Vindhyan Bloom

ISSN-2319-8478
Vol-15 Issue-3, June 2026

A Refereed Peer Review Research Journal

Vindhyan Bloom

ISSN-2319-8478 Vol-15 Issue-3, June 2026

Manuscript Information	*Research Paper*	*Paper No. VBRP-44*

Role of Indigenous Tribal And Folk Knowledge In Biodiversity Conservation And Environmental Sustainability

***Salma**, Research scholar, School of studies in Botany,Samrat Vikramaditya Vishvidyalay Ujjain*

***Manoj Kumar Sisodiya**, Assistant Professor, Government Girls PG College, Ujjain*

Abstract: Environmental sustainability is a major global concern due to climate change, biodiversity loss, deforestation, and resource depletion. Tribal and folk communities possess valuable traditional ecological knowledge that supports environmental conservation. This study highlights the role of indigenous communities such as the Khasi (Meghalaya), Apatani (Arunachal Pradesh), Bishnoi (Rajasthan), and Bhariya and Baiga (Madhya Pradesh) in biodiversity conservation, sustainable resource management, water conservation, and climate-adaptive practices. Their traditional knowledge contributes significantly to ecosystem resilience and environmental sustainability. The paper emphasizes integrating Indigenous Knowledge Systems with modern science to achieve sustainable development while preserving cultural heritage.

Keywords: Tribal knowledge, Folk knowledge, Environmental sustainability, Indian Knowledge System, Biodiversity conservation, Traditional ecological knowledge.

1. Introduction

For centuries, indigenous tribal and folk communities have lived in close harmony with nature and developed rich traditional ecological knowledge through observation and experience. This knowledge includes sustainable practices related to biodiversity conservation, forest protection, water management, traditional medicine, and eco-friendly agriculture. Such practices help maintain ecological balance and support environmental sustainability. The Indian Knowledge System also emphasizes the importance of coexistence between humans and nature. However, modernization, urbanization, and changing lifestyles are gradually leading to the loss of traditional knowledge systems. Therefore, preserving and integrating indigenous knowledge with modern environmental strategies is essential for biodiversity conservation, sustainable resource management, and long-term environmental sustainability.

2. Review of Literature

Several scholars have highlighted the importance of Indigenous Traditional Ecological Knowledge (TEK) in

ISSN-2319-8478
Vol-15 Issue-3, June 2026

biodiversity conservation and sustainable resource management. Tribal communities possess deep environmental knowledge gained through generations of interaction with nature.

Madhav Gadgil and Ramachandra Guha (1995) emphasized the role of tribal communities in sustainable forest management and biodiversity conservation through community-based practices.

Fikret Berkes (1999) described TEK as a valuable knowledge system that supports ecosystem management, wildlife conservation, and climate adaptation.

Vandana Shiva (1988) highlighted the contribution of traditional communities in protecting biodiversity, forests, and sustainable agriculture.

Darrell A. Posey (1999) recognized indigenous knowledge as an important resource for conservation biology and environmental planning.

Overall, the literature indicates that indigenous knowledge plays a significant role in environmental sustainability and biodiversity conservation.

3. Materials and Methods

3.1 Study Design

The present study is descriptive and analytical in nature and is based on secondary data sources. The study aims to examine the role of indigenous tribal and folk knowledge in biodiversity conservation and environmental sustainability through selected case studies from India.

3.2 Sources of Data

The study is primarily based on secondary information collected from various reliable academic and scientific sources. Relevant information was gathered from:

- Research articles published in peer-reviewed journals
- Books related to tribal ecology, biodiversity, and indigenous knowledge systems
- Government reports and publications on tribal affairs and environmental conservation
- Reports of international organizations such as UNESCO and Convention on Biological Diversity (CBD)

Case studies related to tribal communities and traditional ecological practices in India

3.3 Selection of Case Studies

Selected tribal communities from different ecological regions of India were considered to understand traditional environmental practices and their contribution toward sustainability. Communities such as the Bishnoi of Rajasthan, Baiga of Central India, Khasi of Meghalaya, Bhariya and Gond tribes of Madhya Pradesh, and Apatani tribe of Arunachal Pradesh were selected based on their significant contribution to biodiversity conservation, forest management, medicinal knowledge, and sustainable agriculture.

3.4 Method of Analysis

The collected information was analyzed using a qualitative and comparative approach. Different tribal practices related to biodiversity conservation, forest protection, traditional medicine, water conservation, and sustainable agriculture were systematically reviewed and compared to understand their ecological significance and contribution to environmental sustainability.

ISSN-2319-8478
Vol-15 Issue-3, June 2026

3.5 Scope of the Study

The study mainly focuses on indigenous tribal and folk knowledge systems in India and their role in promoting biodiversity conservation and environmental sustainability. It emphasizes selected real case studies and traditional ecological practices that contribute to sustainable resource management.
Writing

4. Role of Indigenous Tribal and Folk Knowledge In Biodiversity Conservation

Indigenous tribal and folk knowledge plays a crucial role in biodiversity conservation by promoting the sustainable use and protection of natural resources. Tribal communities conserve forests through selective harvesting, community-based resource management, and the preservation of sacred groves, which serve as refuges for diverse plant and animal species. Traditional agricultural practices such as mixed cropping, crop rotation, organic farming, and seed preservation help maintain ecological balance and genetic diversity. Indigenous water conservation techniques, including rainwater harvesting and traditional irrigation systems, ensure sustainable water management. Their ethnobotanical knowledge supports the conservation and sustainable use of medicinal plants. In addition, cultural practices such as totemism and taboos significantly contribute to conservation; totems create a spiritual bond between clans and particular plants or animals, discouraging their exploitation, while taboos restrict activities such as hunting, tree cutting, or resource extraction in certain areas or seasons, thereby protecting species and ecosystems. Thus, indigenous tribal and folk knowledge provides effective, sustainable, and culturally rooted approaches to biodiversity conservation.

5.Case Studies of Indigenous Tribal And Folk Knowledge In Environmental Sustainability In India

India possesses rich cultural and ecological diversity, where indigenous tribal communities have traditionally practiced sustainable environmental management. Various tribal groups across different ecological regions demonstrate how traditional ecological knowledge contributes to biodiversity conservation, forest protection, water management, sustainable agriculture, and ecological balance. The following case studies highlight the practical significance of indigenous tribal and folk knowledge in environmental sustainability.

5.1 Bishnoi Community of Rajasthan: A Model of Wildlife and Forest Conservation

The Bishnoi community of Rajasthan is globally recognized for its strong environmental ethics and commitment toward biodiversity conservation. Founded by Guru Jambheshwar (Jambhoji) in the fifteenth century, the Bishnoi community follows twenty-nine principles that emphasize environmental protection, wildlife conservation, and sustainable living.The community strictly prohibits tree cutting and hunting of animals. Species such as blackbuck, chinkara, and peacocks are protected as sacred animals within Bishnoi villages. One of the most significant examples of environmental sacrifice is the Khejarli Movement (1730), where Amrita Devi Bishnoi and more than

ISSN-2319-8478
Vol-15 Issue-3, June 2026

300 villagers sacrificed their lives to protect Khejri trees from being cut down by royal forces.

This case study demonstrates how cultural beliefs and community participation can contribute significantly to forest conservation and biodiversity protection. The Bishnoi model remains highly relevant in present-day environmental conservation efforts.

5.2 Bhil and Gond Tribes of Madhya Pradesh: Sustainable Forest Livelihood and Tendu Leaf Collection

The Bhil and Gond tribes of Madhya Pradesh possess extensive knowledge regarding sustainable forest resource utilization. One important livelihood activity among these tribal communities is the collection of tendu leaves, commonly used in the production of bidi.Tribal communities follow sustainable harvesting methods by plucking only mature leaves without damaging branches or uprooting plants. This practice ensures regeneration of vegetation and maintains forest productivity. The seasonal collection of tendu leaves provides employment opportunities, particularly for women and economically weaker households.

Since tribal livelihoods depend directly on forests, local communities actively participate in forest protection and prevention of illegal exploitation. This case demonstrates the interrelationship between sustainable livelihood generation and biodiversity conservation.

5.3 Baiga Tribe of Central India: Traditional Medicinal Knowledge and Forest Conservation

The Baiga tribe, mainly found in Madhya Pradesh and Chhattisgarh, is widely known for its extensive ethnobotanical knowledge and close association with forests. The Baiga people traditionally use medicinal plants for treating diseases such as fever, wounds, digestive disorders, skin infections, and respiratory illnesses.Baiga healers possess detailed knowledge regarding plant identification, medicinal preparation, and sustainable harvesting techniques. They generally collect medicinal plants carefully to avoid ecological damage and ensure regeneration.

The tribe also practices environmentally responsible forest use, emphasizing conservation rather than exploitation. Their traditional healthcare knowledge highlights the importance of biodiversity preservation for human well-being and sustainable healthcare systems.

5.4 Khasi Sacred Groves of Meghalaya: community-Based Biodiversity Conservation

The Khasi tribe of Meghalaya has preserved sacred groves through strong cultural and spiritual beliefs. Sacred groves are protected forest patches where tree cutting, hunting, and resource extraction are strictly prohibited.These groves function as biodiversity hotspots by conserving numerous rare and endemic species of plants, fungi, birds, and wildlife. Sacred forests also contribute to groundwater recharge, prevention of soil erosion, and climate regulation.The Khasi sacred groves represent an excellent example of community-based environmental governance where traditional beliefs successfully support biodiversity conservation without formal legal

ISSN-2319-8478
Vol-15 Issue-3, June 2026

5.5 Apatani Tribe of Arunachal Pradesh: Sustainable Agriculture and Water Management

The Apatani tribe of Arunachal Pradesh practices an advanced indigenous agricultural system that combines rice cultivation with fish farming. Their farming methods involve efficient irrigation channels and sustainable water management techniques.Unlike modern intensive farming systems, the Apatani agricultural model minimizes chemical use and promotes ecological balance. The integration of agriculture, aquaculture, and water conservation enhances productivity while maintaining ecosystem sustainability.This case study demonstrates how indigenous agricultural practices can contribute to food security, water conservation, and climate resilience.

6. Key Insights From Case Studies

- ➢ Indigenous communities integrate cultural beliefs, ethics, and traditional knowledge to ensure protection of forests and wildlife.
- ➢ Resource use is regulated through customary practices that prevent overexploitation and support natural regeneration.
- ➢ Livelihood activities are closely linked with conservation, creating a balance between economic needs and ecological protection.
- ➢ Traditional healthcare systems depend on biodiversity and encourage sustainable use of medicinal plants.
- ➢ Community-managed systems such as sacred groves effectively conserve rare species and maintain ecosystem services.
- ➢ Indigenous agricultural practices show efficient use of land and water while maintaining ecological stability.

Overall, these case studies demonstrate that traditional knowledge systems are practical models for long-term environmental sustainability and biodiversity conservation.

7. Challenges in Preserving Indigenous Tribal and Folk Knowledge

- Despite its importance, indigenous tribal and folk knowledge faces several challenges due to modernization, urbanization, and environmental changes.
- Modernization and urbanization reduce dependence on traditional ecological practices.
- Cultural erosion leads to loss of traditional beliefs and practices among younger generations.
- Deforestation, mining, and habitat loss threaten natural resources linked to tribal livelihoods and knowledge systems.
- Lack of proper documentation increases the risk of irreversible knowledge loss.
- Commercial exploitation occurs without recognition or benefit-sharing for indigenous communities.

8. Policy Implications and Future Strategies

- Documentation of traditional knowledge is essential to prevent its loss.
- Environmental education should include indigenous ecological wisdom.

ISSN-2319-8478
Vol-15 Issue-3, June 2026

- Active participation of tribal communities should be ensured in conservation programs.
- Legal protection is needed to prevent misuse of traditional knowledge.
- Integration of indigenous knowledge with modern science can improve sustainability outcomes.
- Government support is necessary to strengthen and protect tribal conservation practices**.**

10. Conclusion

Tribal and folk knowledge represents an invaluable source of ecological wisdom that can contribute significantly to environmental sustainability. Indigenous communities have demonstrated sustainable approaches to forest management, biodiversity conservation, water management, traditional medicine, and agriculture for centuries.

The Indian Knowledge System emphasizes harmony between humans and nature, making tribal ecological knowledge highly relevant in addressing present environmental crises. However, modernization, cultural erosion, and environmental degradation threaten the survival of traditional practices.Therefore, preserving tribal and folk knowledge is not only important for cultural heritage but also essential for sustainable environmental management. Integrating indigenous ecological wisdom with modern scientific approaches can provide innovative solutions for achieving sustainability and ecological balance.

11. References

1. M. Gadgil and R. Guha, Ecology and Equity: The Use and Abuse of Nature in Contemporary India. New Delhi, India: Oxford University Press, 1995.
2. F. Berkes, Sacred Ecology: Traditional Ecological Knowledge and Resource Management. Philadelphia, PA, USA: Taylor & Francis, 1999.
3. V. Shiva, Staying Alive: Women, Ecology and Development. New Delhi, India: Kali for Women, 1988.
4. D. A. Posey, Cultural and Spiritual Values of Biodiversity. Nairobi, Kenya: UNEP, 1999.
5. J. S. Singh, “The biodiversity crisis: A multifaceted review,” Current Science, vol. 82, no. 6, pp. 638–647, 2002.
6. UNESCO, Indigenous Knowledge and Sustainability. Paris, France: UNESCO Publishing, 2017.
7. Convention on Biological Diversity (CBD), Traditional Knowledge and Biodiversity. Montreal, Canada: CBD Secretariat, 2011.
8. National Biodiversity Authority, Biodiversity Conservation in India. Chennai, India: NBA Publications, 2018.
9. P. D. Sharma, Ecology and Environment. Meerut, India: Rastogi Publications, 2019.
10. E. Odum and G. W. Barrett, Fundamentals of Ecology, 5th ed. Belmont, CA, USA: Brooks/Cole, 2005.
11. R. K. Gupta, Environmental Studies. New Delhi, India: Atlantic Publishers, 2016.
12. M. Gadgil and V. D. Vartak, “Sacred groves of India,” Economic and Political Weekly, vol. 11, no. 25, pp. 1523–1528, 1976.
13. R. Guha, Environmentalism: A Global History. New Delhi, India: Oxford University Press, 2000.

ISSN-2319-8478
Vol-15 Issue-3, June 2026

14. S. K. Jain, Medicinal Plants. New Delhi, India: National Book Trust, 1991.
15. R. K. Bhattacharya, Tribal Culture and Environment. New Delhi, India: Mittal Publications, 2005.
16. Ministry of Tribal Affairs, Government of India, Annual Report 2022–23. New Delhi, India, 2023.