sagadakkottigal assembled a band of musicians. Endowments have been established to promote music. The kings rewarded musicians.

§ Temples and mutts provided vocal and instrumental music instruction.

Dance

§ The Chola kings supported the art of dance. During the Chola period, two types of dances were performed: **Bharatanatyam and Kathakali**. Lord Siva was depicted as a performer of the Karana dance.

§ **Lord Nataraja** can be seen dancing at the Natarajar temple in Chidamparam and the Sarangapani temple in Kumbakonam.

§ Rajaraja I assigned 400 dancing girls to the Tanjore Big Temple.

§ There were two dance directors in charge of coordinating these dancing girls.

§ Dance dramas were also performed on stages during festival times. Chola kings established endowments to promote the art of dancing.

Drama

§ Drama was promoted by the Cholas. Drama was linked to music and dance.

§ Dramas were performed on a variety of stages and theatres. During the festival, two dramas were performed: **Rajarajeswara natakam and Rajarajavijayam**.

§ The Chola kings rewarded drama actors with honours. One type of drama is **Koothu**. Ariyakuthu, Chakki koothu, and Santhi koothu are all mentioned in the inscriptions.

§ The Cholas' cultural glory is reflected in Chola literature. Chola kings constructed hundreds of temples.

§ The Cholas' cultural monuments include the Tanjore temple Brahadeeswarar (Big Temple) and the Gangaikonda Cholapuram temple.

§ The glorious Chola culture had a large impact on Tamil society, instilling many cultural values such as bakthi.

Cholas as Builders of Temples

§ Innumerable temples were built and patronised by the Cholas. The royal temples of Thanjavur, Gangaikonda Chozhapuram, and Darasuram are the repositories of Dancing woman accompanied by musician, Brihadishvarar temple architecture, sculpture, paintings, and Chola arts iconography.

§ The temples became a focal point for social, economic, cultural, and political activities.

§ The temple paraphernalia, which includes temple officials, dancers, musicians, singers, players of musical instruments, and their masers led by priests worshipping the gods, reflects the royal court.

§ Architecturally, the Chola temples are simple and modest in the early stages. **Sepulchral temples** (pallip-padai) were also built where the kings were buried.

Temple Architecture During the Cholas

Brihadeeshvarar Temple

§ The Grand Temple of Thanjavur, also known as Rajarajisvaram and Brihadishvarar Temple, is a magnificent example of Chola architecture, painting, sculpture, and iconography.

§ Rajaraja's polity was greatly legitimised by this temple. The sanctum, which has a 190-foot vimana, is topped with an 80-ton stone.

§ The figures of Lakshmi, Vishnu, Ardhanarisvara, and Bikshadana, a mendicant form of Siva, on the outer walls of the sanctum are notable.

§ The fresco paintings and miniature sculptures of scenes from puranas and epics in the temple walls reveal the Chola rulers' religious ideology.

§ Dancing girls, musicians, and music masters were chosen from various settlements across Tamil Nadu and attached to this temple.

§ Singers had been assigned to recite the bhakti hymns in the temple grounds.

Gangaikonda Chozhapuram

§ In commemoration of his victory in North India, Rajendra I built Gangaikonda Chozhapuram on the model of Brihadisvarar temple in Thanjavur.

§ He constructed the Chola-gangam irrigation tank near the capital of Jalastambha (water-pillar). It became the coronation centre, which became a Chola landmark.

§ The sculptures of Ardhanariswarar, Durga, Vishnu, Surya, Chandesa, and Anugrahamurty are the best pieces of the idols of gods placed in the niches of the sanctum's outer wall.

Darasuram Temple

§ Darasuram Temple, built by Rajaraja II (1146–1172), is yet another significant Chola contribution to temple architecture.

§ In the form of miniatures, incidents from the Periyapuram are depicted on the temple's garbhagriha (sanctum sanctorum) wall.

Features of Chola Architecture

§ The dvarapalas, or guardian figures, at the entrance to the mandapa, or hall, which began in the Palava period, became a distinctive feature of Chola Temples.

§ After a transition from the Pallava Period's rock cut structures, the Dravidian Style was fully developed.

§ In comparison to the colossal buildings of the Imperial Cholas, the early Chola temples on the banks of the Kaveri River were smaller and made of brick.

§ The Imperial Chola temples are adorned with exquisite, well-composed sculptures and frescoes.

§ The Siva Temple of Tanjore, the largest and tallest of all Indian temples, was built during the Chola period.

§ Among the sculptures at the temple, Ganas are the most memorable figures created in Chola temples.

Significance of Chola Architecture

§ Chola temples had a beautiful shikara stone at the top. It had intricate and meticulously carved carvings.

§ It's amazing how these structures, weighing hundreds of tonnes, are placed without the use of cranes.

§ During their reign, the Cholas built temples in Nageshwara, Brihadeshwara, Airavatesvara, and Chidambaram.

§ Other kingdoms in South India and Sri Lanka adopted their style.

Until the arrival of the Cholas, the art was supported by the common people and the community. During the reign of the Chola Kings, however, the Kings themselves guided and advanced large donations for the construction of grand temples. The sophistication of art in these temple structures reflected the atmosphere of the imperial court. As time passed, the size and grandeur of the temples began to trump the earlier emphasis on art. It can be seen that the Chola temples built in the later half of the period were vast structures proclaiming the majesty and power of the deity while also depicting the majesty of the rulers who built them.

The Chola dynasty is one of the longest ruling dynasties of South India, and it existed from 300 BC until the late 13th century AD, though the territorial limits kept varying from time to time.

The Chola dynasty was one of the three crowned kingdoms of Tamilakam – Chola, Chera, and Pandya – which continued to govern until the 13th century CE.

The Chola Dynasty time period of around 1500 years is divided into Early Cholas, Medieval Cholas (Imperial Cholas), and Later Cholas.

(1) Early Cholas

Not much authentic information is available about the Early Chola Kingdom.

The earliest datable references to this Tamil dynasty are in inscriptions from the 3rd century BCE left by Ashoka, of the Maurya Empire.

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Rajaraja I is also known by the name Ponniiyl Selvon.

His military conquests were:

§ The defeat of the Chera ruler Bhaskararavivarman in the naval battle of Kandalursalai and the destruction of the Chera navy.

§ The defeat of the Pandya ruler, Amarabhujanga and the establishment of Chola authority in the Pandya country.

§ The conquest of Gangavadi, Tadigaipadi and Nolambapadi located in the Mysore region.

§ The invasion of Sri Lanka was entrusted to his son Rajendra I. As the Sri Lankan king Mahinda V fled away from his country, the Cholas annexed northern Sri Lanka. The capital was shifted from Anuradhapura to Polanaruva where a Shiva temple was built

§ The Chola victory over the growing power of the Western Chalukyas of Kalyani. Satyasraya was defeated and Rajaraja I captured the Raichur Doab, Banavasi and other places. Hence the Chola power extended up to the river Tungabhadra.

§ The restoration of the Vengi throne to its rulers Saktivarman and Vimaladitya by defeating the Telugu Chodas. Rajaraja gave his daughter Kundavai in marriage to Vimaladitya.

§ Rajaraja's last military achievement was a naval expedition against the Maldivic Islands which were conquered.

After Rajaraja I

Through these conquests, the extent of the Chola empire under Rajaraja I included the Pandya, Chera and Tondaimandalam regions of Tamil Nadu and the Gangavadi, Nolambapadi and the Telugu Choda territories in the Deccan and the northern part of Ceylon and the Maldivic Islands beyond India.

Rajaraja assumed a number of titles like Mummidi Chola, Jayankonda and Sivapadasekara. He was a devout follower of Saivism. Rajaraja completed the construction of the famous Rajarajeswara temple or Brihadeeswara temple at Tanjore in 1010 A.D. And also helped in the construction of a Buddhist monastery at Nagapattinam.

Rajendra I (1012-1044 A.D)

Rajendra demonstrated his military ability by participating in his father's campaigns. He continued his father's policy of aggressive conquests and expansion. His important wars were:

§ Mahinda V, the king of Sri Lanka attempted to recover from the Cholas in the northern part of Ceylon. Rajendra defeated him and seized southern Sri Lanka. Thus the whole of Sri Lanka was made part of the Chola Empire.

§ He reasserted the Chola authority over the Chera and Pandya countries.

§ He defeated Jayasimha II, the Western Chalukya king and the river Tungabhadra was recognised as the boundary between the Cholas and Chalukyas.

§ His most famous military enterprise was his expedition to north India. The Chola army crossed the Ganges by defeating a number of rulers on their way. Rajendra defeated Mahipala I of Bengal. To commemorate this successful north-Indian campaign Rajendra founded the city of Gangaikondacholapuram and constructed the famous Rajesvaram temple in that city. He also excavated a large irrigation tank called Cholagangam on the western side of the city.

§ Another famous venture of Rajendra was his naval expedition to Kadaram or Sri Vijaya. It is difficult to pinpoint the real object of the expedition. Whatever its objects were, the naval expedition was a complete success. A number of places were occupied by Chola forces. But it was only temporary and no permanent annexation of these places was contemplated. He assumed the title Kadaramkondan.

§ Rajendra I had put down all rebellions and kept his empire intact.

After Rajendra I

At the death of Rajendra I the extent of the Chola Empire was at its peak. The river Tungabhadra was the northern boundary. The Pandya, Kerala and Mysore regions and also Sri Lanka formed part of the empire. He gave his daughter Ammangadevi to the Vengi Chalukya prince and further continued the matrimonial alliance initiated by his father.

Rajendra I assumed a number of titles, the most famous being Mudikondan, Gangaikondan, Kadaram Kondan and Pandita Cholan. Like his father, he was also a devout Saiva and built a temple for that god at the new capital Gangaikondacholapuram. He made liberal endowments to this temple and to the Lord Nataraja temple at Chidambaram. He was also tolerant of the Vaishnava and Buddhist sects.

After Rajendra I, the greatness of the Chola power was preserved by rulers like Kulottunga I and Kulottunga III. Kulottunga I was the grandson of Rajendra I through his daughter Ammangadevi. He succeeded the Chola throne and thus united the Vengi kingdom with the Chola Empire. During his reign Sri Lanka became independent. Subsequently, Vengi and the Mysore region were captured by the western Chalukyas. Kulottunga I sent a large embassy of 72 merchants to China and maintained cordial relations with the kingdom of Sri Vijaya.

Under Kulottunga III the central authority became weak. The rise of the feudatories like the Kadavarayas and the emergence of the Pandya power as a challenge to Chola supremacy contributed to the ultimate downfall of the Chola

Empire. Rajendra III was the last Chola king who was defeated by Jatavarman Sundarapandya II. The Chola country was absorbed into the Pandya Empire.

(3) Later Cholas

Around the 7th century, a Chola kingdom flourished in present-day Andhra Pradesh. These Telugu Cholas traced their descent to the early Sangam Cholas. However, it is not known if they had any relation to the early Cholas.

It is possible that a branch of the Tamil Cholas migrated north during the time of the Pallavas to establish a kingdom of their own, away from the dominating influences of the Pandyas and Pallavas.

The Chinese pilgrim Xuanzang, who spent several months in Kanchipuram during 639–640 writes about the “kingdom of Culi-ya”, an apparent reference to these Telugu Cholas.

Salient features of the Chola Administration:

Central Government of Chola:

The Cholas had an excellent system of administration. The emperor or king was at the top of the administration. The extent and resources of the Chola Empire increased the power and prestige of the monarchy.

The big capital cities like Tanjore and Gangaikondacholapuram, the large royal courts and extensive grants to the temples reveal the authority of the king. They undertook royal tours to increase the efficiency of the administration.

There was elaborate administrative machinery comprising various officials called perundanam and sirudanam. The balance between central control and local independence was maintained and non-interference in local government was sacrosanct

Revenue:

The land revenue department was well organized. It was called puravubarithinaikkalam. All lands were carefully surveyed and classified for assessment of revenue.

The residential portion of the village was called ur-nattam. These and other lands such as the lands belonging to temples were exempted from tax.

Besides land revenue, there were tolls and customs on goods taken from one place to another, various kinds of professional taxes, dues levied on ceremonial occasions like marriages and judicial fines.

During the hard times, there was a remission of taxes and Kulottunga I became famous by abolishing tolls and earned the title – Sungam Tavirtta Cholan.

The main items of government expenditure were the king and his court, army and navy, roads, irrigation tanks and canals.

Military Administration of Chola:

The Cholas maintained a regular standing army consisting of elephants, cavalry, infantry and navy. About seventy regiments were mentioned in the inscriptions.

The royal troops were called Kaikkolaperumpadai. Within this, there was a personal troop to defend the king known as Velaikkarar. Attention was given to the training of the army and military cantonments called kadagams existed.

The Cholas paid special attention to their navy. The naval achievements of the Tamils reached their climax under the Cholas. They controlled the Malabar and Coromandal coasts. In fact, the Bay of Bengal became a Chola lake for some time.

The Chola king's retinue included the padimagalir — women bodyguards who protected and attended to the king. A verse describes a king's skin as covered with "handsome scars" (from battle) "that have grown together as if he were a tree with its bark stripped for use in curing."

Provincial Administration of Chola:

The Chola Empire was divided into Mandalams and each Mandalam was into Valanadus and Nadus. In each Nadu there were a number of autonomous villages.

The royal princes or officers were in charge of Mandalams. The valanadu was under periyannattar and nadu under nattar. The town was known as Nagaram and it was under the administration of a council called Nagarattar.

Village autonomy:

The system of village autonomy with sabhas and their committees developed through the ages and reached its culmination during the Chola rule.

Two inscriptions belonging to the period of Parantaka I found at Uttiramerur provide details of the formation and functions of village councils. That village was divided into thirty wards and each was to nominate its members to the village council.

The qualifications to become a ward member were:

- a. Ownership of at least one-fourth veli of the land.
- b. own residence.
- c. Above thirty years and below seventy years of age.
- d. Knowledge of Vedas.

However, certain norms of disqualification were also mentioned in the inscriptions. They were:

- a. Those who had been members of the committees for the past three years.
- b. Those who had failed to submit accounts as committee members.
- c. Those who had committed sins.
- d. Those who had stolen the property of others.

Of the persons duly nominated, one was to be chosen for each ward by kudavolai system for a year. The names of eligible persons were written on palm leaves and put into a pot. A young boy or girl would take out thirty names each for one ward.

They were divided into six variyams such as samvatsaravariyam, erivariyam, thotta variyam, pancha variyam, pon variyam and puravuvari variyam to take up six different functions of the village administration.

The committee members were called Variyapperumakkal. They usually met in the temple or under a tree and passed resolutions. The number of committees and ward members varied from village to village.

Socio-Cultural life:

The caste system was widely prevalent during the Chola period. Brahmins and Kshatriyas enjoyed special privileges. The inscriptions of the later period of the

Chola rule mentioned two major divisions among the castes – Valangai and Idangai castes. However, there was cooperation among various castes and sub-castes in social and religious life.

The position of women did not improve. The practice of 'sati' was prevalent among the royal families. The devadasi system or dancing girls attached to temples emerged during this period.

Both Saivism and Vaishnavism continued to flourish during the Chola period. A number of temples were built with the patronage of Chola kings and queens. The temples remained centres of economic activity during this period. Mathas had a great influence during this period.

Economic Life:

Both agriculture and industry flourished. Reclamation of forest lands and the construction and maintenance of irrigation tanks led to agricultural prosperity. The weaving industry, particularly the silk-weaving at Kanchi flourished.

The metal works developed owing to the great demand for images for temples and utensils. Commerce and trade were brisk with trunk roads or peruvazhis and merchant guilds. Gold, silver and copper coins were issued in plenty in various denominations.

Commercial contacts between the Chola Empire and China, Sumatra, Java and Arabia were extensively prevalent. Arabian horses were imported in large numbers to strengthen the cavalry.

The 'daughters of god,' the Devanar Makkal or temple women, had their names inscribed in temples for donations received in their names, and inscriptions suggest that Chola women had at least some control over the resources of their households. Women were witnesses and signatories for land grants to temples, as well as land transactions.

Property, when owned by the woman, could not be spent by her husband without her permission, temple inscriptions refer to cases where husbands were fined and asked to repay the wife for having sold her property without her knowledge.

Education and Literature:

Education was also given importance. Besides the temples and mathas as educational centres, several educational institutions also flourished.

The inscription at Ennayiram, Thirumukkudal and Thirubhuvanai provide details of the colleges that existed in these places. Apart from the Vedas and Epics, subjects like mathematics and medicine were taught in these institutions.

The endowment of lands was made to run these institutions. The development of Tamil literature reached its peak during the Chola period. Sivakasintamani written by Thiruthakkadevar and Kundalakesi belonged to the 10th century.

The Ramayana composed by Kamban and the Periyapurana or Tiruttondarpuranam by Sekkilar is the two masterpieces of this age. Jayankondar's Kalingattupparani describes the Kalinga war fought by Kulotunga I.

The Moovarula written by Ottakuthar depicts the life of three Chola kings. The Nalavenba was written by Pugalendi. The works on Tamil grammar like Kalladam by Kalladanar, Yapperungalam by Amirthasagarar, a Jain, Nannul by Pavanandhi and Virasoliyam by Buddhmitra were the products of the Chola age.

Art and Architecture:

The Dravidian style of art and architecture reached its perfection under the Cholas. They built enormous temples. The chief feature of the Chola temple is the vimana.

The early Chola temples were found at Narthamalai and Kodumbalur in Pudukottai district and at Srinivasanallur in Tiruchirappalli district. The Big Temple at Tanjore built by Rajaraja I is a masterpiece of South Indian art and architecture. It consists of the vimana, ardhmandapa, mahamandapa and a large pavilion in the front known as the Nandimandapa.

Another notable contribution made by the Cholas to temple architecture is the Siva temple at Gangaikondacholapuram built by Rajendra I. The Airavathesvara temple at Darasuram in Tanjore District and the Kampaharesvara temple at Tribhuvanam are examples of later Chola temples.

The Cholas also made rich contributions to the art of sculpture. The walls of the Chola temples such as the Tanjore and Gangaikondacholapuram temples contain numerous icons of large size with fine execution.

The bronzes of the Chola period are world-famous. The bronze statues of Nataraja or dancing Siva are masterpieces.

The Chola paintings were found on the walls of Narthamalai and Tanjore temples.

PERIOD	KING	MAJOR EVENTS	INSCRIPTION / BOOKS
Early Cholas: 300BC-200 AD	Karikala Chola 190 CE	Ruled in southern India during the Sangam period He is recognised as the greatest of the Early Cholas. He built the world's earliest water-regulator structure in stone at Kallanai (Grand Anicut) on River Cauvery In the Battle of Venni, he defeated both Pandyan and Cheran	Pattiniappālai, Poruṇ arār r u ppaṭ ai Akanan̄ ūr u Purananuru-books Melapadu plates of Punyakumara
Medieval Cholas: 850AD-1070AD	Vijayalaya Chola 850-870	Vijayalaya Chola re-established the Chola Dynasty Captured Tanjavur from Mutharaiyars (a feudal lord of Pandya). He also renovated Thanjavur and built the Solesvara temple at Padukottai.	The Thiruvallangadu copperplates Title of Parakesarivarman.

The majority of his kingdom was located in the Lower Kaveri Delta area

Aditya Chola 870-907	<p>At the Battle of Sripurambiyam, he defeated Pandya</p> <p>Aditya Chola I attacked the Pallavas and killed Aparajita-the end of the Pallava Dynasty</p> <p>Friendly relations between the Cheras</p> <p>Great Shiva devotee who built a number of Shiva Temples on the banks of river Cauvery.</p>	<p>Kanyakumari inscription</p> <p>Kodandarameshvara</p> <p>The Conquest of Tondaimandalam gave him the title Tondainadupavina Rajakesarivarmans</p>
Parantaka Chola 907-955	<p>He attacked the Pandyas and captured Madura, and assumed the title Madurain-Konda</p> <p>This victory earned him the title of Maduraiyum Elamum Konda Parakesarivarmans (The conqueror of Madura and Ceylon)</p>	<p>Tiruvoyyur Inscriptions</p> <p>Tirunavalur Inscription</p> <p>He assumed many titles: Viranarayana, Virakirti, Virachola,</p>

He was a great militarist who had made extensive conquests

Vikrama-Chola

He laid out the rules for the conduct of the village assemblies in an inscription.

Rajaditya
Chola
949-950

Defeated in the Battle of Takkolam to the combined force of Western Gangas Banas and Vaidumbas led by Rashtrakuta King Krishna III

Raja Raja
Chola I
985-1014
aka
Ponniyil
Selven

During his reign, the Cholas expanded beyond South India with their domains stretching from Srilanka in the south to Kalinga in the north.

The birth name of Rajaraja Chola-I was Arulmozhi Varman

Also known as Rājakesarī,

He is known as Tirumurai Kanda Cholan meaning one who saved the Tirumurai

Rajaraja assumed the title Mummudi Chola" a title

Coins had on the obverse the figure of the standing king and on the reverse the seated goddess.

used by Tamil kings who ruled the three kingdoms of Cholas, Pandyas and Cheras

Rajendra
Chola I
985-1014

Rajendra's conquests included the Andaman and Nicobar Islands, Sri Lanka, and the Maldives, and he successfully invaded the territories of Srivijaya in Malaysia, Southern Thailand and Indonesia in South East Asia.

The whole of Sri Lanka (Iramandalam) was conquered by Rajendra Chola-I in a naval expedition

He defeated Jayasimha II, the Western Chalukya king & Tungabadhra was recognised as the boundary between the Cholas and Chalukyas.

His most famous military enterprise was his expedition to north India. The Chola army crossed the Ganges by defeating a number of rulers on their way. Rajendra defeated Mahipala I of Bengal. Victory over the Chalukyas, Kalinga, Gangas and Palas etc. led him to

assume the title
"Gangaikonda". To
commemorate this
successful north-Indian
campaign Rajendra founded
the city of
Gangaikondacholapuram

Rajadhiraj a Chola 1044- 1052	Performed Ashwamedha Yajna. He was killed in the Battle of Koppam near Mysore while fighting with the Chalukyas	He was killed on the back of the elephant and this is why he came to be known as Yanai-Mel- thunjina Devar (The king who died on the elephant).
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Art and Architecture of Chola Dynasty

The Chola Dynasty, a Tamil dynasty, ruled primarily in southern India until the thirteenth century. Under the Cholas, Tamil Nadu reached new heights of excellence in art, religion, and literature. In all of these areas, the Chola period

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marked the culmination of movements that had begun earlier under the Pallavas. **Monumental architecture** in the form of majestic temples and sculpture in stone and bronze reached a level of finesse never before seen in India.

Art and Architecture - Features

§ The period of the imperial Cholas (c. 850 CE - 1250 CE) in South India was one of continuous improvement and refinement of Chola art and architecture.

§ They used the wealth gained from their extensive conquests to construct long-lasting stone temples and exquisite bronze sculptures in an almost entirely Hindu cultural setting.

§ The Cholas built their temples in the style of the Pallava dynasty, which was influenced by the Amaravati school of architecture.

§ Chola artists and artisans drew further inspiration from other contemporary art and architectural schools, elevating the Chola temple design to new heights.

§ The Chola kings constructed numerous temples throughout their kingdom, which typically included the plains, Central and Northern Tamil Nadu, and at times the entire state of Tamil Nadu, as well as adjoining parts of modern Karnataka and Andhra Pradesh.

§ We can roughly see three major phases in the evolution of Chola temple architecture, beginning with the early phase of Vijayalaya Chola and continuing until Sundara Chola, the middle phase of Rajaraja Chola and Rajendra Chola when achievements scaled heights never reached before or since, and the final phase during the Chalukya Chola period of Kulottunga I until the Chola empire's demise.

§ In addition to temples, the Cholas constructed hospitals, public utility buildings, and palaces. Many such structures are mentioned in inscriptions and in contemporary accounts.

§ The golden palace allegedly built by Aditya Karikala for his father Sundara Chola is an example of such a structure.

§ However, such structures were made of perishable materials, such as wood and fired bricks, and have not withstood the test of time.

Chola Sculpture

§ Stone and metal sculptures abound in Chola temples. They depict Chola period socio-religious ideas. The **Nataraja sculpture** is famous not only for its beauty, but also for its spiritual significance.

§ In Vaishnava temples, there is a Vishnu idol. In sculptural representations of Alvars, a spiritual calmness is depicted. The Cholas used sculptures to decorate the walls, pillars, and roofs.

§ The importance of sculpture is palpable in Chola works. The decorative sculptures are still in place.

§ During the Chola period, realism dominated sculpture. Scenes from the Ramayanam Mahabharatam, Puranas, and the lives of the 63 Nayanmars are sculpted in narrative panels on temple walls.

Chola's Contribution to Art

Portraits

§ In the art of portraiture, the Cholas outperformed the Pallavas. The best portraits can be found on the walls of Koranganatha and Nageswarasamy temples.

§ In Kalahasti temple, there are portraits of Cholamadevi and Kulothunga-III. They are excellent examples of Chola portraiture.

Paintings

§ Paintings flourished, and figures were painted with realism. The Choia painters' skill can be seen in their paintings. Paintings in the Big Temple are excellent examples.

§ Scenes from Periyapuram are beautifully depicted, and the Kailasanathar temple in Kanchipuram and the Vishnu temple in Malaiyadipatti both house fine examples of Chola paintings.

§ During the Chola period, Rajaraja-I and Rajendra made greater contributions to the development of the art of painting.

Music

§ The art of music flourished during the Chola period. In music, twenty-three panns were used. The seven music alphabets were used: sa, ri, ga, ma, pa, da, and ni. In every temple, **Aiwar and Nayanmar hymns** were sung.

§ **Nambiandar nambi and Nathamuni** made significant contributions to the advancement of music.

§ Music has inspired the creation of books. In the Brahadeeswarar temple, several musicians were appointed. Drums, udukai, veena, and flute were well-known musical instruments.

§ Sagadakkottigal assembled a band of musicians. Endowments have been established to promote music. The kings rewarded musicians.

§ Temples and mutts provided vocal and instrumental music instruction.

Dance

§ The Chola kings supported the art of dance. During the Chola period, two types of dances were performed: **Bharatanatyam and Kathakali**. Lord Siva was depicted as a performer of the Karana dance.

§ **Lord Nataraja** can be seen dancing at the Natarajar temple in Chidamparam and the Sarangapani temple in Kumbakonam.

§ Rajaraja I assigned 400 dancing girls to the Tanjore Big Temple.

§ There were two dance directors in charge of coordinating these dancing girls.

§ Dance dramas were also performed on stages during festival times. Chola kings established endowments to promote the art of dancing.

Drama

§ Drama was promoted by the Cholas. Drama was linked to music and dance.

§ Dramas were performed on a variety of stages and theatres. During the festival, two dramas were performed: **Rajarajeswara natakam and Rajarajavijayam**.

§ The Chola kings rewarded drama actors with honours. One type of drama is **Koothu**. Ariyakuthu, Chakki koothu, and Santhi koothu are all mentioned in the inscriptions.

§ The Cholas' cultural glory is reflected in Chola literature. Chola kings constructed hundreds of temples.

§ The Cholas' cultural monuments include the Tanjore temple Brahadeeswarar (Big Temple) and the Gangaikonda Cholapuram temple.

§ The glorious Chola culture had a large impact on Tamil society, instilling many cultural values such as bakthi.

Cholas as Builders of Temples

§ Innumerable temples were built and patronised by the Cholas. The royal temples of Thanjavur, Gangaikonda Chozhapuram, and Darasuram are the

repositories of Dancing woman accompanied by musician, Brihadishvarar temple architecture, sculpture, paintings, and Chola arts iconography.

§ The temples became a focal point for social, economic, cultural, and political activities.

§ The temple paraphernalia, which includes temple officials, dancers, musicians, singers, players of musical instruments, and their masers led by priests worshipping the gods, reflects the royal court.

§ Architecturally, the Chola temples are simple and modest in the early stages. **Sepulchral temples** (pallip-padai) were also built where the kings were buried.

Temple Architecture During the Cholas

Brihadeeshvarar Temple

§ The Grand Temple of Thanjavur, also known as Rajarajisvaram and Brihadishvarar Temple, is a magnificent example of Chola architecture, painting, sculpture, and iconography.

§ Rajaraja's polity was greatly legitimised by this temple. The sanctum, which has a 190-foot vimana, is topped with an 80-ton stone.

§ The figures of Lakshmi, Vishnu, Ardhanarisvara, and Bikshadana, a mendicant form of Siva, on the outer walls of the sanctum are notable.

§ The fresco paintings and miniature sculptures of scenes from puranas and epics in the temple walls reveal the Chola rulers' religious ideology.

§ Dancing girls, musicians, and music masters were chosen from various settlements across Tamil Nadu and attached to this temple.

§ Singers had been assigned to recite the bhakti hymns in the temple grounds.

Gangaikonda Chozhapuram

§ In commemoration of his victory in North India, Rajendra I built Gangaikonda Chozhapuram on the model of Brihadisvarar temple in Thanjavur.

§ He constructed the Chola-gangam irrigation tank near the capital of Jalastambha (water-pillar). It became the coronation centre, which became a Chola landmark.

§ The sculptures of Ardhanariswarar, Durga, Vishnu, Surya, Chandesa, and Anugrahamurty are the best pieces of the idols of gods placed in the niches of the sanctum's outer wall.

Darasuram Temple

§ Darasuram Temple, built by Rajaraja II (1146–1172), is yet another significant Chola contribution to temple architecture.

§ In the form of miniatures, incidents from the Periyapuram are depicted on the temple's garbhagriha (sanctum sanctorum) wall.

Features of Chola Architecture

§ The dvarapalas, or guardian figures, at the entrance to the mandapa, or hall, which began in the Palava period, became a distinctive feature of Chola Temples.

§ After a transition from the Pallava Period's rock cut structures, the Dravidian Style was fully developed.

§ In comparison to the colossal buildings of the Imperial Cholas, the early Chola temples on the banks of the Kaveri River were smaller and made of brick.

§ The Imperial Chola temples are adorned with exquisite, well-composed sculptures and frescoes.

§ The Siva Temple of Tanjore, the largest and tallest of all Indian temples, was built during the Chola period.

§ Among the sculptures at the temple, Ganas are the most memorable figures created in Chola temples.

Significance of Chola Architecture

§ Chola temples had a beautiful shikara stone at the top. It had intricate and meticulously carved carvings.

§ It's amazing how these structures, weighing hundreds of tonnes, are placed without the use of cranes.

§ During their reign, the Cholas built temples in Nageshwara, Brihadeshwara, Airavatesvara, and Chidambaram.

§ Other kingdoms in South India and Sri Lanka adopted their style.

Until the arrival of the Cholas, the art was supported by the common people and the community. During the reign of the Chola Kings, however, the Kings

themselves guided and advanced large donations for the construction of grand temples. The sophistication of art in these temple structures reflected the atmosphere of the imperial court. As time passed, the size and grandeur of the temples began to trump the earlier emphasis on art. It can be seen that the Chola temples built in the later half of the period were vast structures proclaiming the majesty and power of the deity while also depicting the majesty of the rulers who built them.