

Sustainable Environmental Policy: Harmonization between National Law and Local Wisdom

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ARTICLE INFO

Received: 25 May 2025
Revised: 11 July 2025
Accepted: 15 September 2025
Available online: 25 September 2025

Keywords:

Local Wisdom
National Law
Adaptive Management
Legal Pluralism
Community-Based Practices

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ABSTRACT

Purpose: This study examines the interaction between national environmental policy and local wisdom in shaping sustainable environmental governance in Makassar, Indonesia, with particular attention to the extent of harmonization between formal regulations and culturally embedded practices.

Subjects and Methods: A qualitative case study design was employed using in-depth interviews with 22 informants, participant observation, and document analysis. Data were analyzed through a thematic analysis approach involving coding, categorization, and theme development to identify recurring patterns across multiple data sources.

Results: The findings reveal that local wisdom functions as an embedded governance system that regulates environmental behavior through intergenerational knowledge, moral values, and collective norms. However, the implementation of national environmental policy is constrained by bureaucratic rigidity, limited institutional capacity, and weak coordination, resulting in a mismatch between policy frameworks and local realities. Furthermore, an epistemological divide between scientific knowledge and experiential local knowledge, combined with limited community participation, creates tensions that hinder effective policy integration. Despite these challenges, partial harmonization occurs when policy initiatives align with existing local practices.

Conclusions: The study concludes that sustainable environmental governance requires adaptive and integrative approaches that bridge formal policy systems and local wisdom, emphasizing participatory mechanisms, institutional flexibility, and the recognition of culturally grounded knowledge systems as essential components of governance.

INTRODUCTION

The sustainable environmental policy has emerged at the fore front of international discussion on development, governance and ecological justice. Against this background of governance in the face of increasingly severe climate change, deteriorating environmental conditions and the rapid decline in biodiversity, there can be no doubt of the necessity to develop frameworks of policy able to guarantee a sustainable use of natural resources (Evans & Thomas, 2023).

Fueled by the environmentally friendly notion, governments in different parts of the world are developing laws that not only halt environmental destruction, but enhance the sustainability of the environment in the future. The constant issue though is bridging the gap between the national regulatory frameworks and the local sociocultural conditions, especially in the countries where the national traditions of indigenous knowledge and customary law are still strong like Indonesia (Omweri, 2024).

Indonesia, which stands out as an environmentally diverse country and socio-culturally popular one, can be regarded as an example of how environmental policy can combine with strongly felt local traditions and ecological knowledge of the community (Hutahayan & Fernandes, 2024). The Indonesian legal system has it in form of the incorporation of local wisdom in the management of the environment stipulated in law No. 32/2009 on the protection and management of the environment (Ministry of Environment and Forestry, 2009).

This law means that the governance of environment should incorporate the local knowledge systems as a necessary aspect of the sustainable development. However, concerns around practice, local knowledge tends to be assimilated in a very uneven and symbolic way into national policy and even surface level. A more specific case in point is the municipality of Makassar located in South Sulawesi which gives us a very valuable context of studying the intersection of national environmental policy with forms of localized knowledge systems (Setiawan et al., 2024; Gani et al., 2025). The city, as a fast-urbanizing coastal metropolis, is faced with numerous environmental issues, which involve coastal erosion, coastal pollution, shrinking mangroves ecosystem, and uncontrolled city sprawl (Sharma & Pathak, 2024).

At the same time, the locality also maintains quite healthy cultural customs, which include the independence of the *siri, na pacce*, a philosophy based on the concepts of honor, respecting one another and upholding the community that tends to influence the region in the issues of environmental management. Such values are incorporated in the existing practice concerning the forestry, coastal management and water conservation. Such bottom-up environmental stewardship has however been increasingly sidelined by rising bureaucratic and technocratic methods of environmental management (Mugnai, 2022).

There is multi-level structure of administration in place in Indonesia where general policy is developed on the federal level and regional authorities deal with its implementation (Maulida & Juwono, 2025). However, empirical research proves that the responsiveness or flexibility of environmental management has not been improved relatively evenly through decentralization. Instead, Local governments often go through the problem of finding ways of interpreting the national requirements, eventually leading to inefficiency in enforcement and a lack of fit with on-the-ground realities.

As shown in the case of Makassar, the existence of such malaises is compounded by the relative inability of domestic regulators to coordinate regulatory regimes with the customary institutions thus creating a governing vacuum whereby neither normative orders nor national laws are effective. The involvement in the local wisdom in the environmental policy means more than just a symbolic form of respect; it is a fundamental ingredient to achieving sustainability (Fernanda et al., 2025; Mazzocchi, 2020). According to empirical research, Indigenous and local people have adaptive and holistic knowledge systems, which are placed on the principle of intergenerational equity (Mohd et al., 2023).

These systems include customary regulations, cyclical calendars, group-based decision-making process, and prohibitions governing sustainable use of natural resources. By neglecting or superseding these systems when managing regulations nation-states risk disaffecting communities affected by these regulations and undermining compulsions to obey the regulations and raise opposition. Conversely, to the extent that it is locally based and strategically integrated with policy shields, local wisdom in a policy discourse can increase policy legitimacy, engender stewardship, create both culturally specific and context specific solutions.

Back to Makassar, local communities within its explorer city have previously portrayed strength in adapting to the environmental change by means of the indigenous knowledge systems. As an example, customary practices such as limiting specific fishing equipment and designation of sacred areas have been part of the customary marine tenure that have often led to conservation results that are higher than formal controls. These practices, however, are progressively marginalized by a top-down policy interventions, which do not involve locals in either planning or implementation (Sanga et al., 2022). Moreover, the local wisdom has been considered as anecdotal or of lesser value than scientific knowledge and thus its institutional credibility and practice have been compromised.

Tarigan & Hafandi (2024) said that, the call among various groups to expand the more pluralistic and inclusive framework of environmental governance has been gathering pace in the last one decade, both globally and within Indonesia. There are growing beliefs among the researchers and practitioners on hybrid arrangements flanked by formal state control and traditional norms and hence developing co-management structures, bringing legal requirements within the confines of the local cultural circumstances. In the case of Makassar City, this type of hybrid governance is not only practical, but rather necessary due to the very limited opportunities of state-centered environmental interventions and the gradual loss of traditional ecological behavior in a context of rapid urban development and modernization (Rusnaedy et al., 2021).

This paper, thus, enters a wider body of knowledge on sustainable governance in the sense that it critically evaluates the mingling of national environmental law and local wisdom in Makassar. It does not refer to this interaction as a clean-cut execution process but a complex sociopolitical bargaining between participants, organizations, and knowledge systems. The study therefore adds a growing literature worldwide which underlines the significance of context-sensitive, culturally embedded and participatory environmental policy in Indonesia and beyond.

METHODOLOGY

Research Design

This study employed a qualitative case study design to examine the interaction between national environmental policy and local wisdom in environmental governance in Makassar, Indonesia. A qualitative approach was selected as it enables an in-depth exploration of complex socio-cultural, institutional, and regulatory dynamics that cannot be adequately captured through quantitative measures. The case study design follows the approach proposed by Robert K. Yin, which emphasizes the importance of contextual understanding in analyzing real-life phenomena. Makassar was chosen as the case study site because it represents a dynamic setting characterized by rapid urban development, increasing environmental pressures, and the persistence of strong local wisdom traditions that influence environmental practices.

Research Site

The research was conducted in Makassar City, South Sulawesi, Indonesia, focusing specifically on three subdistricts: Tamalate, Mariso, and Ujung Tanah. These locations were selected purposively due to their proximity to coastal ecosystems, the presence of traditional communities, and the visible interaction between formal governance systems and local cultural practices. These areas provide a relevant socio-ecological context where tensions and harmonization between national environmental policies and local wisdom can be observed directly.

Data Collection Techniques

Data collection was carried out using multiple qualitative methods to ensure depth and triangulation. In-depth semi-structured interviews served as the primary source of data, involving 22 purposively selected informants who possessed relevant knowledge and experience related to environmental governance. These informants included government officials, customary leaders, community members, environmental activists, NGO representatives, and religious leaders. The interviews explored participants' perspectives on local ecological practices, policy implementation, and interactions between formal regulations and traditional knowledge systems. All interviews were recorded, transcribed verbatim, and anonymized using participant codes, which are consistently presented in the Results section. In addition to interviews, participant observation was conducted to capture real-life environmental practices and social interactions within the community. The researcher engaged in various activities such as community rituals, environmental events, and informal gatherings, with particular attention to practices reflecting environmental stewardship, including coastal clean-up activities, customary prohibitions, and collective actions such as gotong royong. These observations were documented in detailed field notes and used to complement and validate interview findings. Document analysis was also undertaken to provide contextual support and triangulation. The documents analyzed included national environmental laws, regional regulations, customary rules, and reports produced by NGOs and academic institutions. These materials were used to compare

formal policy frameworks with actual practices in the field and to strengthen the interpretation of qualitative findings.

Sampling Technique

This study employed purposive sampling to ensure that selected participants had direct relevance to the research objectives. Participants were chosen based on their involvement in environmental governance, their roles within customary or community leadership structures, and their experience in interacting with national and local environmental policies. This approach ensured that the data collected reflected diverse perspectives while maintaining analytical relevance.

Data Analysis Techniques

Data analysis was conducted using a thematic analysis approach following the framework developed by Virginia Braun and Victoria Clarke. The analysis began with data familiarization, during which all interview transcripts, observation notes, and documents were read repeatedly to gain a comprehensive understanding of the data. This stage was followed by initial coding, where meaningful segments of data were identified and labeled based on recurring patterns and concepts such as local ecological norms, policy rigidity, participation gaps, and institutional limitations. The codes generated were then grouped into broader analytical categories through a process of constant comparison across different data sources. These categories were further synthesized into three major themes that structure the findings of this study, namely local wisdom practices, policy implementation challenges, and harmonization and conflict between national law and local wisdom. This analytical process is explicitly reflected in the coding table and thematic matrix presented in the Results section, demonstrating how raw qualitative data were transformed into structured analytical insights. The themes were subsequently reviewed and refined to ensure internal consistency and alignment with the research questions. This validation process involved cross-checking findings across interviews, observational data, and documents, thereby ensuring that the analysis was grounded in multiple sources of evidence. The final stage involved interpreting the themes in relation to theoretical perspectives on environmental governance and legal pluralism, allowing for a deeper understanding of the interaction between formal policies and local knowledge systems.

Data Reduction and Analytical Transparency

To enhance analytical transparency, the study applied a systematic data reduction process that transformed raw qualitative data into structured analytical outputs. This process involved the sequential transformation of data from raw excerpts to initial codes, followed by categorization and theme development. The results of this process are presented in the coding table and thematic matrix in the Results section, which illustrate how interview data, including participant statements, were systematically analyzed. This approach ensures that the analytical pathway from data collection to interpretation is clearly traceable.

Validity and Reliability

The trustworthiness of the findings was ensured through several strategies. Data triangulation was applied by integrating information from interviews, observations, and documents, allowing for cross-verification of findings. Data saturation was achieved when no new themes emerged from additional interviews, indicating sufficient coverage of the research phenomenon. The use of detailed participant quotations in the Results section provides thick description, enhancing the credibility and contextual depth of the study. Furthermore, analytical transparency was maintained through the presentation of coding structures and thematic development, ensuring that the research process is both systematic and replicable.

RESULTS AND DISCUSSION

Data Reduction and Analytical Process

The data analysis followed a systematic thematic analysis approach involving six stages: data familiarization, initial coding, code categorization, theme development, review, and interpretation. All interview transcripts (n = 22), field notes, and documents were reduced

through iterative reading and selective extraction of meaning units. The reduction process focused on identifying recurring patterns related to: (1) local ecological practices; (2) policy implementation challenges; (3) interactions between formal law and local wisdom.

Table 1. Example of Data Reduction and Coding

Raw Data (Excerpt)	Initial Code	Category	Theme
“We only follow seasonal fishing rules from our elders...”	Traditional fishing norms	Local ecological knowledge	Local Wisdom Practices
“Government rules are too rigid and do not match our reality”	Policy rigidity	Institutional mismatch	Policy Implementation Challenges
“We were never consulted in coastal reclamation decisions”	Lack of participation	Governance exclusion	Conflict & Harmonization

Source: Authors’ qualitative data analysis based on interview transcripts, participant observation, and document review (2025).

The coding process presented in Table 1 illustrates how raw qualitative data were systematically transformed into structured analytical units through an inductive approach. Each excerpt derived from interview data was first reduced into meaningful segments, which were then assigned initial codes reflecting key ideas expressed by participants. These initial codes were not predetermined but emerged directly from the data, ensuring that the analysis remained grounded in participants’ lived experiences and perspectives. Similar codes were grouped into broader analytical categories that capture shared meanings across different data sources. For instance, codes related to traditional practices and inherited ecological knowledge were clustered under the category of local ecological knowledge, while statements reflecting dissatisfaction with policy implementation were categorized as institutional mismatch. This categorization process enabled the identification of recurring patterns across interviews, observations, and documents. These categories were synthesized into overarching themes that represent the core analytical dimensions of the study, namely local wisdom practices, policy implementation challenges, and harmonization and conflict between national law and local wisdom. The transformation from raw data to themes demonstrates a clear analytical trajectory, ensuring transparency and methodological rigor. Moreover, the consistency of these patterns across multiple data sources confirms the reliability of the findings and supports the validity of the thematic structure developed in this study.

Coding Structure and Theme Development

Codes were generated inductively from the data and grouped into broader categories. These categories were then synthesized into three major themes.

Table 2. Thematic Matrix

Theme	Categories	Representative Codes
Local Wisdom Practices	Ecological norms, cultural values, religious ethics	seasonal fishing, sacred zones, gotong royong
Policy Implementation Challenges	Institutional limitations, bureaucratic rigidity, weak coordination	policy mismatch, limited capacity, fragmented governance
Harmonization and Conflict	Participation gaps, epistemological differences, land-use conflict	exclusion, knowledge gap, development pressure

Source: Developed by the authors based on thematic analysis of interview transcripts, participant observation, and document analysis (2025).

The structured outcome of the coding and categorization process, illustrating how individual codes were systematically organized into broader analytical categories and subsequently synthesized into overarching themes. This matrix reflects the transition from fragmented

qualitative data into coherent analytical constructs, allowing for a more comprehensive understanding of the research phenomenon. The first theme, *local wisdom practices*, emerges from categories related to ecological norms, cultural values, and religious ethics, indicating that environmental management at the community level is deeply embedded in socio-cultural and moral systems. The clustering of codes such as seasonal fishing, sacred zones, and collective practices like gotong royong highlights the role of local knowledge as a normative and operational framework guiding sustainable environmental behavior.

The second theme, *policy implementation challenges*, reflects structural and institutional barriers identified across multiple data sources. Categories such as institutional limitations, bureaucratic rigidity, and weak coordination capture recurring issues in translating national environmental policies into effective local practices. The associated codes, including policy mismatch and limited capacity, indicate that implementation gaps are not merely technical but are also shaped by organizational and governance constraints. The third theme, *harmonization and conflict*, represents the dynamic interaction between formal regulatory systems and local knowledge frameworks. This theme is derived from categories such as participation gaps, epistemological differences, and land-use conflicts, suggesting that tensions arise not only from policy design but also from differences in knowledge systems and decision-making processes. Codes such as exclusion and knowledge gaps further emphasize the challenges of integrating local wisdom into formal governance structures. The development of these themes was achieved through continuous comparison across interviews, observations, and documents, ensuring triangulation and internal consistency. This analytical process confirms that the themes are not isolated findings but are interconnected dimensions that collectively explain the complexity of environmental governance in Makassar.

Local Wisdom in Environmental Practices

The findings reveal that local wisdom remains a central mechanism in environmental management in Makassar. Informants consistently emphasized that ecological practices are deeply embedded in intergenerational knowledge systems, moral values, and collective responsibility. A traditional fisher explained:

“Since I was young, my father and grandfather taught me that the sea is not something we can exploit freely. There are seasons when we are allowed to fish and times when we must stop to let nature recover. We observe the wind, the moon, and the water conditions. If we ignore these rules, the fish will disappear, and our children will suffer. So, these practices are not just habits, they are obligations that we must respect for the future.” (Participant P07, Male, 52 years, Ujung Tanah)

This statement reflects a strong adherence to intergenerational ecological norms, coded as seasonal regulation and resource sustainability. A customary community leader, further emphasized the moral dimension of environmental practices:

“In our community, damaging mangroves or polluting the sea is not only a violation of rules, it is considered a moral failure. We believe in siri na pacce, which teaches us to respect others and the environment. If someone harms nature, it brings shame not only to themselves but also to their family and community. That is why social sanctions are often stronger than formal law because people fear losing honor.” (Participant P03, Male, 61 years, Tamalate)

This highlights the role of cultural enforcement mechanisms, coded as *social sanction* and *moral regulation*. Additionally, a religious leader, described the integration of ecological values with religious teachings:

“We often remind the community during sermons that humans are khalifah on earth, meaning we are responsible for protecting nature. Throwing waste carelessly or destroying ecosystems is not only harmful but also sinful. When religious values are

combined with local traditions, people become more aware and more disciplined in protecting their environment.” (Participant P12, Male, 48 years, Mariso)

This indicates the presence of hybrid ethical frameworks, coded as religious ecology and value integration. Participant observations confirmed that: (1) Rituals and customary prohibitions regulate environmental use; (2) Collective practices such as *gotong royong* sustain environmental cleanliness. These findings demonstrate that local wisdom operates as an informal governance system with strong normative power, often more effective than formal regulatory mechanisms.

Implementation of National Environmental Policy

Despite the presence of national regulations, their implementation at the local level faces significant institutional and contextual challenges. A government official, explained:

“We are required to follow national environmental regulations, and in principle, these policies are already comprehensive. However, in practice, many of these rules are too general and do not consider local socio-cultural conditions. For example, community habits and traditional practices are rarely included in implementation guidelines. As a result, we often focus on fulfilling administrative requirements rather than solving actual environmental problems in the field.” (Participant P15, Female, 39 years, Environmental Agency)

This reflects policy rigidity and context mismatch. An NGO representative, highlighted procedural limitations:

“Many environmental programs are designed in a top-down manner. Communities are invited to meetings, but their input rarely influences final decisions. Participation is often symbolic, just to fulfill formal requirements. This creates a gap between policy design and real community needs, and eventually reduces public trust in government initiatives.” (Participant P18, Male, 34 years, Environmental NGO)

This was coded as *procedural participation* and *tokenism*. Another government staff member, emphasized capacity constraints:

“We face serious limitations in terms of human resources and budget. Monitoring environmental violations across coastal and urban areas is not easy, especially with limited staff. Sometimes we are aware of violations, but we cannot respond quickly due to administrative procedures and resource constraints. This weakens enforcement and reduces the effectiveness of policies.” (Participant P16, Male, 41 years, Municipal Office)

This reflects *capacity constraints* and *institutional limitation*. These findings indicate that policy implementation is shaped by: (1) Bureaucratic formalism; (2) Limited institutional capacity; (3) Weak inter-agency coordination

Harmonization and Conflict between National Law and Local Wisdom

The interaction between national environmental law and local wisdom is characterized by both alignment and tension, depending on the context of implementation and stakeholder involvement.

Areas of Harmonization

In some cases, local practices align closely with national environmental objectives. A community elder, explained:

“Long before government policies existed, we already had rules to protect the sea and coastal areas. We do not fish in certain locations, and we avoid catching small fish. These

practices have been passed down for generations. When government programs support these traditions, it becomes easier for us to cooperate because the values are already part of our lives.” (Participant P05, Male, 58 years, Coastal Community)

This reflects *policy alignment* and *indigenous conservation practices*.

Areas of Conflict

However, significant conflicts emerge due to top-down governance and lack of meaningful participation. A coastal resident, stated:

“When the government approved coastal reclamation projects, we were not properly consulted. We only found out after decisions had been made. These projects affected our fishing areas and livelihoods. It feels like our voices do not matter, even though we are the ones directly impacted by these policies.” (Participant P09, Female, 45 years, Tamalate)

This reflects lack of participation and governance exclusion. Another informant highlighted epistemological differences:

“Government officials often use technical and scientific language that is difficult for local communities to understand. At the same time, they do not fully recognize our traditional knowledge, which is based on experience and cultural values. This creates a gap where both sides fail to communicate effectively, and local wisdom is often ignored in decision-making processes.” (Participant P11, Male, 37 years, Community Activist)

This illustrates an *epistemological gap* between formal and local knowledge systems.

Discussion

Local Wisdom as an Embedded Governance System in Environmental Management

According to Dirawan (2025), the findings indicate that local wisdom in Makassar is not merely a set of cultural expressions but functions as an embedded governance system that regulates environmental behavior at the community level. Unlike formal regulatory frameworks, which rely on institutional enforcement, local wisdom operates through internalized norms, moral obligations, and collective consciousness. This suggests that environmental governance in Makassar is shaped by socially constructed legitimacy rather than solely by legal authority.

From a governance perspective, the presence of intergenerational ecological knowledge demonstrates that sustainability practices are deeply rooted in lived experience rather than external intervention. The continuity of practices such as seasonal fishing and respect for ecological cycles reflects a form of adaptive knowledge that evolves through observation and long-term interaction with the environment (Abu, R., & Reed, 2018; Danugroho et al., 2025). This aligns with broader theories of community-based resource management, where sustainability is achieved through localized knowledge systems rather than standardized policy instruments.

The integration of cultural values such as *siri na pacce* further strengthens this governance structure by embedding environmental responsibility within moral and social identity. Environmental violations are not perceived merely as technical infractions but as ethical transgressions that affect social cohesion (Fernando et al., 2025). This creates a powerful form of social regulation, where compliance is driven by internalized values rather than external sanctions. As a result, enforcement becomes decentralized and socially sustained.

Religious values also play a complementary role in reinforcing environmental ethics. The incorporation of ecological responsibility into religious teachings suggests that environmental governance is multidimensional, combining cultural, moral, and spiritual elements. This hybridization of value systems enhances the legitimacy of environmental practices and broadens the scope of community engagement in sustainability efforts.

The methodological approach of triangulating interview data with participant observation strengthens this interpretation. Observed practices such as collective clean-up activities and ritual-based environmental restrictions confirm that local wisdom is actively practiced rather than symbolically maintained (Fernando et al., 2025; Tantowi & Ahmad, 2025). This reinforces the argument that local wisdom functions as an operational system rather than a passive cultural artifact.

The persistence of these practices should not be romanticized. The findings also imply that local wisdom is under pressure from modernization, urbanization, and shifting socio-economic priorities. While it remains influential, its authority is increasingly contested in contexts where formal governance structures dominate decision-making processes. This creates a tension between continuity and transformation within local knowledge systems.

The absence of formal institutional recognition of local wisdom further limits its integration into broader governance frameworks. Although national policies acknowledge the importance of local knowledge, the lack of operational mechanisms to incorporate these practices results in a disconnect between policy intent and implementation (Croese et al., 2021; Abdullahi & Othman, 2020; Williams, 2021). This suggests that local wisdom is often positioned at the margins of formal governance.

Local wisdom should be understood as a parallel governance system that coexists with formal institutions but lacks structural integration. Its effectiveness depends on social cohesion and cultural continuity rather than institutional support. This duality highlights the need for governance models that can bridge formal and informal systems.

The findings suggest that sustainable environmental governance in Makassar cannot rely solely on formal regulatory approaches. Instead, it requires a recognition of local wisdom as a legitimate and functional governance system that contributes to environmental sustainability through culturally embedded practices.

Institutional Gaps and the Challenge of Harmonizing National Policy with Local Wisdom

The findings reveal that the implementation of national environmental policy in Makassar is characterized by significant institutional and structural limitations (Maskun et al., 2025; Ismaniar et al., 2025; Surya et al., 2020). While regulatory frameworks provide formal guidance, their translation into local practice is constrained by bureaucratic rigidity, limited capacity, and weak coordination among agencies. This indicates that policy effectiveness is not determined solely by design but by the institutional context in which it is implemented.

One of the key challenges lies in the standardized nature of national policies, which often fail to account for local socio-cultural dynamics. Policies are typically formulated at the central level and applied uniformly, resulting in a lack of contextual sensitivity. This creates a mismatch between policy prescriptions and local realities, particularly in communities where environmental practices are shaped by traditional knowledge systems.

The emphasis on procedural compliance further complicates policy implementation. Institutional actors tend to prioritize administrative requirements, such as reporting and documentation, over substantive engagement with communities (Baldwin, 2019; Leardini et al., 2019). This shifts the focus of governance from problem-solving to rule-following, reducing the adaptability of environmental management strategies.

Participation emerges as another critical issue in the governance process. Although participatory mechanisms are formally included in policy frameworks, their implementation is often superficial. Community involvement tends to be limited to consultation rather than meaningful decision-making, leading to perceptions of exclusion and reduced trust in government institutions.

The lack of integration between different government agencies also contributes to governance fragmentation. Environmental management responsibilities are distributed across multiple institutions, each operating within its own mandate. This creates overlapping roles and

inconsistent policy implementation, particularly in areas such as coastal management and land use planning.

Beyond institutional challenges, the findings highlight an epistemological divide between formal and local knowledge systems. Lubis & Baiduri (2025) said that, national policies are grounded in scientific and technical frameworks, while local wisdom is based on experiential and culturally embedded knowledge. The inability to reconcile these perspectives limits the effectiveness of policy interventions and undermines the potential for knowledge integration.

This epistemological gap is particularly evident in decision-making processes, where local knowledge is often undervalued or excluded. The dominance of technical language and formal procedures creates barriers to communication, preventing meaningful dialogue between policymakers and communities (Nesrallah et al., 2023; Baker et al., 2019). As a result, local wisdom is rarely incorporated into policy design or implementation.

Despite these challenges, the findings also suggest the possibility of harmonization under certain conditions. When policies align with existing local practices, community acceptance increases, and implementation becomes more effective. This indicates that compatibility between formal and informal systems is a key factor in successful environmental governance.

Achieving such harmonization requires more than symbolic recognition of local wisdom. It demands institutional transformation, including the development of participatory mechanisms, integration of knowledge systems, and adaptive policy frameworks (Munene et al., 2018; Silva-Ávila et al., 2025; Ziervogel et al., 2022; Chapman & Schott, 2020). Without these changes, the gap between national policy and local practice is likely to persist.

The interaction between national environmental policy and local wisdom in Makassar reflects a complex negotiation between formal authority and cultural legitimacy. The findings suggest that effective environmental governance depends on the ability to bridge institutional and epistemological divides, creating a more inclusive and adaptive governance system.

CONCLUSION

This study concludes that environmental governance in Makassar is shaped by a dynamic and often fragmented interaction between formal national policy frameworks and deeply rooted local wisdom systems. While local wisdom functions as an effective, culturally embedded governance mechanism that regulates environmental behavior through moral values, social norms, and intergenerational knowledge, its integration into formal policy implementation remains limited and largely symbolic. The findings reveal that national environmental policies, although structurally comprehensive, are constrained by bureaucratic rigidity, weak institutional capacity, and insufficient contextual adaptation, resulting in a disconnect between policy design and local realities. This misalignment is further intensified by limited community participation and an epistemological divide between scientific approaches and experiential local knowledge. Nevertheless, the study identifies potential pathways for harmonization, particularly when policy frameworks align with existing local practices and values. Therefore, achieving sustainable environmental governance requires a shift toward more adaptive, inclusive, and integrative approaches that recognize local wisdom as a legitimate and operational component of governance, rather than a peripheral consideration within formal regulatory systems.

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