

From Local to Global: A Multi-Actor Collaboration Model for Environmental Resilience

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Abstract. Global environmental resilience requires the systematic integration of local practices, multi-actor collaboration, and a global resilience framework. This study develops a new conceptual model that connects local wisdom with the global framework through adaptive multi-actor collaboration mechanisms. Using a mixed-methods approach with multi-site case study analysis in Indonesia, this study examines how community-based environmental management practices can be strengthened through multi-actor collaboration and connected to a global resilience framework. The developed conceptual model suggests three integration pathways: (1) amplification of local practices through horizontal collaboration, (2) vertical scalability through multi-level networks, and (3) global connections through transnational platforms. The findings identify key factors that facilitate the transformation from local initiatives to global contributions to environmental resilience, including facilitative leadership, connecting technologies, and adaptive learning mechanisms.

Keywords: local practices, multi-actor collaboration, global resilience, traditional wisdom, scale transformation, environmental governance

1. Introduction

The global environmental crisis of the 21st century presents a fundamental paradox in efforts to build sustainable environmental resilience. On the one hand, the most effective and innovative solutions often emerge from local practices that have proven adaptive to local environmental dynamics. For example, Subak in Bali, which combines water management with a spiritual dimension, maintains ecological balance while strengthening social and cultural ties. Similarly, Sasi in Maluku, which regulates the harvest times of marine and inland produce, demonstrates that communities possess traditional mechanisms for sustainably managing resources. Similarly, the customary forest management practices of the Dayak people in Kalimantan, the Mentawai people in West Sumatra, and the Baduy people in Banten demonstrate how traditional ecological knowledge can preserve biodiversity.

However, these local practices are typically limited to the scale of specific communities or regions. Meanwhile, current environmental challenges—such as climate change and ecosystem degradation—require broader, globally coordinated responses. This is where the gap between adaptive local wisdom and a comprehensive global framework emerges, which this study refers to as the “missing middle ground.”

Global frameworks, such as the Paris Agreement on Climate Change and the Sustainable Development Goals (SDGs), have provided clear guidance, measurable targets, and accountability mechanisms. However, their implementation at the local level often faces challenges. Challenges

arise when adapting to local conditions, integrating existing practices, and connecting them with community knowledge. Furthermore, international environmental governance tends to be top-down and less responsive to the diversity of local contexts. As a result, innovations emerging from communities are often overlooked. Conversely, local practices themselves face limitations in terms of resource support, visibility, and access to broader networks.

In this context, the concept of multi-sector collaboration, as proposed by Ansell and Gash (2008) through the framework of collaborative governance, becomes relevant. According to them, collaboration is not merely formal coordination between actors, but rather a process of face-to-face dialogue, trust-building, shared commitment, and the creation of agreed-upon understandings (Ansell & Gash, 2008: 544). This type of collaboration is essential for addressing complex public issues that cannot be resolved by a single actor or sector alone.

When this theory is connected to environmental governance in Indonesia, a research gap emerges. Previous studies have primarily highlighted the dichotomy between global policies and local practices, but few have addressed how multi-sectoral collaboration models can bridge the two. Yet, through multi-level collaboration, local practices can be strengthened horizontally through community networks, expanded vertically through networks between levels of government, and ultimately integrated into the global framework through transnational institutional mechanisms.

Seperti yang ditekankan Ashley dan Gash, keberhasilan kolaborasi sangat dipengaruhi oleh faktor kontekstual, seperti struktur kelembagaan, distribusi sumber daya, nilai budaya, hingga pola partisipasi aktor (Ansell & Gash, 2008). Dalam konteks Indonesia, sistem desentralisasi menghadirkan tantangan koordinasi antar tingkat pemerintahan, namun sekaligus membuka peluang bagi inovasi lokal yang dapat mendukung agenda global, seperti implementasi Perjanjian Paris dan SDGs.

Thus, this research starts from the premise that the transformation from local practices to global contributions requires a strategically designed multi-sectoral collaboration model. This model must accommodate local diversity while maintaining consistency with the global framework, creating synergy between actors, and facilitating continuous learning. The novelty of this research lies in its attempt to bridge the gap between collaborative governance theory and environmental resilience governance practices in Indonesia.

2. Literature Review

2.1 Traditional Ecological Knowledge and Socio-Ecological Resilience

Traditional Ecological Knowledge (TEK) is a system of knowledge, practices, and beliefs that has developed through generations through interactions between communities and the environment (Berkes, 2012). Its main characteristics are holistic, integrative, and adaptive to change. For example, the subak system in Bali, which combines spiritual, social, and technical aspects in irrigation management, has been shown to support ecological sustainability and social cohesion (Lansing, 2007). Within the framework of socio-ecological resilience theory (Holling, 1973; Walker & Salt, 2012), TEK provides a mechanism for adaptation throughout the resource utilization and recovery cycle. Practices such as sasi in Maluku also demonstrate the principles of adaptive management (Folke et al., 2005). However, the integration of PET with modern science is often hampered by epistemic barriers, the politics of knowledge, and the risk of commodification, which can undermine its cultural value and effectiveness (Agrawal, 1995; Nadasdy, 1999).

2.2 Collaborative Governance

Collaborative governance emerged as a response to the limitations of top-down approaches in addressing environmental complexity. This model emphasizes multi-stakeholder participation, inclusive decision-making, and shared learning (Ansell & Gash, 2008; Gray, 1989). Network-based approaches also enable cross-actor coordination, although they still face challenges such as scientific uncertainty, value conflicts, and power imbalances (Provan & Kenis, 2008; Daniels & Walker, 2001).

2.3 Multi-Level and Global Governance

Environmental issues generally transcend administrative boundaries, requiring cross-level coordination. Multi-level governance theory emphasizes the importance of alignment between ecological systems and institutions (Hooghe & Marks, 2003; Cash et al., 2006). A polycentric approach (Ostrom, 2009) is believed to enhance adaptive capacity through cross-level learning. At the global scale, governance faces fragmentation, implementation gaps, and the dominance of developed countries. Although epistemic communities (Haas, 1992) and transnational advocacy networks (Keck & Sikkink, 1998) play a role in advancing the environmental agenda, accountability and participation mechanisms remain challenges (Biermann, 2014).

3. Research Method

This research uses a qualitative approach with an interpretive constructivist paradigm to deeply examine the conceptual model linking local practices, multi-actor collaboration, and the global resilience framework. The research strategy employed a multiple case study design with a holistic approach to explore phenomena in complex natural settings. The research was conducted in three stages: the first was the exploration of local practices, the second was the analysis of the dynamics of multi-actor collaboration, and the third was the tracing of the transformation pathways of local practices toward global integration. Data collection was conducted through triangulation of qualitative methods, including observation, in-depth interviews, and literature review.

4. Result and Discussion

4.1 Local Practices as a Foundation for Environmental Resilience

The research findings show that local environmental management practices in Indonesia possess unique characteristics that enable them to serve as a foundation for adaptive and sustainable environmental resilience. The success of these practices depends not only on technical aspects, but also on the integration of mutually reinforcing ecological, social, and spiritual dimensions, creating a system resilient to external disturbances.

For example, the Subak system in Bali demonstrates how the Tri Hita Karana philosophy is combined with traditional irrigation technology. This combination has supported agricultural sustainability for over a thousand years. For a Pekaseh (Subak leader) in Bali, Subak is not just about water, but about harmony between humans, nature, and Sang Hyang Widhi. If this harmony is maintained, harvests will be abundant and the environment will remain sustainable. This aligns with research by Lansing (2007), which emphasizes that Subak operates through a complex yet flexible coordination mechanism.

The practice of sasi in Maluku demonstrates the temporal dimension of resource management. Through customary rules that govern when people may or may not harvest marine products, communities maintain ecological balance and food sustainability. For local communities in Maluku, sasi is not a prohibition, but a way to manage time so that the sea can provide the best for their children and grandchildren. Berkes (2012) calls this "time-tested effectiveness," as it is shaped by cross-generational experience.

In Kalimantan, customary forest management by the Dayak Iban community demonstrates how a traditional zoning system supports both biodiversity and daily needs. They divide their territory into tembawang (fruit forests), karanggas (protected forests), rotational fields, and settlements. This pattern aligns with the principle of polycentric governance (Ostrom, 2009), which emphasizes the existence of multiple centers of authority operating at different but interconnected scales.

From these cases, four key characteristics of resilient local practices have been identified. First, embedded adaptability, the ability to change practices without abandoning core values. Second, socio-ecological integration, the balance between environmental sustainability and social cohesion.

Third, intergenerational learning, which maintains the continuity of knowledge and practices. Fourth, institutional flexibility, the ability to adapt to external changes without losing core identity.

4.2 Multi-Actor Collaboration: Spaces for Learning and Transformation

Research shows that collaboration between actors in building environmental resilience does not occur linearly, but rather through an iterative process that includes engagement, learning, and adaptation. Successful collaboration is always characterized by the existence of a "shared learning space" where local and scientific knowledge can converge and be exchanged.

The case of community-based ecotourism development in Tanjung Puting provides a concrete example. The local community plays a role in assisting and bridging the community in obtaining comprehensive and relevant knowledge and information and facilitating communication between the community and government and private sector stakeholders seeking to assist them. This role aligns with the concept of boundary organization (Cash et al., 2006), which emphasizes the importance of intermediary institutions in facilitating knowledge exchange.

In-depth analysis identified three main mechanisms of collaboration. First, trust-building, which develops through repeated interactions and mutual respect. Second, knowledge co-production, which combines modern science and local knowledge through participatory research. Third, collective action, which involves pooling resources and coordinating efforts toward a common goal.

These findings support the concept of principled engagement (Ansell & Gash, 2008), which emphasizes the importance of face-to-face dialogue, mutual trust, and shared understanding. However, in Indonesia, this process must also adapt to local cultural protocols. For example, in the management of customary forests in Sumba, collective decisions are only valid after a traditional deliberation ritual involving spiritual consultation with ancestors.

4.3 Transformation from Local to Global

Local practices can contribute to global resilience through three main channels. First, horizontal amplification, which involves sharing and strengthening practices among communities with similar conditions, such as mangrove management networks in various coastal areas of Indonesia. Second, vertical scalability, which involves incorporating local practices into national policies and programs, such as the integration of traditional agroforestry into social forestry. Third, global connectivity, which involves connecting with international networks, such as UNESCO's recognition of subak as a World Cultural Landscape.

However, this scaling-up process is fraught with challenges. Moore et al. (2015) noted the dilemma of maintaining the authenticity of practices, adapting them to new contexts, and building institutional support. Subak, for example, on the one hand, receives additional resources from global recognition, but on the other, faces the threat of commercialization and the distortion of its original values.

In the context of protecting customary forests, for example, there needs to be a shared understanding of the importance of articulating the ecological and cultural value of forests not solely as the property of local communities, but as part of the shared heritage of humanity. This perspective encourages the development of a collective narrative capable of bridging local interests with global agendas, while strengthening the legitimacy of collaborative efforts in championing sustainability.

Furthermore, digital technology now plays a crucial role. Social media, documentaries, and virtual reality help disseminate local innovations to global audiences. However, there is a risk of misuse or inauthentic representation of traditional knowledge.

4.4 Supporting Factors

The analysis shows that the success of transformation is highly dependent on the surrounding context. One key determinant is policy support. Regulations that provide recognition and protection

for traditional knowledge have been shown to strengthen local innovation. Conversely, policies that are too rigid or restrictive actually hinder the learning process and the replication of proven practices.

In addition to regulatory aspects, social capital also plays a crucial role. Trust between actors, norms of reciprocity, and collective beliefs within the community form a solid foundation for collaboration. Communities with strong social capital tend to be more adaptive and able to navigate the complexities of cross-sectoral policy systems.

Transformational leadership, as described by Folke et al. (2005), emerged as another crucial element. This type of leadership not only inspires but also facilitates shared learning and bridges differing interests without losing legitimacy in the eyes of the community. The presence of such leaders often serves as a catalyst for inclusive, future-oriented collaboration.

Economic factors remain relevant, particularly in terms of incentives and resource availability. However, findings suggest that economic motivation alone is insufficient to sustain long-term collaboration. Intrinsic values, such as a desire to preserve cultural heritage and a commitment to environmental preservation, often serve as stronger drivers for sustainable transformation.

5. Conclusions and Recommendations

This research has successfully developed and validated an integrated conceptual model that connects local practices, multi-actor collaboration, and the global resilience framework within a single, comprehensive analytical framework. The findings demonstrate that the transformation from local practices to global contributions is not a linear process, but rather occurs through complex and interconnected pathways. This transformation requires strategic navigation of emerging challenges and opportunities.

The research identified four characteristics of local practices that have the greatest potential to support global environmental resilience: embedded adaptive capacity, socio-ecological integration, intergenerational learning systems, and institutional flexibility. Concrete examples can be found in the practices of subak in Bali, sasi in Maluku, and customary forest management in Kalimantan, which demonstrate the holistic integration of these four characteristics. Other findings emphasize the importance of multi-actor collaboration designed as a shared learning space. Successful collaboration is underpinned by trust built through repeated interactions, knowledge co-production processes that combine modern science with traditional knowledge, and collective action frameworks that enable the pooling of resources for shared goals.

Integrating local practices with global frameworks can be achieved through three main pathways. First, strengthening inter-community relationships at the local level, enabling good practices to spread and be learned across regions. Second, elevating local practices to higher levels of governance, enabling them to influence regional, national, and even international policies. Third, connecting with transnational networks, enabling local communities to participate in global knowledge exchange and collaboration. The effectiveness of this integration depends heavily on a supportive institutional context, high levels of social capital, transformational leadership capable of inspiring a shared vision, and a balance between economic incentives and intrinsic motivations related to cultural and environmental preservation.

Theoretically, this research extends the literature on transformation by emphasizing the role of multi-actor collaboration as a connecting mechanism between local practices and global frameworks. Practically, this model offers a blueprint for designing contextual, inclusive, and adaptive collaborative initiatives, thus bridging the gap between local wisdom and global needs.

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