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Indian Knowledge Systems (IKS) and Environmental Sustainability: Integrating Tradition with Sustainable Development Goals (SDGs)

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Abstract
This paper critically examines Indian Knowledge Systems (IKS) in the context of environmental sustainability, emphasizing their relevance to global frameworks like the United Nations Sustainable Development Goals (SDGs). It explores how ancient Indian practices in water conservation, agriculture, architecture, biodiversity preservation, and ethical environmentalism contribute to sustainable development. Furthermore, it critiques the Eurocentric orientation of global environmental governance, particularly in the context of the Sustainable Development Goals (SDGs) and argues for the recognition and adoption of Indian Knowledge Systems (IKS) in academic and policy discourse. Through historical examples, contemporary applications, case studies, and a critical policy analysis, the paper highlights epistemic richness of IKS as a foundation for sustainable development and a strategy for achieving ecological resilience.

Keywords: UN, SDGs, IKS, environment sustainability, indigenous knowledge, policy

Introduction
Environmental sustainability has emerged as one of the most urgent global imperatives of the twenty-first century. The Sustainable Development Goals (SDGs), adopted in 2015 by the United Nations, provide a framework for achieving a balanced development model that incorporates environmental, economic, and social objectives (United Nations, 2015). However, in its conceptualization and implementation, the environmental and policy discourses prioritize Eurocentric, technocratic approaches, while overlooking indigenous knowledge systems (Shiva, 2005) [19] like Indian Knowledge Systems (IKS) [1].
Indian Knowledge Systems (IKS), deeply embedded in ancient philosophical, religious, and cultural traditions, offer sustainable, ethical, and holistic solutions for environmental management that resonate profoundly with SDG targets (Mohanapriya & Suriya, 2025). It reflects a harmonious relationship between humans and nature, not merely as resource users but as participants in a cosmic ecology (Baig, 2024) [4].

This paper aims to answer the following research questions:
- How do Indian Knowledge Systems (IKS) support and align with specific SDGs related to environmental sustainability?
- What are the mechanisms through which IKS can be integrated into modern environmental policies and practices?
- How do traditional Indian environmental frameworks compare with and challenge Eurocentric environmental paradigms, particularly in the context of SDGs?

[1] Indigenous Knowledge Systems and Indian Knowledge Systems, though closely related, are distinct concepts. Broadly, Indigenous Knowledge Systems encompass the traditional knowledge held by local and indigenous communities across the globe. In contrast, Indian Knowledge Systems refer specifically to the intellectual and cultural traditions that have developed within the Indian subcontinent. In this sense, Indian Knowledge Systems can be seen as a subset of the broader category of Indigenous Knowledge Systems, representing the unique heritage and wisdom of India.

Conceptual framework: Intersection of IKS, SDGs, and Theoretical Lenses

This research is anchored in a theoretical and conceptual framework that critically analyses the Sustainable Development Goals (SDGs) through the lens of Indian Knowledge Systems (IKS), drawing on decolonial theory [2], ecofeminism [3], and political ecology [4]. Rather than treating IKS as supplementary to global sustainability discourse, this framework positions IKS as a foundational epistemology capable of interrogating the assumptions, silences, and power structures embedded within the SDGs (Mignolo & Escobar, 2010) [17]. Decolonial theory provides the lens to challenge the epistemic dominance of Western frameworks, revealing how SDG narratives often universalize development while marginalizing indigenous worldviews.

Ecofeminism further illuminates the gendered dimensions of both environmental degradation and knowledge marginalization, recognizing women's traditional ecological roles within IKS as central to sustainability (Kings, 2017; Salleh, 2017) [1, 18]. Political ecology helps unpack the socio-political dynamics that shape access, control, and governance of natural resources, offering tools to critique the technocratic and market-based orientation of many SDG targets. Conceptually, this framework elevates IKS as a living, dynamic system that not only preserves biodiversity and promotes ecological balance but also embodies ethical, spiritual, and communal values largely absent in global development agendas. Through this approach, the study aims to expose the limitations of dominant sustainability paradigms and foreground the transformative potential of indigenous knowledge in reimagining more equitable and plural futures.

A conceptual model is proposed below:-

Sustainable Development Goals	
Indian Knowledge Systems (IKS)	**Western Environmental Models**
Theoretical Lenses	**Theoretical Lenses**
Decolonial	Anthropocentric
Political Ecology	Technocentric
Ecofeminism	

This model illustrates how Indian Knowledge Systems can be integrated with SDGs through multiple theoretical perspectives, offering an alternative to dominant Western models.

Research Methodology

This study adopts a qualitative and conceptual research methodology grounded in a secondary literature review. It analyses textual sources including ancient Indian scriptures (e.g., Vedas, Upanishads, Puranas), philosophical commentaries, and legal codes (e.g., Manusmriti), as well as contemporary academic literature, policy reports, and case studies. The criteria for selecting texts and examples are based on their historical relevance, ecological content, regional diversity, and documented continuity or application in the modern era.

In selecting examples, preference was given to indigenous environmental practices that have been sustained or revived in contemporary settings, as well as those cited in academic and policy literature that demonstrate alignment with one or more of the SDGs (especially 6, 11, 12, 13, and 15).

The study uses a, decolonial ecological framework to critically examine how IKS challenge dominant Eurocentric paradigms and align with global sustainability goals. Decolonial environmentalism foregrounds indigenous epistemologies and critiques the legacy of colonial exploitation in shaping environmental narratives. This lens is particularly relevant in the context of IKS, which has often been marginalized by mainstream environmental governance.

Additionally, principles from political ecology are applied to explore how power dynamics, access to natural resources, and socio-environmental justice intersect with traditional knowledge systems. The paper also incorporates ecofeminism-especially relevant through the works of Vandana Shiva which highlights the interconnected oppression of nature and women and positions IKS as a site of resistance and regeneration. These combined theoretical perspectives offer a robust foundation for analyzing the ecological, cultural, and political relevance of IKS in sustainable development.

Environmental sustainable development goals

The Sustainable Development Goals (SDGs) constitute a comprehensive global framework for sustainable human development. Encompassing 17 goals and 169 targets, the SDGs aim to balance economic growth, social inclusion, and environmental protection (UN, 2015). Among these, environmental sustainability is a critical pillar, as the ecological integrity of the planet underpins all dimensions of human activity and survival. The importance of SDGs lies in their capacity to unify global development efforts around shared objectives while addressing systemic inequalities, climate threats, and ecological degradation. They serve as a universal roadmap for governments, civil society, and the private sector to work toward a more just and sustainable future. Conceptually, the SDGs emerged as a successor to the Millennium Development Goals (MDGs), broadening the scope to include planetary boundaries and long-term resilience. Rooted in systems thinking, they emphasize the interdependence among goals and uphold the guiding principle of "leaving no one behind." Environmental sustainability is explicitly articulated in several goals and implicitly intertwined with others, reflecting a holistic and integrated approach to sustainable development.

The environment-related SDGs-particularly Goals 6, 7, 12, 13, 14, and 15-form the ecological backbone of the 2030 Agenda. SDG 6 aims to ensure the availability and

[2] Decolonial theory critiques the lasting impact of colonialism, framing it as an ongoing system of power and knowledge rather than a past event. It challenges Western hegemony, aiming to decenter Eurocentric perspectives and uplift diverse, non-Western epistemologies. Decoloniality highlights the entanglement of colonialism, capitalism, and patriarchy in producing global inequalities, ultimately seeking to dismantle these structures and promote a more just and equitable world.

[3] Ecofeminism is a theoretical approach linking the exploitation of nature with the oppression of women, highlighting care ethics.

[4] Political ecology is an interdisciplinary approach that explores how political, economic, and social power structures shape environmental change and impact different communities. It examines issues of resource access, control, and distribution to uncover the root causes of environmental problems and promote more just, sustainable solutions.

sustainable management of water and sanitation, addressing critical issues like water scarcity, pollution, and unequal access. It promotes Integrated Water Resources Management (IWRM) as a strategic mechanism, though challenges such as data gaps and weak governance persist (UN-Water, 2020). SDG 7 emphasizes universal access to modern energy services and a global transition to renewable energy. It is foundational for decarbonization and energy justice, yet infrastructural and financial barriers, particularly in the Global South, remain significant (IRENA, 2021). SDG 12 targets responsible consumption and production, calling for reductions in ecological footprints and the adoption of circular economies and life-cycle approaches (UNEP, 2019). Despite its transformative potential, this goal requires profound systemic changes in production-consumption patterns.

SDG 13 focuses on urgent climate action, reinforcing the legal mandate of the Paris Agreement (2015). However, implementation has been uneven, with gaps in climate finance, adaptation capacity, and technology transfer (IPCC, 2021). SDG 14 addresses the conservation and sustainable use of oceans, combating overfishing, marine pollution, and acidification. As oceans are global commons, this goal necessitates robust regional and international cooperation, yet governance of the high seas remains weak (FAO, 2020) [8]. SDG 15 advocates for the protection and restoration of terrestrial ecosystems and biodiversity. It aligns with indigenous rights and sustainable forest governance but is often hindered by land-use conflicts and pressures from extractive industries (CBD, 2020) [6].

These environmental SDGs are closely linked to social and economic objectives. For example, clean energy (SDG 7) contributes to improved health (SDG 3), educational access (SDG 4), and gender equality (SDG 5). Nonetheless, trade-offs are inevitable. For instance, renewable energy infrastructure can sometimes conflict with land rights and local livelihoods. As such, policy coherence and inclusive governance are essential for optimizing synergies and mitigating tensions across goals.

Ancient Indian texts and ecological ethics

Ancient Indian texts offer a profound ecological jurisprudence that predates modern environmenttal law. The Isha Upanishad underscores the ethos of sustainable consumption, urging individuals to take only what is necessary while leaving the rest for others-a philosophy that aligns with modern concepts of resource equity and environmental justice (Isha Upanishad 1.1). The Manusmriti explicitly warns against polluting rivers or harming trees, establishing early environmental laws rooted in spiritual and ethical responsibility (Manusmriti 4.56). The Matsya Purana strongly condemns unnecessary tree felling, highlighting the ancient recognition of deforestation's detrimental effects (Matsya Purana 59.34).

From a decolonial environmentalism standpoint, these texts represent indigenous ecological thought systems that were systematically delegitimized during colonial rule, which imposed European legal frameworks and displaced local ecological governance. Reviving their ethical tenets is an act of reclaiming cultural and environmental sovereignty.

Political ecology helps contextualize these scriptures as mechanisms for regulating access to and distribution of natural resources in a way that preserved ecological balance. They reflect how spiritual and legal codes were once intertwined in a framework of community responsibility and environmental stewardship.

Ecofeminism sheds light on the gendered ethics embedded within these texts, many of which emphasize interdependence, compassion, and restraint-virtues historically associated with both ecological and feminine values. By centering the principle of Ahimsa and the sanctity of all life forms, these texts propose an ethic of care that is profoundly inclusive and life-affirming.

Together, these scriptures offer more than philosophical insights; they present a coherent framework of environmental ethics that remains relevant for constructing sustainable and socially just ecological futures.

Environmental sustainability in Indian knowledge systems

Environmental sustainability is a foundational element of Indian Knowledge Systems (IKS), deeply woven into its cultural, spiritual, and ecological ethos. Long before global frameworks such as the United Nations Sustainable Development Goals (SDGs) were established, Indian traditions embraced sustainable water management (SDG 6), resilient community living (SDG 11), responsible consumption (SDG 12), climate action (SDG 13), and ecosystem conservation (SDG 15). This was reflected in the Vedic and post-Vedic texts, which emphasized a sacred interdependence between humans and nature, embodied in the concept of Ṛta, or cosmic order, which advocated for balance in natural resource use (Dwivedi, 1993) [7]. From a decolonial environmentalism perspective, such traditions question the technology-driven and anthropocentric assumptions of Western models by highlighting the importance of relationships with nature and the role of indigenous communities in managing the environment.

Traditional water harvesting systems like johads, step wells, and erikattams in various regions of India ensured community-based and climate-resilient water security, directly aligning with the goals of clean water access and sustainable urban development; also reflecting the community control and equitable access inherent in these systems, in contrast to top-down water infrastructure. Similarly, indigenous agricultural practices such as crop rotation, organic fertilization with panchagavya, and the preservation of native seed varieties illustrate sustainable production and consumption patterns that align with SDG 12 (Sundaram & Ranganathan, 2015) [20]. These also resonate with ecofeminist values by emphasizing regeneration, interdependence, and resistance to industrial agriculture models that often exploit both women and ecosystems.

The conservation of sacred groves (devrai, kavu)-protected by spiritual beliefs-has maintained critical biodiversity corridors for centuries (Gadgil & Vartak, 1976) [10], directly supporting SDG 15. These groves function as informal ecological institutions rooted in cultural narratives, reflecting both political resistance to land commodification and a feminist ethics of care. In a modern context, these knowledge systems offer a time-tested, culturally rooted framework for addressing climate change (SDG 13) and creating community resilience and sustainability.

Analyzing IKS through these theoretical lenses reveals their potential not only as ecological solutions but also as socio-political strategies of resilience, identity, and justice. Recognizing and integrating IKS into contemporary policy

can strengthen India's commitment to the SDGs by aligning development with ecological and cultural integrity.

Recent empirical data further reinforces the value of IKS in contemporary environmental sustainability. For instance, in Alwar district, Rajasthan, the revival of over 1,000 traditional water harvesting structures such as johads by the NGO Tarun Bharat Sangh led to a 33% rise in groundwater levels and re-greening of 860 sq. km of land. This intervention restored seasonal rivers like Arvari, which had remained dry for decades (Agarwal & Narain, 1999) [2].

Similarly, the Zero Budget Natural Farming (ZBNF) [5] initiative in Andhra Pradesh, which draws on traditional agricultural knowledge, has been implemented across more than 700,000 farms by 2020. According to a study by the UN FAO (2020) [8], farmers practicing ZBNF reported a 50-100% increase in microbial activity in the soil, enhanced drought resistance, and input cost savings up to 90%, thus directly addressing SDG 12 and SDG 15.

IKS-based conservation of sacred groves in the Western Ghats also yields quantifiable benefits. A biodiversity survey conducted in Kerala's sacred groves showed they harbor up to 500 plant species per hectare-more than neighboring forest patches-making them vital micro-reserves for endemic and medicinal flora (Gadgil & Vartak, 1976) [10].

Thematic Case Studies

The following section discusses thematic case studies on specific SDGs (6, 11, 12, 13 & 15) which are related with different aspects of sustaibility in environment. It contain in detailed analysis of these SDGs from the vantage point of Indian Knowledge system.

- **Water Conservation and Management (SDG 6)**

Ancient Indian civilizations developed sophisticated water management techniques aligned with the environmental context of each region. Stepwells, also known as Baolis and Vavs, found predominantly in Gujarat and Rajasthan, harvested rainwater, providing critical water resources in semi-arid areas (Agarwal & Narain, 1999) [2]. These structures were architectural marvels designed to store large volumes of rainwater underground, reducing evaporation losses. Temple tanks, or Pushkarini, served not only as sacred spaces but also as practical reservoirs for water storage, ensuring that religious devotion was intertwined with ecological responsibility (Gadgil & Guha, 1992) [9]. Community-managed rainwater harvesting systems, such as Johads and Kunds in Rajasthan, played a vital role in groundwater recharge long before modern aquifer theories were conceptualized.

From a political ecology perspective, these traditional systems represent decentralized and equitable modes of water governance, rooted in community autonomy and customary ecological rights. This contrasts with modern centralized water infrastructures that often marginalize local participation and access. Decolonial environmentalism reframes these indigenous practices as epistemologically rich systems undermined by colonial hydraulic regimes that imposed large-scale canal and dam projects without contextual ecological sensitivity. Reclaiming and restoring such indigenous systems thus becomes a political act of environmental decolonization.

Additionally, ecofeminist perspectives bring attention to the role of women in water conservation practices-collecting, managing, and distributing water at the household and community levels. These practices have historically been invisible in mainstream narratives despite being central to ecological sustainability. By recognizing this labor as both ecological stewardship and a form of gendered resilience, ecofeminism restores value to women's contributions in water management.

- **Sustainable Agriculture and Soil Health (SDG 12, SDG 15)**

Agriculture in ancient India was characterized by a synergistic relationship between ecological stewardship and food security. The Rishi-Krishi method emphasized aligning agricultural cycles with lunar movements while utilizing organic inputs such as cow dung, compost, and herbal pesticides to maintain soil fertility and ecological balance (Shiva, 2005) [19]. Agnihotra farming further reflected an understanding of bio-energy principles, enhancing soil health through specific Vedic fire rituals believed to support beneficial microbial activity in the soil.

Modern evidence of traditional agricultural models thriving can be found in Andhra Pradesh's Zero Budget Natural Farming (ZBNF) initiative. Endorsed by the state government and practiced by over 800,000 farmers, ZBNF draws on principles of indigenous organic farming and demonstrates reduced input costs, improved soil fertility, and increased farmer incomes (FAO, 2020) [8].

From adecolonial environmentalism perspective, such indigenous agricultural systems counteract the legacy of colonial and Green Revolution-era interventions that imposed monocultures and chemical dependencies. Reviving IKS in agriculture thus serves as an act of ecological and epistemological reclamation.

Political ecology highlights how control over land, seeds, and farming knowledge is deeply political. These traditional practices decentralize power, restore community sovereignty, and resist corporate control in food systems.

Ecofeminist analysis further reveals how women have traditionally safeguarded seed diversity, maintained soil health, and nurtured agro-ecological knowledge. These gendered practices are crucial yet undervalued, and recognizing them is key to achieving both environmental and social justice.

- **Climate-Resilient Architecture (SDG 13, SDG 11)**

Ancient Indian architecture embodied principles of environmental responsiveness long before the advent of green building certifications. Vastu Shastra, an ancient science of architecture, advocated designs that harmonized human dwellings with environmental forces, optimizing sunlight, ventilation, and thermal comfort (Gadgil & Guha, 1992) [9]. Jaipur's Hawa Mahal exemplifies this architectural ethos through its intricate latticework that facilitates natural air circulation, reducing dependence on artificial cooling mechanisms.

In flood-prone regions like Assam, traditional homes known as Chang Ghar were constructed on stilts, mitigating flood damage and reflecting adaptive engineering solutions tailored to local climatic conditions (Agarwal & Narain, 1999) [2]. Similarly, in seismic-prone zones such as Himachal Pradesh, the Kath-Khuni architectural style used

[5] ZBNF is a chemical-free farming method relying on traditional Indian agricultural practices using local resources.

interlocking wood and stone frameworks, providing both insulation and resistance to earthquakes.

Viewed through the lens of decolonial environmentalism, these vernacular traditions represent architectural knowledge systems suppressed during colonial rule, which promoted standardized, resource-intensive designs divorced from local climatic realities. Reviving these forms is thus an act of cultural and environmental reclamation. Political ecology draws attention to the marginalization of traditional builders and local knowledge in urban planning and development policies, despite their demonstrated resilience in the face of natural hazards.

From an ecofeminist perspective, the domestic sphere-historically maintained by women-becomes a site of ecological knowledge and adaptive design. Women's roles in sustaining thermally efficient homes, choosing materials, and preserving spatial traditions reflect a form of gendered environmental stewardship often unrecognized in mainstream architecture discourse. Collectively, these frameworks reveal that indigenous architecture is not only environmentally sound but also politically subversive and socially inclusive.

- **Ethical Environmentalism (SDG 13, SDG 15)**

Indian religious and philosophical systems have historically conceptualized environmental stewardship as a moral and spiritual obligation. The Bhagavad Gita emphasizes the importance of living in harmony with nature, urging individuals to recognize their interconnectedness with the broader ecological community (Bhagavad Gita 3.12). Similarly, Jainism and Buddhism uphold the principle of Ahimsa, extending non-violence not only to humans but also to animals, plants, and ecosystems (Shiva, 2005) [19].

The Chipko Movement of the 1970s represents a modern manifestation of these ancient ethical principles. Rooted in the values of forest conservation found in Vedic literature, the movement saw women in Uttarakhand physically embrace trees to protect them from commercial logging, effectively merging ethical convictions with environmental activism (Gadgil & Guha, 1992) [9].

From a political ecology perspective, such grassroots resistance illustrates the power struggles inherent in environmental decision-making. The Chipko Movement, led largely by marginalized rural women, exposed the unequal distribution of ecological costs and access to forest resources. Through this lens, ethical environmentalism in IKS is not only spiritual but also political, asserting the rights of communities over commercial interests.

Decolonial environmentalism reveals how movements like Chipko challenge the colonial legacy of forest control and resource extraction, replacing it with indigenous moral economies grounded in custodianship and reciprocity. This ethical foundation stands in contrast to the commodification of nature inherent in many global climate policies.

From an ecofeminist perspective, the central role of women in these movements underscores how care for the environment is deeply gendered. Women's daily interactions with forests-for fodder, fuel, and food-make them both victims of ecological degradation and powerful agents of resistance. Their involvement in environmental ethics is not symbolic but grounded in lived experience and ecological knowledge. Thus, IKS-based environmental ethics offer an integrated model where cultural values, ecological sustainability, and social justice are inseparable.

Policy Implications and Implementation Pathways

To move beyond conceptual appreciation, Indian Knowledge Systems (IKS) must be institutionally embedded into formal environmental governance frameworks at local, national, and global levels. The following policy strategies are recommended:

- **Integration Into national climate and biodiversity frameworks:** National Action Plans on Climate Change (NAPCC) and Biodiversity (NBAP) should explicitly recognize and fund IKS-driven initiatives. Sacred groves, traditional water systems, and agro ecological zones should be mapped and integrated into climate resilience plans, especially in ecologically vulnerable zones.
- **Legal and institutional recognition of community stewardship:** Policies under the Forest Rights Act, the Panchayats (Extension to Scheduled Areas) Act (PESA), and the Biological Diversity Act must broaden their scope to formally recognize community-conserved areas rooted in spiritual and cultural tradition. This can include sacred groves, traditional seed banks, and temple-managed water bodies.
- **IKS in Urban and Infrastructure Planning:** Urban development schemes like the Smart Cities Mission and AMRUT should incorporate vernacular architecture and decentralized water harvesting designs (e.g., stepwells, erikattams). State building codes can provide incentives for climate-responsive design based on Vastu Shastra and indigenous materials.
- **Educational Reforms and Capacity Building:** The National Education Policy (NEP) 2020 offers a pathway to embed IKS in environmental and scientific curricula. Higher education institutions, especially agricultural and architectural universities, should develop interdisciplinary programs combining traditional and modern ecological knowledge systems.
- **Funding Mechanisms for IKS-Based Conservation:** Special funding allocations through ministries (MoEFCC, Ministry of Rural Development) and global climate finance platforms (e.g., GCF, GEF) should support community-led conservation of sacred spaces, indigenous farming methods, and water commons. Emphasis should be placed on co-design, participatory governance, and indigenous leadership.
- **Data, Certification, and Knowledge Repositories:** Establish multilingual digital repositories for IKS practices, with GIS-tagged examples of sacred groves, stepwells, and community farming models. These can inform planning and monitoring while ensuring communities retain rights over their knowledge. Certification programs co-created with communities can support the ecological marketability of IKS-derived practices and products (e.g., natural farming outputs, traditional medicines).

By translating the ethical and ecological foundations of IKS into enforceable, measurable, and scalable policy pathways, India can develop a sustainability model that is locally rooted, globally relevant, and socially just.

Critical Comparative Analysis: IKS and Western Environmental Strategies

The governance structures and ethical foundations of Indian Knowledge Systems (IKS) and Western environmental

models reveal fundamentally divergent approaches to sustainability. IKS prioritizes community-led governance**,** exemplified by the conservation of sacred groves (*devrai* or *kavu*), where biodiversity protection is embedded in cultural and spiritual practices (Gadgil & Vartak, 1976) [10]. These systems operate on principles of collective stewardship, with local communities-often women-playing central roles in resource management. In contrast, Western models tend to be state or corporate-controlled**,** relying on market-based mechanisms like carbon trading, which commodify nature by assigning financial value to ecosystems (e.g., forests as carbon offsets). While such tools aim to incentivize emissions reductions, they often marginalize indigenous knowledge and perpetuate inequities by enabling wealthier nations to outsource environmental responsibilities to the Global South.

Ethically, IKS is rooted in Ahimsa (non-violence)**,** extending moral consideration to all life forms, as seen in Vedic texts and traditions like Jainism (Shiva, 2005) [19]. This ethic promotes a reciprocal relationship with nature, where sustainability is a spiritual duty rather than a regulatory obligation. Western frameworks, however, frequently adopt an anthropocentric perspective, treating nature as a resource to be optimized for human benefit. For instance, carbon markets reduce ecological health to transactional metrics, disregarding cultural and spiritual dimensions of conservation (Gadgil & Guha, 1992) [9].

The key critique lies in this ontological divide: while IKS integrates ecological care into cultural identity (e.g., sacred groves as sites of worship *and* biodiversity hotspots), Western strategies risk reducing environmentalism to technical and economic calculations. A synthesis of both approaches-combining the accountability of market tools with the community ethics of IKS-could offer a more inclusive path forward.

While the integration of Indian Knowledge Systems with the SDGs demonstrates a strong degree of alignment, a more nuanced understanding also emerges through critical comparison with mainstream global strategies. For example, SDG 13 emphasizes climate action through mechanisms like carbon credits and emissions trading, which rely on market-based incentives and quantifiable carbon offsets. These systems, though effective in some contexts, often marginalize non-market-based conservation efforts and can perpetuate global inequities by allowing wealthier nations to outsource emissions responsibilities to the Global South.

In contrast, traditional Indian systems such as the conservation of sacred groves provide non-market, community-managed approaches to carbon sequestration and biodiversity preservation. These groves, protected by spiritual beliefs and local norms, serve as effective carbon sinks and cultural settings that preserve ecological integrity without commodifying nature. Empirical studies show that sacred groves often preserve more endemic and medicinal plant species per hectare than protected forests managed by state or private authorities (Gadgil & Vartak, 1976) [10].

From a political ecology perspective, this comparison reveals the underlying power asymmetries in global environmental governance-where Western policy tools dominate decision-making and financing structures. Decolonial environmentalism critiques how indigenous practices like sacred groves are rarely acknowledged in formal carbon accounting despite their ecological impact. Ecofeminist interpretations further highlight how women are central to the protection and ritual maintenance of these groves, emphasizing care-based ethics that are largely absent from profit-driven carbon markets.

Rather than framing IKS and Western sustainability models in opposition, a more fruitful approach involves mutual learning and synthesis. Western systems can benefit from the cultural embeddedness and community ethics of IKS, while traditional frameworks may also incorporate adaptive elements of scientific monitoring and policy integration. This pluralistic strategy enables a more inclusive, context-sensitive path to global sustainability.

Conclusion

Indian Knowledge Systems offer a comprehensive, time-tested, and community-rooted framework for environmental sustainability. Grounded in spiritual ethics, localized practices, and collective stewardship, IKS embodies a form of environmentalism that precedes-and in many ways complements the formal sustainability agenda represented by the SDGs.

When viewed through the combined lenses of decolonial environmentalism, political ecology, and ecofeminism, the significance of IKS becomes even more pronounced. These frameworks help unpack the epistemic injustices of colonial and postcolonial environmental governance, expose the power asymmetries embedded in current global policy models, and illuminate the gendered dimensions of ecological labor. Decolonial thought challenges the marginalization of indigenous practices, political ecology emphasizes equity and resource access, and ecofeminism centers care-based, relational ethics that underpin much of traditional Indian ecological wisdom.

Rather than treating IKS as merely cultural artifacts, this paper asserts that they represent viable, resilient strategies that can enrich and transform modern approaches to sustainability. Bridging ancient wisdom and contemporary policy will not only advance SDG objectives but also ensure a more just, inclusive, and ecologically sound future. Embracing IKS is therefore not simply a nod to tradition-it is a necessary paradigm shift toward planetary health and human dignity in the Anthropocene.

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