Translating Environmental Communication Research into Grassroots Advocacy for Sustainable Development

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ABSTRACT

Environmental challenges such as climate change, biodiversity loss, pollution, and resource scarcity require not only scientific innovation but also effective communication that bridges research and community action. Despite advances in environmental communication, a persistent "translation gap" exists between academic insights and grassroots advocacy. This paper proposes the CO-ACT Framework—Co-diagnose, Orient, Adapt, Convene, and Track—as a structured model for translating environmental communication research into practical, community-led action. Grounded in co-production theory, diffusion of innovation, and participatory communication, CO-ACT promotes collaborative problem identification, network mapping, contextual message adaptation, participatory engagement, and iterative monitoring. The framework integrates participatory action research, mixed-methods evaluation, longitudinal learning, and open-access dissemination to ensure both academic rigour and practical relevance. Empirical evidence demonstrates that accessible, culturally resonant communication materials, institutional linkages, and integration of indigenous knowledge enhance behavioural adoption, legitimacy, and policy responsiveness. However, barriers such as knowledge inaccessibility, power asymmetries, contextual mismatches, and limited local capacity continue to hinder effective research translation. By addressing these challenges, CO-ACT transforms knowledge dissemination into knowledge democratization, enabling communities to act as co-creators rather than passive recipients of environmental solutions. The framework's participatory and adaptive design fosters trust, equity, and sustained behavioural and institutional change. Ultimately, CO-ACT provides a replicable pathway for linking scholarly evidence with real-world environmental advocacy, ensuring that communication serves as a catalyst for collective action, environmental justice, and sustainable development.

Keywords: Environmental communication, Grassroots advocacy, CO-ACT framework, Co-production, Participatory action research, social networks.

INTRODUCTION

Environmental challenges—such as climate change, biodiversity loss, pollution, and resource scarcity—extend beyond technical domains to encompass social relations, cultural values, and institutional arrangements. Communication plays a pivotal role in shaping how these issues are defined, prioritized, and addressed (Fuoco et al., 2023). Despite significant advances in environmental communication research, a persistent "translation gap" exists between academic findings and practical grassroots advocacy. Many research outputs remain confined to scholarly circles or are misaligned with community realities, while local organizations often lack the resources, tools, or institutional pathways to apply these insights effectively (Raj et al., 2022; Lyne et al., 2023). Bridging this gap is vital for ensuring that environmental communication research translates into real-world actions supporting sustainable development.

Mechanisms Linking Environmental Communication to Grassroots Action

Recent scholarship underscores that environmental communication can drive meaningful grassroots action when communication strategies are context-sensitive, participatory, and embedded within social systems. Three interrelated mechanisms—co-production and participation, social diffusion and networks, and practical communication and media translation—form the foundation for translating research insights into local advocacy and behavioural change.

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Co-production and Participation

Co-production represents a collaborative process where researchers, community members, and local stakeholders jointly define environmental challenges, co-create solutions, and share decision-making authority throughout the communication process. This participatory model enhances both the relevance and legitimacy of environmental initiatives by aligning research outcomes with the lived realities and priorities of local communities. When people actively contribute to shaping messages, interventions, and evaluation criteria, they perceive the project as their own, resulting in stronger ownership, sustained engagement, and higher rates of adoption (van Maurik Matuk et al., 2023; Lyne et al., 2023). Moreover, co-production mitigates power asymmetries between academic experts and local actors by valuing indigenous knowledge, local innovation, and community storytelling as valid and actionable inputs. In practical terms, co-production in environmental communication translates into participatory workshops, collaborative message design, and community-led demonstrations that connect scientific insights with cultural values and daily experiences.

Social Diffusion and Networks

Social diffusion theory explains how new ideas, practices, or innovations spread through communication channels within a community. Environmental communication efforts achieve greater grassroots impact when they harness these social diffusion pathways. Opinion leaders, such as respected elders, teachers, religious figures, and youth influencers, play a central role in endorsing and legitimizing sustainable behaviours. Their visible adoption of eco-friendly practices creates social proof—demonstrating that sustainable behaviours are not only possible but desirable. Equally important is the trialability of these practices: when community members can observe, test, and adapt innovations (e.g., household recycling, tree planting, clean cooking technologies) within their social networks, they are more likely to internalize and replicate them (Raj et al., 2022). Networks also enable horizontal learning and peer-to-peer communication, which are vital for reinforcing trust, reducing uncertainty, and maintaining momentum. By mapping local communication networks and identifying potential champions, environmental advocates can strategically target diffusion points that accelerate behavioural and cultural change.

Practical Communication and Media Translation

Even the most rigorously produced research will have limited grassroots impact if not communicated in accessible, relatable, and engaging forms. Practical communication and media translation involve simplifying scientific findings into formats that diverse audiences can understand and act upon. Tools such as community radio programs, storytelling sessions, participatory theatre, infographics, short videos, and local language briefs serve as powerful vehicles for environmental advocacy, especially in resource-limited or multilingual contexts (Fuoco et al., 2023). These media formats enhance comprehension, emotional engagement, and recall, bridging the gap between academic jargon and community understanding. Moreover, visual and oral storytelling approaches often resonate more deeply in cultures with strong oral traditions, enabling messages to spread organically through conversations, songs, and local events. Importantly, the integration of modern media technologies—such as WhatsApp groups, local podcasts, and social media campaigns—can extend reach beyond traditional boundaries, linking local experiences to broader sustainability narratives.

Collectively, these three mechanisms create a reinforcing ecosystem of communication and action. Co-production ensures that messages are locally grounded and trusted; social diffusion expands their reach through credible networks; and effective media translation guarantees accessibility and sustained engagement. When these mechanisms operate in synergy, environmental communication transcends awareness-building to become a catalyst for collective agency, policy advocacy, and tangible environmental change at the grassroots level.

Barriers to Translating Research into Practice

Despite well-documented mechanisms for linking environmental communication to grassroots action, several interrelated barriers persist, limiting the translation of research findings into sustainable, community-led advocacy. Knowledge inaccessibility remains a primary constraint, as research outputs are often locked behind paywalls or expressed in technical language inaccessible to local communities (Heinisch, 2020). Power asymmetries between researchers, policymakers, and grassroots actors further hinder collaboration, with

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institutional dominance marginalizing local voices and knowledge systems (Manuel-Navarrete, 2021; Scodanibbio, 2023). Moreover, cultural and contextual mismatches occur when communication strategies overlook indigenous practices and social norms, reducing their local relevance (Diver, 2017). Finally, resource and capacity gaps—including limited funding, weak infrastructure, and low technical literacy—restrict the ability of communities to act on scientific insights (Ramirez-Andreotta et al., 2014). Collectively, these factors create a structural divide between academic knowledge and practical implementation, underscoring the need for inclusive, participatory, and context-sensitive communication approaches.

Knowledge Accessibility

A major obstacle in translating environmental communication research into grassroots advocacy is the limited accessibility of scientific knowledge. Many valuable studies remain locked behind paywalls or are written in highly technical language that alienates non-specialist audiences (Fuoco et al., 2023). This restricts access for community-based organizations, local journalists, and advocacy groups that could otherwise use such findings to design context-specific interventions. Even when open-access versions exist, dissemination is often inadequate—few mechanisms exist to actively share research in user-friendly formats such as policy briefs, vernacular summaries, or radio segments. The resulting "knowledge bottleneck" prevents the flow of research evidence into community planning and public discourse. Bridging this gap requires deliberate strategies to democratize knowledge through open-access publishing, local translation, and participatory dissemination platforms that empower grassroots actors to understand and apply environmental insights.

Power Asymmetries

Power dynamics pose another significant barrier, as grassroots initiatives frequently operate at the margins of formal decision-making systems. Community organizations, despite their local expertise and innovation, often lack the political and institutional leverage needed to influence environmental policy or secure sustained funding (Raj et al., 2022). Decision-making power tends to be concentrated among government agencies, donors, and academic institutions, leaving local actors dependent on external approval or support. This imbalance undermines the sustainability of grassroots-led interventions—projects may succeed at small scales but struggle to gain recognition, replication, or integration into formal planning structures. Overcoming these asymmetries requires not only capacity building at the community level but also institutional reforms that recognize and embed grassroots evidence into policy frameworks.

Cultural and Contextual Mismatch

Another recurring challenge lies in the misalignment between academic research outputs and local realities. Environmental communication models and interventions developed in academic or international contexts often fail when they neglect local worldviews, traditional knowledge systems, and socio-cultural values. Messages that do not resonate with the local language, idioms, or belief systems risk being misunderstood or disregarded. For example, sustainability messages framed solely in scientific or economic terms may not connect with communities whose environmental ethics are rooted in spirituality, collective identity, or ancestral stewardship. Contextual mismatch can also arise when researchers underestimate local constraints such as time poverty, literacy levels, or infrastructural deficits. Effective translation, therefore, demands deep ethnographic understanding, participatory message design, and continuous adaptation of content to fit evolving local contexts and priorities.

Resource and Capacity Gaps

The fourth barrier concerns the persistent scarcity of technical, financial, and institutional resources necessary to sustain evidence-informed advocacy. Many grassroots organizations lack expertise in project management, monitoring and evaluation, and strategic communication, which are critical for scaling successful environmental initiatives (Boulanger, 2022; Lyne et al., 2023). Additionally, funding for long-term advocacy is often project-based and short-term, focusing on immediate outputs rather than systemic change. Limited access to equipment, data, and training further constrains the ability of local groups to generate credible evidence that could attract policy or donor attention. As a result, community actors often depend heavily on external agencies, perpetuating cycles of dependency rather than empowerment. Sustainable capacity strengthening—through technical training,

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resource mobilization, and partnership networks—is thus essential for bridging the gap between research and practice.

These barriers are not isolated but mutually reinforcing. Limited access to knowledge amplifies power imbalances; weak institutional influence, in turn, restricts access to funding and training; and contextual mismatches erode trust between researchers and communities. Overcoming these interconnected obstacles requires systemic strategies that prioritize equity in knowledge sharing, inclusivity in decision-making, and sustained investment in local capacity building. Only through such integrative efforts can environmental communication research genuinely translate into empowered grassroots advocacy for sustainable development.

The CO-ACT Framework for Research Translation

Addressing the multifaceted barriers that impede the translation of environmental communication research into grassroots advocacy requires a structured, context-sensitive framework. The CO-ACT Framework—an acronym for Co-diagnose, Orient, Adapt, Convene, and Track—offers an operational model that bridges academic inquiry and community action. This model synthesizes evidence from co-production literature, diffusion of innovation theory, and participatory communication practice to create a stepwise process for transforming research findings into practical advocacy outcomes.

Co-diagnose

The first stage, Co-diagnose, centers on collaborative problem identification and framing. Researchers, community representatives, and local institutions jointly assess environmental challenges, determine shared priorities, and establish feasible success indicators. This stage is critical for building mutual trust and legitimacy, ensuring that research activities reflect real community concerns rather than externally imposed agendas. Co-diagnosis not only aligns scientific investigation with lived experience but also empowers local actors to articulate their environmental realities in ways that inform evidence-based advocacy. For instance, participatory mapping and storytelling techniques can be used to reveal how communities perceive issues like waste management, water scarcity, or deforestation, forming a foundation for localized solutions (van Maurik Matuk et al., 2023).

Orient

The Orient stage focuses on strategic situational analysis—mapping the stakeholders, social networks, and power relations that shape environmental communication dynamics. This step identifies key opinion leaders, institutional gatekeepers, and existing advocacy platforms that can serve as amplifiers for message dissemination. By understanding who holds influence and how information circulates within local systems, researchers and community actors can tailor outreach efforts to maximize visibility and credibility. Diffusion theory underscores that behavioural innovations are more likely to spread when introduced by trusted figures within a network (Raj et al., 2022). Therefore, orientation involves both social mapping and capacity analysis to align advocacy strategies with the most effective communicators and channels.

Adapt

The Adapt phase operationalizes translation by transforming technical research findings into accessible, culturally resonant formats. Academic outputs—often written in dense, disciplinary language—must be repackaged into messages that are actionable and relatable to community audiences. This can include the use of local dialects, visual aids, folk performances, and interactive radio segments that illustrate environmental issues and solutions in familiar contexts. Adaptation also emphasizes trialability: creating low-cost, visible examples of sustainable practices (such as composting, tree planting, or waste segregation) that communities can easily test and observe. The adaptability of messages enhances both comprehension and engagement, enabling community members to internalize abstract environmental concepts through tangible experience (van Maurik Matuk et al., 2023).

Convene

In the Convene stage, collaboration moves into visible action. Researchers, local leaders, and civic organizations

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jointly organize forums, town hall meetings, and pilot demonstrations to foster collective learning and dialogue. This participatory engagement serves multiple purposes: it validates community knowledge, strengthens social cohesion, and generates social proof through public visibility of success stories. By convening diverse actors around practical demonstrations—such as community clean-ups, school-based climate clubs, or local conservation campaigns—advocacy gains momentum and attracts broader partnerships. Convening also provides a platform for integrating feedback, ensuring that emerging lessons continuously refine both messaging and implementation strategies (Raj et al., 2022).

Track

The final stage, Track, embeds participatory monitoring and evaluation (M&E) to assess communication reach, behavioural adoption, and policy outcomes. Mixed-methods approaches—combining surveys, interviews, behavioural observation, and narrative analysis—enable a comprehensive understanding of what works and why. Tracking involves both quantitative and qualitative indicators: message recall, practice adoption rates, policy uptake, and community narratives of change. Continuous tracking fosters adaptive learning, ensuring that interventions evolve with emerging challenges and community insights. Importantly, participatory M&E also democratizes evaluation by positioning community members as co-analysts of their own progress, enhancing transparency and ownership.

Collectively, the CO-ACT Framework functions as a dynamic cycle rather than a linear sequence. Insights from the Track stage inform future rounds of Co-diagnosis, reinforcing a culture of iterative learning and co-production. By embedding collaboration, cultural adaptation, and participatory evaluation at every stage, CO-ACT bridges the persistent gap between academic research and grassroots advocacy. The model thus provides a replicable pathway for scholars and practitioners seeking to translate environmental communication research into tangible, community-driven progress toward sustainable development.

METHODOLOGICAL CONSIDERATIONS

The operationalization of the CO-ACT Framework demands a robust and participatory methodological approach that aligns academic rigour with community realities. Implementing this framework effectively requires methodological pluralism—integrating participatory, qualitative, and quantitative strategies—to ensure that research translation is both evidence-based and contextually grounded.

Participatory and Action-Oriented Designs

At the core of CO-ACT is participatory action research (PAR), which positions scholars as co-learners embedded within community advocacy processes rather than as detached observers. This design fosters iterative feedback loops where community members, local organizations, and researchers collaboratively define problems, implement solutions, and reflect on progress. Co-production methodologies complement this approach by emphasizing shared decision-making, power balance, and reciprocal learning between researchers and practitioners (Lyne et al., 2023). Embedding researchers within community cycles of action ensures continuous validation of findings and fosters mutual accountability, thereby strengthening the legitimacy and sustainability of interventions.

Mixed-Methods Evaluation and Data Triangulation

Translating environmental communication research into measurable grassroots outcomes requires mixed-methods approaches that integrate quantitative and qualitative tools. Quantitative data—such as participation rates, message reach, and behaviour adoption metrics—provides a basis for assessing the scale and effectiveness of communication interventions. Qualitative methods—focus groups, interviews, participatory video, and narrative analysis—capture deeper dimensions of change, including shifts in perception, identity, and social cohesion. Triangulating these data types enriches understanding by revealing not only what changes occur but also why and how they emerge. Mixed-methods evaluation thus bridges the epistemological divide between statistical impact assessment and experiential insight, ensuring that both measurable and intangible advocacy outcomes are documented.

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Longitudinal Monitoring and Adaptive Learning

Environmental and behavioural transformations rarely occur instantaneously; they evolve gradually as trust builds, norms shift, and institutional structures adapt. Consequently, longitudinal monitoring is critical to capture long-term impact and sustainability. Periodic assessments—conducted at multiple intervals—help identify whether communication interventions lead to enduring behavioural and policy change. Such monitoring also supports adaptive learning, enabling stakeholders to refine messages, adjust engagement strategies, and respond to emerging contextual dynamics. The longitudinal perspective acknowledges that advocacy success should be judged not only by short-term outputs but also by the persistence of community action and institutional responsiveness over time (Lyne et al., 2023).

Knowledge Accessibility and Co-Learning Mechanisms

Methodologically, CO-ACT emphasizes open-access and co-learning mechanisms to democratize research outputs. Environmental communication research should prioritize the production of open-access publications, plain-language briefs, and visual learning materials that can be easily disseminated and understood by grassroots organizations. Local training workshops and collaborative media production—such as community radio programming, participatory documentaries, and youth-led storytelling—serve as both research tools and capacity-building platforms (Fuoco et al., 2023). These mechanisms not only enhance accessibility but also reinforce community ownership and empowerment, ensuring that knowledge generation and application are inclusive and mutually beneficial.

Ethical and Reflexive Practice

Finally, methodological soundness in co-action frameworks demands reflexivity and ethical sensitivity. Researchers must remain aware of their positionality, recognising potential power imbalances and cultural nuances in engagement (Muhammad, Wallerstein, Sussman, Avila, & Duran, 2014). Ethical research design includes obtaining informed consent, ensuring benefit sharing, and protecting community intellectual property (Wallerstein, Duran, Oetzel, & Minkler, 2018). Reflexive practice—continuous critical self-evaluation of assumptions, methods, and impacts—helps safeguard against extractive or top-down tendencies and strengthens the co-production ethos that underpins the framework (Stuart, 1998).In summary, the methodological implementation of a CO-ACT-type (co-action) framework requires a balance of scientific precision and participatory flexibility. By integrating action research, mixed-methods evaluation, longitudinal tracking, and open-access dissemination, scholars can produce research that is both credible within academic standards and transformative in practice (Fetters, Curry, & Creswell, 2013). These methodological principles ensure that environmental communication research translates effectively into grassroots advocacy that sustains behavioural, institutional, and policy-level change.6. Empirical Insights and Case Evidence

Empirical research across diverse environmental contexts reinforces the effectiveness of communication-driven advocacy when informed by participatory and evidence-based frameworks such as CO-ACT. The growing body of case evidence reveals that when communities are positioned not merely as recipients but as co-creators of knowledge, the resulting behavioural, institutional, and policy impacts are significantly amplified.

Communication Accessibility and Behavioural Change

Field studies consistently demonstrate that the clarity, accessibility, and cultural relevance of communication materials determine the success of advocacy initiatives. For example, community-based environmental health campaigns that utilized plain-language media, visual storytelling, and local champions reported markedly higher adoption rates of protective behaviours, particularly in low-literacy and rural populations (Fuoco et al., 2023). By contextualizing complex scientific information into culturally resonant narratives and vernacular languages, these initiatives not only bridged information gaps but also strengthened public trust in environmental messages. This evidence underscores the CO-ACT framework's focus on knowledge democratization and behavioural co-learning as prerequisites for sustainable change.

Institutional Linkages and Networked Scaling

Empirical analyses of grassroots environmental innovations reveal that alliances with municipal authorities, civil

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society networks, and peer advocacy groups significantly enhance both visibility and scalability (Raj et al., 2022). Projects that successfully institutionalized their findings often operated within multi-level governance structures, aligning community-led experimentation with local development agendas. Such partnerships allowed advocacy outcomes to influence policy frameworks, attract funding, and sustain operational continuity beyond the lifespan of individual interventions. This demonstrates that horizontal and vertical integration—across communities, local institutions, and policy actors—is crucial for scaling impact, a principle central to CO-ACT's "connectivity and amplification" component.

Legitimacy through Co-Production and Indigenous Knowledge Integration

Empirical case studies from Africa, Asia, and Latin America affirm that incorporating indigenous knowledge systems and context-specific learning enhances project legitimacy, resilience, and continuity (van Maurik Matuk et al., 2023; Lyne et al., 2023). These studies highlight that when research and advocacy respect local epistemologies—such as traditional ecological practices, community norms, and spiritual relationships with land—stakeholders demonstrate deeper commitment and ownership of environmental initiatives. In Kenya, for instance, co-produced conservation programmes integrating indigenous rangeland management techniques achieved greater acceptance and sustainability compared to externally designed interventions. Such outcomes substantiate CO-ACT's call for epistemic plurality—the equitable integration of academic, experiential, and traditional knowledge.

Evidence of Empowerment and Social Learning

The participatory dimensions of environmental communication are also linked to empowerment and social learning outcomes. Programs employing iterative community dialogues, participatory media, and feedback mechanisms have recorded improvements in civic engagement, environmental literacy, and community self-efficacy. Over time, these practices fostered networked learning environments where local actors exchanged innovations, documented lessons, and mobilized for policy advocacy. Empirical observations confirm that these dynamics—mutual visibility, knowledge reciprocity, and distributed agency—represent the most enduring form of advocacy-driven transformation envisioned by CO-ACT.

Synthesis and Implications

Collectively, these empirical insights validate the foundational logic of the CO-ACT framework. They demonstrate that effective environmental communication is not only about information dissemination but about building power, trust, and agency through participatory knowledge systems. The evidence suggests that interventions combining plain-language dissemination, co-production of knowledge, institutional networking, and respect for indigenous epistemologies achieve both behavioural and structural transformation. By grounding research translation in local realities and reinforcing it through networked collaboration, CO-ACT offers a practical pathway toward sustainable advocacy and environmental justice.

MONITORING AND EVALUATION INDICATORS

Effective monitoring and evaluation (M&E) are integral to the sustainability and scalability of environmental communication initiatives. Within the CO-ACT framework, M&E is envisioned as participatory, iterative, and multidimensional, emphasizing not only outcomes but also processes and equity. Traditional metrics—such as message reach and behavioural adoption—are insufficient without understanding how communication transforms perceptions, relationships, and institutional practices.

Key indicators include stakeholder inclusivity, which measures the diversity and representativeness of community participation across gender, age, and socioeconomic lines. Message recall and comprehension assess how effectively audiences internalize and retain communicated ideas, particularly in low-literacy environments. Behavioural change indicators capture tangible shifts in sustainable practices, while institutional responsiveness evaluates how local governments and organizations incorporate grassroots evidence into decision-making (Fuoco et al., 2023; Raj et al., 2022).

Additionally, equity and justice metrics—such as the participation and benefit of marginalized groups—are

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essential to ensure that environmental communication contributes to social transformation rather than deepening existing inequalities. Triangulating quantitative data (e.g., adoption rates, attendance figures, and media reach) with qualitative insights (e.g., community narratives, focus group discussions, and testimonial evidence) allows evaluators to capture both the scale and the depth of change. This mixed-methods triangulation strengthens validity and contextual relevance.

Finally, M&E should function as a learning mechanism, not merely a reporting tool. By feeding findings back into project design, communities and researchers can continually refine strategies and maintain alignment with evolving social and ecological realities. This cyclical feedback loop reinforces CO-ACT's principle of continuous learning and adaptive co-production, ensuring that advocacy remains responsive, evidence-based, and community-driven.

POLICY AND PRACTICE RECOMMENDATIONS

The synthesis of recent evidence and theoretical insights offers several pragmatic recommendations to enhance the translation of environmental communication research into grassroots advocacy and sustainable development.

First, funders and development agencies should prioritize long-term, co-produced partnerships that include dedicated communication budgets. Short-term or fragmented interventions often fail to sustain behavioural change or institutional commitment. Embedding communication within multi-year funding cycles ensures continuity, iterative learning, and genuine co-ownership between researchers and communities.

Second, researchers and academic institutions must enhance knowledge accessibility and usability. This involves publishing findings in open-access formats, developing plain-language policy briefs, and creating ready-to-use communication templates such as infographics, audio-visual materials, and community toolkits. Simplifying research outputs without compromising scientific integrity bridges the gap between academic evidence and grassroots application (Lyne et al., 2023).

Third, policymakers and municipal authorities should institutionalize evidence-based grassroots innovations by integrating community-generated data into planning, budgeting, and procurement frameworks. Establishing participatory mechanisms—such as community advisory boards or local sustainability councils—ensures that grassroots evidence informs urban governance, environmental planning, and climate adaptation strategies (Raj et al., 2022).

Collectively, these recommendations call for a paradigm shift: from knowledge dissemination to knowledge democratization. Embedding communication within participatory governance systems, financing structures, and open-access research models strengthens the link between environmental scholarship and tangible social transformation. This alignment between research, advocacy, and institutional responsiveness represents the next frontier in sustainable development communication.

CONCLUSION

Translating environmental communication research into grassroots advocacy is essential for realizing sustainable development goals. Recent studies reaffirm that participatory co-production, inclusive communication networks, and iterative learning are central to successful research translation. The CO-ACT framework provides a structured pathway that connects academic rigour with community empowerment. By co-diagnosing local needs, orienting networks, adapting messages, convening actors, and tracking outcomes, researchers and practitioners can transform scholarly insights into tangible, scalable environmental change.

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