DAILY CURRENT AFFAIRS 15-12-2025

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GS-3

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Preah Vihear Temple

Syllabus: GS-1: Indian Art and Architecture.

Context:

➢ India recently **called for the protection of the Preah Vihear Temple** amid **ongoing border clashes between Thailand and Cambodia**.

➢ The issue has renewed attention on the **cultural heritage dimension of border disputes** in Southeast Asia.

About Preah Vihear Temple

➢ **Location**:

  o Situated in **Preah Vihear Province**, northern **Cambodia**.

  o Located **atop a cliff in the Dangrek Mountain range**, along the **Cambodia–Thailand border**.

➢ **Religion**:

  o **Hindu temple dedicated to Lord Shiva**.

➢ **Historical Period**:

  o Built during the **Khmer Empire** in the **11th–12th centuries**.

➢ **Patron Kings**:

  o Initially constructed by **King Suryavarman I (1002–1050 CE)**.

  o Expanded by **King Suryavarman II (1113–1150 CE)**.

➢ **UNESCO Status**:

  o Inscribed as a **UNESCO World Heritage Site**.

Architecture of Preah Vihear Temple

➢ Considered an **outstanding masterpiece of Khmer architecture**.

➢ **Linear Layout**:

o Built along an **800-metre-long axial pathway**, unlike concentric temple layouts.

➢ **Structural Features**:

o Series of **sanctuaries connected by pavements and staircases**.

o Comprises **more than five successive gopuras (ornamental gateways)**.

➢ **Distinctive Design**:

o Gopuras are **connected by a long processional path**.

o Structures are **raised on multi-tiered platforms**, enhancing the dramatic cliff-top setting.

➢ **Roofing**:

o Combination of **stone roofs** and **wooden roofs** in different gopuras.

Significance (Prelims Pointers)

➢ Represents **Hindu cultural influence in mainland Southeast Asia**.

➢ Highlights the **architectural sophistication of the Khmer Empire**.

➢ Frequently cited in **international legal and border dispute contexts** (Cambodia–Thailand).

Pyrite

Syllabus: GS-1: Resource Geography – Minerals.

Context:

➢ Scientists discovered the **oldest-known evidence of fire-making by prehistoric humans in England**.

➢ Findings included:

o Heated clay patch

- o Heat-shattered flint handaxes

- o **Iron pyrite**, used with flint to generate sparks for ignition

➢ Reinforces the role of **pyrite–flint technology** in early human fire control.

About Pyrite

➢ **Type:** Sulfide mineral

➢ **Chemical Composition:** Iron sulfide (FeS_2)

➢ **Appearance:**

- o Brass-yellow colour

- o Bright metallic lustre

➢ **Name Origin:**

- o Derived from Greek word **"pyr" (fire)**

- o Emits sparks when struck against metal or flint

➢ **Common Name:** *Fool's Gold* (due to resemblance to gold)

Pyrite vs Gold

➢ Pyrite:

- o Harder than gold

- o Cannot be scratched by fingernail or pocket knife

- o Lighter than gold

- ➢ Gold:

  - o Softer and malleable

  - o Can be scratched easily

Geological Occurrence

- ➢ Found widely across the world in:

  - o Sedimentary deposits

  - o Hydrothermal veins

  - o Metamorphic rocks

- ➢ Occurs as nodules, crystals, or disseminated grains

Archaeological Significance

- ➢ Pyrite nodules found in **prehistoric burial mounds**

- ➢ Indicates:

  - o Early **fire-making technology**

  - o Human understanding of spark generation

Uses of Pyrite

- ➢ **Industrial Uses:**

  - o Source of **iron and sulfur**

  - o Used in production of **sulfuric acid**

- ➢ **Chemical Products:**

  - o Produces **iron sulfate**, used in:

    - ▪ Nutritional supplements

    - ▪ Ink manufacturing

    - ▪ Lawn conditioners

    - ▪ Water treatment and flocculation

    - ▪ Moss control

- ➢ **Medical Use:**

o Iron sulfate used in treatment of **iron-deficiency anemia**

➢ **Mining:**

o Some pyrite contains **microscopic gold**, making it economically viable as a gold ore

Pax Silica Initiative

Syllabus: GS-2: International Relations.

Context:

➢ The **Congress party** criticised the Prime Minister over **India's exclusion** from the **US-led Pax Silica Initiative**.

➢ It linked the exclusion to an alleged **deterioration in India–US relations**, particularly with former US President **Donald Trump**.

➢ The issue has gained relevance in the context of **global semiconductor geopolitics and AI supply chains**.

Pax Silica Initiative: Overview

➢ **Nature**: A **United States–led strategic initiative**

➢ **Objective**: Build a **secure, resilient, and innovation-driven silicon ecosystem**

➢ **Coverage**: Entire value chain — from **critical minerals** to **AI-enabled technologies**

Meaning of the Term "Pax Silica"

➢ **Pax** (Latin): Peace, stability, long-term prosperity

➢ **Silica**: Refined into **silicon**, the foundational element for:

o Semiconductors

o AI hardware

o Advanced computing infrastructure

Symbolises **technological peace and stability through trusted supply chains**

Core Objectives of Pax Silica

- ➢ **Reduce coercive dependencies** in critical technology supply chains

- ➢ **Safeguard materials and capabilities** essential for:

  - o Artificial Intelligence (AI)

  - o Semiconductors

  - o Advanced manufacturing

- ➢ Enable **aligned nations** to:

  - o Develop

  - o Manufacture

  - o Deploy transformative technologies at scale

- ➢ Protect against **strategic dominance by countries of concern**

Key Focus Areas

- ➢ **Critical minerals** (silicon, rare earths, inputs for chips)

- ➢ **Semiconductor ecosystem**:

  - o Design

  - o Fabrication

  - o Advanced packaging

- ➢ **AI infrastructure**:

  - o Compute capacity

  - o Foundational models

- ➢ **Energy security**:

  - o Power grids

  - o Reliable electricity for data centres

- ➢ **Logistics & transportation** supporting high-tech supply chains

Member Countries of Pax Silica

- • Japan

- • South Korea

- • Singapore

- Netherlands

- United Kingdom

- Israel

- United Arab Emirates

- Australia

Notably, **India is not included** despite its strategic relevance in the Indo-Pacific.

Shared Commitments of Member Countries

➢ Jointly address **AI and semiconductor supply chain vulnerabilities**

➢ Develop **co-investment and joint venture opportunities**

➢ Protect:

  o Sensitive technologies

  o Critical infrastructure

➢ Prevent **undue access or control** by hostile or rival states

➢ Build **trusted technology ecosystems**, including:

  o ICT systems

  o Fiber-optic cables

  o Data centres

  o AI models and applications

New Ramsar Sites (India)

Syllabus: GS-3: Environment – Protected Areas – Wetlands.

Context:

Recently, **Siliserh Lake (Rajasthan)** and **Kopra Jalashay (Chhattisgarh)** have been designated as **Ramsar Sites**, strengthening India's wetland conservation framework under the Ramsar Convention.

1. Siliserh Lake – Rajasthan

Location & Background

- **State:** Rajasthan

- **District:** Alwar

- **Setting:** Human-made lake located within the **buffer zone of Sariska Tiger Reserve**

- **Year of construction:** 1845

- **Built by:** Maharaja Vinay Singh

- **Original purpose:** Drinking water supply to Alwar city

Ecological Significance

- Situated in a **semi-arid zone**, making it a crucial freshwater ecosystem

- Acts as an important **water source and refuge** for regional biodiversity

Biodiversity

- **Birds:** 149 species

- **Mammals:** 17 species

- **Key species:**

  o **River tern** – Vulnerable

  o **Tiger** – Endangered

- o **Black stork (Ciconia nigra):**

    - ▪ Supports **more than 1% of its biogeographic population** (important Ramsar criterion)

Importance

➢ Demonstrates the ecological value of **man-made wetlands**

➢ Enhances conservation value of the **Sariska landscape**

2. Kopra Jalashay – Chhattisgarh

Location & Hydrology

➢ **State:** Chhattisgarh

➢ **River basin:** Upper catchments of the **Mahanadi River**

➢ **Type:** Reservoir

➢ Exhibits strong **hydrological and ecological connectivity** with surrounding landscapes

Ecological Features

➢ Supports a **diverse mosaic of wetland habitats**

➢ Plays a key role in sustaining downstream ecological processes

Biodiversity

➢ **Migratory birds:** More than 60 species

➢ **Functions:**

    - o Nesting site

    - o Feeding ground

o   Stop-over site during migration

Notable Fauna

➢ Greater spotted eagle (Aquila clanga) – Vulnerable

➢ Egyptian vulture (Neophron percnopterus) – Endangered

Importance

➢ Critical for **avian conservation in Central India**

➢ Highlights the role of reservoirs in **wetland biodiversity conservation**

Significance of the New Designations

➢ Strengthens India's commitment to the **Ramsar Convention on Wetlands (1971)**

➢ Recognises both **natural and human-made wetlands**

➢ Enhances **ecosystem services** such as water security, biodiversity protection, and climate resilience

MahaCrimeOS AI: AI-Driven Policing in Maharashtra

Syllabus: GS-3: Internal Security & GS-2: Governance.

Context:

Microsoft CEO Satya Nadella announced the statewide rollout of MahaCrimeOS AI, an advanced AI-driven investigation platform for the Maharashtra Police.

Introduction

➢ **MahaCrimeOS AI** is an **AI-powered crime investigation platform** rolled out statewide for the **Maharashtra Police**.

➢ Announced by **Microsoft CEO Satya Nadella**, marking a major step in **AI-led governance and policing reforms**.

➢ Developed under Maharashtra's AI policing initiative **MARVEL**, in partnership with **Microsoft**.

Latest Developments

➢ Platform to be deployed across **all 1,100 police stations** in Maharashtra.

- Initially piloted in **Nagpur Rural (April 2025)**.

- Reflects a shift from **traditional policing to data-driven, AI-assisted investigations**.

What is MahaCrimeOS AI?

- An **AI-powered investigation and case management platform**.

- Built using **Microsoft Foundry**.

- Adapted from **CrimeOS AI** (by CyberEye, a Microsoft AI partner).

- Customised to:

  - Maharashtra Police investigation protocols

  - Guidelines of the **High Court and Supreme Court**

  - Local language requirements (**Marathi-first design**)

MARVEL: Maharashtra's AI Vision for Policing

- **MARVEL** = *Maharashtra Research and Vigilance for Enhanced Law Enforcement*

- Established in **2024** as a **Special Purpose Vehicle (SPV)**.

- Objectives:

  - Integrate AI into policing and intelligence

  - Strengthen crime prediction and investigation

  - Modernise law enforcement infrastructure

- **First Indian state** to create an **independent AI body exclusively for policing**.

Key Capabilities of MahaCrimeOS AI

- **Multimodal Data Ingestion**:

  - FIRs, PDFs, audio files, images, handwritten notes

- **Multilingual Intelligence**:

  - Extracts information from data in **any language**

- **Automated Analysis**:

  - Identifies patterns, interlinkages, and suspects

- **Rapid Profiling**:

- o Builds profiles of persons of interest using telecom and OSINT data

AI-Generated Investigation Plans

➢ Reads **FIRs in Marathi**.

➢ Automatically generates:

- o Crime-specific investigation plans

- o Step-by-step workflows

➢ Plans aligned with:

- o Maharashtra Police manuals

- o Judicial guidelines of HC and SC

➢ Reduces dependence on senior-level approvals.

Investigation Copilot

➢ AI-powered **decision-support system**.

➢ Functions:

- o Suggests investigation pathways

- o Automates routine workflows

- o Flags pending actions and deadlines

➢ Enhances **speed, consistency, and quality** of investigations.

Advanced Data Analysis & Court Readiness

➢ **Telecom Analysis**:

- o Detects interlinkages between accused

➢ **Open Source Intelligence (OSINT)**:

- o Traces phone numbers across digital platforms

➢ **Judicial Compliance**:

- o Prepares time-stamped, date-wise case diaries

- o Ensures court-ready documentation

Benefits for Police & Governance

➢ Automates administrative tasks (letters to banks/telecom firms).

➢ Reduces task time from **30–45 minutes to seconds**.

➢ Centralised dashboards for:

  o Active cases

  o Pending actions

  o Case updates

➢ **Democratisation of cyber tools**:

  o Advanced analytics available to all officers, not just specialists.

Benefits for Citizens

➢ Faster investigations and reduced bottlenecks.

➢ Improved response time for cyber and financial fraud complaints.

➢ Enhances **public trust** and **access to justice**.

Crime Categories Currently Covered

➢ Cybercrime

➢ Financial fraud

➢ Narcotics

➢ Crimes against women

➢ (More categories under development)

Relevance Under New Criminal Laws

➢ **Bharatiya Nyaya Sanhita** mandates:

  o Chargesheets within **60–90 days**

➢ MahaCrimeOS AI:

  o Enables faster, structured investigations

  o Helps officers manage multiple cases within legal timelines

Case Study (Illustrative Example)

➢ In a **₹38 lakh bank fraud case**:

  o Analysed telecom data and OSINT

  o Traced accused across multiple states

o Led to timely arrests and case resolution

Significance for UPSC

➢ **Governance**: AI in public administration

➢ **Internal Security**: Cybercrime and tech-enabled policing

➢ **Ethics & Accountability**: Rule-based, protocol-driven investigations

➢ **Federal Innovation**: State-led digital governance model

Conclusion

➢ MahaCrimeOS AI represents a **paradigm shift in Indian policing**.

➢ Integrates **AI, judicial best practices, and local language access**.

➢ Positions Maharashtra as a **national leader in future-ready, AI-driven law enforcement**.

➢ Serves as a **replicable model** for other Indian states.