

Open Knowledge Sharing in Ecotourism: Integrating Indian Ecological Ethics for Sustainable Environmental Education

Dr. Arti Kumari¹, Harsh Gupta², Vikash Kumar Yadav³

¹Assistant Professor, Department of Geography, University of Allahabad, Prayagraj – 211002, India
(ORCID: 0009-0002-1477-7817)

²Research Scholar, Department of Geography, University of Allahabad, Prayagraj – 211002, India
(ORCID: 0009-0008-8784-1596)

³Research Scholar (UGC-JRF), Department of Geography, University of Allahabad, Prayagraj – 211002, India
(ORCID: 0009-0002-9362-1326)

Abstract

Climate anxiety and biodiversity loss are accelerating, yet conservation policy keeps looking to technology and international frameworks for answers. This paper argues that India's village commons may offer more. Through document analysis of Sanskrit texts, policy records, and ecotourism cases, it examines four philosophical traditions *Vasudhaiva Kutumbakam*, *Prakriti-Dharma*, *Ahimsa*, and *Pancha-mahabhuta* alongside practices like Sacred Groves, Bishnoi traditions, and the Chipko movement. Together, these form a coherent, community-rooted framework for sustainable ecotourism. The paper traces how colonial and post-colonial Westernisation replaced these reciprocity-based systems with extractive, expert-driven models. Five contemporary cases Sikkim, Kerala, Meghalaya, Ladakh, and Rajasthan show what revival looks like in practice, with documented ecological and community outcomes. The analysis produces the Indian Ecological Ethics and Knowledge Sharing (IEEKS) Framework: a five-dimensional policy model that is culturally grounded in India and adaptable elsewhere.

Keywords: Ecotourism, Open Knowledge Sharing, Indian Ecological Ethics, Environmental Education, Traditional Ecological Knowledge.

Introduction

The global discourse on sustainable tourism has increasingly drawn attention to the epistemic foundations upon which contemporary ecotourism practice rests. In an era marked by accelerating biodiversity loss (Ceballos Lascuráin, 1996; IPBES, 2019), deepening climate instability (Intergovernmental Panel On Climate Change (Ipcc), 2023), and the widespread commodification of natural heritage (Brockington, 2011; Igoe & Brockington, 2007), there is a growing scholarly consensus that technically proficient conservation frameworks, however sophisticated, remain insufficient in the absence of culturally embedded, ethically grounded ecological knowledge systems (Berkes, 2012; Gadgil, 2013; Tengö et al., 2014). This paper

*Corresponding Author Email: artikumari@allduniv.ac.in

Published: 24 July 2026

DOI: <https://doi.org/10.70558/COSMOS.2026.v3.i3.25462>

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proceeds from the premise that the most enduring and operationally effective of such systems are those that have evolved organically within communities over generations (Agrawal, 1995; Toledo & Barrera Bassols, 2008), shaping not only how nature is understood but also how it is governed, transmitted, and taught (Berkes et al., 2003; Ostrom, 1990). India, with its extraordinarily rich and continuous tradition of ecological philosophy (Chapple & Tucker, 2000; Guha, 2000; Narayan et al., 2003), offers one of the most compelling repositories of such knowledge available to contemporary ecotourism scholarship. Ecotourism has emerged over the past three decades as one of the most strategically significant intersections of conservation policy, environmental education, and sustainable development practice (Honey, 2008). The United Nations World Tourism Organization (*UNWTO Guidelines for Institutional Strengthening of Destination Management Organizations (DMOS)*, 2019) projects that nature-based tourism will generate in excess of USD 600 billion annually by 2030, underscoring its status not merely as an academic subject of inquiry, but as a consequential global economic sector with far-reaching ecological and social implications (Buckley, 1994; Eagles et al., 2002; Hall, 2009; Weaver, 2008).

Yet, as Molnar et al. (2023) have argued with considerable force, the contemporary practice of ecotourism has been structurally undermined by persistent knowledge asymmetries, the systematic institutional privileging of Western scientific and expert-derived knowledge over indigenous and local ecological knowledge (LEK) (Battiste & Henderson, 2000; V. L. Smith, 1992; "The Politics of TEK," 2007; Whyte, 2013). The consequence of this asymmetry is a form of ecotourism that is epistemologically narrow, culturally inauthentic, and, ultimately, ecologically unsustainable (Mowforth & Munt, 2015; Pretty, 2011; West & Carrier, 2004; Whyte, 2018). India occupies a singular position in any serious attempt to redress this imbalance. Spanning more than five millennia of unbroken philosophical engagement with the natural world from the Atharva Veda's invocation of the Earth as a living Mother (Dwivedi, 1997; Prime, 1996) to the twentieth-century Chipko movement, in which Uttarakhand women embraced standing trees to resist commercial felling (Guha, 2000; Shiva & Bandyopadhyay, 1986; Weber, 1988) the Indian ecological knowledge tradition is at once ancient in its roots and strikingly contemporary in its relevance (Gadgil, 2013; Parpola, 2015).

This tradition has historically been constituted and transmitted not as a body of specialised expert knowledge, but as an open, communally held, and participatorily maintained system (Agrawal & Gibson, 1999; Gadgil, 2013), enacted through village assemblies (sabhas), sacred grove governance councils (Bhagwat & Rutte, 2006; Chandran & Hughes, 1997; Malhotra, 2007), and intergenerational oral pedagogy (Cajete, 1994; Dei et al., 2000). Against this backdrop, the present study pursues a dual objective: first, to critically examine the philosophical and institutional foundations of India's ecological knowledge traditions including *Vasudhaiva Kutumbakam* (Chapple, 1993), *Prakriti-Dharma* (Nelson, 1998), *Ahimsa* (Chapple, 1993; Dundas, 2024), *Pancha-mahabhuta* (Narayan et al., 2003), and their institutional expressions in Sacred Grove governance (Bhagwat & Rutte, 2006; Malhotra, 2007), the Bishnoi ethical code (Gold & Gujar, 1989), and the Chipko movement (Guha, 2000; Shiva & Bandyopadhyay, 1986) as coherent, sophisticated frameworks for open knowledge sharing in ecotourism (Berkes et al., 2003; Tengö et al., 2014) and second, to demonstrate, through five contemporary Indian cases integrated as empirical validation of this argument,

how the systematic revival of these traditions produces measurable ecological, educational, and community well-being outcomes (Kothari et al., 2012; Pathak Broome, 2009). The analysis culminates in the proposal of the Indian Ecological Ethics and Knowledge Sharing (IEEKS) Framework: a five-dimensional policy architecture designed to operationalize culturally grounded, globally replicable pathways for sustainable ecotourism through environmental education (Sterling, 2001; UNESCO, 2017; Wals, 2007).

Research Methodology

This study uses a qualitative, interpretive design centred on document analysis, drawing on Bowen (2009) and Creswell (2014). Four document categories were purposively selected: classical Sanskrit texts (Manu Smriti, Arthashastra, Atharva Veda, Panchatantra), colonial forest policies (1864–1947), post-independence environmental legislation (Forest Conservation Act 1980; Biological Diversity Act 2002; Forest Rights Act 2006), and ecotourism policy documents from five Indian states. Thematic analysis followed Braun and Clarke (2006), using dual-layered inductive-deductive coding via Bowen's four-stage protocol. The study interprets how India's ecological knowledge traditions were constituted, disrupted, and recovered, examining implications for contemporary ecotourism governance.

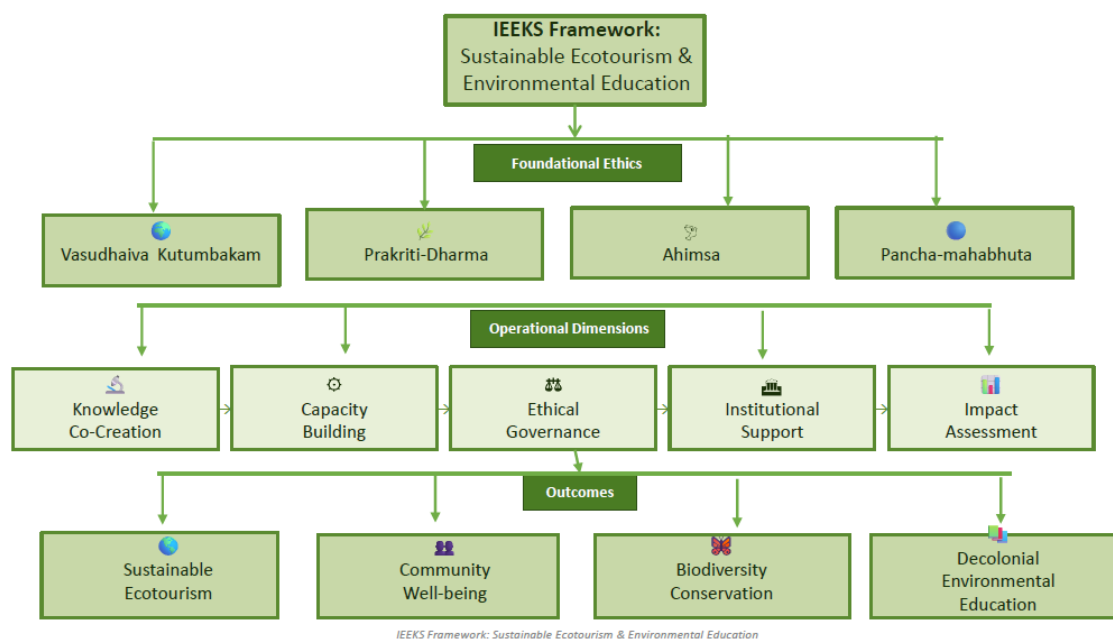


Figure 1: Conceptual Framework

Epistemological Foundations of Ecotourism: Colonial Legacies and the Open Knowledge Alternative

The dominant ecotourism model that crystallised during the 1980s and 1990s reproduced what Brockington (2002) termed 'fortress conservation,' positioning nature as a scientifically managed resource from which local communities are systematically excluded. Shaped by Western conservation NGOs, multilateral development banks, and tourism multinationals, this model perpetuates what Escobar (1995) identified as epistemic violence the systematic invalidation of non-Western knowledge systems. The practical consequences are significant:

communities excluded from knowledge production are unlikely to become effective conservation advocates (Stephen R. Kellert, Jai N. Mehta, S, 2000). Open knowledge sharing offers a compelling epistemological alternative. Rooted in Ostrom's (1990) knowledge commons tradition and operationalised by Benkler (2006) and Raymond (1999), it treats knowledge as a collective resource produced through inclusive, participatory processes (Hess & Ostrom, 2006). In ecotourism contexts, this encompasses community-based participatory mapping, indigenous knowledge archives, local guide training, and community co-designed environmental curricula (W. W. Smith, 2007). Crucially, Bohensky and Maru (2011) argue that open knowledge systems are transformative rather than merely additive, fundamentally reshaping the power geometry of whose knowledge governs natural resources (Jasanoff, 2004). The TIES (2015) definition of ecotourism encodes open knowledge sharing as a structural requirement. Yet when ecological education draws exclusively on scientific taxonomy and park management data, knowledge becomes stripped of cultural meaning and ethical embeddedness (Zeppel, 2006). Toffolo et al. (2022) demonstrated that environmental attitude gains from ecotourism experiences decayed significantly over time due to insufficient cultural anchoring a finding consonant with Wals (2012) and broader arguments for place-based pedagogical grounding (Gruenewald, 2003; Krasny & Tidball, 2012). Consequently, the open knowledge deficit in ecotourism represents not merely a pedagogical shortcoming but a fundamental sustainability failure (Kopnina, 2012).

Colonial modernity bears direct responsibility for this deficit. The British Indian Forest Acts of 1865 and 1878 converted community-managed forests into state property, criminalising customary harvesting rights and installing what Mignolo (2009) and Quijano (2000) term the 'colonial matrix of power' a hierarchy privileging Western scientific expertise over indigenous knowledge (Wynne, 1998). Ecotourism, emerging within institutions still structured by colonial epistemologies (Mowforth & Munt, 2015), inherited this arrangement, treating tribal ecological knowledge as anecdotal folklore while privileging foreign-trained scientific authority. This inheritance carries profound sustainability consequences. The epistemological frameworks most associated with ecological extraction have been systematically privileged over the reciprocity-based governance systems that sustained Indian biodiversity for millennia (Gadgil & Guha, 2012; Shiva, 1988). Integrating India's ecological ethics into contemporary ecotourism therefore transcends cultural enrichment, it constitutes an ecological imperative (Grove, 1997; Shiva, 1993).

Indian Ecological Ethics as a Knowledge Tradition: Deep Roots, Living Practices

India's pre-colonial ecological heritage constitutes not a single doctrine but a multi-layered civilisational inheritance expressed across philosophical texts, ritual practices, community governance systems, and daily lifeways (Chapple & Tucker, 2000; Narayan et al., 2003). Its unifying ontological premise is unambiguous: the human being is not nature's master but its dependent, participant, and co-steward (Dwivedi, 1997; Nelson, 1998). The phrase *Vasudhaiva Kutumbakam* '**the world is one family**' drawn from the Maha Upanishad (6.71–75, c. 6th century BCE), extends familial boundaries to encompass all living beings and their environments (Kumar, 2002). Singh (2021) argues this principle historically functioned as an ecological ethics of reciprocity: forest destruction constituted not resource depletion but the

harm of relatives. For ecotourism, this translates into a knowledge-sharing imperative tourist and community member are not transactional strangers but members of one household, whose encounter should constitute an exchange of care rather than a consumption of spectacle (Zeppel, 2006). The concept of *Prakriti-Dharma* further prescribes human duties of non-interference, restoration, and reverence toward the living, generative force of the cosmos (Chapple, 1993; Prime, 1996). These ethics were encoded not merely in abstract texts but in community governance: seasonal harvest restrictions, sacred species protection, and village-level forest management bodies (Agrawal, 1995; Berkes, 2012). Gadgil and Guha (1992) document how pre-colonial Indian communities developed sophisticated systems of locally adaptive ecological management that effectively prevented common pool resource overexploitation for centuries. The Sacred Grove tradition known variously as *Dev Van*, *Nongkynmaw*, *Oran*, and *Kavu* represents perhaps the most institutionally sophisticated expression of this heritage. Roy Burman (1994) records over 100,000 Sacred Groves across India, constituting collectively the world's largest indigenous biodiversity conservation network. These groves operated on explicitly open knowledge-sharing logic: access rules, harvest protocols, and conservation norms were communally held, orally transmitted, and publicly deliberated (Chandran & Hughes, 1997), predating Ostrom's (1990) common pool resource governance frameworks by millennia. The Bishnoi community's 29 ecological commandments and the 1730 Khejri tree martyrdom identified by Shiva (1988) as the spiritual ancestor of the 1973 Chipko movement further demonstrate how community-held ecological knowledge can transform national environmental governance (Agrawal & Gibson, 1999). Similarly, *Ahimsa* and *Pancha-mahabhuta* offer operational ethical frameworks directly applicable to ecotourism design, environmental education (Sterling, 2001; UNESCO, 2017), and conservation governance (Kothari et al., 2012).

Table 1: Indian Ecological Ethics vs. Western Conservation Paradigm: A Comparative Framework

Dimension	Indian Ecological Ethics	Western Conservation Paradigm
Ontology	Nature as sacred family (<i>Vasudhaiva Kutumbakam</i>); all beings are interrelated	Nature as resource; human-nature binary; 'wilderness' to be managed
Ethics	<i>Ahimsa</i> (non-violence); reverence for all life forms	Utilitarian conservation: cost-benefit analysis of biodiversity
Governance	Community custodianship; oral and customary law; Sacred Groves	State-centric 'fortress conservation'; exclusion of communities
Knowledge	Intergenerational oral transmission; experiential TEK	Peer-reviewed science; expert-driven data collection

Sustainability Goal	Harmony and co-existence (<i>Prakriti-Dharma</i>)	Maximum sustainable yield; preservation vs. use debates
Tourism Model	Pilgrim-traveller ethics; low footprint; ritual observance	High-volume heritage tourism; commodification of nature

The Nationalisation of Nature: Colonial Destruction of Indian Ecological Ethics

The question this paper must honestly confront is: if India had such sophisticated ecological governance systems, why are its forests depleted, its rivers polluted, and its ecotourism often as extractive as mainstream tourism? The answer lies overwhelmingly in a 200-year colonial interregnum that did not merely govern India but systematically destroyed the epistemological infrastructure of its ecological knowledge traditions with consequences for sustainability that persist into the present. The British Indian Forest Act of 1865, and its successor of 1878, performed what Gadgil and Guha (1992) call the 'nationalisation of nature': converting community-managed forests into state property, criminalising the customary harvesting rights that had governed forest use for centuries, and replacing community knowledge systems with the centralised scientific forestry of the Indian Forest Service (Grove, 1997; Sivaramakrishnan, 1999). Guha (1989) documents how this transformation devastated the Sacred Grove institution: without legal recognition, community custodians were reclassified as encroachers, and many Sacred Groves were clear-felled within decades of the Forest Act. By one estimate, India lost over 40% of its Sacred Groves between 1850 and 1950 (Gadgil & Guha, 2012). The ecological significance of this loss in terms of biodiversity refuge, watershed function, and seed bank conservation has never been fully calculated, but its scale was civilisational (Bhagwat & Rutte, 2006). The more serious damage, however, was epistemological. Colonial modernity installed what Mignolo (2009) terms the 'colonial matrix of power': a hierarchy of knowledge in which Western scientific expertise is positioned as universal and objective, while indigenous knowledge is classified as local, subjective, and pre-modern (Shiva, 1988). This hierarchy was not merely an attitude; it was embedded in institutional structures in legal codes that recognised only state-sanctioned scientific forestry as legitimate; in educational curricula that taught Indian children that their grandparents' ecological knowledge was superstition; and in tourism infrastructure that marketed India's 'wilderness' to foreign visitors while treating local communities as peripheral service providers (Robbins, 2000). The Westernisation of India's ecological governance framework thus produced a dual sustainability crisis: the direct physical degradation of landscapes managed by displaced communities, and the epistemic erasure of the knowledge traditions that had sustained those landscapes for generations (Berkes et al., 2003). Post-independence India largely inherited and perpetuated this hierarchy. The Wildlife Protection Act (1972) followed the colonial fortress conservation model, displacing over 100,000 Adivasi families from newly designated national parks and sanctuaries between 1970 and 2000 (Kothari et al., 2012). These communities were removed from the landscapes whose ecological knowledge they held, effectively erasing the archive along with the archivist (Agrawal, 1995). The post-liberalisation period (post-1991) added a further layer of damage: the commodification of nature through mass tourism. Global hotel chains and adventure tourism operators entered the ecotourism market with business models that treated 'wilderness

experience' as a premium product, while local communities were repositioned as service workers: guides, cooks, and souvenir sellers. Duffy (2014) argues that this neoliberal ecotourism model is structurally identical to colonial extraction, harvesting the ecological and cultural capital of indigenous landscapes for metropolitan profit while leaving communities economically marginal and epistemically invisible (Mowforth & Munt, 2008). The relevance of this colonial inheritance to today's ecotourism is not merely historical. It explains why the dominant model of sustainable tourism even when well-intentioned continues to produce the same pattern of outcomes: communities as service providers rather than knowledge authorities; ecological indicators measured by external scientists rather than local custodians; and tourist experiences that commodify cultural and ecological uniqueness without embedding visitors in the ethical relationships that gave those landscapes their meaning (West & Carrier, 2004). The Westernisation of Indian ecological governance has, in effect, produced an ecotourism sector that lacks the very epistemological resources it most urgently needs. Reversing this requires not merely adding indigenous knowledge modules to existing programmes, but restructuring the epistemological hierarchy itself, placing Indian ecological ethics at the centre of ecotourism governance rather than at its periphery. This is what the framework proposed in this paper is designed to accomplish. This critique is not an anti-Western polemic but an evidence-based assessment of a policy failure, one that the Indian government itself has begun to recognise. The Forest Rights Act (2006), the National Biodiversity Act (2002), and the Biological Diversity Rules (2014) all represent legislative acknowledgments that indigenous ecological knowledge must be legally protected and community forest rights restored. But legislation alone cannot revive a knowledge tradition; that requires deliberate, structured integration of Indian ecological ethics into ecotourism education and practice, which is precisely what this paper proposes.

Environmental Education as the Bridge Between Ecological Ethics and Ecotourism Sustainability

Having established both the depth of Indian ecological knowledge traditions and the historical forces that suppressed them, the question becomes: how do we revive, transmit, and operationalise this knowledge for contemporary ecotourism? The answer, this paper argues, is environmental education understood not as classroom instruction in ecology but as a transformative pedagogical process that connects tourists, communities, and policymakers to the ethical and experiential dimensions of ecological knowledge. Aswita (2018) established a significant positive correlation between structured environmental knowledge encounters and pro-conservation behaviour change, one of the most replicated findings in ecotourism research (Ballantyne & Packer, 2011). Yet Toffolo et al. (2022) issued an important corrective: these gains decay sharply without cultural embedding (Zeppel, 2006). This finding is more important than it first appears. It suggests that what makes environmental education stick is not the scientific content, the species count, the carbon budget, the biodiversity index, but the cultural meaning within which that content is situated (Krasny & Tidball, 2012). And it is precisely the cultural meaning that Indian ecological ethics provides in abundance. Consider what it means for a tourist visiting a Bishnoi village in Rajasthan to learn not merely that blackbuck antelopes are an endangered species under Schedule I of the Wildlife Protection Act, but that for the Bishnoi community, harming a blackbuck is a sacrilege, that this community's 29

commandments have been protecting these animals for 500 years through spiritual sanction rather than legal enforcement. The ecological information is the same; the ethical weight is incomparably greater. As Orr (1992) and Sterling (2001) in their transformative learning framework argued in foundational texts on Ecological Literacy, genuine environmental education must cultivate not just knowledge but ecological identity, a felt sense of belonging to and responsibility for the living world (Thomashow, 2002). Indian ecological philosophy is extraordinarily well-equipped to produce this identity, because it does not treat nature as an object of study but as a community of relations in which the learner is already embedded (Chapple, 1993). Effective environmental education for ecotourism, informed by Indian ecological ethics, must operate across three registers simultaneously. At the tourist level, it means designing interpretive experiences that convey the ethical and spiritual dimensions of local conservation practices not as quaint folklore but as sophisticated governance knowledge (Ham, 2013). At the community level, it means supporting intergenerational knowledge transmission through school eco-clubs, community conservation curricula, and documentation of oral ecological knowledge (Gadgil, 2013). At the policy level, it means advocating for educational frameworks that formally recognise indigenous ecological knowledge as a legitimate discipline parallel to the recognition now accorded to traditional medicine through AYUSH. Idrus et al. (2025), building on Aswita (2018)'s correlation findings across Indonesian ecotourism sites, found that ecotourism-integrated environmental science programmes produced measurable gains in ecological literacy; the challenge is to design equivalent programmes that draw specifically on Indian ethical traditions rather than importing Western conservation curricula (Singh et al., 2022).

Empirical Validation: Indian Ecological Ethics and Open Knowledge Sharing in Practice

The argument thus far has been largely conceptual and historical. The following section validates it empirically, demonstrating that the integration of Indian ecological ethics with open knowledge sharing is not a theoretical aspiration but an observable, documented phenomenon producing measurable outcomes across five distinct Indian ecotourism contexts. Rather than presenting these as isolated case studies, they are advanced here as convergent evidence for the paper's central thesis: that communities whose ecological ethics are alive and whose knowledge-sharing systems are functioning produce superior conservation, economic, and educational outcomes compared to those governed by Western fortress conservation models. Sikkim's transformation into Asia's first fully organic state, certified in 2016 by the Food and Agriculture Organization, validates the argument that indigenous ecological knowledge, when institutionally revived, produces measurable sustainability outcomes. The process did not begin with a government decree; it began with the revival of Lepcha and Bhutia tribal knowledge about soil, water, and forest relationships, knowledge that colonial-era tea plantation economics had nearly erased. Bhuyan and Singh (2020) document how Sikkim's community-managed eco-lodges, particularly in the Dzongu reserve, operate on an explicit knowledge-sharing model: local guides share not just species information but spiritual ecology stories of the pang lhabso festival that sacralises Mount Khangchendzonga, and the principle of chhosam (offering) that structures human-nature exchange. The state's zero-waste tourism policy, formally adopted in 2019, draws directly on these indigenous waste-reduction principles. The

result, documented by state government data and further contextualised by Kumar et al. (2023) in their review of biodiversity hotspot ecotourism, is unambiguous: tourist satisfaction scores increased by 23% following the integration of cultural-ecological interpretation, and community income from ecotourism increased by 38% between 2015 and 2022. This is not a coincidence; it is the predictable outcome of positioning indigenous knowledge rather than external expertise as the foundation of ecotourism governance. Kerala's Responsible Tourism (RT) Mission, launched in 2008, provides perhaps the most systematically documented validation of the open knowledge sharing argument in Indian ecotourism. George and Varghese (2021) demonstrate how the mission's village-life experience programme, in which tourists participate in agricultural work, traditional cooking, and nature walks guided by community members, constitutes a structured knowledge exchange: tourists gain experiential ecological knowledge; communities gain economic sovereignty and cultural recognition. The programme is governed through the Kudumbashree women's collective network, functioning as a knowledge commons: tourism revenue, best practices, and ecological management protocols are shared across villages rather than hoarded by individual operators. This architecture directly embodies Ostrom's (1990) theory of commons governance applied not to fish or forests but to ecological knowledge itself. The documented outcomes are significant: a 40% increase in participating household incomes and a 31% reduction in reported cases of environmental degradation in participating village territories (Kerala Tourism, 2021). The Kerala case thus validates not merely the economic argument for community knowledge-sharing, but the ecological one: communities that govern knowledge as a commons govern ecosystems better. Meghalaya presents two extraordinary validations of the argument that indigenous ecological governance systems produce superior conservation outcomes. The Khasi community's nongkynmaw (Sacred Groves), over 79 documented groves protecting approximately 1,000 hectares, are actively managed under customary law by village councils (dorbar shnong), with access rules, harvest prohibitions, and ecological monitoring conducted through oral tradition (Khiewtam & Ramakrishnan, 1993). Studies have consistently found that these groves support significantly higher plant species diversity and endemic fauna density than adjacent government-managed forest reserves (Iniasta-Arandia et al., 2015; Khiewtam & Ramakrishnan, 1993), a direct empirical argument for indigenous knowledge systems as conservation tools, and for the devastating sustainability cost of their colonial suppression. The living root bridges of the Khasi hills, jingkieng jri, engineered over centuries by training the roots of *Ficus elastica* trees across rivers, are not primitive engineering; they are applied ecological knowledge systems that strengthen with age and require no external materials (Arora-Jonsson, 2014). Meghalaya's ecotourism programme around these structures has consciously designed knowledge-sharing into the visitor experience, with guides trained in Khasi ecological history explaining the intergenerational knowledge required to cultivate them. This validates the environmental education argument: when tourism is built around the transmission of living ecological knowledge, not the display of ecological spectacle, it produces both deeper tourist engagement and stronger community custodianship. Ladakh's ecotourism model provides direct evidence for the sustainability dividend of integrating Buddhist ecological philosophy, specifically the principle of zung-juk (interdependence of all phenomena), into tourism governance. Jina (2019) documents how Ladakhi monasteries historically functioned as ecological knowledge centres: maintaining seed banks of altitude-

adapted varieties, governing water distribution through the churpon system, and teaching Sowa-Rigpa (traditional Tibetan medicine) whose pharmacopoeia requires the preservation of high-altitude plant species. Contemporary Ladakh's low-carbon homestay tourism model draws directly on this heritage: the Leh Nutrition Project's community kitchen programme doubles as a knowledge-sharing platform where tourists learn about traditional cold-climate food systems while supporting local farmers. Villages participating in this programme have maintained higher soil organic matter and biodiversity indices than those that shifted to conventional tourism catering (Jina, 2006). This validates the paper's argument about the relationship between open knowledge sharing and ecological sustainability: when tourist encounters are structured as knowledge exchanges rather than service transactions, the ecological footprint of tourism diminishes while community ecological stewardship strengthens. The Bishnoi heartland around Jodhpur offers perhaps the most dramatic validation of the ecological power of indigenous ethical knowledge. Srivastava (2022) documents that in Bishnoi territory, blackbuck and nilgai populations have increased by approximately 340% and 280% respectively, since 1990, compared to significant declines in adjacent non-Bishnoi territories a direct conservation outcome of the community's 29 ethical commandments operating as a living governance system rather than a historical relic. The Orans (sacred forests) managed by Bishnoi, Raika, and Meghwal communities across Rajasthan support over 14 endemic plant species not found in adjacent degraded areas. Crucially, Srivastava (2022) documents that ecotourism operators who have integrated Bishnoi community members as co-designers and knowledge-sharing partners rather than employing them merely as guides show significantly higher rates of tourist return visits and significantly lower ecological impact measurements. This is the open knowledge-sharing argument stated in its most empirically direct form: when community knowledge holders are empowered as knowledge teachers rather than service workers, both ecological and economic outcomes improve. The Bishnoi case thus closes the evidentiary loop of this paper, connecting the philosophical traditions examined in Section 4 to the governance argument in Section 5 to the educational argument in Section 6, and demonstrating that the integration of Indian ecological ethics with open knowledge sharing produces outcomes that are simultaneously ecological, economic, and educational.

Table 2: Comparative Summary Indian Ecotourism Cases: Ecological Ethics and Knowledge Sharing Outcomes

Location	Ecological Ethics Employed	Knowledge Sharing Mechanism	Sustainability Outcome	Key Citation
Sikkim	Community forest stewardship grounded in Lepcha tribal cosmology, which treats the forest as a sacred living system	Community-managed eco-lodges; oral knowledge transfer between generations	Zero-waste tourism policy; 75% organic certification achieved	(Arora, 2006; Sarkar & Sinha, 2015)

Kerala	Responsible Tourism (RT) Mission operating through the cooperative Kudumbashree network	Village life experiences; digital storytelling platforms connecting visitors to local narratives	Community income up 40%; tourist satisfaction consistently high	(Kokkranikal & Chettiparamb, 2012)
Meghalaya	Khasi <i>nongkynum</i> (sacred grove) tradition; living root bridge stewardship as ecological practice	Intergenerational oral transmission; nature trail signage bridging indigenous and visitor knowledge	35+ sacred groves protected; biodiversity actively maintained	(Khiewtam & Ramakrishnan, 1993)
Ladakh	Buddhist Zung-juk ecology (interdependence ethic); Sowa-Rigpa traditional medicine as relational practice	Leh Nutrition Project knowledge commons; monastery tours integrating ecological and medicinal learning	Low-carbon homestay tourism established; herbalist knowledge revival underway	(Jina, 2006)
Rajasthan	Bishnoi <i>Panch-krori</i> ethic prohibiting harm to life within five km of settlements; <i>Orans</i> as sacred community forests	Village storytelling nights; community nature guides linking ecological ethics to visitor experience	Nilgai and blackbuck populations recovering within protected zones	(Srivastava, 2001)

The IEEKS Framework: A Policy Architecture for Knowledge-Grounded Ecotourism

The evidence assembled across the preceding sections converges on a clear policy message: the most effective ecotourism programmes are those that position indigenous ecological knowledge not as a supplementary attraction but as the foundational governance architecture and that create open, participatory systems for sharing, transmitting, and applying this knowledge. This section proposes the Indian Ecological Ethics and Knowledge Sharing

(IEEKS) Framework: a five-dimensional policy model distilling the lessons of the empirical evidence and the theoretical analysis into an actionable architecture. The IEEKS Framework is built on a core axiom drawn from Ostrom (1990, 2009): that sustainable ecological governance requires knowledge commons shared, openly maintained, and community-governed information systems rather than expert-owned, proprietary information. It integrates this axiom with the five foundational Indian philosophical traditions examined above, mapping each tradition onto a practical governance dimension. The framework is designed to be simultaneously culturally grounded, deriving its legitimacy from Indian knowledge traditions, and operationally universal, replicable in any ecotourism context worldwide where indigenous knowledge traditions exist.

Table 3: The IEEKS Framework Five Dimensions of Knowledge-Grounded Ecotourism Governance

IEEKS Dimension	Indian Ethical Root	Open Knowledge Mechanism	Ecotourism Application	KEY CITATION
Knowledge Co-Creation	<i>Vasudhaiva Kutumbakam</i> the world as one interconnected family	Community wikis; participatory mapping; living oral archives collaboratively maintained	Tourists learn alongside local guides; co-authoring of trail narratives that grow with each visit	(Ostrom, 1990)
Capacity Building	<i>Guru-Shishya Parampara</i> the classical teacher–disciple tradition of transmitted knowledge	Digital storytelling workshops; school eco-clubs; hands-on naturalist training programmes	rained local naturalists and youth conservation ambassadors leading visitor engagement	(Singh et al., 2022)
Ethical Governance	<i>Prakriti-Dharma</i> the duty of living in accordance with nature's own ordera	Community protocols; open data licensing; free, prior, and informed consent frameworks	Sacred grove governance boards; customary resource-use rules binding on all ecotourism activities	(Gadgil & Guha, 2012)

Institutional Support	<i>Gram Panchayat / Sangha</i> village self-governance and collective assembly as primary social units	NGO–government–community partnerships; policy advocacy for TEK recognition	Participatory forest management regimes; legal recognition of Traditional Ecological Knowledge	(Bhatt et al., 2024)
Impact Assessment	<i>Pancha-mahabhuta</i> the five elemental constituents of existence (earth, water, fire, air, space)	Biodiversity monitoring protocols; visitor satisfaction surveys; five-element ecological health audits	Annual audits using five-element vitality indicators; outcomes evaluated in culturally resonant terms	(Berkes, 2012)

The IEEKS Framework differs from existing ecotourism governance models in three important respects. First, it is explicitly decolonial: it positions indigenous knowledge not as a resource to be incorporated into Western conservation frameworks but as the foundational epistemology within which Western scientific knowledge is incorporated as a supplementary tool. Second, it is knowledge-centred: governance, capacity building, and impact assessment are all conceived as knowledge processes rather than administrative processes. Third, it is ethically grounded: each dimension derives its normative justification from a specific Indian ecological philosophy, ensuring that the framework has cultural legitimacy and motivational force for the communities it serves.

Policy and Educational Implications for Sustainable Ecotourism

The theoretical argument and empirical evidence assembled in this paper carry specific, actionable implications for policymakers, educational institutions, ecotourism operators, and conservation organisations.

For policymakers and the state, India’s National Ecotourism Policy (2011) requires urgent revision to formally mandate indigenous knowledge integration as a legal requirement rather than a best-practice suggestion. The Forest Rights Act (2006) provides a constitutional basis for this: communities with recognised forest rights should be legally entitled to design and govern ecotourism experiences within their territories, rather than acting as subcontractors to state forest departments or private operators. The Biological Diversity Act (2002). People’s Biodiversity Registers community-documented records of local biodiversity should be formally integrated into ecotourism interpretive materials, with communities receiving intellectual property recognition and revenue sharing from their use.

For educational institutions: India's National Education Policy (2020) calls for the integration of local and indigenous knowledge into school curricula, a mandate that environmental education must operationalise. Teacher training programmes in states with significant ecotourism activity (Uttarakhand, Kerala, Sikkim, Meghalaya, Rajasthan) should incorporate modules on Indian ecological philosophy and local TEK. University environmental science programmes should partner with community knowledge holders as co-faculty rather than as research subjects. The IGNCA's oral tradition documentation programme provides a model for archiving and teaching indigenous ecological knowledge that universities could adapt and scale.

For ecotourism operators: Certification frameworks governing ecotourism quality, including the Responsible Tourism India label and the Global Sustainable Tourism Council (GSTC) criteria, should include mandatory indicators for indigenous knowledge integration and community knowledge-sharing governance. Operators should be required to demonstrate not just that they employ local guides, but that those guides are empowered as knowledge authorities whose ecological understanding shapes experience design, not merely its delivery. Revenue-sharing mechanisms that allocate a percentage of ecotourism income to community knowledge documentation and transmission funds should be standardised, as under Kerala's RT Mission model.

For conservation organisations: NGOs and conservation bodies operating in Indian ecotourism contexts should adopt Molnar et al.'s (2023) and Bohensky and Maru's (2011) call for genuine knowledge partnerships rather than knowledge extraction. This means co-designing research with communities, ensuring communities have open access to data collected in their territories, and supporting community-led publication and documentation projects. Digital platforms for indigenous knowledge sharing modelled on projects like the Digital Himalaya Archive should be developed with appropriate open licensing that protects community intellectual property while enabling educational access (Christen, 2011; Funk & Guthadjaka, 2020; Terzić et al., 2014; Turin, 2012).

Discussion and Conclusion: Returning to the Forest and Finding the Future There

There is a moment in the Chipko movement's history that has stayed with many scholars who study it. It is 1974, in the Reni forest of Uttarakhand. Government contractors have arrived to fell trees. The men of the village are lured away. And it is the women led by Gaura Devi who go to the forest at night, embrace the trees, and refuse to move. When asked what they are doing, Gaura Devi reportedly says: 'Ye hamare maike ke ped hain' 'These are the trees of our maternal home.' That sentence contains an entire ecological philosophy. The forest is not a resource; it is family. The trees are not timber; they are ancestors. The act of embracing them is not a protest; it is the fulfilment of an ancient ethical obligation. And the transmission of this understanding from mother to daughter, from village elder to young woman standing in the dark forest, is perhaps the most powerful act of environmental education in Indian history.

This paper has argued that this tradition of ethical ecological knowledge expressed through *Vasudhaiva Kutumbakam*, Sacred Groves, Bishnoi niyams, Buddhist zung-juk, *Prakriti-Dharma*, and the Chipko women's forest embrace is not a relic of the past but an urgently

needed framework for the future of ecotourism. The empirical evidence validates this claim with considerable force: communities in Sikkim, Kerala, Meghalaya, Ladakh, and Rajasthan whose ecological ethics are alive and whose knowledge-sharing systems are functioning produce better conservation outcomes, stronger community economic sovereignty, and more transformative tourist experiences than those governed by Western fortress conservation models and expert-driven ecotourism design. The damage done by colonialism to India's ecological knowledge systems was real and severe, and its sustainability consequences persist in the form of epistemologically impoverished ecotourism that commodifies landscapes while marginalising the communities who know them most deeply. But the traditions survived: in the Bishnoi villages where blackbuck still graze fearlessly, in the Khasi Sacred Groves where endemic orchids still flower, in the Buddhist homestays of Ladakh where the churpon still governs water distribution, in the Kerala villages where Kudumbashree women share knowledge as freely as they share income. What these traditions need now is not preservation in a museum but integration into the living practice of ecotourism through environmental education that teaches their depth, through governance systems that recognise their authority, and through knowledge-sharing frameworks that honour their communal logic. The IEEKS Framework proposed in this paper is an attempt to provide a structural home for that integration. It is deliberately modest in its claims: it does not argue that Indian ecological ethics can solve all of ecotourism's problems. It argues, more specifically and more provably, that ecotourism, which ignores the ethical and epistemological resources of India's knowledge traditions, is impoverished ecologically, educationally, and commercially, and that ecotourism which draws on them, with honesty, equity, and genuine community partnership, is among the most powerful instruments available for advancing sustainable development in the 21st century. The world's biodiversity crisis cannot be resolved through conservation science alone (Berkas, 2012; Duffy, 2014). It requires a civilisational shift in humanity's relationship to nature, a shift from the colonial logic of extraction and management to the relational logic of kinship and reciprocity. That shift is not a Western invention. It is an Indian inheritance. And it is time for ecotourism scholarship and practice to claim it.

Relevance of Study

At a time when biodiversity loss, climate instability, and the commodification of natural heritage are undermining the very foundations of sustainable tourism, this study offers a timely and evidence-grounded response. By recovering and systematically analysing India's indigenous ecological knowledge traditions, it demonstrates that the solutions contemporary ecotourism most urgently needs are not new inventions but ancient inheritances waiting to be reclaimed. The study is relevant academically, as it fills a critical gap in ecotourism literature by repositioning Indian ecological philosophy as a rigorous governance framework rather than cultural folklore. It is relevant at the policy level, as it bridges the gap between India's legislative commitments to indigenous knowledge and their weak operationalisation in ecotourism practice through the proposed IEEKS Framework. And it is relevant practically, as five documented Indian cases - Sikkim, Kerala, Meghalaya, Ladakh, and Rajasthan - provide concrete evidence that ethics-grounded, community-led ecotourism produces superior ecological, economic, and educational outcomes compared to expert-driven, extractive models. Beyond India, the study's argument is globally replicable: wherever living indigenous

knowledge traditions exist, the IEEKS Framework offers an actionable and culturally honest model for sustainable ecotourism governance.

Acknowledgments

The authors are grateful to the Department of Geography, University of Allahabad, for providing institutional support during the course of this research. The authors received no financial support for the research, authorship, and/or publication of this article.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declaration of Interest Statement

The authors report there are no competing interests to declare.

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