

Daily Editorial Analysis 13 May 2026

May 13, 2026 • vajiramandravi.com



How India is Governing Its Water Resources

Context

- India's water crisis is often viewed as a problem of **water scarcity**, but the real challenge lies in ineffective **water governance** and inefficient resource management.
- Despite receiving nearly 4,000 billion cubic metres of annual rainfall, only a small proportion is properly stored and utilised.
- This contradiction highlights the gap between water availability and water management.
- As India works toward achieving **Sustainable Development Goal 6** and its vision of becoming a developed nation by 2047, strengthening the governance structure of water resources has become essential for sustainable growth and social well-being.

Enduring Paradox

- **Abundance of Rainfall but Limited Usable Water**
 - India possesses only about 4% of the world's **freshwater resources** while supporting nearly one-fifth of the global population.

- According to the **NITI Aayog Composite Water Management Index**, nearly 600 million people experience high to extreme water stress.
- Although annual rainfall is significant, only around 1,100 billion cubic metres of water are considered usable because of inadequate **storage infrastructure**, uneven rainfall patterns, and ecological limitations.
- **Declining Per-Capita Water Availability**
 - The growing pressure on water resources is reflected in the sharp decline in per-capita water availability.
 - After independence, water availability exceeded 5,000 cubic metres per person annually, but today it has fallen to nearly 1,400 cubic metres.
 - Rapid **urbanisation**, industrialisation, and population growth have intensified this crisis.
- **Overdependence on Groundwater**
 - India has become the world's largest user of **groundwater extraction**, accounting for nearly one-fourth of global usage.
 - Groundwater has supported **agriculture**, food production, and rural livelihoods, but excessive extraction has caused falling water tables in many regions.
 - This growing dependence reveals weak regulation and unsustainable patterns of consumption.

Institutional Structure of India's Water Governance

- India's water governance system operates through a complex **federal structure** involving the Union government, State governments, and local bodies.
- The **Ministry of Jal Shakti** functions as the central authority responsible for water resources, drinking water supply, and sanitation.
- The **Central Water Commission** manages surface water planning, flood control, and river basin development, while the **Central Ground Water Board** monitors groundwater resources and promotes sustainable aquifer management.
- However, most water-related responsibilities, including irrigation and water supply, fall under State jurisdiction.
- This decentralised structure often creates coordination problems, overlapping responsibilities, and fragmented policymaking.

Major Government Initiatives

- **Jal Jeevan Mission**
 - The Jal Jeevan Mission, launched in 2019, aims to provide functional tap water connections to rural households.
 - The mission has been extended until 2028 to achieve universal rural coverage.
- **Atal Bhujal Yojana**
 - The Atal Bhujal Yojana promotes participatory groundwater management through community-based water budgeting and monitoring in water-stressed areas.
- **Pradhan Mantri Krishi Sinchayee Yojana**

- The Pradhan Mantri Krishi Sinchayee Yojana encourages micro-irrigation and efficient agricultural water use.
- Since agriculture consumes the largest share of India's freshwater resources, improving irrigation efficiency is essential.

- **Urban Water Management and River Restoration**

- Urban water challenges are addressed through the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), which focuses on water supply systems, sewage treatment, and wastewater reuse.
- Similarly, the Namami Gange Programme combines pollution control, ecological restoration, and sewage treatment in the Ganga basin.

The Path Forward: A Circular Water Economy

- **Need for Sustainable Water Management**

- India's future water strategy increasingly focuses on building a circular water economy based on conservation, recycling, and efficient utilisation of resources.
- Expanding **wastewater recycling** in cities can reduce pressure on freshwater resources, while better crop selection and improved irrigation practices can increase agricultural productivity.

- **Role of Technology and Public Participation**

- Technological innovation, scientific planning, and community participation are crucial for ensuring **water sustainability**.
- Efficient governance systems, stronger regulations, and improved infrastructure can help transform India's water economy from one driven by scarcity and overexploitation to one based on sustainability and resilience.

Conclusion

- **India's water crisis is fundamentally a challenge of governance** rather than merely a shortage of water resources.
- Weak institutional coordination, excessive dependence on groundwater, and inefficient management have intensified the crisis despite abundant rainfall.
- **Sustainable water governance**, scientific planning, efficient infrastructure, and active public participation are essential for securing India's future.
- Effective management of water resources will play a critical role in ensuring environmental protection, economic growth, and social equity in the twenty-first century.

How India is Governing Its Water Resources FAQs

Q1. Why is India's water crisis considered a governance issue?

Ans. India's water crisis is considered a governance issue because poor management and inefficient distribution of water resources create shortages despite adequate rainfall.

Q2. What is the role of the Ministry of Jal Shakti?

Ans. The Ministry of Jal Shakti is responsible for managing water resources, drinking water supply, and sanitation at the national level.

Q3. Why is groundwater extraction a major concern in India?

Ans. Groundwater extraction is a major concern because excessive use has led to declining water tables in many regions.

Q4. What is the aim of the Jal Jeevan Mission?

Ans. The Jal Jeevan Mission aims to provide functional tap water connections to rural households across India.

Q5. How can a circular water economy help India?

Ans. A circular water economy can help India by promoting wastewater recycling, efficient irrigation, and sustainable use of water resources.

Source: **The Hindu**

Managing Coexistence in Human-Wildlife Conflict Zones

Context

- Human-wildlife conflict (HWC) is not merely a conservation issue but a broader socio-ecological challenge driven by changing land use, livelihood pressures, and habitat disruption.
- As human activities increasingly transform natural ecosystems, encounters between people and wildlife are becoming more frequent and severe across the world.
- In India, such conflicts lead to hundreds of human deaths in elephant encounters and significant livestock losses due to predators.
- Similar trends in Africa, Southeast Asia, and Latin America highlight how habitat fragmentation, agricultural expansion, and dense human settlements overlapping with biodiversity hotspots make such conflicts increasingly unavoidable.

Human-Wildlife Conflict as a Sign of Ecological Imbalance

- Severe human-wildlife conflicts are concentrated in South and Southeast Asia, and sub-Saharan Africa.
- Countries such as India, Brazil, Indonesia, Kenya, and Tanzania face repeated conflicts involving elephants, big cats, and other large mammals.
- Habitat destruction through deforestation, road construction, and agricultural expansion disrupts wildlife movement corridors and natural habitats, forcing animals into human-dominated landscapes.
- Animal actions such as crop raiding, livestock predation, or scavenging near settlements are **not necessarily aggressive behaviour** but adaptive responses to shrinking habitats, declining prey, and ecological pressures.

- **Examples of Ecological Stress**

- Elephants enter farms when migration routes are blocked.
- Predators attack livestock when natural prey becomes scarce.
- Monkeys and wild boars exploit easily available food near forest boundaries.
- These behaviours reflect ecological imbalance rather than abnormal animal conduct.

• **Global Strategies for Coexistence**

- Several countries have adopted proactive coexistence models:
 - Botswana and Namibia use community-based wildlife management with local economic incentives.
 - Costa Rica integrates ecological corridors into national planning.
 - Finland combines wildlife monitoring with rapid compensation systems.
- **Common Features of Successful Models**
 - Effective human-wildlife conflict management generally relies on:
 - strong community participation,
 - reliable economic compensation, and
 - ecological data-driven planning.
 - These approaches treat conflict as a shared management challenge rather than simply a law-and-order issue.

Human-Wildlife Conflict in India: Key Challenges and Solutions

- India has adopted several measures to address human-wildlife conflict, including compensation schemes, technological interventions such as solar fencing and early-warning systems, and legal protections for wildlife conservation.
- Despite these efforts, challenges remain in:
 - timely compensation payments,
 - broader coverage for affected communities,
 - easier access for marginalised groups, and
 - better coordination in deploying technological solutions.

• **Need for Adaptive Policy Frameworks**

- India's wildlife laws have contributed significantly to conservation, but changing land-use patterns and growing human-wildlife interaction require more flexible, locally responsive governance approaches.
- Proposals such as fertility control for wild elephants have limited practical relevance in India, where elephant populations move across large, fragmented landscapes. Technical interventions alone cannot address the root causes.
- Sustainable solutions should focus on:
 - habitat restoration,
 - improving ecological connectivity, and
 - community-based conflict mitigation strategies.

- Experiences from Bhutan and Nepal show that community-managed forests, coordinated grazing, predator-proof livestock enclosures, and stable conservation funding can effectively reduce conflict.

The Way Forward in Human-Wildlife Conflict Management

- **Impact of Climate Change** – Climate change is expected to intensify human-wildlife conflict by altering food, water, and habitat availability, forcing both wildlife and human communities to adapt under increasing stress.
- **Need for a Balanced Approach** – Wildlife should not be viewed merely as a threat, nor should human livelihoods be ignored in the pursuit of conservation. A balanced coexistence-based approach is essential.
- **Key Policy Measures** – Effective conflict management requires:
 - securing wildlife corridors,
 - better land-use planning,
 - stronger and faster compensation systems, and
 - active community participation in conservation efforts.
- **Role of Education and Awareness** – Public awareness and education can help build greater tolerance, improve understanding of wildlife behaviour, and encourage community cooperation in conflict mitigation.
- **Conflict as a Structural Outcome** – Human-wildlife conflict is not an isolated anomaly but a predictable result of changing land use, habitat disruption, and resource pressures.

Goal: Sustainable Coexistence

- The objective should not be to eliminate conflict entirely, but to manage it through scientifically informed, socially equitable, and ecologically sustainable strategies that protect both people and wildlife.

Managing Coexistence in Human-Wildlife Conflict Zones FAQs

Q1. Why is human-wildlife conflict considered more than a conservation issue?

Ans. Human-wildlife conflict is a socio-ecological challenge driven by habitat fragmentation, agricultural expansion, changing land use, climate stress, and increasing overlap between wildlife habitats and human settlements.

Q2. What are the major causes of human-wildlife conflict in India?

Ans. Habitat loss, disrupted wildlife corridors, shrinking prey base, agricultural expansion, competition for water and food, and increasing human encroachment into ecological landscapes intensify conflict.

Q3. What lessons can India learn from other countries in managing human-wildlife conflict?

Ans. Countries like Botswana, Namibia, Finland, Nepal, and Bhutan show community participation, compensation systems, habitat connectivity, and ecological planning can effectively reduce conflict.

Q4. Why are technical solutions alone insufficient to address human-wildlife conflict?

Ans. Technical fixes like fencing or fertility control cannot solve structural issues such as habitat degradation, ecological imbalance, resource scarcity, and weak community-based conservation systems.

Q5. What measures are needed for sustainable human-wildlife coexistence?

Ans. Securing wildlife corridors, better land-use planning, faster compensation, ecological restoration, community engagement, awareness programmes, and climate-resilient conservation strategies are essential for coexistence.

Source: TH

Source: <https://vajiramandravi.com/current-affairs/daily-editorial-analysis-13-may-2026/>

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