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India-Vietnam Virtual Summit

Why in News

Recently, **India and Vietnam** signed **seven pacts** during their virtual summit, in areas such as defence, petrochemicals, and nuclear energy, and agreed to **intensify their development partnership** that will enable achievement of **Sustainable Development Goals (SDGs)**, and develop capabilities to address **climate change**.



Key Points

- **Memorandums of Understanding (MoU)/Agreements:**
 - Agreements covered diverse areas such as **IT, UN peacekeeping and cancer research**.
 - One specific agreement will cover **USD 5 million Indian Grant Assistance for Army Software Park** at National Telecommunications University, Nha Trang, Vietnam.
 - Both sides committed to promote bilateral cooperation between the “regulatory bodies of the two countries in the **fields of radiation protection and nuclear safety.**”
- **Defence and Security:**
 - Defence and security partnership between India and Vietnam will be an important factor of stability in the **Indo-Pacific region**.
 - The two sides will step up their **military-to-military exchanges, training and capacity building programmes** across the **three services and coast guards** and will intensify their defence industry collaboration **building on India’s defence credit lines extended to Vietnam.**
 - VINBAX is the **military exercise** between armies of India and Vietnam.
 - Both sides will **engage more closely through institutionalized dialogue mechanisms** in dealing with traditional and non-traditional security threats in **cyber and maritime domains, terrorism, natural disasters, health security, water security, transnational crimes** etc, including through enhanced legal and judicial cooperation, where required.
 - One such example is the successful implementation of the **High Speed Guard Boat (HSGB) Manufacturing Project** for Vietnam Border Guard Command under the **US dollar 100 million Defence Line of Credit extended by the Government of India** to Vietnam.
- **Terrorism:**
 - The two sides will step up joint efforts in building a strong consensus for early adoption of the **Comprehensive Convention on International Terrorism (CCIT)**.
- **South China Sea:**
 - Both sides reaffirmed the importance of maintaining **peace, stability, security and freedom of navigation and overflight in the South China Sea**, while pursuing the peaceful resolution of disputes in accordance with international law, particularly the **1982 United Nations Convention on the Law of the Sea (UNCLOS)**.
 - Both leaders further called for the full and effective implementation of the **Declaration on the Conduct of Parties in the South China Sea (DOC)** in its entirety.

- **Cooperation at Various Forums:**
 - Both sides will strengthen multilateral and regional cooperation, including in the **United Nations, ASEAN-led mechanisms** and **Mekong sub-regional cooperation**.
 - **Association of SouthEast Asian Nations (ASEAN):**
To foster practical cooperation between **ASEAN** and India in the key areas and in line with the objectives and principles as stated in the **ASEAN Outlook on Indo-Pacific (AOIP)** and India's **Indo-Pacific Oceans Initiative (IPOI)**.
 - The two sides will actively **promote reformed multilateralism to make international organizations**, including the **UN Security Council**, more representative, contemporary and capable of dealing with current challenges.
- **Management of Covid-19 Pandemic:**
 - They will encourage experience-sharing and cooperation in the management of **Covid-19 pandemic**, support **on-line training of health professionals**, forge institutional cooperation in **vaccine development**, promote open supply chains, facilitate essential cross-border movement of people, and maintain close contact and coordination in multilateral bodies like the **World Health Organization**.
 - **Cooperation in the Post Pandemic Era:**
Acknowledging the new challenges as well as opportunities brought upon by Covid-19 pandemic, the two sides will work towards reliable, **efficient and resilient** supply chains, and will promote **human-centric globalization**.
- **Economic Cooperation:**
 - New horizons for partnership created by **India's goal to become a US dollar 5 trillion economy by 2024** and **Vietnam's ambition to become a high-income economy by 2045** will be fully explored for all segments of economy, including **blue economy**, **MSMEs and farming communities of the two countries**.
 - India and Vietnam share a **comprehensive strategic partnership**. One great example of economic cooperation is completion of the **Development Projects with Indian 'Grant-in-Aid' Assistance** of US dollar 1.5 million for the benefit of the local community in Vietnam's Ninh Thuan province.

- **Cooperation on Climate Change:**
 - Both sides will partner in **new and renewable energy resources**, energy conservation and other climate-resilient technologies.
 - India advocated that Vietnam's possible future participation in the **International Solar Alliance** would bring new opportunities for cooperation in large scale deployment of solar energy.
 - India looks forward to Vietnam's joining the **Coalition for Disaster Resilient Infrastructure** in the near future.
 - They agreed to expand the **Mekong - Ganga Quick Impact Projects**.
- **Cultural Cooperation and Links:**
 - Both sides will actively cooperate to publish an **Encyclopedia of India - Vietnam Cultural and Civilizational Relations** to mark the 50th anniversary of India - Vietnam diplomatic relations in 2022.
 - The two sides will promote understanding and research of their shared cultural and civilizational heritage, including **Buddhist and Cham cultures, traditions and ancient scriptures**.
 - The traditional systems of medicine like **Ayurveda** and **Vietnam-Traditional Medicine** share many common threads of rich knowledge of health.
 - **Yoga** has emerged as a symbol of peace and harmony and shared pursuit of spiritual wellbeing and happiness.
 - **New Development Partnership projects** in heritage conservation in Vietnam (F-block of Temple at My Son; Dong Duong Buddhist Monastery in Quang Nam and Nhan Cham Tower in Phu Yen) will be materialised.
- **People-to-People Exchange:**

By **increasing direct flights**, providing ease of travelling through **simplified visa procedures** and facilitating **tourism**.
- **Education and Institutional Cooperation:**
 - They will further **strengthen and institutionalize linkages** such as Parliamentary exchanges; relations between Indian States and Vietnamese Provinces; exchanges between social organisations and youth organizations; collaboration between educational institutions; engagement between think tanks; joint research programmes; and exchanges in media, film, TV shows and sports.
 - They will also facilitate cooperation between respective agencies on the two sides to promote contents related to India - Vietnam relations and **their historical links in each other's school textbooks**.

Way Forward

- **Vietnam is a key pillar** of India's **Act East policy** and there is a scope for further cooperation between the countries.

- The close relationship between the two countries is **significant for the maintenance of strategic balance in South East Asia** which is witnessing aggressive Chinese activities.
- Both Countries need to leverage the economic opportunities available because of **anti-China sentiments** and several manufacturing firms deciding to shift from China.
- Keeping in mind the strategic challenges in the Indo-Pacific region, primarily those posed by China, India and Vietnam should work in close coordination at multilateral institutions such as the UN Security Council, where both **India and Vietnam are elected to be non-permanent members** in 2021.

Source:PIB

PM WANI: India's New Public Wi-Fi Project

Why in News

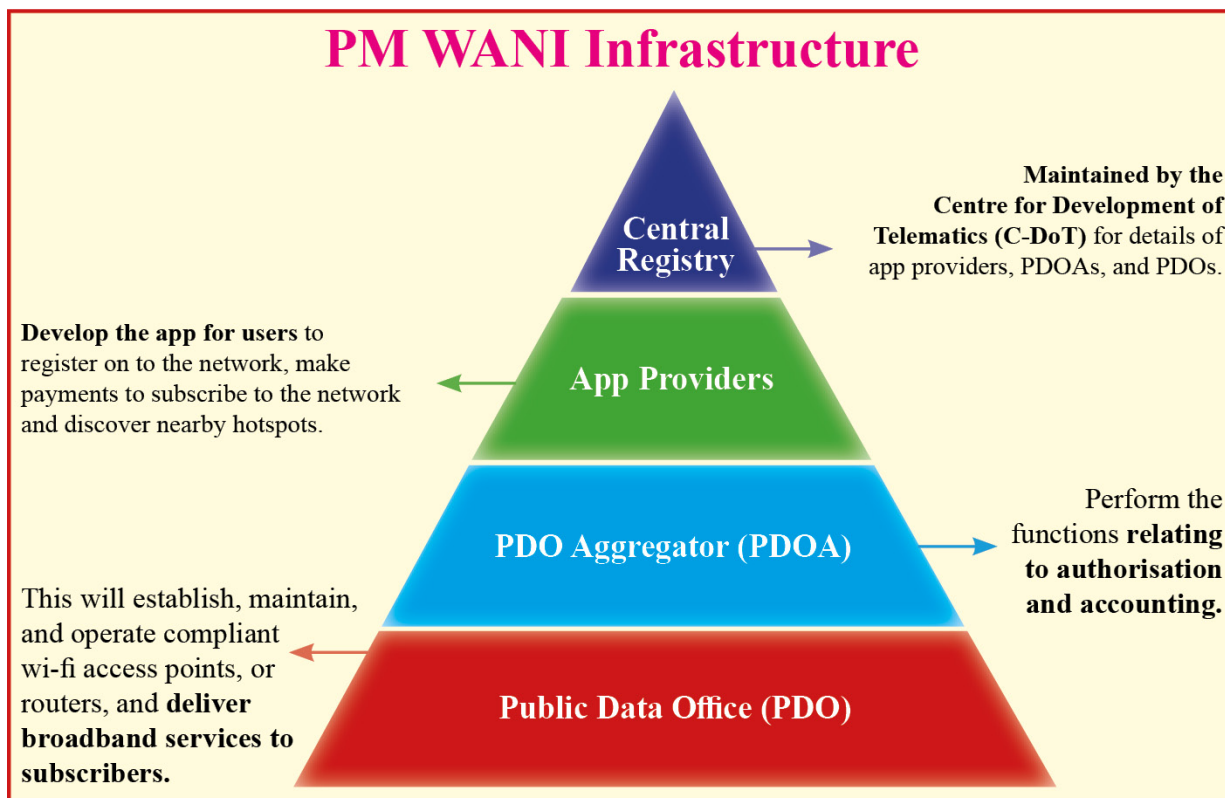
The Union Cabinet recently cleared a proposal by the Department of Telecommunications (DoT) to set up **public Wi-Fi access** network interfaces.

The **public Wi-Fi Access Network Interface**, which will be called 'PM-WANI', was first recommended by the **Telecom Regulatory Authority of India (TRAI)** in 2017.

Key Points

PM-WANI: This will involve **multiple players**, including PDOs, PDOAs, app providers, and a central registry. **PM-WANI infrastructure** can be structured in the **form of a pyramid**.

PM WANI Infrastructure



- **Need for a Public Wi-Fi Network in India:**

- To **increase the proliferation of internet services** in the country.
With PDOs - which will basically be small retail outlets across the length and breadth of the country - **last mile connectivity** is being aimed at.
- To **offer a cost-effective option** for the common man.
Even in urban areas with sufficient mobile data coverage, the **mobile internet tariffs are bound to increase.**
- To achieve the '**Digital India**' vision.
 - From **2015 to June of 2020**, India grew from **302 million internet subscribers to 750 million**. That is a **Compound Annual Growth Rate (CAGR) of 20%**, making India one of the fastest growing internet markets in the world.
 - However, this statistic **overshadows the quality of access. Only 23 million are wired internet subscribers.**
 - If Digital India vision is to be achieved, there is a **need to deliver a resilient and reliable connection to every Indian**, so that they can have reliable access everywhere, at affordable price points.
 - According to **Digital Quality of Life Index 2020**, India was placed at **9th** position in **Internet Affordability**, outperforming even countries like the UK, the USA and China. While, for **Internet Quality** and **E-infrastructure**, India was almost at the bottom of the pillar placed at **78th and 79th** (out of 85) positions respectively.

- **Potential Benefits:**

- It has the **potential to generate over 2 crore jobs and entrepreneurship opportunities**, besides offering a cost-effective means of mass connectivity.

Given the **National Digital Communications Policy** goals of creating 1 crore public Wi-Fi hotspots by 2022, and with the present number being merely at 3.5 lakh, PM-WANI is expected to result in the **creation of demand and scope for developing the components for this pan-India activity (Atmanirbhar Bharat)**.

- **PDOs can become local distribution centres for content.**

Students in rural areas can access offline content without using bandwidth.

- Combining this with the **liberalisation of the Other Service Providers (OSPs) regulations**, one can see that **India is paving the way for digital SMEs (Small and Medium-sized Enterprises) to go online** without the burden of onerous compliances.

- It will **further Ease of Doing Business and Ease of Living**, as it will enable small shopkeepers to provide Wi-Fi service.

- **Challenges:**

- **Network Security:**

- Most Wi-Fi hotspots don't encrypt information that is sent over the Internet and therefore aren't secure. This could potentially lead to **hacking or unapproved access to personal information** on the device.
 - However, the **Indian public Wi-Fi hotspot network** envisages that the access to the Internet through these points will be permitted only through **electronic KYC (Know Your Customer) and a mix of OTP (One-Time Password) and MAC ID-based authentication system**, thereby minimising the risk of network security being compromised.

- The **MAC authentication** method grants access to a secure network by authenticating devices for access to the network.

- **Viability of the Project:**

- The viability of public Wi-Fi networks in India has also been called into question with several tech-giants already having tried and failed.
 - In 2017, social media company **Facebook had launched Express Wi-Fi**. The project made little impact.
 - **Google's Station project**, to provide free wi-fi in more than 400 railway stations across India and "thousands" of other public places, which was launched in **2015**, was shut down earlier this year.

- Google cited **cheaper and more accessible mobile data, government initiatives** to provide access to the Internet for everyone and the **challenge of varying technical requirements and infrastructure**.

Wi-Fi

- It is a **networking technology that uses radio waves to allow high-speed data transfer** over short distances.
- Wi-Fi **allows Local Area Networks (LANs)** to operate without cables and wiring, making it a popular choice for home and business networks.
- Wi-Fi can also be used to **provide wireless broadband Internet access** for many modern devices, such as laptops, smartphones, tablet computers, and electronic gaming consoles.
- Wi-Fi-enabled devices are able to connect to the Internet when they are near areas that have Wi-Fi access, called **"hot spots"**.

- According to **Cisco Annual Internet Report (2018-2023)**, there will be **nearly 623 million public Wi-Fi hotspots** across the world by 2023, up from 169 million hotspots as of 2018.

Within this, the highest share of hotspots by 2023 will be in the Asia Pacific region at 46%. As per the calculations of the Telecom Regulatory Authority of India (TRAI), based on Cisco's estimates, **India should have 100 million Wi-Fi hotspots by 2023.**

Centre for Development of Telematics

- C-DOT was established in 1984 as **an autonomous Telecom R&D centre of DoT**, Government of India.
- It is a **registered society** under the Societies Registration Act, 1860.
- It is a **registered 'public funded research institution' with the Department of Scientific and Industrial Research (DSIR)**, Ministry of Science & Technology.

Way Forward

- The **citizen expects** robust service, protection of data integrity, transparency on commercial use of data, and security against cyberattacks.
- The government must also ensure true unbundling of hardware, software, apps and payment gateways in the WANI system, as advocated by TRAI, to **prevent monopolies**. Existing public wi-fi options run on a limited scale by some entities compel consumers to pay through a single gateway app, underscoring the need for reform.

Source: IE

Early Health Warning System

Why in News

The **Ministry of Earth Sciences (MoES)** is developing an unique **Early Health Warning System** which is expected to forecast the possibility of disease outbreaks in the country.

The **India Meteorological Department** (IMD) is also involved in the development studies and the process.

Key Points

About:

- The model being developed is based on the **relationship between weather changes and incidence.**
- There are certain diseases where **weather patterns play a crucial role.** Such as **malaria**, for which **particular temperatures and rainfall patterns can approximately predict** whether an area is likely to have an outbreak with fairly reasonable accuracy

Early Health Warning System

- According to the **World Health Organisation** (WHO), **early warning systems** are timely surveillance systems that collect information on epidemic-prone diseases in order to trigger prompt public health interventions.
- However, these systems **rarely apply statistical methods to detect changes** in trends, or sentinel events that would require intervention.
- In most cases they **rely on an in-depth review done by epidemiologists** of the data coming in, which is rarely done in a systematic way.
Epidemiology is the study of the distribution and determinants of health-related states and events in specified populations.
- **Significance:**
 - It is expected to **predict outbreaks of vector-borne diseases**, particularly **malaria** and **diarrhoea**. Subsequently, it is likely to **monitor non-communicable diseases** (NCDs) as well.
 - **Vectors** are organisms that **transmit pathogens and parasites** from one infected person (or animal) to another, causing serious diseases in human populations. For example, **Chikungunya**, Malaria, **Dengue**, **Yellow fever**, **Lymphatic filariasis**, Chagas disease, etc.
 - Vector-borne **diseases have direct links to weather patterns.**
 - **NCDs are affected by weather conditions.** For example, **cardiovascular problems and respiratory diseases** are associated with **rising heat waves and environmental pollution.**
 - Such a system, when deployed, would **give local authorities ample time to prepare.**

- **Analysis and Studies:**

- To verify the robustness of the advance warning system, a **detailed analysis was carried out of malaria and diarrhoea** cases in two districts of Maharashtra, **Pune and Nagpur**.

While both districts have incidences of both diseases, Nagpur reports a higher number of malaria cases while diarrhoea cases are higher in Pune.

- **Temporal and spatial variability in weather parameters**, for example, a **short-term increase in temperature and rainfall** as an effect of El-Niño can lead to **malaria epidemics**.
- A study by the Intergovernmental Panel on Climate Change (IPCC) noted that climate change may increase the risk of **diarrhoeal diseases**, which is of major concern in developing countries, with increasing **incidents of floods as well as drought**.
- **On Covid-19:**

Although there have been studies and analysis on weather patterns affecting the spread of **viral diseases**, researchers are **unable to establish a certain link between Covid-19 pandemic and the weather** as it is a far more **complex** disease.

Source: IE

Intentional Genomic Alteration

Why in News

Recently, the **US Food and Drug Administration (FDA)** approved a **first-of-its-kind Intentional Genomic Alteration (IGA)** in a line of domestic pigs referred to as **GalSafe pigs**.

This will be the **first time** that the regulator has approved an **animal biotechnology product for both food and biomedical purposes**.

Key Points

- **Intentional Genomic Alteration (IGA):**

- IGA in animals means **making specific changes to the genome of the organism using modern molecular technologies** that are popularly referred to as **“genome editing” or “genetic engineering”**.

- **Genome editing** is a group of technologies that give scientists the ability to change an organism's **Deoxyribonucleic Acid (DNA)**.

DNA is the chemical name for the molecule that **carries genetic instructions in all living things**.

- The DNA molecule consists of two strands that wind around one another to form a shape known as a **double helix**.
- Each strand has a backbone made of **alternating sugar (deoxyribose) and phosphate groups**.
- These technologies allow genetic material to be **added, removed, or altered at particular locations** in the genome.
 - One such technology is **Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR)**, which replicates natural defence mechanisms in bacteria to fight virus attacks, using a **special protein called Cas9**.
 - **Emmanuelle Charpentier** of France and **Jennifer A Doudna** of the USA have been awarded the **2020 Nobel Prize in Chemistry** for developing CRISPR/Cas9 genetic scissors.
- A **Genetically Modified Organism (GMO)** is an animal, plant, or microbe whose DNA has been altered using genetic engineering techniques.

- An IGA is inserted into an animal to **change or alter its structure and function**.
- The difference between an animal with an IGA and one that does not have an IGA is that the IGA **gives them a new trait or characteristic, such as faster growth or resistance to certain diseases**.

- **Use of IGA:**

Changes in the **DNA** sequence of an animal may be carried out **for research purposes, to produce healthier meat** for human consumption and **to study disease resistance** in animals, among other reasons.

One example is of using IGAs to make an **animal more susceptible to certain diseases such as cancer**, which helps researchers **get a better understanding of the disease and develop new therapies** to treat it.

- **FDA's Approval:**

- The FDA allowed IGA in GalSafe pigs to **eliminate a type of sugar found in mammals called alpha-gal.**
- GalSafe pigs may potentially be used to produce human medical products, IGA will help eventually free these products from detectable alpha-gal sugar, thereby **protecting their human consumers from potential allergies.**
Sugar is present on the surface of GalSafe pigs' cells and when they are **used for products such as medicines or food** (the sugar is found in red meats such as beef, pork and lamb), the **sugar makes some people with Alpha-gal Syndrome (AGS) more susceptible to developing mild to severe allergic reactions.**

Legislation in India Related to Genetically Modified Organisms

- In India, Genetically Modified Organisms (GMOs) and the products thereof are regulated under the **Rules for the manufacture, use, import, export & storage of hazardous microorganisms, genetically engineered organisms or cells, 1989** (referred to as Rules, 1989) notified under the **Environment (Protection) Act, 1986.**
- The **Rules, 1989** are supported by a series of guidelines on contained research, biologics, confined field trials, food safety assessment, environmental risk assessment etc.
- These rules are very broad in scope essentially **covering the entire spectrum of activities involving GMOs and products thereof.**
 - They also **apply to any substances, products, and food stuffs, etc.**
 - **New gene technologies apart from genetic engineering** have also been included.
- Rules, 1989 are implemented by the **Ministry of Environment, Forest and Climate Change (MoEFCC)** jointly with the **Department of Biotechnology (DBT)**, Ministry of Science & Technology and **state governments.**
- Six Competent Authorities and their composition have been notified under these Rules that include:
 - rDNA Advisory Committee (RDAC)
 - Institutional Biosafety Committee (IBSC)
 - Review Committee on Genetic Manipulation (RCGM)
 - Genetic Engineering Appraisal Committee (GEAC)
 - State Biotechnology Coordination committee (SBCC)
 - District Level Committee (DLC)

While the RDAC is advisory in function, the IBSC, RCGM, and GEAC are responsible for regulating function. SBCC and DLC are for monitoring purposes.

- **Indian Initiatives Related to GMOs:**

- **Indian GMO Research Information System** : It is a database on activities involving the use of GMOs and products thereof in India.

The primary purpose of this website is to make available objective and realistic scientific information relating to GMOs and products thereof under research and commercial use to all stakeholders including scientists, regulators, industry and the public in general. It is also expected to promote collaborations and avoid duplication of work.

- **Bt cotton** is the only **Genetically Modified (GM) crop** that is allowed in India. It has alien genes from the soil bacterium *Bacillus thuringiensis* (Bt) that allows the crop to develop a protein toxic to the common pest pink bollworm.
- India is also a signatory of **Cartagena Protocol on Biosafety** which seeks to **protect biological diversity** from the potential risks posed by **Living Modified Organisms** resulting from modern biotechnology.

Source:IE

Rise in Leopard Population

Why in News

As per a recent report '**Status of leopards in India, 2018**' released by the Ministry of Environment, Forest and Climate Change there has been a "**60% increase in the population count of leopards in India from 2014 estimates**".

Key Points

- The 2014 estimates placed the population of leopards at nearly **8,000 which has increased to 12,852**.
- The largest number of leopards have been estimated in **Madhya Pradesh** (3,421) followed by **Karnataka** (1,783) and **Maharashtra** (1,690).
- Region wise distribution:
 - **Central India and Eastern Ghats have the highest number of leopards** at 8,071.
 - **Western Ghats:** 3,387 leopards
 - **Shivalik and Gangetic Plains:** 1,253 leopards
 - **Northeast hills:** 141 leopards
- While the estimated number of leopards has increased, the report alerts that the leopard habitat area has been **shrinking alarmingly** over the past 100-125 years.

- **Techniques Used:**
 - Camera Traps
 - Satellite Imaging
 - Field work by the **Wildlife Institute of India** and **National Tiger Conservation Authority** (NTCA).
- **Limited Coverage:**
 - While the presence of the leopard is **fairly ubiquitous**, the study has been conducted only in tiger- populated forests areas under **Project Tiger**.
 - Leopard populations in other **agricultural, non-forested areas like tea and coffee plantations**, and in **most parts of the North East have not been conducted**.
- **Threats to Leopard:**
 - Fragmentation of forests as well as the decline in quality of forests leading to habitat loss.
 - Human-Leopard conflict
 - Poaching
 - Depletion of natural prey base
- **Conservation Status:**
 - **International Union for Conservation of Nature** (IUCN): Vulnerable
 - **Convention on International Trade in Endangered Species of Wild Fauna and Flora** (CITES): Appendix I
 - **Appendix I:**
 - It lists species that are the **most endangered** among CITES-listed animals and plants.
 - **Wildlife Protection Act 1972: Schedule 1**
 - **Schedule I and part II of Schedule II** provide **absolute protection to threatened species**. Offences under these are prescribed the highest penalties.

Wildlife Institute of India

- Wildlife Institute of India (WII) is an **autonomous institution** under the **Ministry of Environment, Forest and Climate Change**.
- It was established in **1982**.
- It is based in **Dehradun, Uttarakhand**.
- It offers training programs, academic courses, and advisory in wildlife research and management.

National Tiger Conservation Authority

- National Tiger Conservation Authority (NTCA) is a **statutory body** under the **Ministry of Environment, Forests and Climate Change**.

- It was established in 2005 following the recommendations of the Tiger Task Force.
- It was constituted under enabling provisions of the **Wildlife (Protection) Act, 1972, as amended in 2006**, for strengthening tiger conservation, as per powers and functions assigned to it.

Source:IE

Biodiversity Management Committees

Why in News

The **National Green Tribunal** has extended the time limit for the constitution of **Biodiversity Management Committees (BMCs)** and preparation of **People's Biodiversity Registers (PBRs)** on account of the **Covid-19 pandemic**.

Key Points

- **Biodiversity Management Committees (BMC)**
 - As per the **Biological Diversity Act 2002**, BMCs are created for “**promoting conservation, sustainable use and documentation of biological diversity**” by **local bodies** across the country.
 - **Composition:**
 - It shall consist of a **chair person** and **not more than six persons nominated by the local body**, of whom not less than one third should be women and not less than 18% should belong to the **Scheduled Castes/ Scheduled Tribes**.
 - The main function of the BMC is to prepare **People's Biodiversity Register** in consultation with the **local people**.
- **People's Biodiversity Registers (PBR):**
 - The Registers entail a **complete documentation of biodiversity** in the area plants, food sources, wildlife, medicinal sources, etc.
 - **Advantages of PBR:**
 - A good PBR will aid in **tracing how habitats are changing**, and to understand and estimate parts of our forests.
 - **Prevent Biopiracy:**
The **indigenous and local community** are a repository of traditional knowledge and their knowledge and practices help in **conservation and sustainable development of biodiversity**.
 - Being a bottom-up exercise, it is also a means of understanding the **overlap of cultural and natural biodiversity**.
 - It envisages a decentralised way through an **inclusive approach**.

Biodiversity Governance in India

- India's **Biological Diversity Act 2002** (BD Act), is in close synergy with the **Nagoya Protocol** and aims to implement provisions of the **Convention on Biological Diversity (CBD)**.
The Nagoya Protocol sought to **ensure commercial and research utilisation of genetic resources** led to **sharing its benefits** with the government and the community that conserved such resources.
- The BD Act was hailed as an important step towards preserving **India's vast biodiversity**, as it recognised the **sovereign right of countries over its natural resources**.
- The BD Act seeks to address issues of **managing bio-resources in the most decentralised** manner possible.
- The BD Act envisages **three layered structures**:
 - The **National Biodiversity Authority** (NBA) at the national level.
 - The **State Biodiversity Boards** (SSBs) at the state level
 - **Biodiversity Management Committees** (BMCs) at the local level.
- The act also strengthens the country's stand with respect to anyone claiming an **intellectual property right over biodiversity-related knowledge**.

Convention on Biological Diversity (CBD)

A **legally binding treaty** to conserve biodiversity has been in force since 1993. It has **3 main objectives**:

- The **conservation** of biological diversity.
- The **sustainable use** of the components of biological diversity.
- The **fair and equitable sharing of the benefits arising out of the utilization of genetic resources**.

Source:HT

Strengthen Safeguards for Whistleblowers

Why in News

Recently, experts have highlighted the **need to strengthen safeguards for corporate whistleblowers** and **extend the requirement of a vigil mechanism** to large private companies in India.

Key Points

- **Background:**
 - The **Delhi High Court (HC)** is currently hearing a writ petition, which has **challenged the constitutional validity of the existing provisions of the Companies Act 2013**.
 - Current provisions **only require listed companies to have a vigil mechanism** to address whistleblower complaints.
 - These companies are those which accept public deposits and companies that have loans from banks or public financial institutions of over Rs. 50 crore.
- **Concerns Highlighted:**
 - Absence of any specific guidelines on the functioning of a vigil mechanism has led to **companies not ensuring that whistleblower complaints are addressed in a timely manner**.
 - Current provisions **do not provide any guidelines on the functioning of the vigil mechanism** for companies.
 - Companies were **able to retaliate against employees raising whistleblower complaints** and even **terminated their employment** as any civil suit for such actions could be **too expensive and time-consuming**.
 - Parties filing civil suits are required to **first pay court fees, typically amounting to around 1%** of damages claimed.
- **Suggestions:**
 - Private sector companies above a **certain threshold of turnover or employees should set up a vigil mechanism**.
 - Large private sector companies, including subsidiaries of large multinational corporations, should be **regulated differently from small private sector companies** and should be **required to have vigil mechanisms**.
 - The law should require a **permanent internal committee** and **specify directions** on the functioning of the committee.
 - For that, the government should consider **issuing guiding principles** on such as **internal reporting to and review by** the audit committee, **timelines for addressing grievances** and **consideration** by the board on nature and **number of open matters and outcomes** of resolved matters, etc.
 - However, regulating the functioning of vigil mechanisms **pose a risk of over-regulation and micro-management**.
 - The mechanism should provide for **“adequate safeguards against victimisation** of persons who use such mechanisms and make **provision for direct access to the chairperson of the audit committee** in appropriate or exceptional cases.
 - There was a need for a **deterrent against frivolous complaints**.

- According to the Companies Act, whistleblowing is an **action aimed at drawing the attention of stakeholders to instances of unethical practices** in an organization.
- A whistleblower can be anyone **who chooses to expose wrong practices and has evidence** to support the allegations.
- They can be **either from within or outside the organization**, such as current and former employees, shareholders, external auditors, and lawyers.
- In India, whistleblowers are protected by the **Whistleblowers Protection Act, 2014**.

It provides for the **protection of their identity and also has strict norms to prevent their victimization**.

- In **January 2020**, the **Securities and Exchange Board of India (SEBI)** came out with a **new mechanism to reward whistle-blowers** and other informants for sharing information about insider trading cases.

Way Forward

- Suitable legislation must be enacted to provide protection to innocent whistleblowers and strengthening of the whistleblower protection mechanism will help in ensuring that the integrity of democracy is protected, cherished and upheld.
- It is important that the law empower citizens to come forward if they have evidence of unethical conduct within the organisation.

Source: IE

District Mineral Foundation Trust Funds

Why in News

Dhanbad (Jharkhand) Deputy Commissioner has ordered an audit and an impact assessment of utilisation of funds from the **District Mineral Foundation Trust (DMFT)** for the financial years 2017-2020.

Key Points

- **Statutory Provision:** As per the **Mine and Minerals Development Regulation (Amendment) Act, 2015**, in every district affected by mining-related operations, the **state government** shall, by notification, **establish a trust as a non-profit body** to be called the **District Mineral Foundation**.
- **DMFT Funds:** Mining companies contribute **10-30% on the royalty** amount that they pay to the government to DMF Trust in the district they are operating in.

- **Objective:** The idea behind the contribution is that local mining-affected communities, **mostly tribal and among the poorest** in the country, also **have the right to benefit from natural resources extracted from where they live.**
- **Status:** DMFs have been set-up in **572 districts of the country**, with a cumulative accrual of **more than Rs. 40,000 crore** so far as per Ministry of Mines (MoM) data.
- **Linked with PMKKKY:** The functioning of the DMF trusts and the fund use governed by states' DMF Rules incorporate the mandates of a central guideline, **Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)** that specifies high priority areas of investments.

Pradhan Mantri Khanij Kshetra Kalyan Yojana

- **Nodal Ministry:** PMKKKY is a scheme by the **Ministry of Mines** for the welfare of people & affected areas by using the funds accrued under District Mineral Foundation (DMF).
- **Objectives:**
 - To **implement various developmental and welfare projects/programs in mining affected areas** that complement the existing ongoing schemes/projects of State and Central Government.
 - To **minimize/mitigate the adverse impacts, during and after mining**, on the environment, health and socio-economics of people in mining districts.
 - To ensure **long-term sustainable livelihoods** for the affected people in mining areas.
- **Implementation:**
 - At least **60% the fund will be utilized for "High Priority Areas"** like Drinking water supply, Environment preservation & pollution control measure, Health care, Education, etc.
 - **Rest of the fund** will be utilized for **"Other Priority Areas"**, such as Physical infrastructure, Irrigation, Energy & watershed development and Measures for enhancing environmental quality.

Source: IE

Winter Solstice

Why in News

21st December or the **Winter Solstice** marks the **shortest day of the year** in the **Northern Hemisphere**. The same day marks the **Summer Solstice**, the year's **longest day**, in the **Southern Hemisphere**.

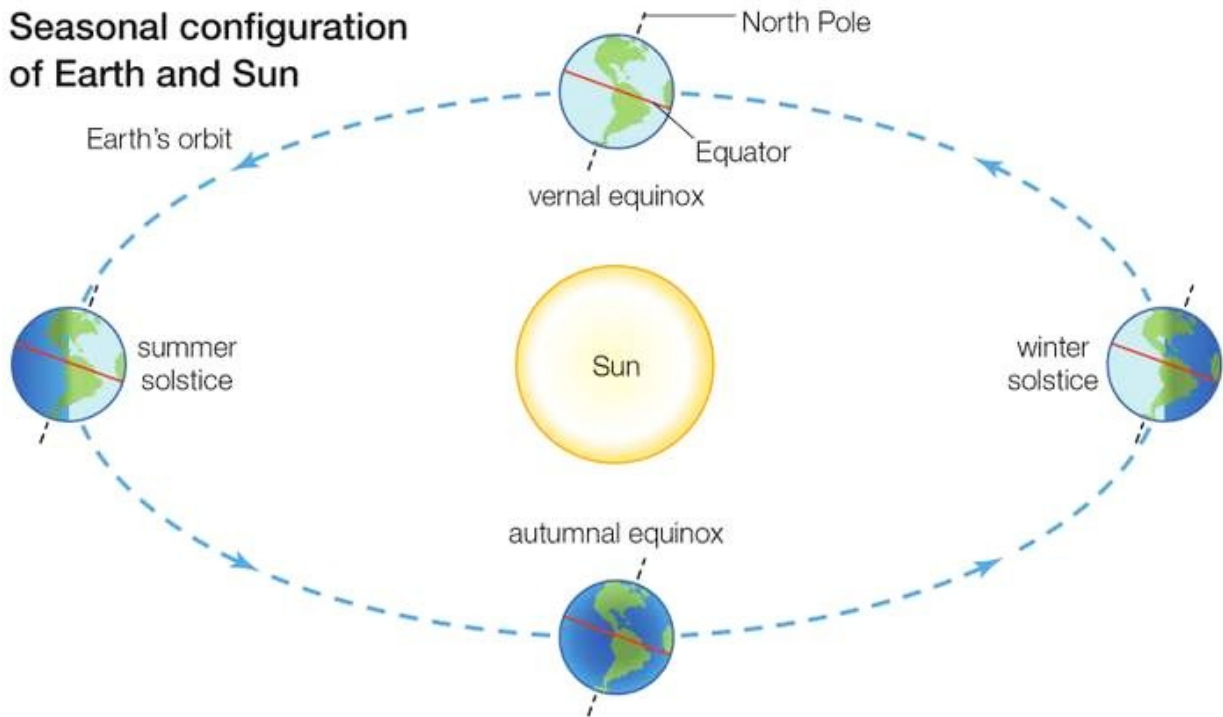
Key Points

- **Solstice:**

It is a **Latin word** that means ‘**stalled sun**’. It is a natural phenomenon that occurs **twice every year**, once in the summer and again during winter, in each hemisphere of the earth.

- **Winter Solstice:**

Seasonal configuration of Earth and Sun



- It is the **shortest day and longest night** of the year in the **Northern Hemisphere** and is also known as the ‘**first day of winter**’ in the Northern Hemisphere as well as ‘**Hiemal solstice or Hibernial solstice**’.
- During this, **countries in the Northern Hemisphere are farthest from the Sun** and the Sun shines overhead on the **Tropic of Capricorn** (23.5° south).
 - At latitudes of 23.5° are the Tropics of Cancer and Capricorn, north and south of the Equator.
 - At 66.5° are the Arctic and Antarctic Circles, to the north and south.
 - Latitudes are a measure of a location’s distance from the Equator.
- This situation will be reversed on **21st June**, when the **Northern Hemisphere** will see the **Summer Solstice**, the year’s **longest day** and the **Southern Hemisphere** will see the year’s **shortest day**.
- In **Vedic tradition**, the northern movement of the Earth on the celestial sphere is implicitly acknowledged in the **Surya Siddhanta**, which outlines the **Uttarayana** (the period between *Makar Sankranti* and *Karka Sankranti*). Hence, Winter Solstice is the **first day of Uttarayana**.

- **Special Winter Solstice 2020:**
 - In **2020**, the day is special as it coincides with a **celestial event**, the **‘Great Conjunction’** of **Jupiter and Saturn**, happening after nearly 400 years.
 - The two planets **come in conjunction when they have the same right ascension or celestial longitude** and that is known as ‘Great Conjunction’.
- **Geography Behind:**
 - The reason behind the changing lengths of the days is the **Earth’s tilt**.
 - The **Earth’s axis of rotation is tilted at an angle of 23.5° to its orbital plane**. This tilt, combined with factors such as Earth’s spin and orbit, **leads to variations in the duration of sunlight**, due to which any location on the planet receives different lengths of days.

The Northern Hemisphere spends half the year tilted in the direction of the Sun, getting direct sunlight during long summer days. During the other half of the year, it tilts away from the Sun, and the days are shorter.
 - The **tilt is also responsible for the different seasons on Earth**. This phenomenon **causes the movement of the Sun from the northern to the southern hemisphere** and vice versa **bringing in seasonal changes** in the year.

Source: IE

Srinivasa Ramanujan

Why in News

Every year, Srinivasa Ramanujan’s birth anniversary on **December 22** is commemorated as **National Mathematics Day**.

Key Points

- **About Srinivasa Ramanujan:**



- **Born** on 22nd December, 1887 in **Erode, Tamil Nadu** and **died** on 26th April 1920 in Kumbakonam, **Tamil Nadu, India**.
- **In 1903** he secured a scholarship to the University of Madras but lost it the following year because he neglected all other subjects in pursuit of mathematics.
- **In 1911** Ramanujan published the **first of his papers** in the Journal of the **Indian Mathematical Society**.
- **In 1913** he began a correspondence with the British mathematician Godfrey H. Hardy which led to a special scholarship from the **University of Madras and a grant from Trinity College, Cambridge**.
- **In 1918** he was elected to the **Royal Society of London**.
- Ramanujan was one of the **youngest members of Britain's Royal Society** and the **first Indian to be elected a Fellow of Trinity College, Cambridge University**.

- **Contributions to Mathematics:**

- **Formulas and Equations:**

- Ramanujan compiled around 3,900 results consisting of equations and identities. One of his most treasured findings was his **infinite series for Pi**.
- He gave several formulas to **calculate the digits of Pi** in many unconventional ways.

- **Game Theory:**

- He discovered a long list of new ideas to solve many challenging mathematical problems, which gave a significant impetus to the development of game theory.
- His contribution to game theory is purely based on intuition and natural talent and remains unrivalled to this day.

- **Ramanujan's Book:**

One of Ramanujan's notebooks was discovered by George Andrews in 1976 in the library at Trinity College. Later the contents of this notebook were published as a book.

- **Ramanujan number:**

- **1729** is known as the **Ramanujan number**.
- It is the **smallest number** which can be expressed as the **sum of two different cubes in two different ways**.
 - 1729 is the sum of the **cubes of 10 and 9** - cube of 10 is 1000 and cube of 9 is 729 adding the two numbers results in 1729.
 - 1729 is also the sum of the cubes of 12 and 1, cube of 12 is 1728 and cube of 1 is 1 adding the two results in 1729.

- **Other Contributions:** Ramanujan's other notable contributions include **hypergeometric series, the Riemann series, the elliptic integrals, mock theta function, the theory of divergent series, and the functional equations of the zeta function.**

Source:TOI

Chillai Kalan

Why in News

The **40-day intense winter period "chillai kalan"** started in Kashmir valley on 21st December with sub-zero night temperatures across the region.

It will continue till January 31.

Key Points

- Chillai Kalan is followed by **Chillai-Khurd** and **Chillai-Bachha**.
 - **Chillai Khurd (small cold)** is a 20-day long period which starts from January 31 to February 19.
 - **Chillai-Bachha (baby cold)**, a 10-day long period which occurs between February 20 and March 2.
- Considered to be the core of winter, Chillai Kalan usually brings snowfall, sub-zero temperatures causing freezing of water bodies including the Dal lake, closure of highways, etc.

Source: HT
