



Indigenous Knowledge Systems and Environmental Communication

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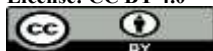
KEY WORDS

Indigenous, Knowledge
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ABSTRACT

This study explores how Indigenous knowledge systems intersect with environmental communication in addressing contemporary ecological challenges. Indigenous knowledge rooted in generations of interaction with natural environments offers holistic understandings, sustainable practices, and culturally grounded environmental stewardship. Despite its proven value in biodiversity conservation, climate adaptation, and sustainable resource management, Indigenous knowledge remains underrepresented in mainstream environmental communication, which is largely shaped by Western scientific paradigms. This marginalization creates a persistent knowledge gap between Indigenous perspectives and dominant environmental discourse. Drawing on Social Construction Theory and Agenda-Setting Theory, the research examines how Indigenous knowledge shapes environmental communication practices, identifies barriers to integrating Indigenous perspectives, and evaluates communication frameworks that can bridge diverse knowledge systems. Findings highlight eight critical roles of Indigenous knowledge, including holistic ecological understanding, intergenerational knowledge transmission, community-based conservation, and culturally embedded sustainability practices. The study concludes that effective environmental communication requires culturally responsive frameworks, genuine partnerships, and inclusive policymaking processes that recognize Indigenous expertise. It recommends challenging Western epistemological dominance by centering Indigenous knowledge systems, transforming research methodologies, and amplifying marginalized voices. Furthermore, federal and state governments should establish equitable knowledge-sharing platforms that safeguard Indigenous sovereignty, honor languages and cultural protocols, and address digital inequalities to ensure meaningful participation in environmental discourse.

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1. Introduction

The escalating global environmental crisis evident in climate change, biodiversity loss, and ecosystem degradation demands approaches that move beyond conventional Western scientific paradigms. Indigenous knowledge systems, developed through millennia of close interaction with local ecosystems, have become vital resources for addressing contemporary ecological challenges. These systems include traditional practices, ecological observations, and cosmological understandings transmitted across generations (UNESCO, 2025). Emerging scholarship affirms that indigenous knowledge offers sophisticated frameworks for environmental stewardship, contributing practical insights into sustainable resource management, climate adaptation, and biodiversity conservation that complement Western scientific methods (Jones et al., 2025).

Environmental communication, as an interdisciplinary field, examines how societies construct, disseminate, and negotiate environmental meanings through diverse communicative practices. Van Kempen and Feldpausch-Parker (2024) argue that the field addresses complex and socially contentious issues where education alone is insufficient to inspire meaningful engagement or behavioral change. Integrating indigenous knowledge systems into

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environmental communication frameworks is therefore both an ethical responsibility and a pragmatic necessity for developing comprehensive responses to environmental crises. Although indigenous communities steward approximately 80% of the world's biodiversity within their territories, their knowledge systems remain marginalized in dominant environmental discourse (Science Summit, 2025).

The intersection of indigenous knowledge and environmental communication reveals broader dynamics of power, representation, and epistemic justice. Bonhoure (2024) describes indigenous knowledge as informal institutional knowledge that shapes environmental governance, particularly in contexts where formal institutions are weak. In sub-Saharan Africa, indigenous knowledge significantly informs digital financial inclusion initiatives linked to environmental resource management, illustrating its continued relevance in contemporary development contexts. Despite this, integration efforts face substantial barriers, including colonial legacies, institutional exclusion, and epistemological tensions between indigenous and Western knowledge systems (Gnansounou et al., 2025).

Recent scholarship emphasizes inclusive and culturally responsive communication approaches that recognize multiple ways of knowing. Sianturi et al. (2024) demonstrate that incorporating indigenous knowledge into environmental partnerships strengthens cultural identity and enhances community engagement. Similarly, research in the Mono Transboundary Biosphere Reserve in West Africa indicates that indigenous mangrove conservation practices have sustained ecosystems for decades, although modernization, globalization, and Western cultural influences now threaten these systems (Gnansounou et al., 2025). Such findings highlight the urgency of developing communication frameworks that respect and amplify indigenous environmental knowledge.

Media and digital technologies introduce both opportunities and challenges for representation. Schäfer (2025) observes that social media platforms have reshaped environmental communication by enabling dialogue and mobilization, yet indigenous perspectives often remain underrepresented, reinforcing historical patterns of marginalization. The Indigenous Environmental Network (2024) calls for decolonizing communication strategies that center indigenous natural laws and environmental justice, challenging practices that privilege Western scientific authority.

Contemporary environmental challenges require communication approaches that bridge diverse knowledge systems. The concept of 'two-eyed seeing,' developed by Mi'kmaw Elder Albert Marshall, encourages viewing environmental issues through both indigenous knowledge and Western science, recognizing the strengths of each system (UNESCO, 2025). This integrative approach aligns with calls for epistemic pluralism in environmental governance, acknowledging that effective solutions emerge from collaborative engagement between different knowledge traditions. Research demonstrates that when indigenous knowledge is integrated with scientific frameworks, environmental outcomes improve significantly, as evidenced by indigenous fire management practices in Australia's Northern Kimberley that reduced fire frequency across 42% of study areas (UNESCO, 2025).

This study examines the intersection of indigenous knowledge systems and environmental communication, exploring how these knowledge systems shape environmental discourse, influence communication practices, and contribute to sustainable environmental management. By analyzing recent empirical research and theoretical frameworks, this investigation seeks to illuminate pathways for more inclusive, effective environmental communication that honors indigenous knowledge while addressing pressing ecological challenges. The research recognizes that environmental communication is not merely a technical exercise but a deeply political and cultural process that reflects and reinforces particular worldviews, power relations, and visions of human-nature relationships.

Statement of the Problem

Despite growing recognition of indigenous knowledge systems' value for environmental sustainability, major gaps remain in understanding how they intersect with environmental communication. Environmental communication scholarship largely reflects Western epistemologies, marginalizing indigenous perspectives and overlooking how communities construct, communicate, and act on environmental knowledge (Garrote, 2025). This epistemological bias limits inclusive, culturally responsive approaches to environmental challenges.

Research shows indigenous knowledge systems are being eroded by colonization, industrialization, and globalization, with serious consequences for conservation (Gnansounou et al., 2025). Among the Nandi in Kenya, Western cultural norms reduced adherence to indigenous environmental practices (Bomett et al., 2024, as cited in Gnansounou et al., 2025). Similarly, the Himba in Namibia face cultural shifts that constrain traditional ecological responses (Inman, 2024, as cited in Gnansounou et al., 2025).

Mainstream environmental communication frameworks also lack tools to integrate indigenous knowledge. Although Social Construction Theory and Agenda-Setting Theory illuminate public discourse, they are rarely applied to indigenous contexts (Guenther et al., 2024). Empirical research on how indigenous knowledge shapes communication, especially within modern media and global governance, remains limited.

Research Objectives

The objectives that guided this study are:

1. To find out the role of media in environmental communication
2. To identify the roles of indigenous knowledge systems in shaping environmental communication.
3. To investigate the barriers and opportunities for integrating indigenous knowledge systems into mainstream environmental communication frameworks.

Theoretical Framework

This study employs two complementary communication theories to examine the intersection of indigenous knowledge systems and environmental communication: Social Construction Theory and Agenda-Setting Theory. These theoretical frameworks provide analytical tools for understanding how environmental meanings are constructed, communicated, and prioritized within diverse cultural contexts.

Social Construction Theory

Social Construction Theory posits that our understanding of reality, including environmental phenomena, is shaped through social, cultural, and historical processes rather than emerging solely from objective physical facts. In environmental communication, this theory illuminates how different societies construct meanings about nature, environmental problems, and sustainable solutions (Hansen, 2015). The theory recognizes that concepts such as 'nature,' 'wilderness,' and 'environmental crisis' are not pre-existing truths but actively created and given meaning by societies and communities.

Numerous scholars have applied Social Construction Theory to environmental communication. Guenther et al. (2024) utilized this framework to analyze how climate futures are socially constructed across news media, climate movements, and local communities, revealing that different social arenas reframe environmental messages to align with their particular interests and values. Similarly, Pol et al. (2024) employed social constructionist perspectives to examine how environmental knowledge and sustainable behaviors are psychosocially constructed through communication and socialization processes. This theoretical lens is particularly valuable for understanding indigenous knowledge systems because it acknowledges multiple, culturally-specific ways of knowing and relating to the

environment, challenging the dominance of Western scientific epistemologies in environmental discourse.

Agenda-Setting Theory

Agenda-Setting Theory, originally proposed by Maxwell McCombs and Donald Shaw (1972), explains how media coverage influences public perceptions of issue importance. The theory suggests that while media may not tell people what to think, they significantly influence what people think about by determining which issues receive attention and how those issues are framed. In environmental communication, Agenda-Setting Theory helps explain how environmental issues gain or lose public prominence through media coverage patterns.

Recent applications of Agenda-Setting Theory to environmental communication demonstrate its continued relevance. Calabrese (2024) employed second-level agenda-setting analysis to examine which actors drove climate change conversations on Chinese social media, finding that celebrities, ordinary users, and civil society organizations significantly influenced environmental discourse, challenging assumptions about government and media dominance. McCombs et al. (2023) argued that analyzing attributes in environmental news coverage can provide normative guidance for journalists to broaden their coverage spectrum and achieve greater public impact. Friedlander and Riedy (2025) developed the MAVEN framework for raising environmental issues within hybrid media landscapes, explicitly building on agenda-setting principles. This theory is particularly relevant for understanding how indigenous knowledge systems can gain visibility in environmental communication, as it illuminates the processes through which certain perspectives and knowledge systems achieve prominence while others remain marginalized.

Methodology

The researchers employed the library research approach, which relies on secondary methods such as textbooks, the internet and other published materials. Secondary research involves collecting, summarising and synthesising existing data and information from various sources to address the research questions or objectives (Arijeníwà, Pepple, & Asemah, E.S. (2023).

Literature Review

The Concept of Environmental Communication

Environmental communication has emerged as an interdisciplinary field examining the role and influence of communication in environmental affairs. Cox (2007, as cited in Environmental Communication Symposium, 2024) defines it as a crisis discipline with an urgent ethical mandate to analyze environmental problems and intervene to transform the social order, framing it as normative and action-oriented. Drawing from communication studies, environmental studies, sociology, psychology, and political science, the field explores how human–nature relationships are shaped through discourse and practice.

It encompasses diverse forms of symbolic representation and social interaction, including mass media, public discourse, interpersonal communication, advocacy campaigns, popular culture, and policy deliberation (Environmental Communication Symposium, 2024). At its core, environmental communication examines how media and communication processes influence public understanding and political decision-making. Communication about nature is never neutral, as social, economic, and political contexts determine which issues gain attention and which perspectives are marginalized, making it a site of contestation where power shapes environmental meanings.

Scholars also highlight the material dimensions of media. Peters (2015, as cited in Pezzullo & Murphy, 2018) urges examining media as content and infrastructural environments with ecological impacts. Devices, data centers, and global networks carry environmental costs, often disproportionately affecting developing regions. Schäfer (2025) notes that social media enables information sharing on issues like climate change but introduces challenges such as

misinformation and algorithmic filtering, while generative AI presents opportunities and risks, including computational environmental costs.

However, environmental communication is tied to social change. Pezzullo (2017, as cited in Environmental Communication Symposium, 2024) calls it a “care discipline” fostering sustainable human environment relationships, emphasizing shared values, emotional resonance, and culturally meaningful narratives (Friedlander & Riedy, 2025).

Concept of Indigenous Knowledge Systems

Indigenous knowledge systems encompass the practices, skills, and worldviews developed by indigenous peoples through close relationships with their environments. UNESCO's Local and Indigenous Knowledge Systems (LINKS) programme defines indigenous knowledge as dynamic systems validated within their own epistemic frameworks, emphasizing that these are living, evolving knowledge traditions (UNESCO, 2025). The Inuit Circumpolar Council describes it as systematic ways of thinking integrating biological, physical, cultural, and spiritual realms, reflecting a holistic worldview in contrast to Western science. This knowledge is transmitted via oral traditions, experiential learning, and cultural practices embedded in languages, ceremonies, and social relationships.

The sophistication of indigenous knowledge has been recognized in environmental management. In the Arctic, Inuit knowledge keepers document climate shifts through generational observations, complementing meteorological models, though elders note some inherited knowledge no longer functions reliably due to unprecedented changes (UNESCO, 2025). In Africa, farmers in Burkina Faso, Niger, Mali, Kenya, and Senegal use techniques like *zaï*, intercropping, and indigenous plant varieties to maintain soil fertility without synthetic inputs. A 2025 South African study found 92% of farmers used indigenous plant-based pest and disease management methods (UNESCO, 2025). Indigenous fire management in Australia's Northern Kimberley reduced fire frequency across over 42% of study areas compared to periods without indigenous management (UNESCO, 2025).

Despite their value, indigenous knowledge faces threats from colonization, modernization, and globalization. Western education, Christianity, and colonial governance have undermined its transmission (Gnansounou et al., 2025). In African communities, the spread of Western norms reduced adherence to traditional environmental practices, impacting biodiversity. Loss of indigenous knowledge often leads to ecological degradation (Fabiano et al., 2021, as cited in Gnansounou et al., 2025). Its underrepresentation in international law and intellectual property frameworks also increases vulnerability to appropriation and distortion.

Integrating indigenous knowledge with Western science presents opportunities and challenges. Scholarship emphasizes 'braiding' knowledge systems to retain distinct identities while valuing multiple ways of knowing (Jones et al., 2025). Indigenous knowledge is crucial for global sustainability, aligning with SDGs on health, environmental sustainability, and reducing inequalities (Science Summit, 2025). The African Union, for example, integrates traditional practices into health systems, demonstrating that indigenous knowledge is key to addressing climate change, biodiversity loss, and environmental degradation.

The Role of Media in Environmental Communication

Media play a central role in shaping public understanding of environmental issues, serving as primary sources of information and influencing how societies perceive ecological challenges. Through selective framing, media construct narratives about nature, climate change, and human-environment relationships that prioritize certain perspectives while marginalizing others. This agenda-setting function makes media powerful actors in environmental governance, capable of elevating issues or relegating them to obscurity (Mutinta, 2025). Increased media coverage of environmental issues is linked to higher public concern, demonstrating media's capacity to shape collective attention and priorities.

Different media forms employ distinct strategies for communicating environmental issues. Research on Swedish media identified a five-cluster model ranging from mainstream anthropocentric to alternative ecocentric strategies (Mutinta, 2025). Mainstream media often reproduce anthropocentric perspectives, emphasizing human superiority, economic growth, and technological solutions. Alternative media may adopt ecocentric approaches, recognizing intrinsic value in non-human nature and questioning human dominance. These differences reflect broader ideological struggles over environmental meaning and appropriate responses, highlighting that media are active participants in constructing environmental realities.

Social media have transformed environmental communication by enabling direct public participation without institutional gatekeepers, democratizing discourse (Schäfer, 2025). Studies of climate discussions on Chinese social media show that celebrities, users, and civil society organizations influence environmental narratives, challenging assumptions about government and traditional media dominance (Calabrese, 2024). User-generated content can shape perceptions, influence norms, and mobilize collective action, but also spreads misinformation, reinforces echo chambers, and is subject to algorithmic filtering.

Media representation of indigenous environmental knowledge remains limited, often characterized by absence, stereotyping, or appropriation. Mainstream media prioritize Western scientific expertise, marginalizing indigenous voices and perpetuating epistemic exclusion. When included, indigenous knowledge is often exoticized or romanticized rather than recognized as evolving and relevant (Indigenous Environmental Network, 2024). Digital inequities further hinder participation; limited internet access, financial resources, language barriers, and culturally mismatched platform algorithms restrict engagement. Promising approaches include indigenous-led digital storytelling, community radio in native languages, and social media campaigns amplifying indigenous activism, emphasizing the need for communities to control their media narratives.

Related Empirical Review

Bonhoure (2024) conducted a quantitative study examining the role of indigenous knowledge in digital financial inclusion across developing countries, using institutional theory as a theoretical framework. The research surveyed 1,000 digital-finance users and employed regression analysis techniques to investigate the combined effects of informal institutions (indigenous knowledge) and formal institutions (regulatory frameworks) on digital financial inclusion. The findings revealed significant regional variations in how institutional factors shape digital financial inclusion. In sub-Saharan Africa, where formal institutions remain weak, indigenous knowledge significantly increased digital financial inclusion, demonstrating the practical relevance of traditional knowledge systems in contemporary technological contexts. This research contributes to understanding how indigenous knowledge systems can facilitate adaptation to modern technologies and economic systems, particularly in contexts where formal institutional structures provide inadequate support. The study's significance extends beyond financial services, suggesting that indigenous knowledge may play crucial roles in technology adoption and environmental resource management in regions with weak formal institutions.

Sianturi et al. (2024) examined the synergy between indigenous ways of knowing, being, and doing and digital technology in culturally responsive home-school partnerships. The study adopted a phenomenological case study approach, drawing from experiences of 22 indigenous West Papuan parents and eight teachers. The research investigated how integrating traditional indigenous knowledge into home-school partnerships affected cultural connections and parental participation. Findings revealed that when indigenous knowledge was incorporated into partnership frameworks, cultural connections strengthened significantly and parental participation increased substantially. This research demonstrates the importance of recognizing and validating indigenous knowledge systems in institutional contexts, showing that culturally responsive approaches that honor indigenous knowledge can enhance engagement and outcomes. For environmental communication, these findings suggest that integrating

indigenous knowledge into communication strategies and institutional frameworks may similarly increase indigenous community participation in environmental initiatives and strengthen cultural connections to environmental stewardship practices.

A large-scale study published in 2024 examined indigenous fire management practices in Australia's Northern Kimberley, comparing fire metrics across eleven years without indigenous fire management (2001-2011) and eleven subsequent years under indigenous fire management (2012-2022). Aboriginal communities in this region revived traditional fire management practices after decades of colonial disruption, implementing culturally-informed burning strategies based on indigenous ecological knowledge (UNESCO, 2025). The study found that fire frequency decreased across more than 42% of the study area during the period of indigenous management, demonstrating the effectiveness of traditional fire management approaches. This research provides compelling empirical evidence that indigenous knowledge systems offer sophisticated, effective strategies for environmental management. The findings challenge assumptions that indigenous practices are incompatible with contemporary conservation goals, instead showing that indigenous fire management can achieve ecological outcomes that complement or exceed those of Western management approaches. This study exemplifies how indigenous knowledge, when applied in environmental management contexts, produces measurable benefits for ecosystem health and biodiversity conservation.

Roles of Indigenous Knowledge Systems in Shaping Environmental Communication

Indigenous knowledge systems play multifaceted roles in shaping environmental communication practices, discourse, and outcomes. These roles reflect the distinctive epistemologies, values, and practices that characterize indigenous approaches to environmental understanding and stewardship.

1. Providing Holistic Environmental Frameworks: Indigenous knowledge systems offer holistic frameworks that integrate biological, physical, cultural, and spiritual dimensions of environmental understanding. Unlike Western scientific approaches that often compartmentalize knowledge, indigenous frameworks recognize the interconnectedness of all elements within ecosystems and between human and non-human entities. This holistic perspective shapes environmental communication by emphasizing relationships, interdependencies, and systemic thinking rather than isolated problems and technical solutions. Such frameworks challenge reductionist environmental narratives that dominate mainstream discourse, offering alternative conceptualizations of human-environment relationships grounded in reciprocity, respect, and responsibility (UNESCO, 2025).

2. Facilitating Intergenerational Knowledge Transmission: Indigenous knowledge systems employ distinctive communication practices for transmitting environmental knowledge across generations, including oral traditions, storytelling, experiential learning, and cultural ceremonies. These transmission methods embed environmental knowledge within cultural identities and social relationships, ensuring knowledge continuity while allowing adaptive responses to changing conditions. The intergenerational dimension of indigenous knowledge communication contrasts with Western scientific communication, which primarily occurs through formal publications, academic conferences, and educational institutions. Indigenous transmission practices maintain living connections to environmental knowledge, keeping it relevant and accessible within communities while honoring ancestral wisdom (Jones et al., 2025).

3. Grounding Environmental Communication in Place: Indigenous knowledge systems are inherently place-based, developed through intimate, long-term relationships with specific landscapes and ecosystems. This place-based character shapes environmental communication by centering local contexts, ecological particularities, and community-specific relationships

with environments rather than abstract, universalized environmental narratives. Place-based indigenous knowledge offers detailed environmental observations accumulated over generations that complement broader-scale scientific monitoring. Inuit knowledge keepers, for example, document climate shifts through generational observations of specific Arctic regions, providing locally-grounded perspectives that enhance understanding of global environmental changes (UNESCO, 2025).

4. Embedding Environmental Values in Communication: Indigenous environmental communication inherently conveys values of reciprocity, stewardship, and respect for non-human entities. These values shape how environmental issues are framed, discussed, and addressed within indigenous communities. Rather than treating nature as a resource to be managed or exploited, indigenous communication often emphasizes human responsibilities to maintain relationships with non-human kin and care for environments that sustain communities. This values-centered approach to environmental communication offers alternatives to utilitarian frameworks that dominate Western environmental discourse, potentially inspiring more ethical, sustainable human-environment relationships (Garrote, 2025).

5. Challenging Dominant Environmental Narratives: Indigenous knowledge systems challenge dominant Western narratives about environmental problems and solutions by offering alternative explanations, priorities, and approaches grounded in indigenous epistemologies. These challenges can disrupt taken-for-granted assumptions in environmental communication, such as the primacy of economic growth, the separation of humans from nature, and the superiority of technological solutions. Indigenous perspectives may reframe environmental issues in ways that foreground environmental justice, cultural survival, and spiritual relationships with land rather than technical management problems. Such reframings can expand the scope of environmental communication beyond narrow technocratic discourse to encompass broader questions of power, justice, and alternative futures (Environmental Communication Symposium, 2024).

6. Providing Practical Environmental Solutions: Indigenous knowledge systems contribute practical, proven solutions to environmental challenges that can inform and improve environmental management and communication. Traditional agricultural practices, fire management techniques, water conservation strategies, and biodiversity protection methods demonstrate the applied effectiveness of indigenous knowledge. These practical contributions provide concrete evidence for environmental communication that counters narratives dismissing indigenous knowledge as primitive or irrelevant. Empirical research demonstrates that indigenous fire management reduces fire frequency, indigenous agricultural practices support soil fertility without synthetic inputs, and indigenous conservation practices protect endangered species, validating indigenous approaches through measurable environmental outcomes (UNESCO, 2025; Gnansounou et al., 2025).

7. Fostering Community-Based Environmental Engagement: Indigenous knowledge systems emphasize collective, community-based approaches to environmental understanding and action. This communal orientation shapes environmental communication by prioritizing dialogue, consensus-building, and shared decision-making rather than top-down expert communication. Community-based engagement rooted in indigenous knowledge can increase participation in environmental initiatives, strengthen social cohesion around environmental goals, and ensure that environmental actions reflect community values and priorities. Research demonstrates that when indigenous knowledge is integrated into partnership frameworks, community participation increases significantly, suggesting that indigenous approaches to environmental communication may be more effective at fostering engagement than conventional expert-driven strategies (Sianturi et al., 2024).

8. Bridging Traditional and Scientific Knowledge: Indigenous knowledge systems play crucial roles in facilitating dialogue between different knowledge traditions. Concepts such as Two-Eyed Seeing, which encourages viewing environmental issues through both indigenous knowledge and Western science, exemplify how indigenous frameworks can create spaces for integrating diverse epistemologies. This bridging function is essential for developing comprehensive environmental understanding and effective communication strategies that draw on multiple knowledge sources. Indigenous communities often serve as knowledge brokers, translating between different systems while maintaining the integrity of indigenous epistemologies. This bridging role enriches environmental communication by bringing together complementary insights, challenging epistemic hierarchies, and modeling collaborative approaches to knowledge production that respect diverse ways of knowing (Jones et al., 2025).

Barriers and opportunities for Integrating Indigenous Knowledge Systems into Mainstream Environmental Communication Frameworks.

Integrating indigenous knowledge with Western science in environmental management creates both communication challenges and valuable opportunities. These interactions reflect differences in worldview, power, and knowledge systems, but they also open pathways for collaboration and sustainability.

1. Different knowledge systems shape communication. Indigenous knowledge is holistic and relational, while Western science often emphasizes objectivity and standardized methods, creating conceptual misunderstandings (UNESCO, 2024; Ijatuyi et al., 2025).
2. Language and cultural meaning barriers complicate interpretation. Many indigenous ecological ideas are embedded in oral traditions and cultural practices that resist direct translation into scientific frameworks (Ndlovu, 2024).
3. Power imbalances affect recognition. Western scientific institutions often dominate environmental discourse, which can marginalize indigenous voices and knowledge systems (David, 2024).
4. Trust and historical experience influence communication. Communities may be cautious due to past knowledge extraction or exclusion from research decisions, requiring respectful engagement (Reyes-García et al., 2026).
5. Different validation processes create tension. Scientific knowledge relies on experimental verification, while indigenous knowledge is grounded in long-term observation and lived experience (Sampson et al., 2024).
6. Integration improves environmental understanding. Indigenous knowledge offers detailed place-based ecological insights developed over generations, complementing scientific data (Irvine, 2024).
7. Collaborative knowledge production supports sustainability. Research shows co-developed approaches can enhance ecosystem restoration and conservation outcomes (Ocean & Coastal Management, 2024).
8. Inclusive participation strengthens environmental governance. Recognizing indigenous knowledge improves policy legitimacy and community support (Weir, 2023).
9. Ethical communication frameworks are essential. Respect for intellectual ownership and cultural protocols promotes equitable partnerships (David, 2024).
10. Intercultural competence enables successful integration. Effective dialogue requires mutual respect, shared decision-making, and recognition of multiple ways of knowing (Reyes-García et al., 2026).

Conclusion

This study explores the intersection of indigenous knowledge systems and environmental communication, showing how traditional knowledge shapes environmental discourse and supports sustainable management. Indigenous frameworks offer holistic approaches that both complement and challenge Western science. Using Social Construction Theory and Agenda-

Setting Theory, the research highlights how environmental meanings are culturally constructed and how media and institutions influence the visibility of indigenous perspectives. Evidence from practices such as fire management in Australia, mangrove conservation in West Africa, and traditional African agriculture demonstrates measurable environmental benefits. However, colonization, globalization, and marginalization threaten these systems, risking cultural loss and ecological decline. The study identifies eight key roles of indigenous knowledge, emphasizing the need for decolonized, inclusive communication frameworks that amplify indigenous voices and integrate diverse ways of knowing in environmental governance.

Recommendations

The study, therefore recommends the following:

1. There is a need to challenge Western epistemological dominance by centering Indigenous knowledge systems, transforming theories, methodologies, and amplifying marginalized Indigenous voices in environmental communication.
2. The government (both Federal and State) should create equitable platforms for Indigenous knowledge sharing that protect sovereignty, honour languages, bridge digital divides, and respect cultural protocols.
3. There is a need to prioritize Indigenous-led conservation initiatives through funding, recognition, and capacity building, respecting governance, expertise, and community leadership in environmental communication.
4. The government should integrate Indigenous knowledge into environmental policy through genuine partnerships safeguarding rights, sovereignty, intergenerational transmission, and protection against appropriation.

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