theIAShub

the IAS hub
Be Your Dream.

MARCH
16

CRUX 10

10 News. 10 Sources. One Place

THE HINDU
ET
BS
TOI
The Indian EXPRESS
livemint
pib
DownToEarth
FORTNIGHTLY ON POLITICS OF DEVELOPMENT, ENVIRONMENT AND HEALTH
Science Reporter
विज्ञान एवं प्रौद्योगिकी मन्त्रालय
MINISTRY OF SCIENCE AND TECHNOLOGY



MK Yadav Sir

Table of Contents

1. AH-64E Apache
2. Atmospheric Research Testbed
3. New EV Policy
4. Chinese Satellites-DRO-A & DRO-B
5. Sangam: Digital Twin Initiative
6. Darien Gap
7. Battery Energy Storage System
8. Kalachuri Dynasty
9. Wildlife Institute of India (WII)
10. NMEO-OP

THE HINDU Page 14

AH-64E APACHE

(Syllabus: GS Paper 3 – Sci and Tech-Defence Tech)

Army raises first unit to operate Apache attack helicopters in Jodhpur

Dinakar Peri
NEW DELHI



The Indian Army will receive the first batch of three Apache attack helicopters in May. SPECIAL ARRANGEMENT

Preparing to induct the first batch of AH-64E Apache attack helicopters into its fold, the Indian Army Aviation Corps raised its first unit at Jodhpur on Friday that will operate the helicopters. The Apaches will be the second attack helicopters in the Army after the indigenous light combat helicopter (LCH).

The 451 Aviation Squadron was formally raised at Jodhpur on Friday in the presence of Lt. Gen. A. K. Suri, Director-General of the Army Aviation Corps, a defence official said. "Army will receive the first batch of three Apaches in May and another three in July," the official added.

India signed a deal with Boeing for six more Apaches for the Army, at a cost of around $800 million, in February 2020. As part of the deal, six pilots and 24 technicians were trained by Boeing in the U.S.

The Army Aviation inducted its first dedicated attack helicopter with the LCH and the first squadron, 351 Army Aviation, was moved to Missamari, Assam in the Eastern Sector near the Line of Actual Control (LAC) in November 2022.

The Cabinet Committee had in the past given sanction for the procurement of 39 AH-64 Apache attack helicopters from the U.S., as part of which the IAF inducted 22 Apaches under a deal signed in September 2015. Subsequently, the government decided that future Apache procurements would go to the Army.

While the Army has been pushing the case for 11 more Apaches, the Chief of Defence Staff (CDS) last year ordered a study on the number of armoured helicopters required by the three Services.

Last November, the Defence Acquisition Council approved the procurement of 156 LCH at an estimated cost of ₹45,000 crore – 90 for the Army and 66 for the Air Force. There are 10 for the Air Force and five for the Army, currently being inducted, in addition to the 15 limited-series production LCH at a total cost of ₹4,264 crore.

Context: Preparing to induct the first batch of AH-64E Apache attack helicopters into its fold, the Indian Army Aviation Corps raised its first Unit at Jodhpur on March 15 that will operate the helicopters.

AH-64E Apache

- **About:** The AH-64E Apache stands as the pinnacle of combat helicopter technology, renowned for its versatility and effectiveness in diverse roles.
- **Origin**: Originating from the United States, the AH-64E is manufactured by Boeing, a leader in aviation technology.
- **Recognized by**: Alternate moniker, the Apache Guardian, highlighting its protective capabilities in the battlefield.
- **Evolution from AH-64**: The AH-64E is the latest iteration of the AH-64 series, primarily utilized by the US Army, showcasing continuous advancements in combat helicopter design.
- **Global Reach**: Beyond the United States, numerous nations, including India, Egypt, Greece, Indonesia, Israel, and more, have embraced the Apache for their defense needs.
- **Features**:
  - Equipped with an open systems architecture, facilitating seamless integration of cutting-edge communication, navigation, sensor, and weapon systems.
  - Boasting greater thrust and lift capabilities, joint digital operability, improved survivability, and cognitive decision aiding, enhancing its operational efficiency and survivability.
  - Incorporates an integrated infrared laser for precise target designation and enhanced infrared imagery, blending infrared and night vision capabilities for superior situational awareness.
- **Apache's Role in Indian Defense**
  - **Key Asset for Indian Forces**: The Indian Air Force already operates a fleet of 22 AH-64E Apache attack helicopters, bolstering the nation's defense capabilities.
  - **Expansion for Indian Army**: In a strategic move, Boeing inked a deal in 2020 with the Indian government for the acquisition of six additional Apache helicopters, further fortifying the Indian Army's arsenal.

ATMOSPHERIC RESEARCH TESTBED
(Syllabus GS Paper 3 – Sci and Tech)

ATMOSPHERIC RESEARCH TESTBED

A facility to observe and study weather parameters linked to India's Monsoon Core Zone

ANJALI MARAR
BENGALURU, MARCH 15

THE FIRST phase of India's Atmospheric Research Testbed in Central India (ART-CI) was inaugurated on March 12 at Silkheda village in Madhya Pradesh's Sehore district.

The 100-acre facility houses 25 high-end meteorological instruments for studying vital cloud processes associated with India's Monsoon Core Zone (MCZ).



The Atmospheric Research Testbed is spread across 100 acres. MoES

What is the Atmospheric Research Testbed (ART)?

ART is an open-field, focused observational and analytical research programme.

The facility aims to conduct ground-based observations of weather parameters like temperature and wind speeds, and on-site observations of the transient synoptic systems — like low-pressure areas and depressions forming in the Bay of Bengal — during the southwest monsoon season from June to September.

Developed by the Ministry of Earth Sciences at a cost of Rs 125 crore, the Indian Institute of Tropical Meteorology (IITM), Pune, is in charge of its operations.

Why is the MCZ important?

Much of Indian agriculture is rain-fed, as is cultivation along the MCZ that spans the central India region from Gujarat to West Bengal.

The southwest monsoon season accounts for 70% of the country's annual average rainfall (880mm). It is also when the majority of Kharif cultivation is undertaken.

During this season, several rain-bearing atmospheric systems develop in the Bay of Bengal. Studies have correlated the all-India rainfall performance to the rainfall received over the central India region, highlighting its importance.

Central India, therefore, acts as a natural laboratory for scientists and meteorologists to perform a hands-on study of Indian monsoons. They can record data and make observations about the allied systems, clouds, and other associated physical and atmospheric parameters.

Silkheda falls directly in line with the path of major rain-bearing synoptic systems. Besides, this area is relatively free of pollutants, making it suitable for setting up sensitive, high-end meteorological instruments and observatories.

What will ART do?

While the India Meteorological Department (IMD) issues a special rainfall forecast for the MCZ, there is still limited understanding about the role of these synoptic systems, their associated cloud physics, cloud properties, and their overall role in enhancing monsoon rainfall. Moreover, climate change is driving erratic rainfall patterns in places like India.

With ART, scientists will be able to generate and obtain long-term observations on cloud microphysics, precipitation, convection, and land-surface properties, among a host of other parameters.

This information will be assimilated and fed into the numerical weather models to enhance rainfall forecasts, ultimately helping farmers plan their activities better.

Context: Recently, the first phase of India's Atmospheric Research Testbed in Central India (ART-CI) was inaugurated at Silkheda in Sehore district, situated approximately 50 km northwest of Bhopal in Madhya Pradesh.

Atmospheric Research Testbed (ART)

- **About:** The ART is an open-field, focused observational and analytical research programme at Silkheda.
- **Aim**: To conduct ground-based observations of weather parameters like temperature, wind speeds, etc. and in-situ (on-site) observations of the transient synoptic systems
- **Developed by**: Ministry of Earth Sciences for Rs 125 crore, with operations managed by the Indian Institute of Tropical Meteorology (IITM), Pune.
- **Purpose:** The ART serves as an open-field research program at Silkheda, focusing on observational and analytical research.
- **Objectives**: Conducts ground-based observations of weather parameters during the southwest monsoon season.
    - Analyzes transient synoptic systems like low-pressure areas and depressions in the Bay of Bengal.

Significance of an Atmospheric Research Testbed

- **Agricultural Dependence on Monsoon**: With 45% of India's workforce in agriculture, understanding rainfall patterns is crucial.
- Monsoon accounts for 70% of the annual rainfall, vital for rain-fed agriculture.
- **Monsoon Core Zone**: MCZ, spanning central India, heavily relies on monsoon rains for cultivation.
- **National Rainfall Correlation**: Studies show a correlation between all-India rainfall and rainfall in central India.
    - Central India's rainfall data is vital for understanding and predicting overall monsoon patterns.

LIVEMINT

Front Page

NEW EV POLICY

(Syllabus: GS Paper 3 – Economy)

E-vehicle imports get policy impetus

Move to nudge global EV makers to manufacture in India

Alisha Sachdev
alisha.sachdev@livemint.com
NEW DELHI

India on Friday unveiled a new electric vehicle policy that would provide foreign EV makers like US-based Tesla & Vietnamese carmaker Vinfast with incentives to enter India's nascent electric car market.

In a gazette notification, the Centre said it would will allow automakers to import up to 8,000 EVs priced $35,000 or higher every year at a reduced import duty of 15%, from 70% earlier, if they commit to investing at least $500 million in India over the next three years.

They will also have to begin local manufacturing operations and ensure 25% domestic value addition (DVA) in the vehicles manufactured here by the end of that period, increasing it to 50% at the end of the five years. The scheme will be administered by the ministry of heavy industries (MHI).

Mint was the first to report last November that plans were afoot to introduce a policy for EV makers wanting to enter India, for vehicles in the range of $25,000-$35,000.

However, local OEMs Tata Motors & Mahindra & Mahindra have since lobbied with the government to raise the price threshold higher to $35,000 and above, to protect their investments and competitiveness.

Both OEMs have aggressive plans

TURN TO PAGE 14



SWEETENING DEAL

The move is being seen as a nifty balancing act by the govt just before the expected announcement of model code of conduct for the polls.



- **CUSTOMS DUTY** of 15% on vehicles with value of $35,000+ for 5 years (saving of 55% duty per vehicle)
- **THE MAKERS** will have to commit investment of at least $500 million in India over the next three years
- **MANUFACTURING TIMELINE:** 3 years to set up facilities, 5 years to achieve 50% domestic value addition
- **TO BE** eligible, OEMs will need to have minimum global turnover of ₹10,000 crore

Context: The government of India announced the e-vehicle policy, which aims to promote the country as a leading manufacturing destination for EVs and attract investments from global EV makers.

EV Policy

- **About:** The policy is crafted to entice investments from renowned global EV manufacturers into the Indian market.
- **Three-Year Establishment Window**: A three-year grace period provided for establishing local manufacturing units for EVs.
  - Currently, India imposes hefty taxes ranging from 70% to 100% on imported cars, depending on their value.
- **Domestic Component Stipulation**: Requirement for at least 25% of components to be domestically sourced.
- **Minimum Investment required**: Rs 4,150 crore ($500 million).
- **Maximum Limit**: No limit on Investment.
- **Timeline for manufacturing:** 3 years for setting up manufacturing facilities in India, and to start commercial production of e-vehicles, and reach 50% domestic value addition (DVA) within 5 years at the maximum.
- **Domestic value addition (DVA) during manufacturing**: A localisation level of 25% by the 3rd year and 50% by the 5th year will have to be achieved.
- **Custom Duty Applicability**: 15% (as applicable to CKD units) would be applicable for a period of 5 years.
- **Permissible Vehicle Value**: Vehicles of CIF value of $35,000 or above will be permissible.
- **Determination of EV Import**: The total number of EVs allowed for import would be determined by the total duty foregone or investment made, whichever is lower, subject to a maximum of Rs 6,484 crore (equal to incentive under PLI scheme).
- **Annual Import Limit:** Not more than 8,000 EVs per year would be permissible for import under this scheme. The carryover of unutilised annual import limits would be permitted.

INDIAN EXPRESS

Page-The World

CHINESE SATELLITES-DRO-A & DRO-B

(Syllabus: GS Paper 3 – S&T)

China's lunar probe fails to reach orbit after rocket falters

PRESS TRUST OF INDIA
BEIJING, MARCH 15

A PAIR of Chinese satellites failed to reach a planned orbit on their way to the moon after experiencing abnormalities, a rare setback for Beijing's high-profile space programme.

The satellites, known as DRO-A and DRO-B, were launched on Wednesday evening from the Xichang Satellite Launch Centre in the Sichuan Province, the launch centre said in a press release on Thursday. They were carried by A Yuanzheng-1S (Expedition-1S) upper-stage aircraft, attached to a Long March-2C carrier rocket, it said.

The first and second stages of the rocket operated normally, while the upper stage encountered an abnormality during flight, causing the satellites to fail to enter the preset orbit accurately, it said.

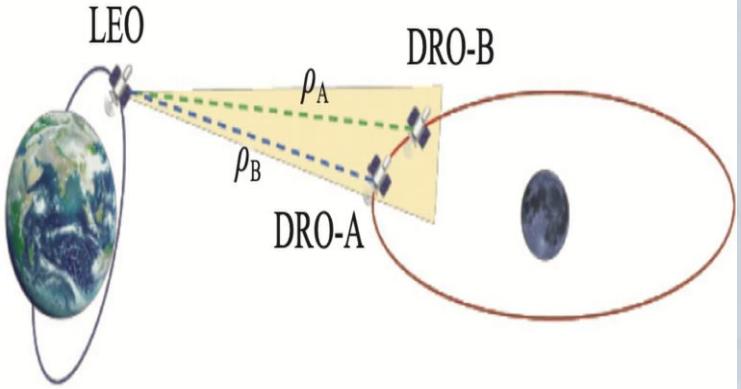
The relevant disposal work is currently underway, state-run Xinhua news agency reported, citing the launch centre.

The plan was for the two satellites to head towards the moon and enter a distant retrograde orbit (DRO).

From there, they would fly in formation and work with DRO-L – a third satellite that was successfully placed into low-Earth orbit by a Jielong 3 rocket last month – to test laser-based navigation technologies between the Earth and the moon, known as cislunar space, the Hong Kong-based South China Morning Post reported.

The DRO orbit is at a high altitude, tens of thousands of kilometres above the lunar surface. It is highly stable, allowing spacecraft to remain on track for a long time without using fuel, and is an advantageous waypoint for research and exploration, according to Chinese scientists.

Long March rockets have been integral to China's space ambitions, including moon missions.



Context: A pair of Chinese satellites **(DRO-A and DRO-B)** failed to reach a planned orbit on their way to the moon after experiencing abnormalities, a rare setback for Beijing's high-profile space program.

About DRO-A and DRO-B:

- **Launched from:** **X**ichang Satellite Launch Centre in the Sichuan Province.
- **Launched by:** A Yuanzheng-1S (Expedition-1S) upper-stage aircraft.
- **Aim:** The plan was for the two satellites to head towards the moon and enter a **distant retrograde orbit (DRO).**
  - From there, they would fly in formation and work with DRO-L - a third satellite that was successfully placed into low-Earth orbit by a Jielong 3 rocket last month - to test laser-based navigation technologies between the Earth and the moon, known as cislunar space.

Distant retrograde orbit (DRO):

- **About**: The DRO orbit is at a high altitude, tens of thousands of kilometres above the lunar surface.
  - It is highly stable, allowing spacecraft to remain on track for a long time without using fuel, and is an advantageous waypoint for research and exploration.

PIB

Mar 15

SANGAM: DIGITAL TWIN INITIATIVE

(Syllabus: GS Paper 2 – Govt Scheme)

DoT extends deadline for Expression of Interest for Sangam: Digital Twin Initiative from 15th March to 5th April 2024

Context: The Department of Telecommunications (DoT) recently launched an Expression of Interest (EoI), inviting participation in the Sangam: Digital Twin Initiative.

Sangam: Digital Twin Initiative

- **About:** The Proof of Concept, aimed at demonstrating a product, is divided into two stages and will be carried out in one of India's major cities.
- **Aim**: Showcase innovative infrastructure planning solutions in a real-world context.
- **Model Framework Development:** Create a collaborative model for faster and more effective collaboration.
- **Future Blueprint**: Provide a roadmap for scaling and replicating successful strategies in future infrastructure projects.
- **Digital Twin Technology**: Utilizing Digital Twin technology for virtual replicas, enabling real-time monitoring and simulation.
- **Adaptive Feedback Loop**: Iterative experimentation and feedback to adapt to changes for optimal outcomes.
- **Backdrop of Techade Vision 2047**: Breakthroughs in Communication, Computation, and Sensing: Contextualizing the initiative within the decade's technological advancements.
- **Two-Stage Process:** The initiative comprises two stages:
  - The first stage focuses on exploratory activities to unleash potential and gain clarity of horizon.
  - The second stage involves practical demonstrations of specific use cases to generate a future blueprint for scalability and replication in future infrastructure projects.

Digital-Twin Technology

- **About**: It is a digital representation of a physical object, person, or process, contextualized in a digital version of its environment.
- **Digital twins can help** an organization simulate real situations and their outcomes, ultimately allowing it to make better decisions.

DTE

Mar 15

DARIEN GAP

(Syllabus: GS Paper 1 – Geography)

What is the Darien Gap? And why are more migrants risking this Latin American route to get to the US?



Context: The treacherous Darien Gap route that spans parts of Central and South America has seen an increasing number of people attempting to pass on their way to claiming asylum in the US.

Darien Gap

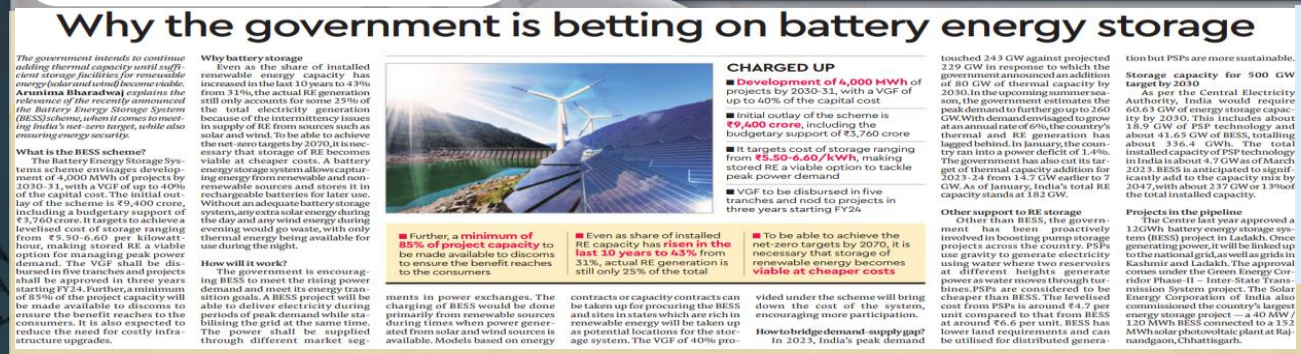
- **About:** It is a stretch of densely forested jungle across northern Colombia and southern Panama
- **Challenging Terrain**: The region is characterized by dense forests, muddy terrain, and instability due to its wet conditions.
- **Major Migration Route:** Despite its challenging nature, the Darién Gap has become a significant pathway for global human migration.
- **Geographic Significance:** It is the easternmost part of the Isthmus of Panama, extending into northwestern Colombia around the Gulf of Urabá.
- **Linking Continents:** Serving as a physiographic link between Central and South America, the Darién Gap plays a crucial role in connecting these two continents.
- **Ecological Description**: The area is characterized by hot, humid conditions and is dominated by tropical rainforests, mangrove swamps, and low mountain ranges with cloud forest vegetation.
- **Sparse Population**: Despite its ecological richness, Darién has historically been sparsely populated due to its challenging environment.

Panama Canal

- **About:** The Panama Canal, a man-made waterway, serves as a vital link connecting the Atlantic and Pacific oceans by traversing the Isthmus of Panama.
- **Strategic Importance:** Recognized as one of the world's two most crucial artificial water passages, the Panama Canal shares this distinction with the Suez Canal, playing a pivotal role in international maritime trade.
- **Dimensions:** Stretching approximately 80 kilometers in length, the canal serves as a remarkable feat of engineering, significantly shortening travel distances for ships.

BATTERY ENERGY STORAGE SYSTEM

(Syllabus: GS Paper 3 – Economy)



Why the government is betting on battery energy storage

The government intends to continue adding thermal capacity until sufficient storage facilities for renewable energy (solar and wind) become viable. **Arunima Bharadwaj** *explains the relevance of the recently announced the Battery Energy Storage System (BESS) scheme, when it comes to meeting India's net-zero target, while also ensuring energy security.*

What is the BESS scheme?

The Battery Energy Storage Systems scheme envisages development of 4,000 MWh of projects by 2030-31, with a VGF of up to 40% of the capital cost. The initial outlay of the scheme is ₹9,400 crore, including a budgetary support of ₹3,760 crore. It targets to achieve a levelised cost of storage ranging from ₹5.50-6.60 per kilowatt-hour, making stored RE a viable option for managing peak power demand. The VGF shall be disbursed in five tranches and projects shall be approved in three years starting FY24. Further, a minimum of 85% of the project capacity will be made available to discoms to ensure the benefit reaches to the consumers. It is also expected to reduce the need for costly infrastructure upgrades.

Why battery storage

Even as the share of installed renewable energy capacity has increased in the last 10 years to 43% from 31%, the actual RE generation still only accounts for some 25% of the total electricity generation because of the intermittency issues in supply of RE from sources such as solar and wind. To be able to achieve the net-zero targets by 2070, it is necessary that storage of RE becomes viable at cheaper costs. A battery energy storage system allows capturing energy from renewable and non-renewable sources and stores it in rechargeable batteries for later use. Without an adequate battery storage system, any extra solar energy during the day and any wind energy during evening would go waste, with only thermal energy being available for use during the night.

How will it work?

The government is encouraging BESS to meet the rising power demand and meet its energy transition goals. A BESS project will be able to deliver electricity during periods of peak demand while stabilising the grid at the same time. The power shall be supplied through different market segments in power exchanges. The charging of BESS would be done primarily from renewable sources during times when power generated from solar and wind sources is available. Models based on energy contracts or capacity contracts can be taken up for procuring the BESS and sites in states which are rich in renewable energy will be taken up as potential locations for the storage system. The VGF of 40% provided under the scheme will bring down the cost of the system, encouraging more participation.

How to bridge demand-supply gap?

In 2023, India's peak demand touched 243 GW against projected 229 GW in response to which the government announced an addition of 80 GW of thermal capacity by 2030. In the upcoming summer season, the government estimates the peak demand to further go up to 260 GW. With demand envisaged to grow at an annual rate of 6%, the country's thermal and RE generation has lagged behind. In January, the country ran into a power deficit of 1.4%. The government has also cut its target of thermal capacity addition for 2023-24 from 14.7 GW earlier to 7 GW. As of January, India's total RE capacity stands at 182 GW.

Other support to RE storage

Other than BESS, the government has been proactively involved in boosting pump storage projects across the country. PSPs use gravity to generate electricity using water where two reservoirs at different heights generate power as water moves through turbines. PSPs are considered to be cheaper than BESS. The levelised cost from PSPs is around ₹4.7 per unit compared to that from BESS at around ₹6.6 per unit. BESS has lower land requirements and can be utilised for distributed generation but PSPs are more sustainable.

Storage capacity for 500 GW target by 2030

As per the Central Electricity Authority, India would require 60.63 GW of energy storage capacity by 2030. This includes about 18.9 GW of PSP technology and about 41.65 GW of BESS, totalling about 336.4 GWh. The total installed capacity of PSP technology in India is about 4.7 GW as of March 2023. BESS is anticipated to significantly add to the capacity mix by 2047, with about 237 GW or 13% of the total installed capacity.

Projects in the pipeline

The Centre last year approved a 12GWh battery energy storage system (BESS) project in Ladakh. Once generating power, it will be linked up to the national grid, as well as grids in Kashmir and Ladakh. The approval comes under the Green Energy Corridor Phase-II – Inter-State Transmission System project. The Solar Energy Corporation of India also commissioned the country's largest energy storage project — a 40 MW / 120 MWh BESS connected to a 152 MWh solar photovoltaic plant at Rajnandgaon, Chhattisgarh.

CHARGED UP

- **Development of 4,000 MWh** of projects by 2030-31, with a VGF of up to 40% of the capital cost
- Initial outlay of the scheme is **₹9,400 crore**, including the budgetary support of ₹3,760 crore
- It targets cost of storage ranging from **₹5.50-6.60/kWh**, making stored RE a viable option to tackle peak power demand
- VGF to be disbursed in five tranches and nod to projects in three years starting FY24

- Further, a **minimum of 85% of project capacity** to be made available to discoms to ensure the benefit reaches to the consumers
- Even as share of installed RE capacity has **risen in the last 10 years to 43%** from 31%, actual RE generation is still only 25% of the total
- To be able to achieve the net-zero targets by 2070, it is necessary that storage of renewable energy becomes **viable at cheaper costs**

Context: The Indian government has finalized a mechanism to fund the development of 4,000 MWh of battery energy storage systems (BESS) in the country.

Battery Energy Storage System (BESS)

- **About**: BESS is a technology developed for storing electric charge by using specially developed batteries
- **Aim**: To develop 4,000 MWh of projects by 2030-31, with up to 40% VGF (Viability Gap Funding) of the capital cost.
- **Financial Overview**: The scheme's initial outlay is ₹9,400 crore, with a budgetary support of ₹3,760 crore.
- **Objectives**: The scheme targets a levelised cost of storage ranging from ₹5.50-₹6.60 per kilowatt-hour, making stored Renewable Energy (RE) a feasible option for managing peak power demand.
- **VGF Disbursement and Approval Process**: VGF will be disbursed in five tranches, and projects will be approved within three years starting FY24.
- **Consumer Benefit**: A minimum of 85% of project capacity will be allocated to distribution companies (discoms) to ensure consumer benefits.
- **Infrastructure Impact:** The BESS scheme is anticipated to reduce the necessity for expensive infrastructure upgrades.
- **Addressing Intermittency Issues**: Despite increased renewable energy capacity, intermittency issues limit actual RE generation to 25% of total electricity generation.
- **Net-Zero Targets:** Achieving net-zero targets by 2070 necessitates cost-effective storage solutions for renewable energy.

Operational Framework

- **Government's Initiative**: The government is promoting BESS to meet rising power demands and energy transition goals.
- **Electricity Delivery and Grid Stability:** BESS projects will supply electricity during peak demand periods while stabilizing the grid.
- **Charging from Renewable Sources**: Charging of BESS will primarily occur during periods of surplus renewable energy generation.

TIMES OF INDIA Page 1

KALACHURI DYNASTY
(Syllabus: GS Paper 1 – History)

In MP village, a dig for the oldest temple in India

Amarjeet.Singh1
@timesgroup.com

Bhopal: In a small village just 500m off the highway to Katni, in Madhya Pradesh, a group of archaeologists brushes off centuries of earth from layers of bricks being uncovered from under two mounds. They hope that what lies beneath is the oldest temple in India.

The dig sites are in Nachne village, merely 30 metres from another archaeological wonder — a Gupta-era Parvati temple — and close to Chaumukhi temple, built by the Kalachuri Dynasty (6th-7th centuries CE). It's a site rich in history and less than 100 km from Khajuraho.



ASI is excavating a mound near a Gupta-era Parvati temple in Panna district's Nachna area

▶Pre-Gupta era, P 25

Context: In a small village of Madhya Pradesh, a group of archaeologists brushes off centuries of earth from layer bricks being uncovered from under two mounds.

- The dig sites are in **Nachne village**, merely 30 metres from another archaeological wonder a Gupta-era Parvati temple — and close to Chaumukhi temple, built by the **Kalachuri Dynasty (6th-7th centuries CE).**

Kalachuri Dynasty

- **Founder**: The dynasty was founded by Kokalla I (850-885 AD).
- **Rule of Extent**: They governed parts of central India, encompassing regions like Gorakhpur, Ratnapur, and Rajpur in eastern Gujarat.
- **Sources:** The Karitalai inscription of Lakshmanaraja I portrays them as Rashtrakuta feudatories.
- The Gyaraspur inscription traces their lineage back to Kartavirya Arjuna.
- **Territorial Extent and Capital**: Initially, the Kalachuris ruled over northern Maharashtra, Gujarat, Malwa, and parts of the Western Deccan. Their capital was located at Mahishmati, situated in the Narmada River Valley.
- **Southern Expansion:** Another branch of the Kalachuri Dynasty, known as Haihaya, extended its rule to Southern India, particularly Karnataka, during the 10th to 12th centuries.
- The Kalachuri Dynasty has various branches; some of the most prominent branches of Kalachuri are
    - Kalachuri of Mahishmati
    - Kalachuri of Tripura
    - Kalachuri of Kalyani
    - Kalachuri of Ratanpur
- **Religion**: They primarily followed Shaivism but also supported Jainism.
- **Decline**: Subsequent rulers, weaker in governance, struggled to manage the empire, facing frequent invasions, resulting in a gradual loss of territory and influence.

WILDLIFE INSTITUTE OF INDIA (WII)

(Syllabus: GS Paper 3 – Env and Eco)



10-year Asola plan to focus on increasing leopard population

Long-term plans for biodiversity zone

The new management plan will list long-term targets to be adopted and conservation practices to be followed for the next 10 years

Jasjeev Gandhiok

jasjeev.gandhiok@hindustantimes.com

NEW DELHI: The Wildlife Institute of India (WII) has begun work on a decade-long management plan for the Asola Bhatti Wildlife Sanctuary with a focus on increasing the leopard population, and simultaneously mitigating the man-animal conflict, Delhi forest department officials said on Friday. The plan is likely to be ready by next year, the officials said.

The existing management plan of the sanctuary came into force in 2015, and will remain in place till next year, before the new plan replaces it.

The previous plan, prepared by the Forest Research Institute (FRI), Dehradun, focused heavily on restoration of degraded habitats at the sanctuary, particularly old mining pits.

The other focus area of the plan was to create a fruit-rich natural habitat for the monkeys in the area and to weed out invasive plant species, particularly the vilayati kikar (prosopis juliflora) and lantana (lantana camara).

A senior forest department official said WII carried out its first ground survey earlier this month, with research to commence from next month for a period of one year, in which a team of at least five researchers from WII will set up camera traps, study micro-habitats within the sanctuary, assess the types of flora and fauna and interact with people living in the vicinity of the sanctuary.

"The previous management plan, which was also overseen by us, focused on habitat restoration to a large extent. The new management plan will be focused on man-animal conflict mitigation. We will look to replicate successful models such as the Sanjay Gandhi National Park in Mumbai, where locals in the vicinity have learnt to live fearlessly with the leopard population," said Delhi's chief wildlife warden Sunecsh Buxy, and added that WII is preparing the plan on behalf of the forest department.

He said the plan will also include water and soil-conservation measures; raising awareness about conservation measures and wildlife through eco-tourism and to increase the greenery in the sanctuary further through native species.

Management plans list long-term targets or measures that a wildlife sanctuary or national park needs to focus on for the next decade.

The plan also identified conservation practices that need to be prioritised and species which need special attention.

Though leopards were a rare sight when the last management plan was made in 2014, their number has increased over the past decade.

A study carried out jointly by the Delhi forest department and the Bombay Natural History Society (BNHS) in 2022 has shown that there were at least eight leopards in the sanctuary. In January 2023, two more cubs were captured on camera, indicating there may be as many as 10 leopards living in the sanctuary.

A second forest department official said through the course of research for the management plan, researchers from WII also aim to look at possible routes the leopards are taking and accordingly, formulate measures to reduce man-animal conflict.

"The research period will be one year, based on which the final plan will be prepared," the official said, on condition of anonymity. "During this period, the team will also interact with locals in the vicinity and create awareness on how to co-exist with leopards and the remaining wildlife inside," the official added.

In December last year, leopards were seen in the on different occasions in Sainik Farms area for almost a week, prompting the forest department to set up cages to trap the animal.

Experts say that with proper awareness, such incidents can be avoided.

"A management plan gives an insight into the predators and the prey present in the area and through it, one can maintain an ideal prey to predator balance. Habitat restoration is still required in parts of Asola, as the overall area was highly degraded when the sanctuary was formed. As habitat gets systematically restored, more herbivores like the spotted deer will naturally come, which in turn provides ample food for the leopards," said CR Babu, head of the Centre for Environmental Management of Degraded Ecosystems (CEMDE), stating a management plan also includes guidelines on what needs to be done when animals like leopards stray out.

"Awareness needs to be created in the neighbouring areas, as part of the new plan, which includes not provoking the animal when sighted, not dumping litter or waste near the sanctuary which can attract the animal and to alert authorities if a sighting is made. People need to be taught not to panic or attack the animal and the animal will also not retaliate," he added.

Who will make the plan?

Wildlife Institute of India will prepare the plan on behalf of the Forest department. A one-year survey will be carried out at the sanctuary, which will include setting up camera traps, studying micro-habitats and interacting with locals

FOCUS AREAS

New plan	Previous plan
Conservation of existing wildlife habitats	Rejuvenation of degraded landscape
Landscape development for wildlife population	Removal of lantana and other invasive species
Leopard conservation	Special habitat restoration of primates
Water and soil conservation	Protection against encroachment
Eco-restoration of degraded landscapes	Improving groundwater recharge

Context: The Wildlife Institute of India (WII) has begun work on a decade-long management plan for the Asola Bhatti Wildlife Sanctuary with a focus on increasing the leopard population, and simultaneously mitigating the man-animal conflict.

Asola Bhatti Wildlife Sanctuary

- **Coverage Area:** 32.71 km2 area on the Southern Delhi Ridge of Aravalli hill range.
- **Location**: Delhi-Haryana border lies in Southern Delhi as well as northern parts of Faridabad and Gurugram districts of Haryana state.
- It is also part of the **Sariska-Delhi Wildlife Corridor**, which runs from the **Sariska Tiger Reserve** in Rajasthan to Delhi Ridge.
- **Vegetation**: Dry deciduous,
- **Flora**: Consists of Prosopis juliflora as the dominant exotic species and Diospyros montana as the dominant native species in the sanctuary.
- **Fauna:** Golden Jackals, Striped-Hyenas, Indian crested-Porcupines, Civets, Jungle Cats, Snakes, Monitor Lizards, Mongoose etc.

Wildlife Institute of India (WII)

- **About:** It is an autonomous natural resource service institution under the Ministry of Environment Forest and Climate change, Government of India, was established in 1982.
- **Located at:** Dehradun, India.
- **Establishment**: 1982.
- **Headquarters**: Dehradun, Uttarakhand.
- **Objective**: It offers training programs, academic courses, and advisory in wildlife research and management.
  - WII **carries out wildlife research** in areas of study like Biodiversity, Endangered Species, Wildlife Policy, Wildlife Management, Wildlife Forensics, Spatial Modelling, Eco-development, Ecotoxicology, Habitat Ecology and Climate Change.
  - **The All India Tiger Estimation** (Tiger Census), is done by WII along with National Tiger Conservation Authority (NTCA) and state forest departments.

BUSNESS LINE Mar 15

NMEO-OP
(Syllabus: GS Paper 3 – Economy)

Govt focussing on palm oil to achieve self sufficiency in edible oil, says Prime Minister Modi PREMIUM

Context: Prime Minister of India recently inaugurated the **first Oil Palm Processing Mill under National Mission for Palm Oil** in Arunachal Pradesh.

National Mission for Edible Oils - Oil Palm (NMEO-OP)

- **About:** NMEO-OP is a **Centrally Sponsored Scheme** to augment the availability of edible oil in the country by harnessing area expansion, increasing crude palm oil production with the aim to reduce the import burden.
- **Launched:** 2021.
- **Target:**
  - To increase area of oil palm to 10 lakh hectares from 3.5 lakh ha during 2019-20 by 2025-26 (additional 6.50 lakh ha).
  - The target for general states is 3.22 lakh hectares and 3.28 lakh ha for North Eastern states, with targeted FFB production of 66.00 lakh tonnes.
  - To increase in Crude Palm Oil production from 0.27 lakh tonnes during 2019-20 to 11.20lakh tonnes by 2025-26 and 28 lakh tonnes by 2028-29.
  - Increase consumer awareness to maintain consumption level of 19.00 kg/person/annum till 2025-26.
- **Salient Feature:**
  - Assistance for planting material.
  - Inputs for intercropping up to gestation period of 4 years and for maintenance
  - Establishment of seed gardens, nurseries, micro irrigation, bore well/pumpset/water harvesting structure, vermi compost units, solar pumps, harvesting tools, custom hiring centre cum harvester Groups, farmers and officers training, and for replanting of old oil palm gardens etc.

Oil Palm Production in India

- **Composition of Imports:** Palm oil constitutes the largest share of imports, approximately 57%, followed by soybean oil at 29%, and sunflower oil at 14%.
- **Primary Sources of Imports**: Indonesia and Malaysia are the primary sources of imported palm oil, while Argentina and Brazil serve as major exporters of soybean oil to India.
- **Sunflower Oil Imports:** Sunflower oil imports primarily originate from Russia and Ukraine, with Romania and the Netherlands emerging as new partners in the current oil year.
- **Major Oil Palm Growing States**: Andhra Pradesh, Telangana, and Kerala collectively contribute to 98% of the total production, with Andhra Pradesh being the largest producer.

FREE Download PDF

Login to theiashub.com

- Aaj Ka Quality Enrichment (Toppers' Favourite PDF)
- News-CRUX-10 (10 News. 10 Sources. One Place)
- Monthly Editorials (The Hindu & Indian Express)
- Daily Quiz (Prelims)
- Government Schemes & Ministry Wise Year End Review
- Free Enrichment PDFs (Tailor Made Crisp Study Material)



Log On To Our Unique
Free Answer Writing Sessions with Toppers (FAST) Portal
& Start Practicing!

SCAN HERE

9560082909

t.me/theiashub

/mkyadav

www.theiashub.com

www.theiashub.com