

WHAT IS VIBRANT VILLAGE PROGRAMME?

The Home Ministry recently sanctioned 113 roads under the Vibrant Village Programme in Arunachal Pradesh, Uttarakhand, and Sikkim.

Vibrant Village Programme is a **Centrally Sponsored Scheme** implemented over the financial years 2022-23 to 2025-26.

Objective:

- Comprehensive **development of villages** and blocks on the northern border, thus improving the quality of life of people living in identified border villages.
- This will help in **encouraging people to stay** in their native locations in border areas and reversing the outmigration from these villages, adding to improved security of the border.

It will **provide funds** for the development of essential infrastructure and the creation of livelihood opportunities in 2967 villages in 19 Districts and 46 Border blocks of 4 states and 1 UT along the northern land border of the country: **Arunachal Pradesh, Sikkim, Uttarakhand, Himachal Pradesh**, and the UT of **Ladakh**.

- It envisages **focused areas of intervention** in the select villages for the creation of opportunities for livelihood generation through promotion of tourism and cultural heritage, skill development and entrepreneurship, and development of cooperative societies, including agriculture/horticulture, cultivation of medicinal plants/herbs etc.
- Interventions also include providing road connectivity to unconnected villages, housing and village infrastructures, energy including renewable energy, television and telecom connectivity.
- **Vibrant Village Action Plans** will be **created by the district administration** with the help of Gram Panchayats, and 100 % saturation of Central and state schemes will be ensured. There will be no overlap with the Border Area Development Programme.

MAMMOTH CARBON CAPTURE PLANT



Recently, the world's largest facility designed to remove carbon dioxide from the atmosphere started operations in Iceland.

- It is the largest **carbon dioxide capture and storage** facility of its kind situated on a dormant volcano in **Iceland**.
- It is dubbed as "Mammoth," this plant is Climeworks' second commercial direct air capture (DAC) facility in the nation and is significantly larger than its predecessor, Orca, which began in 2021.

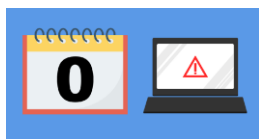
Working:

- This cutting-edge technology draws in air and chemically extracts carbon dioxide, which can then be stored underground, **converted into stone, or reused**.
- The Swiss company Climeworks, in partnership with Icelandic company Carbfix, plans to sequester the captured carbon by turning it into stone beneath the earth's surface, utilizing Iceland's abundant geothermal energy to power the process.

What is direct air capture?

- It **extracts CO2 directly from the atmosphere** at any location, unlike carbon capture which is generally carried out at the point of emissions, such as a steel plant.
- The CO2 can be permanently stored in deep geological formations or used for a variety of applications.

WHAT IS ZERO-DAY VULNERABILITY (ZDV)?



Google Chrome has been hit with another zero-day vulnerability, which has set the alarm bells ringing among users and cyber experts.

Zero-Day Vulnerability is a system or software vulnerability unknown to the vendor and for which no patch or means of mitigation are available at the time it is discovered.

- The term ZDV refers to the flaw itself, while **zero-day attack** refers to an attack that has zero days between the time the vulnerability is discovered and the first attack.
 - **Zero-day exploit** refers to the method or technique hackers use to take advantage of a ZDV, often via malware, and execute the attack.
 - Thus, a zero-day attack occurs when threat actors develop and release malware that targets the ZDV.
 - Because they were **discovered before security researchers** and software developers became aware of them—and before they **can issue a patch**— ZDVs **pose a higher risk** to users for the following reasons:
 - **Cybercriminals** race to **exploit these** vulnerabilities to cash in on their schemes.
 - **Vulnerable systems are exposed** until a patch is issued by the vendor.
 - Once a ZDV has been made public, it is known as an **n-day or one-day vulnerability**.
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INTEGRATED COMMANDS STRUCTURE PLAN

Theaterisation of Armed Forces

- It is a concept which seeks to integrate the capabilities of the **three services** - army, air force and navy – in order to optimally utilise their resources for wars and operations.
- A **theatre command/unit** will be created by integrating elements/assets from all the three services.
 - Simply put, a theatre command deploys elements of the three services under a single, unified command structure.
- Each command is assigned a **specific geographical region** for operational roles.
- Almost all major countries like China, Russia, US, UK and France work on a theatre command concept.
 - For example, **China’s Western Theatre Command** looks after the entire borders with India.

Current command structure in India

- At present, India has 17 single service commands and only two tri-service commands.
- The 17 single service commands are divided as:
 - Army – 7 commands; Airforce – 7 commands; Navy – 3 commands
- **The two tri-service commands** are: Andaman and Nicobar Command (ANC), and The Strategic Force Command (handles the nuclear weapons).
 - The Andaman and Nicobar command is a full-fledged command raised as a tri-service command in 2001.

Recent steps taken by India towards theaterisation

- **Proposal to create a national defence committee**
 - There is a proposal for theatre commanders under a national defence committee **likely to be headed by the Defence Minister**.
- **Inter-Services Organisation (Command, Control and Discipline) Act 2023**
 - The act empowers the commander-in-chief and the officer-in-command of inter-services organisations with disciplinary and administrative powers over personnel from the other services serving in them.
 - Limited cross-postings between the Army, Navy and IAF have already been implemented to promote jointness.
 - Restructuring of the headquarters and the subsequent postings will take place after the final approval from the govt.

First tri-service common defence station

- In March 2024, the decision was taken to transform Mumbai into the first tri-service common defence station.
 - A common defense station would merge all Army, Navy, and Air Force facilities, like logistics and maintenance, under one leadership.
- It was also decided to set up additional joint logistics nodes across the country to boost integration in logistical needs and streamline their supply chains.

WHAT IS RAT-HOLE MINING?

A one-member panel appointed by the High Court of Meghalaya to handle coal-related issues has flagged the lack of progress in restoring the environment damaged by rat-hole coal mining in the State.



About Rat-Hole Mining:

- It is a method of **manual drilling** most **common in Meghalaya**, especially in the West Jaintia Hills, East Jaintia Hills, and West Khasi Hills.
- The term “**rat hole**” refers to the narrow pits dug into the ground, typically just large enough for one person to descend and extract coal. The coal is manually extracted **using primitive tools** such as pickaxes, shovels, and baskets.
- Rat-hole mining is broadly classified into **two categories: Side-cutting procedure and box-cutting**.
 - In the **side-cutting procedure**, narrow tunnels are dug on the hill slopes, and workers go inside until they find the coal seam.
 - **Box-cutting** entails digging a circular or squarish pit at least 5 sq. metre in width up to a depth of 400 feet.
 - Miners who drop down in makeshift cranes or using rope-and-bamboo ladders dig horizontally after finding the coal seam.
 - The tunnels are dug in every direction from the edge of the pit, resembling the tentacles of an octopus.

Risks associated:

- Rat-hole mining is largely **unregulated**, and miners have to work without proper ventilation, safety gear, and any structural support.
- The narrow and vertical nature of the pits makes them **prone to collapse**, leading to accidents and fatalities.
- The **National Green Tribunal (NGT) banned rat-hole mining in 2014** for being unscientific, although the practice remains widespread.

CHINA RECLAIMS INDIA'S TOP TRADING PARTNER TAG

Why in news?

China has emerged as the largest trading partner of India with USD 118.4 billion two-way commerce in 2023-24, narrowly overtaking the US (India-US two-way trade came in at \$118.3 billion in FY24). This has been revealed by the data released by the think tank Global Trade Research Initiative (GTRI).

The US was India's top trading partner during FY22 and FY23 after China was the top bilateral trading partner in FY21.

Bilateral trade between India and China

- **Statistics**
 - India's bilateral trade with China in FY24 stood at \$118.4 billion.
 - India's imports increased by 3.24 per cent to \$101.7 billion and exports rose by 8.7 per cent to \$16.67 billion in FY24 compared to FY23.
- **Surge in imports for China in recent years - statistics**
 - Between FY19 and FY24, India's exports to China witnessed a marginal decline in exports by 0.6 per cent, down from \$16.75 billion to \$16.66 billion.
 - However, during the same period, imports from China surged by 44.7 per cent, up from \$70.32 billion to \$101.75 billion.
- **Major Imports from China to India**
 - Electrical, electronic equipment, engineering goods, chemicals and related products, plastics, other manufacturing goods and textiles.
- **Major Exports from India to China**
 - Engineering goods, agricultural and allied products, ores and minerals, chemicals and related products, Petroleum & crude products etc.
- **Existing trade deficit**
 - Rising from USD 53.57 billion in FY2019 to **USD 85.09 billion in FY2024**.

- **Reasons behind high trade deficit**
 - **Gap between domestic production and demand for various products**
 - **Export of raw materials while importing finished goods**
 - India's predominant exports have consisted of iron ore, cotton, copper, aluminum and diamonds/natural gems. However, majority of Chinese exports consist of machinery, power-related equipment, telecom equipment, organic chemicals and fertilizers.
 - **Indian pharmaceutical industry is heavily dependent (~68%) on APIs from China**
 - **Other factors:** A narrow basket of commodities, mostly primary, that India exports to China.
 - Market access impediments for most Indian agricultural products and competitive markets, such as pharmaceuticals, IT/ITES etc.

Trade relation with other countries (for 2019 – 2024)

- In 2023-24, the UAE with USD **83.6 billion**, was the third largest trading partner of India.
- It was followed by Russia (USD 65.7 billion), Saudi Arabia (USD 43.4 billion), and Singapore (USD 35.6 billion).
- **With Russia**
 - During the last five years, Russia's trading figures were marked by a dramatic increase, with exports growing by 78.3 per cent to \$4.26 billion.
 - On the other hand, imports soared by 952 per cent to \$61.44 billion, widening the trade deficit to \$57.18 billion.
- **With Saudi Arabia**
 - Saudi Arabia's exports more than doubled, with a 107.9 per cent increase to \$11.56 billion.
 - Imports rose at a slower pace by 11.7 per cent to \$31.81 billion, which slightly reduced the trade deficit to \$20.25 billion.

- **With UAE**
 - Exports to the UAE rose by 18.3 per cent to \$35.63 billion, and imports increased substantially by 61.2 per cent to \$48.02 billion.
 - This shift turned a marginal trade surplus of \$0.34 billion in FY19 into a deficit of \$12.39 billion by FY24.
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WHAT IS LEOPARD CAT?

A leopard cat has been spotted in Maharashtra's Pench Tiger Reserve for the first time, a senior forest official said recently.

Leopard Cat is a species of **forest-dwelling cat**, of the family Felidae. It is noted for its **leopard-like colouring**.

- **Distribution:**
 - They are the most **widely distributed** Asian small cats.
 - Their range **extends from the Amur region in the Russian Far East** over the Korean Peninsula, China, Indochina, the **Indian Subcontinent**, to the West in northern Pakistan, and to the south in the Philippines and the **Sunda Islands of Indonesia**.
 - **Habitat:**
 - They are found in agriculturally used areas but **prefer forested habitats**.
 - They live in **tropical evergreen rainforests and plantations** at sea level, in subtropical deciduous and coniferous forests in the foothills of the Himalayas at altitudes above 1000 m.

Features:

They vary widely in size and appearance across their range. The **colouration ranges** from pale tawny, to yellow, red or grey above, with the underparts white and spotted.

- There are usually **four black stripes running down the forehead to the nape**, breaking up into short bands and elongate spots on the shoulders. They are **solitary, nocturnal carnivores**.

Conservation Status:

- **IUCN Red List:** Least Concern

PENCH TIGER RESERVE



- **Location:** It is located in the southern reaches of the Satpura hills in the Seoni and Chhindwara districts in **Madhya Pradesh** and continues in Nagpur district in **Maharashtra** as a separate Sanctuary.
 - It is named after the **Pench River**, which flows from north to south through the Reserve. It comprises the Indira Priyadarshini Pench National Park, the Pench Mowgli Sanctuary, and a buffer.
- The area of the Pench Tiger Reserve and the surrounding area is the **real story area** of Rudyard **Kipling's famous "The Jungle Book"**.
- **Vegetation:** The undulating topography supports a mosaic of vegetation ranging from a moist, sheltered valley to an open, dry deciduous forest.
- **Flora:** The reserve boasts a diverse range of flora, including teak, saag, mahua, and various grasses and shrubs.
- **Fauna:**
 - The area is especially famous for large herds of Chital, Sambar, Nilgai, Gaur (Indian Bison), and wild boar.
 - The key predator is the tiger, followed by the leopard, wild dogs, and wolf.
 - There are over 325 species of resident and migratory birds, including the Malabar Pied Hornbill, Indian Pitta, Osprey, Grey Headed Fishing Eagle, White Eyed Buzzard, etc.