Biological Diversity (Amendment) Bill, 2021

For Prelims: Biological Diversity (Amendment) Bill, 2021, United Nation Convention on Biological Diversity, Nagoya Protocol,

For Mains: Salient features of Biological Diversity (Amendment) Bill, 2021 and associated concerns.

Why in News

Recently, the **Biological Diversity (Amendment) Bill, 2021** was tabled in the Parliament.

- The amendments seek to **decriminalise certain provisions** and bring **more foreign investments** in the chain of biological resources, including **research, patent and commercial utilisation**, without compromising the **national interest.**
- However, opposition parties have **cited concerns** over the bill and it is being referred to **a select committee.** They demanded the bill to be referred to the Parliament standing committee.

Note:

- A **Select Committee** is formed for examining a particular Bill and its membership is limited to Members of Parliament from one House. It's chaired by MPs from the ruling party.

Key Points

- **Objective:** The bill looks to relax certain rules in the **Biological Diversity Act, 2002.**
  - The 2002 Act imposed a **heavy "compliance burden"** on Indian medicine practitioners, seed sector, industry & researchers and made it hard to conduct collaborative research and investments.
- **Simplify Research Process:** The amendments also streamline the process of Patenting for Indian researchers to encourage patenting.
  - For this, **regional patenting centres** will be opened across the country.
- **Boosting Indian Medicine System:** It seeks to give a fillip to **"Indian system of medicine"**, and facilitate fast-tracking of research, patent application process, transfer of research results while utilising the biological resources available in India.
  - It seeks to empower local communities to be able to utilise resources, particularly of medicinal value, such as seeds.
  - The Bill looks to encourage farmers to **increase cultivation of medicinal plants.**
  - These objectives to be achieved without compromising the objectives of the **United Nation Convention on Biological Diversity.**
- **Decriminalising Certain Provisions:** It seeks to decriminalise certain provisions in the chain of biological resources.
  - These changes were brought in consonance with **India's ratification of Nagoya Protocol** (access to generic resources and the fair and equitable sharing of benefits arising from their utilisation) in 2012.

- **Allowing Foreign Investments:** It also allows for **foreign investment in research in biodiversity.** However, this investment will necessarily have to be made through Indian companies involved in biodiversity research.
    - For foreign entities the approval from the **National Biodiversity Authority** is necessary.
- **Exempting AYUSH Practitioners:** The Bill seeks to exempt registered **AYUSH medical practitioners** and people accessing codified traditional knowledge, among others, from giving prior intimation to State biodiversity boards for accessing biological resources for certain purposes.

Note:

- **Biological Diversity Act, 2002:** It was enacted by the Parliament, to provide for:
    - Conservation of biological diversity,
    - Sustainable use of its components
    - Fair and equitable sharing of the benefits arising out of the use of biological resources and knowledge.
- **Nagoya Protocol**
- It is mandated that **benefits derived from the use of biological resources are shared in a fair and equitable manner** among the indigenous and local communities.
- When an Indian or foreign company or individual accesses biological resources such as medicinal plants and associated knowledge, it has to take **prior consent from the national biodiversity board.**
- The board **can impose a benefit-sharing fee or royalty or impose conditions so that the company shares the monetary benefit** from commercial utilisation of these resources with local people who are conserving biodiversity in the region.

Concerns Raised by The Experts

- **Trade over Conservation**: It prioritises **intellectual property** and commercial trade at the expense of the act's key aim of conserving biological resources.
- **Threat of Bio-piracy:** The exemptions to **AYUSH Practitioners** no longer need to take approvals, would pave the way for **"bio piracy".**
    - **Biopiracy** is the practice of exploiting naturally occurring genetic or biochemical material in commerce.
- **Marginalising Biodiversity Management Committees (BMCs):** The proposed amendments allow for state biodiversity boards to represent BMCs to determine terms of benefit sharing,
    - Under the Biodiversity Act 2002, national and state biodiversity boards are required to consult the **biodiversity management committees (constituted by every local body)** while taking any decision relating to the use of biological resources.
- **Sidelining Local Communities:** The bill also exempts cultivated medicinal plants from the purview of the Act. However, it is practically impossible to **detect which plants are cultivated and which are from the wild.**
    - This provision could allow large companies to **evade the requirement for prior approval or share the benefit** with local communities under the access and benefit-sharing provisions of the Act.

Way Forward

- **Effective Implementation of the** Forest Rights Act (FRA)**:** The government must make an effort to **build trust between its agencies in the area and the people** who depend on these forests by treating them as equal citizens like everyone else in the country..
    - The FRA's loopholes have already been identified; all it needs is to work on amending it.
- **Integration of International Treaties:** The implementation of Nagoya Protocol cannot work in isolation and thus must be commensurate with other international treaties.
    - Therefore, integration between **Nagoya Protocol** and the **International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)** need to consider the legislative, administrative and policy measures that cross each other's path

- **People's Biodiversity Register (PBR):** PBR should **aim to document folk knowledge of status, uses, history, ongoing changes and forces driving changes in biodiversity resources, and people's perceptions** of how these resources should be managed.
    - **PBRs** can be useful to preserve the rights of farmers or communities over the traditional knowledge they may hold over a particular variety.

Source: IE

Right to Be Forgotten

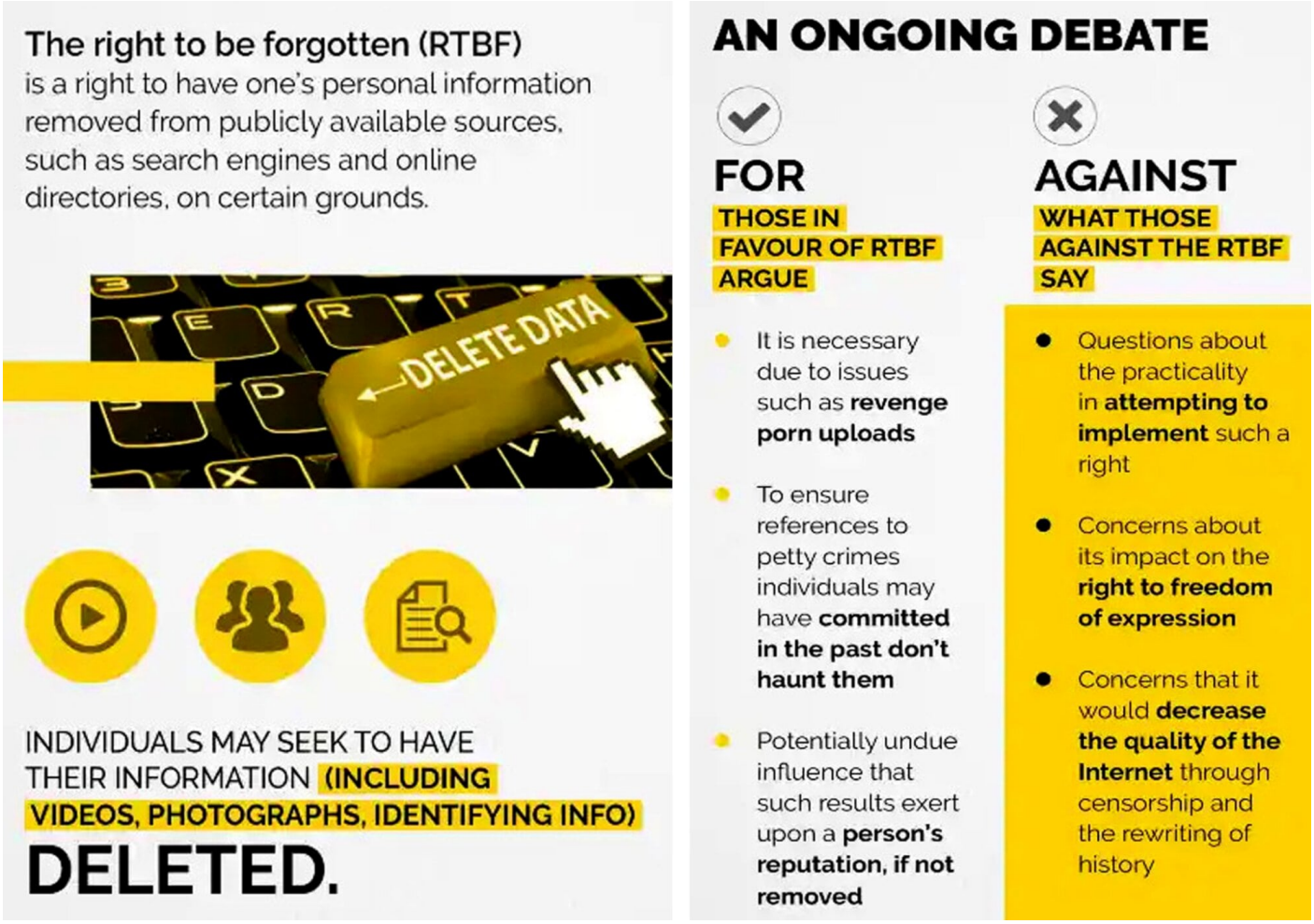
For Prelims: Fundamental Rights, Right to Privacy, the Puttaswamy case, B N Srikrishna Committee, Data protection bill.

For Mains: Issues Related to Right to be forgotten and government steps to protect privacy.

Why in News

Recently, the Union Government informed the Delhi High Court that the international legal concept of the **Right to Be Forgotten** is evolving in India and **it comes under the** Right to Privacy.

- As per **Supreme Court** Judgement the Right to privacy includes the **Right to Be Forgotten (RTBF) and the right to be left alone.**



//

Key Points

- **Right to Privacy:** In ***Puttaswamy v. Union of India case, 2017,*** the **Right to Privacy was declared a** fundamental right by the Supreme Court.
  - Right to privacy is protected as **an intrinsic part of the right to life and personal liberty under** Article 21 and as a part of the freedoms guaranteed by Part III of the Constitution.
- **Right to be Forgotten** : It is the **right to have publicly available personal information removed from the internet, search, databases, websites or any other public platforms,** once the personal information in question is no longer necessary, or relevant.
  - The RTBF gained **importance after the 2014 decision of the Court of Justice of the** European Union **("CJEU")** in the Google Spain case.
  - In the Indian context, the Supreme Court in ***Puttaswamy v. Union of India, 2017*** noted that the RTBF was a part of the broader right of privacy.
    - The RTBF emerges from the right to privacy **under Article 21 and partly from the right to dignity under Article 21.**
- **Right to be Left Alone:** It doesn't mean that one is withdrawing from society. It is an expectation that society will not interfere in the choices made by the person so long as they do not cause harm to others.
- **Issues Associated with RTBF:**
  - **Privacy vs. Information:** The existence of RTBF in a given situation depends on **its balancing with other conflicting rights such as the right to free expression** or other publication rights.
    - For example, a person may want to de-link information about his criminal records

and make it difficult for people to access certain journalistic reports when they google him.
        - This brings the person's right to be left alone, derived from Article 21, directly in **conflict with the rights of the media to report on issues, flowing from** Article 19.
    - **Enforceability Against Private Individuals:** The RTBF will normally be **claimed against a private party** (a media or news website).
        - This raises the **question of whether fundamental rights can be enforced against the private individual,** which is generally enforceable against the state.
        - Only Article 15(2), Article 17 and **Article 23** provides protection against a private act of a private party that is challenged based on its violation of the Constitution.
    - **Ambiguous Judgements:** In recent years, without a data protection law to codify RTBF, **there are some inconsistent and peculiar adjudications** of the right by various high courts.
        - Courts in India have repeatedly **either accepted or rejected the application of RTBF** while completely ignoring the wider constitutional questions associated with it.

Government Steps to Protect Privacy

- **Personal Data Protection Bill 2019:**
    - To provide for **protection of privacy of individuals relating to their Personal Data** and to establish a Data Protection Authority of India for the said purposes and the matters concerning the personal data of an individual.
    - Framed on the recommendations of **B N Srikrishna Committee (2018).**
- **Information Technology Act, 2000:**
    - Provides for **safeguard against certain breaches in relation to data from computer systems**. It contains provisions to prevent the unauthorised use of computers, computer systems and data stored therein.

Way Forward

- The Parliament and the Supreme Court should engage in a detailed analysis of RTBF and **evolve a mechanism for balancing the conflicting rights of privacy and freedom of expression.**
- In this digital age, data is a valuable resource that should not be left unregulated. **In this context, the time is ripe for India to have a robust data protection regime.**
    - Thus, the government should expedite the enactment of the **Personal Data Protection Bill 2019.**

Source: IE

Programme for Development of Semiconductors and Display Manufacturing Ecosystem

For Prelims: Production Linked Incentives, Self Reliance, Scheme for Promotion of Manufacturing of electronic Components and semiconductors, semiconductors and its use.

For mains: Significance of semiconducting device in Indian economy, Need of promoting electronic and semiconductor industry, role of electronic industry in making India self-reliant.

Why in News

Recently, the Ministry of Electronics and Information Technology (MeitY) has approved a comprehensive **Program for the Development of** Semiconductors **and Display Manufacturing Ecosystems** in the country.

- The government proposes to provide **incentives worth Rs 76,000 crore for the development of semiconductors and display manufacturing** ecosystems **over the next six years.**

Semiconductors

- Any of a class of crystalline solids **intermediate in electrical conductivity between a conductor and an insulator.**
- Semiconductors are employed in the manufacture of various kinds of electronic devices, **including diodes, transistors, and integrated circuits.** Such devices have found wide application **because of their compactness, reliability, power efficiency, and low cost.**
- As discrete components, **they have found use in power devices, optical sensors, and light emitters, including solid-state lasers.**

Key Points

- **Incentives Under the Programme**
  - **Semiconductor Fabs and Display Fabs:**
    - It would provide **fiscal support of up to 50% of the project cost** for setting up semiconductor and display fabrication units.
    - The Union government will work with the States to **set up high-tech clusters with the required infrastructure** such as land and semiconductor-grade water.
  - **Semi-conductor Laboratory (SCL):**
    - MeitY **will take requisite steps for modernization and commercialization of Semi-conductor Laboratory (SCL).**
    - MeitY will explore the possibility **for the Joint Venture of SCL with a commercial fab partner** to modernise the brownfield fab facility.
  - **Compound Semiconductors:**
    - It will support fiscal support **of 30% of capital expenditure to approved units.**
    - At Least **15 such units** of Compound Semiconductors and Semiconductor Packaging **are expected to be established** with Government support under this scheme.
  - **Semiconductor Design Companies:**
    - The **Design Linked Incentive (DLI) Scheme shall extend product design linked incentive of up to 50%** of eligible expenditure and product deployment linked incentive of 6% - 4% on net sales for five years.
    - **Support will be provided to 100 domestic companies** of semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design.
  - **India Semiconductor Mission:**
    - In order to drive the long-term strategies for developing a sustainable semiconductors and display ecosystem, a **specialised and independent India Semiconductor Mission (ISM) will be set up.**
    - ISM will be **led by global experts in the semiconductor and display industry.** It will act as the nodal agency for efficient and smooth implementation of the schemes on Semiconductors and Display ecosystem.
  - **Production Linked Incentives:**
    - Incentive support to the tune of Rs.55,392 crore (7.5 billion USD) have been approved under **PLI** for Largest Scale Electronics Manufacturing, PLI for IT Hardware, SPECS Scheme and **Modified** Electronics Manufacturing Clusters **(EMC 2.0) Scheme.**

        - In addition, PLI incentives to the quantum of Rs.98,000 crore (USD 13 billion) are approved for allied **sectors comprising ACC battery, auto components, telecom & networking products, solar PV modules and white goods.**
- **Significance:**
    - **Strategic Importance**: In the current geopolitical scenario, **trusted sources of semiconductors and displays hold strategic importance** and are key to the security of critical information infrastructure.
    - **Employment:** It will also create **highly skilled employment opportunities** to harness the demographic dividend of the country.
    - **Multiplier Effect:** Development of the semiconductor and display ecosystem will have a multiplier effect across different sectors of the economy with deeper integration to the global value chain.
    - **Boost to Electronic Sector:** The program will **usher in a new era in electronics manufacturing** by providing a globally competitive incentive package to companies in semiconductors and display manufacturing as well as design.
    - **Self Reliance:** This shall **pave the way for India's technological leadership** in these areas of strategic importance and economic self-reliance.

Indian Electronic Sector

- **About:**
    - The Indian electronics sector is **tremendously growing** with the demand expected to cross **USD 400 billion by 2023-24.**
    - Domestic production has grown from USD 29 billion in 2014-15 to nearly **USD 70 billion in 2019-20 (**Compounded Annual Growth Rate **of 25%).**
    - Most of this production takes place in the final assembly units (last-mile industries) located in India and focussing on them will **help develop deep backward linkages, thus inducing industrialisation.**
- **Need:**
    - **National Security Considerations:**
        - Most of the chips, as well as components used in Indian communication and critical systems, are imported.
        - This **could hamper national security and sovereignty** as backdoors could be programmed in chips during manufacturing, which could compromise networks and **cyber-security.**
    - **Increasing Imports:**
        - It is expected that **electronics imports will soon overtake crude oil** as India's largest import commodity which will result in assembly units ending up as little more than mere packaging units.
    - **Increased Demand and Shortage Amid Covid:**
        - The **Covid-19 pandemic** and the subsequent **lockdowns** across the world that **forced shut crucial chip-making facilities in countries including Japan, South Korea, China and the US.**
        - Its shortage causes cascading effects, given that the first one creates pent-up demand that becomes the cause for the follow-up famine.
    - **Profiting from Anti-Chinese Sentiments:**
        - Due to the **USA's allegations on China** for worsening **Covid-19 and India-China conflict** and **recent developments as a result of it**, numerous multinational companies (MNCs) are shifting their production out of China.
    - **Pushing Make in India:**
        - There is **a need to promote semiconductor manufacturing alongside assembly units** in India.
        - This will induce greater local production of components and also fuel the growth of the industry as a whole, making **Make in India** successful.
        - In 2019, the Union Cabinet gave its approval to the **National Policy on Electronics 2019** which envisions positioning India as a global hub for Electronics System Design and Manufacturing.
- **Challenges:**
    - **Missing Profits:**

        - Despite the impressive growth of electronic production in India, **the net value added by production units is very low.**
        - The net value addition ranges between 5% and 15%, as most components are imported rather than locally sourced.
        - It implies that local value addition is a mere USD 7-10 billion out of a global market of USD 2.1 trillion.
    - **Limited Indigenous Capability in Upstream Industries:**
        - In the era of **global supply chains**, the **value addition at the final stages of production is very low**, especially in electronics because the more complicated processes, involving greater value addition, occur prior to assembly, in 'upstream' industries.
        - These include the production of processors, display panels, memory chips, cameras, etc.
    - **Absence of Foundries:**
        - In the absence of **foundries (semiconductor fabrication plants where microchips are produced)**, India has to **rely on foreign contractors** to produce microchips.
        - Set-up of Foundries requires **massive capital expenditure** to the tune of USD 2 billion and more.
            - Foundries are also required to adopt newer technologies and processes almost every 18 months to ensure competitiveness which means high capital depreciation and often accounts for 50-60% of the production cost.

Way Forward

- Semiconductors and displays are the **foundation of modern electronics** driving the next phase of digital transformation under **Industry 4.0.**
- The new mission **should focus fiscal support**, at least for now, on other parts of the chip-making chain including design centres, testing facilities, packaging etc.
    - The total outlay of **Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS)** must be increased from the current Rs. 3300 crore, to attract the microchip giants.
- India's PSEs such as Bharat Electronics Ltd or Hindustan Aeronautics Ltd can be **used to set up a semiconductor fab foundry with the help of a global major.**
- India needs to drop the dream of swadeshi semiconductors. Instead, **it should aim to become a key player in a trusted, plurilateral semiconductor ecosystem** that keeps key adversaries out.
    - **Favourable trade policies** are critical for building a plurilateral semiconductor ecosystem.

Source: PIB

India and Vietnam Relation

For Prelims: Comprehensive Strategic Partnership, Look East Policy, Indo-Pacific Oceans Initiative (IPOI), ASEAN, Vietnam's Mekong Delta region, UN Security Council, East Asia Summit, Mekong Ganga Cooperation, Asia Europe Meeting (ASEM).

For Mains: Significance of India and Vietnam relations and the common are of interest between two countries in recent times.

Why in News

Recently, **India and Vietnam** signed a **letter of intent (LOI)** to collaborate in the **field of digital media,** paving the way for further strengthening the partnership between the two countries.

- A LOI is a document that declares the **initial commitment of two parties** as they enter into a business deal with each other. It outlines the chief terms of the prospective deal.
- Earlier in 2020, **Defence Ministers of India and Vietnam** discussed collaboration in defence industry capability building, training and cooperation in **United Nations (UN)** peacekeeping operations, etc.

Key Points

- **Letter of Intent:** It recognises the **joint objectives of both the countries** to facilitate cooperation in the **field of Posts and Telecom.**
  - Promote **sharing of information and experience**, cooperate to implement projects in Human Resource Development.
  - Promote **enhanced cooperation of postal designated operators** and service providers of both the countries.
  - It will shape bilateral cooperation in the field of new technologies and challenges, such as the **'infodemic',** which all countries are grappling with during the COVID-19 pandemic.
- **Scope of Discussion:** Vietnam appreciated the efforts of India for developing indigenous 5G network under **"AtmaNirbhar Bharat"**.
  - The Vietnamese Minister of Information and Communications suggested that **India should collaborate in the field of** 5G to produce world class India has been developing indigenously designed 5G telecom equipment.

India- Vietnam Relation

- **Background:**
  - While defence cooperation has been one of the most significant pillars of the **Comprehensive Strategic Partnership** initiated by the two countries in 2016, the relationship between the two countries was established much earlier.
  - India had established the **Consul General's office** in **Hanoi** as early as 1956.
    - Vietnam established its **diplomatic mission in 1972.**
  - India had stood by Vietnam in opposing US intervention in that country at the cost of embittering Indo-US relations.

- The relationship was further strengthened when India, in the early 1990s, initiated its **"Look East Policy"** with the specific objective of economic integration and political cooperation with Southeast Asia and East Asia.

- **Areas of Cooperation:**
  - **Strategic Partnership:**
    - India and Vietnam agreed to strengthen their strategic partnership "in line with India's **Indo-Pacific Oceans Initiative (IPOI)** and the **ASEAN's Outlook on Indo-Pacific** to achieve shared security, prosperity and growth for all in the region."
  - **Economic Cooperation:**
    - Trade and economic relations for mutual benefit, which have significantly improved over the years particularly after the **ASEAN- India Free Trade Agreement** was signed.
    - India realises that Vietnam is a potential regional power in **South East Asia** with great political stability and substantial economic growth.
    - India is investing in development and capacity assistance for Vietnam through **quick impact projects (QIP), proposals in the area of water resource management** in **Vietnam's Mekong Delta region**, **Sustainable Development Goals (SDGs)**, and **digital connectivity.**
  - **Trade relations:**
    - During the **Financial Year (FY)** April 2020 – March 2021, bilateral trade between India and Vietnam reached USD 11.12 billion.
      - Indian exports to Vietnam amounting to USD 4.99 billion and Indian imports from Vietnam at USD 6.12 billion.
  - **Defence Cooperation:**
    - While Vietnam is interested in modernising its armed forces, India is interested in **developing defence capabilities** of its South-East Asian partners sufficiently to maintain peace in the strategic region.
    - Vietnam is interested in **India's Akash surface-to-air systems** and **Dhruv advanced light helicopters** and **Brahmos missiles.**
    - Apart from this, the defence relations include capacity building, dealing with common security concerns, training of personnel, and cooperation in defence R&D.
    - Both countries reaffirmed the strong **India-Vietnam Defence cooperation** which is a key pillar of **Comprehensive Strategic Partnership (2016).**
      - **This year completes five years of "Comprehensive Strategic Partnership" between India and Vietnam, and the year 2022 will mark fifty years of diplomatic relations between the two countries**
    - Indian Naval Ship INS Kiltan undertook a visit to Ho Chi Minh City to deliver flood relief materials for the people of Central Vietnam.
      - It also participated in the **PASSEX** Exercise with the Vietnam People's Navy.
    - The **China factor also weighs heavily in the respective strategic calculus** of India and Vietnam.
      - Both countries had fought wars with China and both have border problems with that country. China aggressively continues to encroach in the territories of the two countries.
      - Hence, it is natural for both the countries to come closer with a view to restrain China from its aggressive actions.
  - **Cooperation at Multiple Fora:**
    - At the **UN Security Council**, both India and Vietnam are serving concurrently as **non-permanent members in 2021.**
    - India and Vietnam closely cooperate in various regional forums such as **East Asia Summit**, **Mekong Ganga Cooperation**, **Asia Europe Meeting** (ASEM).
  - **People-to-People Contacts:**
    - The year 2019 was celebrated as the **ASEAN-India Year of Tourism**. Both countries have **facilitated a simplified visa regime** to **promote bilateral tourism**.
    - The Embassy of India organised various events to **celebrate** in 2018-19. These include Jaipur artificial limb fitment camps, which were organised in four provinces of Vietnam, benefitting 1000 people, under the **'India for Humanity'** initiative of the Government of India.

Way Forward

- In 2016, the first time in 15 years, an Indian Prime Minister visited Vietnam signalling India is no longer hesitant to expand its presence in China's periphery.
- India's foreign policy envisages **India to play an anchor for peace, prosperity and stability in Asia and Africa,** deepening ties with Vietnam will only strengthen this narrative.
- As **India and Vietnam geographically lie** at the heart of the emerging **Indo-Pacific construct**, both would play a major role in this strategic space which is becoming a core theatre for competition for power and influence amongst the major powers.
- The **strategic partnership** under the broad India-Vietnam cooperation framework would be **critical towards building the vision laid out under India's 'Act East' Policy,** which looks to **expand engagement** that is mutually positive and which ensures inclusive growth for all in the region.
- Strengthening ties with Vietnam will eventually lead a step towards the realisation of **SAGAR (Security and Growth all in the region)** initiative as hailed by the Indian PM.
- India and Vietnam both can mutually benefit each other in the arena of Blue Economy and ocean security.

Source: PIB

Proposal on Algo Trading: SEBI

For Prelims: Capital Market, SEBI, Algorithmic Trading, Application Programming Interface.

For Mains: Capital Market and its significance in Indian Economy, Laws related to Capital Markets and its regulation, Concerns related to algo trading and its significance.

Why in News

Recently, the **Securities and Exchange Board of India (SEBI)** has issued a discussion paper on **regulating Algorithmic or Algo Trading**, or trades generated out of automatic execution and logic.

Algo Trading

- Almost everything in the digital world is based on algorithms. Algorithms leverage **user data, behaviour and usage patterns, and take in pre-specified instructions** to achieve certain goals.
- Algo trading refers to **orders generated at superfast speed by the use of advanced mathematical models** that involve automated execution of trade.
    - Even a split-second faster access is considered capable of bringing huge gains to a trader.
- The algo trading system **automatically monitors the live stock prices and initiates an order when the given criteria are met.**
- This **frees the trader from having to monitor live stock prices** and initiate manual order placement.
- It's like **asking a broker to buy or sell shares at a specific time or at a certain price,** except that algorithmic trading is faster – computers analyse a lot more data than a human can in a given time and have less scope for error.
    - Also, significant price changes can be **avoided because orders are executed within seconds.**
    - Thus, investors can execute **more trades faster since less time is required to manually monitor, select, buy, sell, initiate** order placements and so on.

Key Points

- **SEBI's Proposal:**
  - **Regulating Framework:** There is a **need to create a regulatory framework for algo trading.**
  - **Algo-Order:** All orders **emanating from an APIs (Application Programming Interface)**, **should be treated as an algo order** and be subject to control by stock broker and the APIs to carry out algo trading should be tagged with the unique algo ID provided by the stock exchange granting approval for the algo.
    - An **API** is an interface that can be used to program software that interacts with an existing application.
  - **Exchange Approval:** Each algo strategy, **whether used by broker or client, has to be approved by exchange** and as is the current practice, each algo strategy has to be certified by Certified Information Systems Auditor (CISA)/ Diploma in Information System Audit (DISA) auditors.
  - **Algo-ID:** Stock exchanges have to develop a system to ensure that only those algos **which are approved by the exchange and having unique algo ID** provided by the Exchange are being deployed.
  - **Broker to Control Client Orders:** All algos developed by any entity **have to run on the servers of brokers wherein the broker has control of client orders**, order confirmations and margin information.
  - **Authentication:** Two factor authentication should be built in every such **system which provides access to an investor for any API/algo trade.**
- **SEBI's Concern:**
  - **Risk To Market:** Unregulated and unapproved algos **pose a risk to the market and can be misused for systematic market manipulation** as well as to lure the retail investors by guaranteeing them higher returns.
  - **Identity Issue:** Currently, exchanges approve algos submitted by brokers. However, for algos deployed by retail investors using **APIs** neither the exchanges nor the brokers can identify if a trade emanating from the API link is an algo or a non-algo trade.
  - **No Redressal Mechanism:** Potential losses **in case of a failed algo strategy could be huge for retail investors** since third-party algo providers are unregulated and there is no investor grievance redressal mechanism in place.
- **Significance:**
  - **Protection of Retail Investors:** It will ensure that the **interest of retail investors is protected and it will boost investors' confidence** to undertake algo trading.
  - **Curb on Price Manipulation:** With a set of rules in place, **there won't be any price manipulations and the investors will not incur any heavy losses** in the process.
  - **Empowerment of Brokers:** Additionally, **it might be a blessing in disguise for brokers to scale up their technological prowess** and expand their clientele.
- **Market Concerns:**
  - **Makes Process Tedious:** Algo trading will deepen the **stock markets and aid retail investors who are not full-time engaged in stock trading.** However, as getting the requisite **permission from the stock exchanges is a tedious process,** brokers may have to stop using the API system.
  - **Negatively Impact Development of Market:** There's a chance that **investors might shift to some other system if API is not allowed**, putting restrictions **will impact development of the market.**

Function of Application Programming Interface

- Many brokers in India have started providing **API** access to their clients **which establishes an online connection between a data provider (stock broker) and an end-user (client).**
- API access **enables the investors to use a third-party application that suits their feature needs or investors who have technological capabilities** to build their own front-end features.
- These third-party applications **help an investor analyse market data or back-test a trading**

or investment strategy. These APIs are being used by the investors for automating their trades.
    - Presently, though the broker can identify the orders emanating from an API, **they are unable to differentiate between an algo and non-algo** order emanating from an API.

Way Forward

- Regulations **govern and work towards eliminating any threats** to that particular market. But in doing so, it has to often **stifle innovation and keep checks in place to avoid malpractices or misuse.**
- It is essential that **regulators are well versed in the operation of algorithms and have the flexibility to be able to engage** in new legislation where required.

Source: IE

Chalcolithic Culture in Central India

For Prelims: Archaeological Survey of India (ASI), Chalcolithic Culture, Harappa culture.

For Mains: Chalcolithic Culture and its characteristics, Chalcolithic sites in India.

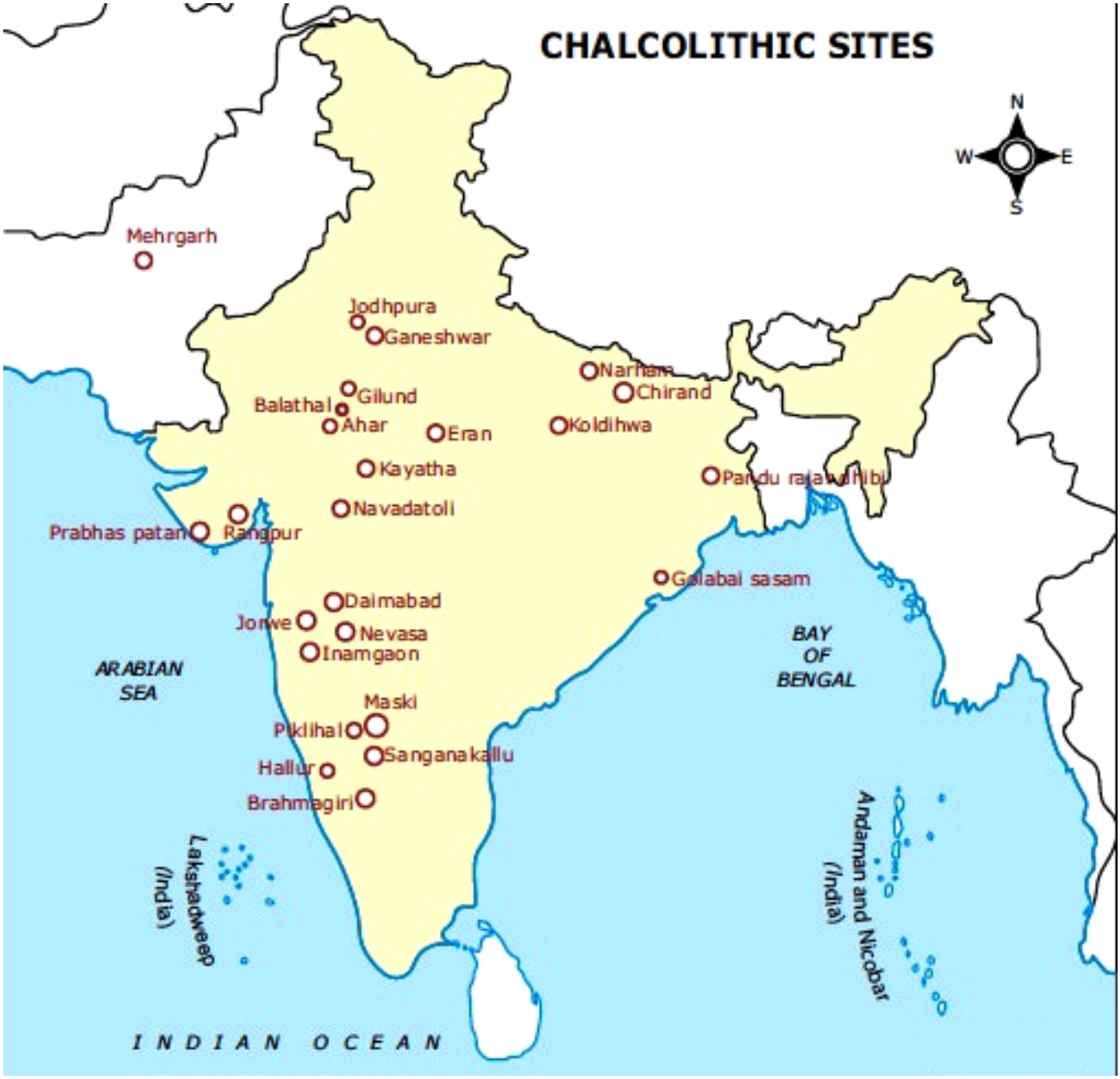
Why in News

Recently, **Archaeological Survey of India (ASI)** carried out excavations at two prominent sites of Chalcolithic affiliations in **Central India** (Eran, district Sagar and at Tewar, district Jabalpur) in the state of **Madhya Pradesh.**

Key Points

- **Chalcolithic Culture:**
    - **About:** The end of the **Neolithic period** saw the use of metals. Several cultures were based on the use of copper and stone implements.
        - Such a culture is called **Chalcolithic** and as the name indicates, during the **Chalcolithic (Chalco = Copper and Lithic = Stone) period**, both **metal and stone** were utilised for the manufacture of the equipment in day-to-day life.
        - The Chalcolithic cultures followed the **Bronze Age Harappa culture.**
        - It spanned around **2500 BC to 700 BC.**
    - **Salient Features:** The Chalcolithic culture of a region was defined according to certain salient features seen in ceramics and other cultural equipment like **copper artefacts, beads of semi-precious stones, stone tools and terracotta figurines**.
    - **Characteristics:**
        - **Rural Settlements:** The **people were mostly rural** and lived near hills and rivers.
            - The people of Chalcolithic Age survived on **hunting, fishing, and farming**
        - **Regional Differences:** Regional differences in social structure, cereals and pottery become visible. The excavations revealed a five-fold sequence of cultures:
            - **Kayatha culture** (2450-2000 BC.)
            - **Ahar culture** (1950-1700 BC)
            - **Malwa culture** (1700-1400 BC)

        - **Early Historic** (600 BC-200 BC)
        - **Sunga-Kusana-Gupta** (200 BC-600 CE)
    - **Migration:** Migration and diffusion of population groups were often cited as causes for the origin of different cultures within the Chalcolithic period.
    - **First Metal Age of India:** Since this was the first metal age, copper and its alloy bronze which melt at low temperature were used for the manufacture of various objects during this period.
    - **Art and Craft:** The **specialty** of the Chalcolithic culture was **wheel made pottery mostly of red and orange colour.**
        - Different types of pottery were used by the people of the Chalcolithic phase. The Black-and-Red pottery among them was quite common.
        - The **Ochre-Coloured Pottery(OCP)** was also in use.



- **Excavation at Eran during 2020-21:**
    - Eran (ancient Airikina) is situated on the **left bank of the Bina (ancient Venva)** river and surrounded by it on three sides.
        - **Bina river** is a river that flows in Madhya Pradesh state of India. It is a chief **tributary of the Betwa river,** which is itself a **tributary of the Yamuna river.**

- Eran is located 75 km north-west from Sagar district headquarter.
- The recent excavation at this site, during 2020-21, has unearthed a variety of antiquities including a **copper coin, an iron arrowhead, terracotta bead, stone beads along with a copper coins, stone celt, beads of steatite and jasper, glass, carnelian, terracotta wheel, animal figurines, miniature pots, iron objects, stone querns, pestles and a red slipped terracotta** with inscription in Devnagari.
- The occurrence of few specimens of plain, thin grey ware is noteworthy.
- The use of **iron was evidenced by few metallic objects** at the site.
- This excavation at the site also revealed the remains of Chalcolithic culture with four major periods i.e.
    - **Period I**: Chalcolithic (18^{th} -7^{th} BCE),
    - **Period II**: Early historic (7^{th}– 2^{nd} century BCE & 2^{nd} century BCE – 1st century CE),
    - **Period III**: 1^{st} – 6^{th} century CE
    - **Period IV**: late mediaeval (16^{th} – 18^{th} century CE).

- **Excavation at Tewar during 2020-21:**
    - Tewar (Tripuri) village is located 12 km west of Jabalpur district on Jabalpur – Bhopal highway.
    - This excavation revealed **four folds of cultural sequences i.e. Kushana, Shunga, Satavahana, and Kalachuri.**
    - Antiquarian **remains in this excavation** include viz remains of sculptures, hopscotch, terracotta balls, Iron nails, copper coins, terracotta beads, implements of Iron and terracotta figurine, in ceramics red ware, black ware, red slipped ware with shapes of handi, bowl, spouted pot, small pot, big jar, etc., structural remains consist of brick wall and structure of sandstone columns.

Source: PIB
