



## **DAILY CURRENT AFFAIRS 16-06-2026**

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5. **Jiangmen Underground Neutrino Observatory (JUNO)**

## Thamirabarani River

Syllabus: GS-1; Geography- Rivers, GS-3; Environment & Ecology, Biodiversity Conservation

### Context

Researchers have raised concerns about the declining otter population in Tamil Nadu's Thamirabarani River. Habitat degradation, riverbank encroachment, pollution, and increasing human interference are threatening otters and the river's rich biodiversity.



### About Thamirabarani River

- The **Thamirabarani River** (also known as **Tamraparni** or **Porunai**) is a rare **perennial river** in southern India that flows entirely within **Tamil Nadu**.
- The name "Thamirabarani" is derived from the Tamil words "**Thamiram**" (**copper**) and "**Barani**" (**vessel**), referring to the copper-like colour of its waters.

- **Porunai** is the river's ancient name and is frequently mentioned in **Sangam literature**.

### Origin and Course

- Originates from **Agastyarkoodam Peak** in the **Pothigai Hills** of the **Western Ghats**.
- Flows through **Tirunelveli** and **Thoothukudi (Tuticorin)** districts of Tamil Nadu.
- Empties into the **Gulf of Mannar**, a part of the **Bay of Bengal**.
- **Total Length:** Approximately **128 km**.

### Major Tributaries

- Gadananathi River
- Manimuthar River
- Pachaiyar River

### Important Dams

- Papanasam Dam
- Karaiyar Dam
- Manimuthar Dam
- Servalar Dam
- Gadananathi Dam

### Major Waterfalls

- **Banatheertham Falls** (about 132 ft)
- **Agasthiyar Falls**
- **Kalyana Theertham**

### Biodiversity Significance

- Considered one of India's most biodiversity-rich rivers.
- Home to numerous freshwater fish species, including over **16 species of native snakehead fish**.
- Supports a large variety of aquatic life and endemic species.
- Notably, all three otter species found in India inhabit the river:
  - **Eurasian Otter** (*Lutra lutra*)
  - **Smooth-coated Otter** (*Lutrogale perspicillata*)
  - **Asian Small-clawed Otter** (*Aonyx cinereus*)

## **Masroor Rock-Cut Temples**

**Syllabus: GS-1; Indian Heritage & Culture – Temple Architecture**

### **Context**

The Masroor Rock-Cut Temples in **Himachal Pradesh’s Kangra Valley** have recently drawn attention as an important yet lesser-known heritage site.



### **About Masroor Rock-Cut Temples**

- An early 8th-century complex of rock-cut Hindu temples located in the Kangra Valley of the Beas River, Himachal Pradesh.
- Often referred to as the **“Ellora of Himachal”** and the **“Himalayan Pyramid.”**

### **History**

- Archaeological evidence suggests construction around the 8th century CE due to similarities with **Gupta-style architecture**.
- No mention of the temples has been found in scriptures or historical records.
- First reported by **Henry Shuttleworth** in 1913.
- Independently surveyed by **Harold Hargreaves** of the Archaeological Survey of India in 1915.

## Architecture

- Comprises a 15-monument temple complex.
- Reflects the **North Indian Nagara style** of architecture.
- Dedicated to:
  - Lord Shiva
  - Lord Rama
  - Goddess Sita
  - Lord Lakshmana
- Faces northeast towards the **Dhauladhar mountains**, unlike most Hindu temples that face east.
- Carved out of monolithic rock and crowned with a shikhara.
- Includes a sacred water tank.
- Follows a symmetrical square-grid layout.
- Main temple is surrounded by smaller shrines arranged in a mandala pattern.
- Has three entrances facing northeast, southeast, and northwest.
- Evidence suggests a planned but unfinished fourth entrance.
- Features elaborate reliefs depicting Vedic and Puranic deities along with narrative friezes.
- Significant portions of sculptures and reliefs have been damaged, likely due to earthquakes.

## **Oilseeds Kisaan Mitra**

### Syllabus: GS-3; Agriculture – Agricultural Extension & Technology

#### Context

The Indian Council of Agricultural Research (ICAR) recently launched **Oilseeds Kisaan Mitra**.

#### About Oilseeds Kisaan Mitra

- A WhatsApp-based AI-powered advisory service.
- Developed by the **ICAR-Indian Institute of Oilseeds Research (ICAR-IIOR), Hyderabad**.
- Aims to strengthen oilseed cultivation and improve farmers' access to scientific guidance.

### Crops Covered

- Groundnut
- Mustard
- Sesame
- Sunflower
- Soybean
- Niger
- Other oilseed crops

### Features

- Provides round-the-clock scientific advisory support.
- Available in multiple Indian languages.
- Offers guidance on:
  - Variety selection
  - Crop management
  - Pest and disease control
  - Irrigation
  - Post-harvest management

### Working Mechanism

- Built using advanced AI and a scientific knowledge base developed from multiple ICAR institutions.
- Understands queries in regional languages.
- Provides crop-specific responses.
- Accessible through WhatsApp without requiring a separate application.

### Collaborating Institutions

- ICAR-National Soybean Research Institute (NSRI), Indore
- ICAR-Indian Institute of Groundnut Research (IIGR), Junagadh
- ICAR-Indian Institute of Rapeseed and Mustard Research (IIRMR), Bharatpur
- PC Unit (Sesame & Niger)

## **National Pharmaceutical Pricing Authority (NPPA)**

**Syllabus: GS-2: Indian Polity – Regulatory body.**

### **Context:**

- Recently, the drug price regulator **National Pharmaceutical Pricing Authority (NPPA)** raised ceiling rates for two key platinum-based cancer drugs by **50%** after a surge in raw material costs triggered widespread shortages.

### **About NPPA**

- An independent regulator for **pricing of drugs** and ensuring **availability and accessibility of medicines at affordable prices**.
- Constituted in **1997** under the **Department of Pharmaceuticals (DoP), Ministry of Chemicals & Fertilizers**.

### **Functions of NPPA**

- Implements and enforces provisions of the **Drugs (Prices Control) Order (DPCO)** in accordance with delegated powers.
- Monitors availability of drugs, identifies shortages, and takes remedial measures.
- Collects and maintains data on production, exports, imports, market share of companies, profitability, etc., for bulk drugs and formulations.
- Recruits and appoints officers and staff members of the Authority as per government rules and procedures.
- Advises the Central Government on changes/revisions in drug policy.
- Assists the Central Government in parliamentary matters relating to drug pricing.
- Fixes and revises drug prices as per provisions of the **Drugs Prices Control Order (DPCO)**.
- Provides **ceiling prices** for all drugs notified under **Schedule-I of DPCO**.

### **Significance**

- Ensures **affordable access to essential medicines**.
- Balances **consumer welfare** with **industry viability**.
- Plays a key role in preventing drug shortages and maintaining market availability of critical medicines.

## **Jiangmen Underground Neutrino Observatory (JUNO)**

Syllabus:GS-3: Science and Technology

### Context:

- The **Jiangmen Underground Neutrino Observatory (JUNO)** collaboration in China recently published its first results, including measurements on how often particles called **neutrinos** from nuclear reactors change their flavour (type) as they travel.

### About JUNO

- A large underground neutrino detector located near **Kaiping** in southern **Guangdong**.
- Product of an international collaboration involving **74 institutions** from Asia, Europe and America, with around **700 members**.
- Led by the **Chinese Academy of Sciences (CAS)** through the **Institute of High Energy Physics (IHEP)**.
- Second neutrino experiment in **China** after the **Daya Bay Reactor Neutrino Experiment**.
- Situated about **53 km** from the nuclear power plants at **Taishan** and **Yangjiang**.



### Primary Objective

- Determination of the **Neutrino Mass Ordering (NMO)**.
- Achieved by measuring the oscillation pattern of **electron anti-neutrinos** emitted from nuclear power plants.

### Key Features

- Experimental hall: **80 m high, 50 m diameter**, located **700 m underground**.

- Main feature: **35 m radius spherical neutrino detector** containing **20,000 tonnes of liquid scintillator**.
- World's **largest and highest-precision liquid scintillator detector**.
- Designed scientific lifespan of **up to 30 years**.

### Significance

- One of the three next-generation neutrino experiments:
  - **JUNO** – China
  - **Hyper-Kamiokande** – Japan
  - **Deep Underground Neutrino Experiment** – United States

### Neutrinos

#### What are Neutrinos?

- Often called "**ghost particles**".
- Elementary particles belonging to the **lepton family**.
- Interact very weakly with matter, making their detection extremely difficult.
- Have **no electric charge** and **very small mass** (less than one millionth of the electron's mass).
- Travel at speeds nearly equal to the **speed of light**.

#### Discovery

- First predicted in **1930**.
- Experimentally discovered in **1956**.

#### Interaction with Fundamental Forces

- Of the four fundamental forces, neutrinos interact only through:
  - Gravity
  - Weak Nuclear Force

#### Sources

- Produced from various natural and artificial sources.
- Commonly generated when heavy particles transform into lighter particles through **radioactive decay**.

#### Key Facts

- Most abundant particles in the universe.
- Approximately **100 trillion neutrinos** pass through the human body every second without causing harm.
- Essential for understanding:
  - **Standard Model of Particle Physics**
  - Stellar evolution and black holes
  - Cosmology and the **Big Bang**
  - Fundamental properties of matter and energy