NAMAN SHARMA
IAS ACADEMY

Daily
CURRENT AFFAIRS

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Offline Centre Location:
SCO 173-174, Sector 17C, Chandigarh

Index

1. India’s rainfall deficit 35% as monsoon stalls

Why in the news?

India is currently witnessing a **35% deficit in rainfall** because the southwest monsoon has remained stagnant since it reached the state of Kerala. Central India is one area where the rainfall is **deficient by 61%.** The Government of India has designated approximately 150-200 districts for special monitoring and asked states to formulate contingency plans for crops.

Hanging clouds

While a monsoon deficit in June is not unusual, it assumes additional significance in a year which has been globally forecast to witness a ‘Super El Nino’

Rainfall departures for El Niño years since 2000:

	June	Whole southwest monsoon
2002	+2%	19% below LPA*
2004	+1%	13% below LPA
2009	- 47%	22% below LPA
2014	- 44%	12% below LPA
2015	+14%	14% below LPA
2023	- 8%	6% below LPA

*LPA: Long Period Average

Source: IMD

Background

Importance of the Monsoon

- The southwest monsoon provides nearly 70–75% of India's annual rainfall.

It is crucial for:

- Kharif crop cultivation.
- Reservoir and groundwater replenishment.
- Hydropower generation.
- Rural incomes and food security.

Current Situation

- Monsoon reached Kerala on June 4, only three days late.
- Its advance towards Mumbai and central India has stalled.

Rainfall departures:

- Northwest India: +5%
- East & Northeast India: –43%

- Central India: –61%
- Southern Peninsula: –14%

El Niño Concerns

- El Niño refers to the abnormal warming of the Pacific Ocean, often weakening the Indian monsoon.
- NOAA has confirmed El Niño conditions and warned of a 63% chance of a very strong event.
- IMD expects seasonal rainfall to be 90% of the Long Period Average (LPA) and assigns a 60% probability of a deficient monsoon, the most pessimistic outlook since 2015.

Features

Stalled Monsoon Advance

- The first monsoon pulse weakened near Mumbai.
- An anticyclonic circulation and westerly winds have impeded further progress.

Unfavourable Madden-Julian Oscillation (MJO)

- MJO is presently in a phase that suppresses rainfall.
- The next monsoon pulse may arrive with the formation of a low-pressure system over the Bay of Bengal.

Better Reservoir Storage

- Reservoir levels stand at 30.4% capacity, compared with 25.1% during previous El Niño years, providing some cushion.

Government Preparedness

- Weekly El Niño reviews.
- Monitoring of vulnerable districts.
- Adequate seed and fertiliser stocks.
- Promotion of cotton and pulses.

Challenges

Agricultural Impact

- Delayed sowing of kharif crops such as:
- Paddy
- Soybean
- Maize
- Pulses
- Lower crop yields and farmer incomes.

Food Inflation

- Reduced production may raise prices of cereals, pulses, and vegetables.
- Could complicate inflation management.

Water Stress

- Lower reservoir inflows.
- Reduced groundwater recharge.
- Drinking water shortages in vulnerable regions.

Energy Sector Concerns

- Reduced hydropower generation.
- Greater dependence on thermal power, increasing fuel demand.

Climate Variability
- Increasing frequency of extreme weather events.
- Higher unpredictability due to climate change and ENSO interactions.

Rural Distress
- Employment losses and reduced rural consumption.
- Increased demand for government support and relief measures.

Way Forward
- Crop-wise contingency planning for affected districts.
- Promote drought-resistant and short-duration crop varieties.
- Ensure timely availability of seeds, fertilisers, and insurance support.
- Expand irrigation and water conservation measures.
- Strengthen weather advisories and district-level monitoring.

Medium- and Long-Term Measures
- Climate-resilient agriculture through diversification and precision farming.
- Expansion of micro-irrigation (drip and sprinkler systems).
- Improved reservoir management and groundwater recharge.
- Greater use of AI, satellite data, and advanced forecasting.
- **Strengthening schemes such as:**
    - PMFBY (Pradhan Mantri Fasal Bima Yojana)
    - PMKSY (Pradhan Mantri Krishi Sinchai Yojana)
- Promote less water-intensive crops and sustainable farming practices.

Conclusion
The 35% rainfall deficit, the delayed onset of the southwest monsoon, and the arrival of a powerful El Niño pose risks to agricultural productivity, water availability, and the inflation rate. Even though the government is well prepared to handle this situation due to adequate water reserves, immediate and future measures are needed to protect India from potential repercussions.

2. GRAPES-3: A Cosmic-Ray Tracker

Why in the news?
Researchers from India and Japan used the Gamma Ray Astronomy PeV EnergieS phase-3 (GRAPES-3) telescope to analyse 22 years of muon data, enabling real-time monitoring of changes in the Earth's upper atmosphere.

What is GRAPES-3?
- GRAPES-3 (Gamma Ray Astronomy PeV EnergieS phase-3) is a muon telescope and cosmic-ray observatory located at Ooty, Tamil Nadu.
- It detects muons, rather than visible light.
- It is designed to study Cosmic rays, Solar magnetic fields, Space weather, and Atmospheric processes.

What are Muons?
- Muons are high-energy subatomic particles produced when cosmic rays collide with atoms in the Earth's upper atmosphere.

- They can penetrate deep into the Earth's surface due to their high energy.

How does GRAPES-3 Work?

- Comprises 16 detector modules.
- Each module contains 232 proportional counters filled with argon-methane gas and a tungsten wire.
- Passing muons generate electrical pulses, recorded as "hits."
- Four layers of detectors arranged at right angles help determine the trajectory and angle of incoming muons.
- Reinforced concrete layers filter out low-energy particles, allowing only high-energy muons to be detected.

Significance

- Enables real-time monitoring of upper atmospheric temperature changes.
- Helps study the Sun's magnetic field and space weather.
- Improves understanding of cosmic-ray interactions with Earth's atmosphere.
- Contributes to research in astroparticle physics and atmospheric science.

Value Addition

- Cosmic Rays: High-energy charged particles originating from outer space.
- Space Weather: Variations in the space environment caused by solar activity that can affect satellites, communication systems, and power grids.

Way Forward

Strengthen Multi-disciplinary Research

- Promote collaboration among atmospheric scientists, astrophysicists, and climate researchers.

Expand Space Weather Monitoring
- Integrate GRAPES-3 data with ISRO and global space weather networks.

Improve Predictive Models
- Use AI and machine learning to analyse long-term muon datasets.

Develop Indigenous Astroparticle Infrastructure
- Establish more advanced observatories and detectors.

Enhance International Collaboration
- Deepen cooperation with Japan and other countries in high-energy astrophysics.

Conclusion
The GRAPES-3 telescope is an important step forward in the field of astroparticle science in India. The use of muons as natural detectors makes it a unique method for tracking atmospheric conditions and space weather. The discoveries made by the telescope enhance the expertise in India regarding fundamental physics, climatology, and space science.

3. The U.S.-Iran ‘peace deal’ confronts spoiler Israel

Why in the news?
A U.S.-Iran peace treaty can be seen as a possible milestone in overcoming the long-standing hostility between the two countries. Nonetheless, the successful establishment of such an accord may depend on how Israel, which has been against any closer ties between the two countries, would react.

Background
Evolution of U.S.-Iran Relations
- Relations deteriorated after the **1979 Iranian Revolution** and the hostage crisis.
- Decades of sanctions, proxy conflicts, and military tensions followed.
- In 2015, the **Joint Comprehensive Plan of Action (JCPOA)** limited Iran's nuclear programme in exchange for sanctions relief.
- The U.S. withdrew from the agreement in 2018.
- Recent diplomatic efforts have revived hopes for a broader understanding between Washington and Tehran.

Features
Diplomatic Engagement
- Aims to reduce hostility and military confrontation.
- Seeks greater regional stability in West Asia.

Nuclear Restraint
- Revives concerns about Iran's nuclear ambitions.
- Focuses on verification and confidence-building measures.

Economic Cooperation
- Potential easing of sanctions.
- Greater integration of Iran into regional and global economic systems.

Regional De-escalation
- Supports dialogue among regional actors.
- Encourages reduction of proxy conflicts.

Challenges
Israeli Opposition
Strong influence through:
- Strategic ties with the United States.
- Congressional support.
- Lobby groups such as AIPAC.

Trust Deficit
- Historical hostility between Iran and the U.S.
- Mutual suspicions over compliance.

Proxy Networks
- Hezbollah, Hamas, Houthis, and other groups continue to create instability.

Domestic Politics
- Political divisions in:
- United States.
- Iran.
- Israel.

Nuclear Concerns
- Verification and monitoring remain contentious issues.

Way Forward
Inclusive Regional Security Architecture
- Move from confrontation to cooperative security.

Revive Nuclear Diplomacy
- Strengthen safeguards and inspection mechanisms.

Address Palestinian Issues
- Pursue a two-state solution based on international law.

Promote Economic Interdependence
- Enhance regional trade and infrastructure connectivity.

Encourage Multilateral Dialogue
- Utilise forums involving Gulf countries, Iran, the U.S., and international organisations.

Conclusion
An enduring agreement between the U.S. and Iran can transform West Asia through the elimination of several decades of animosity within the region. Nevertheless, such an arrangement will be determined by addressing existing mutual distrust, taking into account the security interests of other parties like Israel. Peace in West Asia demands the transition from rivalries to cooperation.

4. Mohenjo-daro's "Dancing Girl": History, Identity and the Debate on Modesty

Why in the News?
The **National Council of Educational Research and Training (NCERT)** restored the original image of the iconic Mohenjo-daro bronze figurine in a **Class 9 textbook** after an earlier version had shaded its bare torso, reviving debates over cultural representation and historical interpretation.

Background
- The **"Dancing Girl"** is a bronze statuette discovered in 1926 at Mohenjo-daro, an important site of the **Indus Valley Civilisation (IVC).**
- It dates to around **2500 BCE** and is one of the finest examples of Harappan artistic and metallurgical excellence.
- The figurine is currently housed in the **National Museum, New Delhi.**

About the Figurine
- Height: 10.5 cm.
- Material: Bronze.
- Manufactured using the **Lost-Wax Casting Technique (Cire Perdue).**

Depicts a young female figure with:

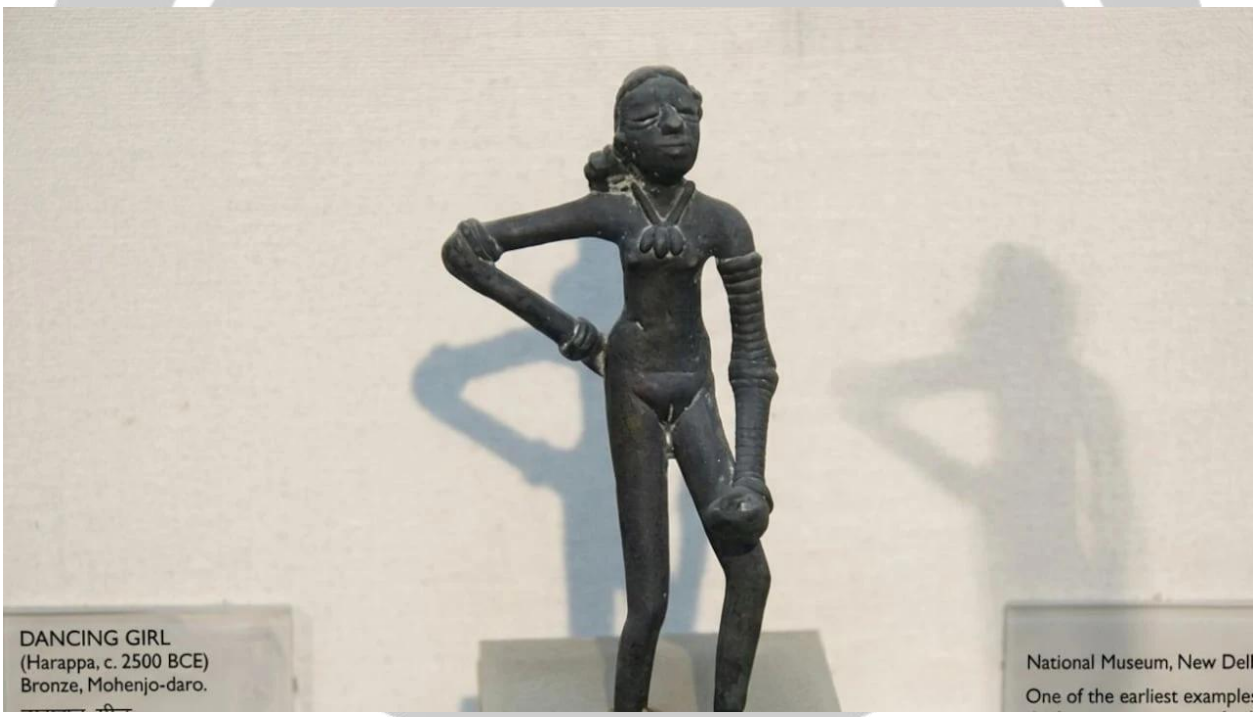
- Numerous bangles on one arm.
- Necklace and ornaments.
- Confident posture with one hand resting on the hip.
- It is among the **most iconic artefacts of the Indus Valley Civilisation.**

Why is its Identity Contested?

- Archaeologist John Marshall identified it as a **"nautch girl" (dancing girl)** based on posture and appearance.
- However, scholars argue there is no archaeological evidence that she was a professional dancer.
- Historian Upinder Singh notes that the figure "may not have been dancing at all."
- Archaeologist Gregory L. Possehl also questioned the dancer's interpretation.

Partition and Ownership Debate

- After Partition, around 12,000 Harappan artefacts in Delhi became subjects of dispute between India and Pakistan.
- Both countries agreed to a 50:50 division of artefacts from Mohenjo-daro and Chanhu-daro.
- Pakistan chose the "Priest King" figurine over the Dancing Girl, reportedly due to concerns over the latter's nudity.
- The Dancing Girl remains in India and is viewed by many scholars as part of the shared heritage of South Asia.



Value Addition

- **Lost-Wax Casting Technique:** A metal casting process in which a wax model is covered with clay; molten metal replaces the melted wax to create the final sculpture.
- The Dancing Girl is one of the most iconic artistic representations of the Indus Valley Civilisation.

Way Forward

Preserve Historical Authenticity

- Educational materials should present artefacts in their original form while providing appropriate context.

Promote Evidence-Based Archaeology

- Avoid imposing modern assumptions or colonial interpretations on ancient societies.

Recognize Shared Heritage

- Encourage cultural cooperation among South Asian nations regarding the Harappan civilisation.

Enhance Public Awareness

- Museums and textbooks should explain the historical and artistic significance of artefacts rather than censor them.

Encourage Multidisciplinary Research

- Combine archaeology, anthropology, history, and material science for a better understanding of the Indus Valley Civilisation.

Conclusion

The Dancing Girl of Mohenjo-Daro is not merely an artefact but represents the advanced technology and craftsmanship of the Indus Valley civilisation. Recent controversies over the image highlight how history tends to be constructed according to the colonial perspective and modern-day morality. It is necessary to preserve such artefacts in their original form along with developing a historical awareness about them, to protect our collective cultural heritage.

5. India-Japan Joint Crediting Mechanism (JCM) under Article 6.2

Why in the news?

India and Japan adopted the Rules of Implementation for the Joint Crediting Mechanism (JCM) on 8 June 2026, operationalising their 2025 Memorandum of Cooperation (MoC) under Article 6.2 of the Paris Agreement.

What is the Joint Crediting Mechanism (JCM)?

- The JCM is a bilateral framework through which India and Japan cooperate on projects that reduce or remove greenhouse gas (GHG) emissions.
- The resulting emission reductions are converted into Internationally Transferred Mitigation Outcomes (ITMOs), which can be used by both countries to meet their Nationally Determined Contributions (NDCs) under the Paris Agreement.

Objective

- Promote low-carbon technologies and investments.
- Enable international carbon trading.
- Contribute to global climate mitigation while ensuring sustainable development.

Background

Article 6.2 – Cooperative Approaches

- Allows countries to voluntarily exchange carbon credits through ITMOs.
- Requires transparency and accounting rules to avoid double counting.

Article 6.4 – UN-Supervised Carbon Market

- Establishes a centralised mechanism under UN oversight.
- Successor to the Kyoto Protocol's Clean Development Mechanism (CDM).

Article 6.8 – Non-Market Approaches

- Encourages climate cooperation without carbon trading.
- Includes technology transfer, adaptation support, and capacity building.

Features

Joint Committee

- Comprises representatives from both countries.
- Supervises implementation and approves methodologies and projects.

Transparent Project Approval

- Standardised procedures for project registration.
- Ensures credibility and accountability.

Third-Party Validation and Verification

- Independent entities validate projects and verify emission reductions.
- Enhances confidence in carbon credits generated.

Sustainable Development Safeguards

- Projects must support environmental and socio-economic objectives.
- Avoid adverse impacts on local communities.

National Registries

- Both countries maintain registries to track credits and transactions.
- Provides transparency and traceability.

Corresponding Adjustments

- Prevents the same emission reduction from being counted by both countries.
- Ensures environmental integrity.

How the JCM Works

- India and Japan identify eligible low-carbon projects.
- Japanese technology and investment support implementation.
- Emission reductions are measured and verified independently.
- Carbon credits (ITMOs) are generated.
- Credits are allocated between the two countries through agreed rules.
- Corresponding adjustments are made to avoid double counting.

Challenges

Robust MRV Framework

- Accurate measurement and verification systems are essential.

- Institutional and technical capacities need strengthening.

Environmental Integrity
- Credits must represent genuine and additional emission reductions.
- Preventing greenwashing remains critical.

Equitable Sharing of Benefits
- Allocation of carbon credits and revenues should be fair.
- Balancing national interests with investor expectations is necessary.

Alignment with National Priorities
- Projects should complement India's developmental goals.
- Avoid over-dependence on external technologies.

Regulatory and Administrative Complexity
- Requires strong coordination among ministries and agencies.
- Transparent accounting mechanisms are needed.

Way Forward
Strengthen MRV Systems
- Develop transparent and internationally accepted standards.

Build Domestic Carbon Market Infrastructure
- Integrate JCM experiences with India's Carbon Credit Trading Scheme.

Ensure Fair Benefit Sharing
- Establish clear rules for allocation of ITMOs and revenues.

Prioritise National Development Goals
- Focus on projects that contribute to energy security, employment, and sustainable growth.

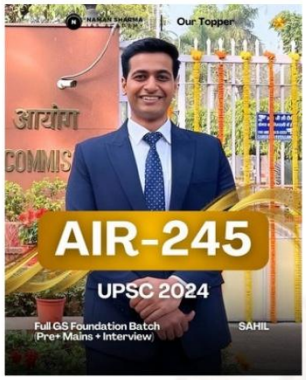
Expand International Climate Partnerships
- Use JCM as a model for cooperation with other countries.

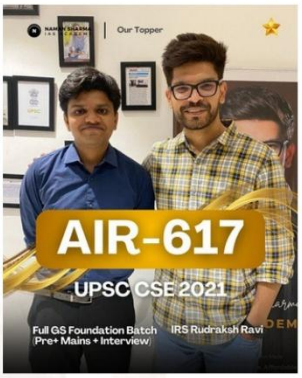
Enhance Capacity Building
- Train institutions and industries in carbon accounting and verification.

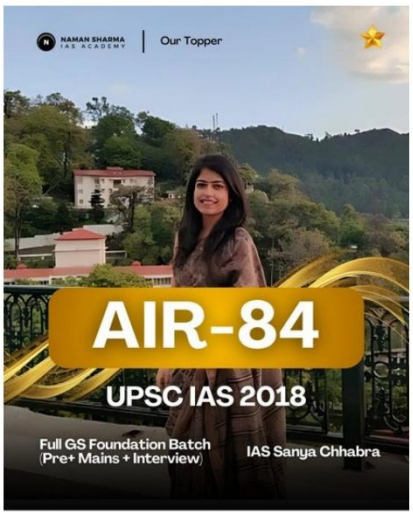
Conclusion

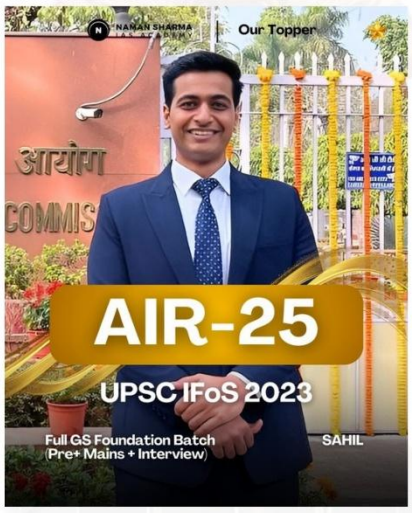
India-Japan JCM is one of the significant initiatives taken by India and Japan for implementing Article 6.2 of the Paris Agreement, which integrates climate change mitigation, technology transfer, and financial investments. Through the implementation of the mechanism, ITMOs would be developed and transferred, enabling India to take rapid strides toward decarbonization, enhancing its developing carbon markets ecosystem, and fulfilling its NDCs. Nevertheless, the importance of having robust MRVs and ensuring environmental integrity and equitable benefit sharing should not be underestimated.

Our Recent Toppers









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