Development of a Collaborative Governance Model in Local Governments for Environmental Innovation in Public Service

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Abstract

This study develops a collaborative governance model for environmental public service innovation in Thai Local Administrative Organisations (LAOs), contextualising Collaborative Governance Regimes (CGR) within a developing-nation framework characterised by institutional fragility and fiscal constraints. Employing a qualitative multiple case study design, the research conducted semi-structured interviews and focus group discussions with 37 key informants across three award-winning LAOs: Rang Chorakhe SAO, Na Phan Sam SAO, and Kong Thanu SAO. Data were analysed using thematic analysis six-phase framework. Findings reveal that effective environmental governance operates as an iterative cycle of learning and institutional adaptation across four stages: policy formulation, innovation implementation, analysis and evaluation, and continuous adaptation. Critical success factors encompass facilitative leadership, social capital mobilisation, and multidimensional incentive design. Governance outcomes include national budget savings exceeding 51 million THB and certified reductions of 289,497 tonnes of CO_2e emissions. The study contributes an empirically grounded collaborative governance model applicable to developing-nation local governance contexts, with practical and policy recommendations for scaling environmental innovation through inter-local partnerships.

Keywords: Collaborative Governance, Local Administrative Organizations (LAOs),
Public Service Innovation, Environmental Management, Co-production, Institutional Resilience

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Received: January 28, 2026. Revised: April 24, 2026. Accepted: June 04, 2026

Introduction

The global community faces persistent transboundary environmental pressures, characterised as systemic 'wicked problems' that necessitate collaborative solutions (Rockström et al., 2009; UNEP, 2012). In Thailand, multifaceted challenges span various governance scales, yet Local Administrative Organizations (LAOs) struggle to fulfill their statutory mandates (ONEP, 2023; World Bank, 2021). These difficulties stem from legal limitations and fiscal constraints (Prutipinyo & Polrob, 2015). Such structural barriers, combined with insufficient public participation, significantly impede the effectiveness of localised environmental management (Chamchong, 2018; Jarusombat, 2011).

Collaborative governance has emerged as a pivotal mechanism for addressing environmental complexities by leveraging synergies between state agencies and diverse stakeholders (Newig et al., 2018). This paradigm enables actors to co-create localised public policies, thereby fostering institutional innovation (Nesta, 2014). Critically, it enables LAOs to transcend conventional constraints through the co-production of public services (Ansell & Gash, 2008; Luangprapat, 2020). However, most foundational models originate from Western contexts characterised by robust institutional trust, leaving a significant gap in understanding how collaborative governance operates under conditions of 'collaborative fragility' — a term describing the constrained trust environment inherent in Thailand's highly centralised bureaucracy (Boossabong et al., 2017; Chamchong, 2018). For many Thai LAOs, localised innovation thus remains an emergent practice, and substantial knowledge gaps persist regarding the practical application of these concepts and their coherent integration into broader policy frameworks (Leach et al., 1997; Mascia & Mills, 2018).

Despite growing scholarly interest, existing literature lacks a synthesised model elucidating the causal relationship between iterative learning and institutional resilience in localised governance contexts (Luangprapat et al., 2014; Ostrom, 2010). Current studies frequently treat collaborative processes and governance outcomes as isolated entities, resulting in fragmented and decontextualised analysis (Emerson et al., 2012; Termeer et al., 2017). In-depth, context-sensitive research is therefore critically needed to operationalise collaborative governance theory within local realities, enabling a more holistic and empirically grounded approach to environmental public service delivery.

To bridge critical theoretical and practical gaps, this research develops a collaborative governance model for environmental public service innovation. By elucidating successful governance processes and evaluating localized innovation impacts, the study contextualizes Collaborative Governance Regimes (CGR) within a developing nation's framework. Consequently, it provides concrete policy recommendations to enhance the institutional capacity of Local Administrative Organizations (LAOs). Ultimately, this research empowers local governments to drive sustainable innovation, tangibly fostering the genuine well-being of the citizenry.

Research Objectives

1) To explore and analyze the collaborative governance processes in environmental public service innovation within Thai local governments.

2) To examine the key success factors of collaborative governance and evaluate the outputs, outcomes, and impacts resulting from environmental public service innovation in local governments.

3) To develop an appropriate collaborative governance model for local governments to effectively manage and sustain environmental public service innovation.

Literature Review

Environmental Innovation

Environmental innovation within collaborative governance frameworks necessitates a fundamental reconfiguration of authority relationships between the state and society (Ansell & Gash, 2008; Emerson et al., 2012). Scholarly consensus identifies two interdependent dimensions: technological innovation, which applies technical knowledge to optimise resource management, and institutional innovation, which restructures regulatory frameworks and social norms through cross-sectoral networks (Davidson & Frickel, 2004; Lemos et al., 2006).

These dimensions are conceptually aligned with the Circular Economy (CE) framework, which facilitates the transition from linear resource consumption toward closed-loop systems through waste-to-resource mechanisms (IUCN, 2014; Hickmann, 2021). However, critics note that CE adoption in developing-nation contexts remains constrained by institutional fragility and fiscal dependency (Falayi et al., 2021; Atisa et al., 2021).

Consequently, localised innovation management represents a strategic integration of appropriate technology, behavioural adaptation, and multi-level governance capacity — translating global environmental commitments into tangible, context-specific public services at the subnational level (Lafferty & Meadowcroft, 2000; Yang et al., 2022).

Public Service Innovation

Public service innovation extends beyond fiscal efficiency to encompass public value — understood as a multidimensional concept integrating citizen well-being, social equity, and environmental sustainability (Moore, 1995; Mulgan & Albury, 2003). As a form of social innovation, it addresses complex public challenges that centralised governmental mechanisms often prove insufficient to resolve through conventional administrative processes (Damanpour & Aravind, 2012; Mulgan & Albury, 2003).

Co-production constitutes the foundational mechanism of contemporary public service innovation, reconstructing the traditional state–citizen relationship by positioning stakeholders as active co-creators throughout the innovation lifecycle (Ostrom, 1996; Osborne, 2010). This process enables Local Administrative Organisations (LAOs) to mobilise social capital, integrate place-based knowledge with formal institutional authority, and develop contextually responsive environmental public services (Damanpour & Aravind, 2012; Kelly & Kranzberg, 1978).

However, co-production faces significant constraints in highly centralised administrative contexts, where fiscal dependency and weak participatory mechanisms restrict the innovation process (Mulgan & Albury, 2003; Zabadzhiev et al., 2022). Sustained innovation therefore necessitates iterative institutionalisation — systematically embedding new practices into organisational structures and cultures to ensure long-term viability and replicability across local governance contexts (Damanpour & Aravind, 2012).

Collaborative Governance

Collaborative governance (CG) emerged in the late 1990s as a strategic administrative paradigm designed to address the escalating complexity of public management, particularly wicked problems such as environmental degradation, poverty, and social inequality that centralised governmental mechanisms frequently prove insufficient to resolve (Ansell & Gash, 2008; Emerson et al., 2012). Rooted in a fundamental transition from traditional bureaucracy toward pluralistic governance, CG formally engages non-state actors — including the private sector, civil society, and local communities — in policy

formulation and public service delivery through consensus-oriented, trust-based decision-making processes (Ansell & Gash, 2008; Chamchong, 2018).

Emerson et al. (2012) define CG as the processes and structures for public policy decision-making that enable individuals and organisations across governmental boundaries to engage constructively in pursuit of shared objectives unachievable by any single actor. This integrative framework is further developed by Emerson and Nabatchi (2015) into the Collaborative Governance Regime (CGR), comprising four interdependent dimensions: system context, drivers, collaborative dynamics, and outputs. The system context encompasses resource conditions, policy and legal frameworks, socioeconomic characteristics, political dynamics, and conflict histories — all of which shape the formation and sustainability of collaborative arrangements. Four key drivers initiate collaborative action: problem uncertainty, interdependence among actors, consequential incentives, and initiating leadership (Emerson & Nabatchi, 2015).

The collaborative dynamics dimension integrates three mutually reinforcing components: principled engagement, shared motivation, and capacity for joint action. Principled engagement encompasses discovery, problem definition, deliberation, and determination, while shared motivation is sustained through trust, mutual understanding, internal legitimacy, and shared commitment. Capacity for joint action depends on procedural arrangements, facilitative leadership, and equitable resource-sharing (Emerson & Nabatchi, 2015; Luangprapat, 2020). Complementing this, Greenwood et al. (2021) propose the "Moving Northeast" concept, wherein collaborative processes generate mutual gains by identifying shared interests, thereby transforming zero-sum competition into win-win outcomes across stakeholder groups.

Collaborative capacity — encompassing both individual boundary-spanning skills and organisational culture — fundamentally determines governance effectiveness (Luangprapat, 2020). However, structural challenges including collaborative inertia, power imbalances, and jurisdictional limitations persistently constrain implementation (Huxham & Vangen, 2000). International scholarship further identifies flexible institutional design and facilitative leadership as critical success factors, while excessive top-down steering and resource dependency remain significant barriers (Amsler & Vieilledent, 2021; Nielsen et al., 2024).

In the Thai context, despite growing scholarly interest, structural and operational barriers continue to undermine the sustainability of collaborative initiatives. Rigid legal frameworks, political instability, and frequent leadership turnover often reduce partnerships to superficial arrangements driven by resource dependency rather than genuine co-governance (Boossabong et al., 2017; Luangprapat et al., 2014). Luangprapat (2020) and Chamchong (2018) further emphasise that Thailand's highly centralised administrative culture generates collaborative fragility — a structural condition in which institutional trust deficits inhibit meaningful stakeholder engagement. Consequently, future research must examine trust-building mechanisms and power dynamics to enhance the capacity of Local Administrative Organisations (LAOs) to drive sustainable environmental public service innovations within decentralised governance frameworks.

Conceptual Framework

This study synthesises three complementary theoretical perspectives to construct a contextually grounded collaborative governance framework for environmental public service innovation in Thai Local Administrative Organisations (LAOs). The foundational structure derives from the Collaborative Governance Regimes (CGR) framework (Emerson & Nabatchi, 2015), which interconnects system context, collaborative dynamics, and iterative outputs through continuous feedback cycles, thereby enabling systematic analysis of complex multi-stakeholder interactions across five contextual dimensions: resource conditions, policy frameworks, socioeconomic characteristics, political dynamics, and conflict histories.

To operationalise a clear procedural pathway, the researcher integrates the four-stage collaborative governance process — policy formulation, innovation implementation, analysis and evaluation, and continuous adaptation — adapted from Greenwood et al. (2001) and Emerson and Nabatchi (2015). This process prioritises shared interests among stakeholders to achieve mutually beneficial governance outcomes.

Furthermore, Luangprapat (2020) strengthens the framework by identifying collaborative capacity — encompassing both individual boundary-spanning competencies and organisational culture — as the critical success factor within Thailand's centralised administrative context.

The integration of these perspectives produces a holistic framework with both structural and procedural dimensions, wherein LAOs function as the primary unit of analysis engaging five actor categories: government agencies, the private sector, citizens, and civil society organisations. This model facilitates systematic environmental innovation across four iterative governance stages, as illustrated in Figure 1.

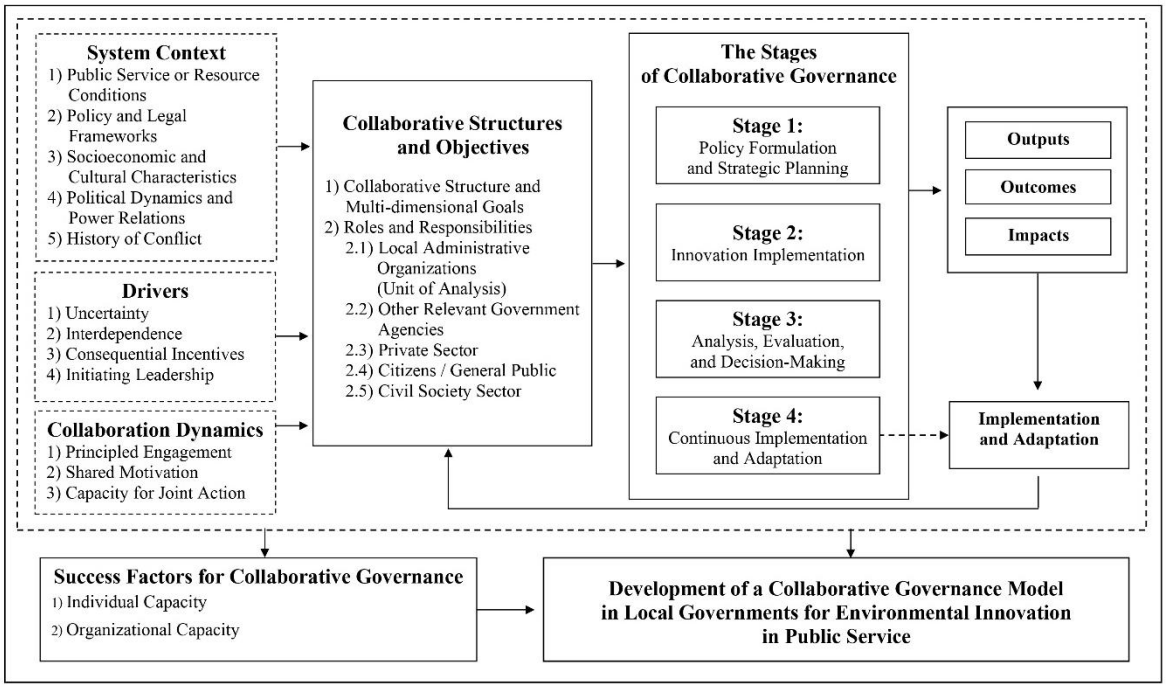


Figure 1 Conceptual Framework for the Development of a Collaborative Governance Model in Local Administrative Organisations for Environmental Public Service Innovation

Note: Adapted from Emerson and Nabatchi (2015); Greenwood et al. (2001); Luangprapat (2020)

Research Methodology

Research Design

This study employs a qualitative multiple case study design to develop a collaborative governance model for environmental public service innovation in Thai Local Administrative Organisations (LAOs). This approach is appropriate when the research aim is to generate contextually grounded theoretical understanding of complex governance phenomena within real-world settings (Creswell & Poth, 2018; Yin, 2018). The analytical framework integrates secondary data — including legislation, government policies, and official reports — with primary field data to provide credible empirical evidence supporting model development.

Units of Analysis and Case Selection

The units of analysis comprise three LAOs recognised for outstanding environmental service innovations, selected through purposive sampling on the basis of their demonstrable governance success and information-rich characteristics (Patton, 2015). Each organisation received the Excellence in Good Governance Award for fiscal years 2021–2023 from the Office of the National Decentralisation to Local Government Organisation Committee, providing a theoretically justified criterion for selection as exemplary collaborative governance cases. The designated cases are Rang Chorakhe Sub-district

Administrative Organisation (SAO) in Phra Nakhon Si Ayutthaya Province, Na Phan Sam SAO in Phetchaburi Province, and Kong Thanu SAO in Lopburi Province. These three cases collectively represent diverse geographical and socioeconomic contexts, enabling cross-case analytical comparison.

Participants and Sampling

A total of 37 key informants were selected through purposive sampling to represent the multidimensional stakeholder structure of collaborative governance (Patton, 2015). Participants were categorised into four groups: LAO officials with policy-making authority, government oversight agencies, private sector actors providing technical support, and civil society leaders serving as community-level implementation actors. Table 1 presents the distribution and coding of informants across all three case sites.

Table 1. Distribution and Coding of Key Informants by Stakeholder Group and Case Site

Stakeholder Group	Rang Chorakhe (Code)	Na Phan Sam (Code)	Kong Thanu (Code)	Total
1. Local Administrative Organizations	2 (LAO1- LAO2)	2 (LAO3- LAO4)	2 (LAO5- LAO6)	6
2. Government Agencies	4 (GOV1- GOV4)	3 (GOV5- GOV7)	2 (GOV8- GOV9)	9
3. Private Sector	3 (PRIV1- PRIV3)	2 (PRIV4- PRIV5)	1 (PRIV6)	6
4. Citizens & Civil Society	6 CIT1- CIT 6	4 CIT7- CIT10	6 CIT11- CIT16	16
Total	**15**	**11**	**11**	**37**

Data Collection

Primary data were collected through semi-structured in-depth interviews and focus group discussions, continued until theoretical saturation was achieved (Morgan, 1997). Secondary data sources included policy documents, administrative records, and award assessment reports. Credibility and trustworthiness were ensured through methodological triangulation — comparing diverse stakeholder perspectives, integrating secondary with primary evidence, and cross-analysing findings across all three case sites (Denzin, 1978; Creswell & Miller, 2000).

Data Analysis

Data were analysed using thematic analysis following the six-phase framework of Braun and Clarke (2006), comprising familiarisation, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. This systematic process enabled the identification of key patterns and the construction of a collaborative governance model grounded in empirical evidence from all three cases.

Ethical Considerations

This study adhered to strict ethical standards, having secured approval from the Institutional Review Board (IRB) of Mahidol University (Approval No. 2023/174.2410 MSSIRB 2023/202). Informed consent was obtained from all participants, and respondent anonymity was strictly maintained throughout the data collection and analysis phases.

Results and Discussion

The specific background contexts and environmental problem

Environmental innovation within the three studied Local Administrative Organizations originated from critical resource crises and structural constraints. Consequently, these distinct problematic situations are categorized to demonstrate the logical progression toward their specific innovation models.

Rang Chorakhe Subdistrict Administrative Organization

Rang Chorakhe SAO operates within a low-lying agricultural context where intensive rice cultivation generates systemic environmental pressures. The widespread burning of post-harvest residues produces hazardous PM2.5 emissions, while downstream geographic conditions facilitate aquatic weed accumulation, obstructing waterways and degrading water quality (ONEP, 2023). Conventional regulatory interventions proved insufficient to address these compounding challenges, which were further constrained by limited budgetary and human resource capacity (World Bank, 2021).

These conditions correspond to the system context dimension of the Collaborative Governance Regime framework — specifically, adverse resource conditions and institutional limitations functioning as primary drivers of collaborative action (Emerson & Nabatchi, 2015). In response, Rang Chorakhe SAO developed value-added waste transformation innovations, converting agricultural residues and aquatic weeds into compressed biomass bales, thereby generating economic returns from previously unmanaged environmental burdens (Ansell & Gash, 2008).

Na Phan Sam Subdistrict Administrative Organization

Na Phan Sam SAO confronts environmental pressures directly linked to the expansion of its local confectionery industry within the creative economy. The proliferation of over 50 household enterprises — collectively consuming more than 10,000 eggs daily — generated two decades of accumulated eggshell waste. Inadequate disposal practices, including illegal dumping and open burning, produced severe air pollution and disease vector proliferation, constituting a compound public health burden (ONEP, 2023).

Compounding these pressures, fiscal constraints precluded investment in specialised waste management infrastructure (World Bank, 2021). These conditions align with the system context and drivers dimensions of the Collaborative Governance Regime framework, wherein resource scarcity and interdependence among actors necessitate collective action (Emerson & Nabatchi, 2015). In response, the "Coffee Council" — a locally established cross-sectoral deliberative platform — facilitated stakeholder engagement through principled engagement processes (Ansell & Gash, 2008), ultimately enabling the upcycling of eggshell waste into bio-fertilisers and generating supplementary household income.

Kong Thanu Subdistrict Administrative Organization

Kong Thanu SAO confronts systemic challenges in municipal solid waste management, compounded by severe budgetary and human resource constraints. The absence of institutional capacity for conventional waste collection or sanitary landfill operations historically prompted residents to adopt hazardous disposal practices — including open burning and riverine dumping into the Lopburi River — degrading both water quality and agricultural landscape integrity (ONEP, 2023; World Bank, 2021).

These conditions constitute the system context dimension of the Collaborative Governance Regime framework, wherein resource scarcity and institutional limitations function as primary drivers of collaborative action (Emerson & Nabatchi, 2015). In response, local leadership transitioned from state-centric service delivery toward the community-based "Kong Thanu Model," operationalising the "Home-Temple-School" (HTS) principle to mobilise social capital for source-separation waste management (Ostrom, 1996). This collaborative arrangement further transformed waste streams into a community cremation welfare fund, demonstrating the capacity for joint action among diverse local stakeholders (Ansell & Gash, 2008).

The collaborative governance processes in environmental innovation within the public services of local governments.

The System Context of Collaborative Governance

The system context within which collaborative governance operates is multidimensional, encompassing five interrelated factors that shape the formation and sustainability of collaborative arrangements across the three case sites (Emerson & Nabatchi, 2015).

1) Environmental Conditions

Local environmental challenges — including crop residue burning and inadequate solid waste management — constitute wicked problems embedded within complex socioeconomic practices that resist conventional regulatory solutions (Rittel & Webber, 1973). These conditions reveal structural

limitations of centralised administrative arrangements, wherein single-agency responses prove insufficient to address multidimensional environmental burdens. Consistent with Levi-Faur's (2012) conceptualisation of the transition from "big government" to "big governance," findings across all three case sites demonstrate that effective environmental management necessitates collaborative arrangements in which the state functions as a strategic facilitator rather than a sole service provider.

2) Legal and Policy Frameworks

The legal framework simultaneously provides institutional legitimacy and imposes operational constraints on collaborative environmental governance. While national initiatives such as "Zero Waste Thailand" establish strategic mandates, rigid top-down regulations frequently remain disconnected from localised realities. Evidence indicates that prescriptive instruments — including open-burning prohibitions — escalate compliance costs without providing viable community-level alternatives, generating resistance that undermines governance sustainability (Ansell & Gash, 2008; Boossabong et al., 2017). Effective policy design therefore requires meaningful alignment between national frameworks and subnational implementation contexts to sustain collaborative governance arrangements.

3) Socio-cultural and Economic Dynamics

Sustainable environmental management requires governance mechanisms responsive to local cultural capital and prevailing economic values. Evidence from all three cases demonstrates that market-based approaches — transforming waste streams into income-generating activities — foster long-term community consent and shared value creation (Porter & Kramer, 2011). Consistent with Benjapongs and Munintorwat (2023), integrating economic incentives with existing social norms reframes environmental initiatives from regulatory burdens into community-driven development opportunities, thereby strengthening collective ownership of governance outcomes and enhancing the legitimacy of collaborative arrangements.

4) Political Dynamics and Power Relations

Local environmental governance involves a complex interplay between formal structural authority and informal civic networks. Findings indicate that governance effectiveness increases when LAOs transition from coercive power relations toward collaborative power-sharing arrangements — shifting from "power over" to "power with" community actors (Rhodes, 1996). This transition enables cross-boundary resource integration and transforms hierarchical resistance into collective agency. These dynamics are consistent with the principled engagement and shared motivation dimensions of the Collaborative Governance Regime framework, wherein trust-based relationships constitute a prerequisite for sustained collective action (Emerson & Nabatchi, 2015).

5) History of Conflict

Although persistent conflict is conventionally regarded as a barrier to cooperation, evidence from the three case sites suggests it can function as a critical juncture catalysing institutional transformation (Mahoney & Thelen, 2010). Accumulated grievances exerted sufficient pressure on competing actors to move beyond institutional stalemates and engage in structured negotiation. This deliberative dynamic facilitated the identification of shared interests and the generation of mutually beneficial governance outcomes, consistent with Greenwood et al.'s (2001) "Moving Northeast" concept. Consequently, historical tensions were reconfigured as a productive foundation for sustained collaborative action rather than an impediment to governance.

Drivers of the Collaborative Governance Process

The initiation and sustainability of collaborative governance across the three case sites are propelled by four interrelated drivers identified within the Collaborative Governance Regime framework (Emerson & Nabatchi, 2015).

1) Uncertainty

Environmental volatility — including unpredictable PM2.5 dispersion and pandemic-related waste management crises — exposes the inadequacy of conventional bureaucratic responses. Such uncertainty necessitates inclusive, adaptive governance platforms capable of integrating diverse stakeholder perspectives (Emerson & Nabatchi, 2015; Kariji, 2018). These conditions transform systemic vulnerability into a structural impetus for collaborative public service innovation among LAOs.

2) Interdependence

Environmental challenges are inherently boundary-spanning, compelling LAOs to recognise that internal resources are insufficient for unilateral problem resolution. This interdependence necessitates the establishment of formal and informal inter-organisational networks to exchange complementary resources and expertise (Krueathep, 2007; Osborne, 2010), enabling collective outcomes that exceed the capacity of any single institutional actor.

3) Consequential Incentives

Context-specific incentive mechanisms are essential for securing sustained stakeholder commitment. Evidence from the three cases demonstrates that incentives ranging from waste-to-income economic transformation to community welfare fund generation sustain voluntary participation more effectively than coercive mandates (Ulibarri et al., 2020). Mutually beneficial outcomes constitute the primary basis for long-term collaborative resilience.

4) Initiating Leadership

Within hierarchical administrative structures, effective initiating leadership operates through boundary-spanning facilitation rather than vertical command. Leaders who leverage social capital and informal negotiation spaces cultivate the inter-organisational trust necessary to transform governance crises into collaborative opportunities (Ansell & Gash, 2008; Emerson & Nabatchi, 2015), driving sustainable environmental innovation across diverse stakeholder sectors.

Collaborative Structures and Objectives

The structural framework and strategic objectives of collaborative governance across the three case sites are defined by three interrelated dimensions (Emerson & Nabatchi, 2015).

1) Collaborative Structure

LAOs have transitioned from traditional regulatory controllers to network facilitators by establishing lead-organisation networks. This structure operationalises local social capital through the "Home-Temple-School" (HTS) principle, integrating non-state stakeholders into formal decision-making processes (Ansell & Gash, 2008; Ostrom, 1996). By functioning as central coordinating nodes, LAOs enable systematic cross-sectoral inclusion within collaborative environmental governance arrangements (Emerson et al., 2012).

2) Multi-dimensional Goals

Collaborative sustainability depends on formulating comprehensive objectives across environmental, economic, and social dimensions. Evidence indicates that linking environmental goals to tangible community incentives — including waste-to-welfare fund transformation — generates shared interests that reinforce long-term stakeholder commitment. This multi-dimensional alignment corresponds with the Sustainable Development Goals framework and strengthens governance resilience (Guo & Li, 2022; United Nations, 2015).

The Stages of Collaborative Governance in Environmental Public Service Innovation

Case study findings reveal that collaborative governance within LAOs operates as a non-linear iterative process characterised by continuous learning and institutional adaptation across four interconnected stages (Emerson & Nabatchi, 2015; Greenwood et al., 2001).

Stage 1: Policy Formulation and Strategic Planning

Strategic planning commences with a comprehensive issue assessment utilizing empirical evidence and inclusive community forums — such as the "Coffee Council" in Na Phan Sam — to establish shared problem definitions. These platforms operationalise principled engagement by fostering mutual understanding and mitigating power imbalances among stakeholders (Emerson & Nabatchi, 2015).

Face-to-face dialogue functions as a foundational trust-building mechanism, ensuring that strategic agendas are co-defined rather than unilaterally imposed (Luangprapat, 2020; Ansell & Gash, 2008).

Stage 2: Innovation Implementation

During implementation, LAOs transition from regulatory authorities to resource coordinators within distributed network arrangements. Operations are allocated among partners according to comparative capacities — including private-sector technical expertise and community-based "Home-Temple-School" networks — consistent with co-production principles (Osborne, 2010). This joint execution strengthens institutional capacity through resource pooling and inter-organisational knowledge exchange (Zia ud Din et al., 2023).

Stage 3: Analysis, Evaluation, and Decision-Making

The decision-making stage prioritises multilateral deliberation oriented toward collective sustainability over bureaucratic compliance. Consistent with learning-oriented governance, evaluative data enables stakeholders to identify shared interests and build consensus around strategic adjustments (Pholsim, 2024; Emerson & Nabatchi, 2015). This approach strengthens the perceived legitimacy of environmental governance decisions across diverse stakeholder groups.

Stage : Continuous Implementation and Adaptation

Collaborative governance functions as a dynamic iterative cycle in which institutional constraints constitute critical junctures necessitating strategic adjustment rather than governance failure (Mahoney & Thelen, 2010). Evaluative findings are systematically reintegrated into planning processes, enabling adaptive capacity development. This cycle mobilises cross-sectoral network resources and realigns collaborative arrangements with evolving environmental and institutional conditions (Emerson & Nabatchi, 2015; Greenwood et al., 2001).

Empirical evidence from the three case sites demonstrates cyclical governance resilience, wherein institutional conflicts are reconfigured as catalysts for collaborative innovation. In Na Phan Sam, the "Coffee Council" facilitated structured face-to-face dialogue that transformed community resistance into collective ownership by linking waste management to household welfare generation (Ansell & Gash, 2008). In Rang Chorakhe, adaptive capacity was demonstrated through the transition from centralised service delivery toward distributed network coordination, integrating private-sector technology to generate economic returns from agricultural waste (Emerson & Nabatchi, 2015).

Across all three cases, innovation sustainability derives from social internalisation and the progressive substitution of state budgetary dependency with community-mobilised resources (Ostrom, 1996). Sustaining collaborative dynamics requires context-specific consequential incentives that yield tangible benefits, maintaining shared stakeholder commitment and integrating innovative practices into institutional routines (Emerson & Nabatchi, 2015; Luangprapat, 2020).

Although the collaborative governance framework follows a consistent structural logic, each LAO tailors implementation strategies to navigate localised constraints, as summarised in Table 2. This contextual adaptation ensures that governance arrangements remain both institutionally legitimate and environmentally responsive across diverse subnational settings.

Table 1: Comparative Summary of Collaborative Governance for Environmental Innovation Management by Case Study

Stages	Rang Chorakhe SAO	Na Phan Sam SAO	Kong Thanu SAO
Focus	Technology & Economy	Social & Agriculture	Social & Agriculture
1. Policy Formulation & Strategic Planning	Evaluated household and industrial waste issues using empirical data to dictate strategic direction.	Assessed agricultural residue burning through community forums to foster a Shared Understanding.	Utilized "Coffee Councils" as a platform for Face-to-face Dialogue to bridge power gaps and reduce resistance.
2. Innovation Implementation	Transitioned into a Resource Arranger by integrating private-sector technology to transform waste into revenue.	Leveraged community networks and local social capital (HTS model) to drive operational activities.	Employed Disseminated Action by distributing operational roles to social networks based on stakeholder capacity.
3. Analysis, Evaluation & Decision-Making	Utilized multilateral committees for Deliberation, prioritizing environmental sustainability and revenue growth.	Treated evaluative data as a tool for Learning-Oriented Governance to build community consensus.	Used empirical data as a mediator to help stakeholders recognize Shared Interests and mitigate conflict.
4. Continuous Implementation & Adaptation	Adapted to fiscal constraints by integrating collaborative efforts with the private sector (Adaptive Capacity).	Ensured sustainability through Social Internalization, embedding innovation into community norms and lifestyles.	Transformed conflict crises into a Critical Juncture by establishing a waste bank and welfare fund instead of top-down mandates.

Cross-case analysis reveals that successful environmental public service innovation derives from adaptive governance responsive to contextual specificity rather than linear procedural progression (Emerson & Nabatchi, 2015). LAOs demonstrate institutional resilience through an iterative cycle of learning and adaptation across four governance stages.

During policy formulation, organisations prioritise co-constructing shared problem definitions tailored to localised conditions. Rang Chorakhe employs community forums to align environmental objectives with agrarian socio-cultural values, while Na Phan Sam utilises the "Coffee Council" as a deliberative platform to reduce structural resistance and build inter-stakeholder consensus (Ansell & Gash, 2008; Luangprapat, 2020).

> *"In reality, this issue has been long-standing, with frequent friction among local residents. The Coffee Council serves as a vital platform that allows all parties to participate as neighbors, ultimately revealing a shared goal: the desire for a clean village."* (LAO3, Focus Group, January 17, 2025).

During innovation implementation, Rang Chorakhe SAO transitioned from centralised service delivery to network coordination, securing private-sector technology and resources to strengthen collaborative capacity (Emerson & Nabatchi, 2015).

> *"As mentioned, the SAO's objectives aligned with our company's policy to utilize technology for community benefit; thus, the synergy led to our shared success."* (PRIV2, Focus Group, January 10, 2025).

Na Phan Sam SAO and Kong Thanu SAO mobilised social capital through "Home-Temple-School" networks and civic volunteer groups to drive innovation under fiscal constraints — demonstrating that resource interdependence among community actors constitutes a viable substitute for state budgetary allocation (Ostrom, 1996; Emerson & Nabatchi, 2015).

> *"We face numerous challenges while being a small SAO with a limited budget. However, we possess robust social capital derived from all sectors—residents, schools, temples, and volunteer groups. Their collaboration has become a force more significant than any financial budget."* (LAO5, Focus Group, January 24, 2025).

The evaluation stage reflects a transition toward learning-oriented governance through multilateral deliberation, ensuring stakeholder consensus and innovation legitimacy (Emerson & Nabatchi, 2015).

> *"Our committee convenes monthly to report on income and expenditures, as well as to determine waste purchase prices. This total transparency has fostered deep public confidence."* (LAO6, Focus Group, January 24, 2025).

Such collaborative mechanisms allowed the network of partners to identify Shared Interests, thereby securing legitimacy for the innovations and fostering a conflict-free consensus.

The continuous implementation stage demonstrates adaptive capacity through institutional reconfiguration. Rang Chorakhe SAO adjusted operations to sustain circular waste-to-revenue systems, while Kong Thanu SAO embedded innovation into community welfare structures, transforming governance arrangements into institutionalised local practices (Emerson & Nabatchi, 2015; Ostrom, 1996).

The capacity of LAOs to transform systemic governance failures into critical junctures for institutional renewal constitutes a central finding across all three cases (Mahoney & Thelen, 2010). By renegotiating stakeholder commitments and reframing shared interests, these organisations established institutional resilience capable of withstanding political volatility and resource constraints (Emerson & Nabatchi, 2015).

Sustainability in environmental public service innovation emerges from adaptive capacity exercised in response to collaborative fragility during implementation (Huxham & Vangen, 2000). Structural barriers — including fiscal constraints and regulatory rigidity — do not inevitably produce governance failure; rather, they activate iterative cycles of learning and strategic adaptation (Emerson & Nabatchi, 2015).

The Kong Thanu SAO case illustrates this dynamic, wherein initial top-down mandates generated community resistance. Leadership responded by establishing deliberative community forums to rebuild inter-stakeholder trust, facilitating a transition from institutional conflict toward shared welfare objectives (Ansell & Gash, 2008). This process ultimately produced a community-based solid waste management system embedded within local social structures, demonstrating that governance legitimacy derives from participatory reconfiguration rather than hierarchical imposition (Ostrom, 1996; Luangprapat, 2020).

Success Factors for Collaborative Governance

Findings identify two interdependent levels of collaborative capacity as critical determinants of governance success in environmental public service innovation (Luangprapat, 2020).

1. Individual Capacity

Individual capacity operationalises collaborative governance through facilitative leadership and contextual intelligence. By transitioning from hierarchical command toward facilitative leadership approaches, administrators strengthen institutional legitimacy and build trust across state-citizen boundaries (Ansell & Gash, 2008; Luangprapat, 2020). The integration of place-based knowledge with

technical expertise enables culturally responsive solutions to complex environmental challenges, ensuring governance relevance across diverse local contexts.

Beyond formal leadership, social capital cultivation through deliberate communicative practices sustains network resilience. LAOs utilise inclusive deliberative spaces — including community forums and cross-sectoral dialogue platforms — to facilitate mutual learning among stakeholders rather than unidirectional information dissemination (Hodge, 2024). These interactions generate the relational foundations necessary for collaborative networks to maintain functionality under institutional pressure, ultimately enabling individual actors to navigate structural constraints and drive sustainable public service innovation.

2. Organizational Capacity:

Organisational capacity provides the structural foundations for sustaining long-term collaboration across four dimensions (Emerson & Nabatchi, 2015).

Institutional Design

A clearly defined yet flexible organisational structure enables LAOs to function as central coordinating nodes. Role differentiation based on comparative stakeholder expertise minimises operational redundancy and is consistent with network governance principles (Osborne, 2010).
Shared Goals and Incentives

Aligning environmental, economic, and welfare objectives generates mutually beneficial outcomes that reinforce long-term stakeholder commitment. This multi-dimensional alignment corresponds with the Sustainable Development Goals framework (United Nations, 2015).

Resource Integration

LAOs address fiscal constraints through inter-organisational resource interdependence among state agencies, private sector actors, and academic institutions, reflecting enhanced institutional capacity for managing challenges exceeding single-agency capability (Krueathep, 2007).

Adaptive Capacity

Governance sustainability is achieved through learning-oriented cycles of continuous evaluation and operational refinement — including technical upgrades and regulatory adaptation to local social conditions — consistent with findings on organisational resilience (Pholsim, 2024; Zia ud Din et al., 2023).

Results: Creating Value from Operational to Macro Levels

Following Emerson and Nabatchi's (2015) output-outcome-impact framework, collaborative governance generated multi-level public value across the three case sites.

Outputs

Institutional innovations were established through localised learning centres, formal Memoranda of Understanding, and multilateral communication channels, providing structural foundations for sustained cross-sectoral collaboration.

Outcomes

Waste-to-resource initiatives produced measurable behavioural and economic change, including reductions in chemical fertiliser costs exceeding 500,000 THB annually and community welfare fund generation exceeding 30 million THB — consistent with shared value creation principles (Greenwood et al., 2001; Porter & Kramer, 2011).

Impacts

Long-term impacts include national budget savings exceeding 51 million THB and significant reductions in CO_2e emissions, contributing to public health improvement and alignment with Thailand's international environmental commitments (ONEP, 2023; United Nations, 2015). This is substantiated by focus group data:

> *"...Calculations show that our waste management requires no financial budget; previously, this cost over 6 million THB annually. Over eight years of continuous operation, we have saved the state approximately 51 million THB. Moreover, the Thailand Greenhouse Gas Management Organization (TGO) has certified that our project reduced greenhouse gas emissions by 289,497 tons, which is equivalent to planting 184,000 trees."* (LAO5, Focus Group, January 24, 2025).

Challenges and Constraints

Despite documented governance successes, collaborative environmental management across the three case sites confronts persistent structural constraints consistent with Huxham and Vangen's (2000) analysis of inter-organisational collaborative complexity.

Resource and Logistics Constraints.

Difficulties in synchronising operational schedules and managing waste volumes that exceed current processing capacities reflect persistent supply chain coordination challenges. Without standardised logistics frameworks, the operational continuity of waste-to-resource initiatives remains susceptible to disruption (Emerson & Nabatchi, 2015).

Market Volatility

Fluctuations in domestic and global recycling market prices directly affect community participation incentives, demonstrating that localised collaborative arrangements remain exposed to macroeconomic conditions beyond LAO strategic control — necessitating more stable price-support mechanisms (Ulibarri et al., 2020).

Boundary-Spanning Environmental Problems

The persistence of PM2.5 air pollution indicates that sub-district-level governance efficiency alone is insufficient to achieve decisive environmental improvement. The absence of synchronised regional collaboration frameworks prevents effective cross-jurisdictional impact reduction, underscoring the need to scale collaborative governance from sub-district to provincial and national administrative tiers (Ansell & Gash, 2008; Levi-Faur, 2012).

These constraints reflect collaborative fragility — a structural condition wherein fiscal dependency and external volatility undermine long-term governance sustainability (Boossabong et al., 2017; Huxham & Vangen, 2000). Addressing these challenges requires a transition from isolated local initiatives toward inter-local partnerships capable of managing boundary-spanning environmental problems at regional scale.

Collaborative Governance Model for Local Governments to Effectively Manage and Sustain Environmental Public Service Innovation

Stage 1: System Context Analysis and Collaborative Initiation

The initiation stage emphasises proactive situational diagnosis through the mobilisation of social capital and inclusive deliberative spaces to establish shared problem definitions. Integrating empirical evidence with community-level insights enables recognition of stakeholder interdependence and the necessity of cross-sectoral resource sharing (Emerson & Nabatchi, 2015). This process establishes the principled engagement conditions required for sustained collective commitment to environmental governance objectives.

Stage 2: Establishing Collaborative Platforms

Stage two involves designing flexible multilateral governance architectures incorporating context-specific incentive mechanisms aligned with shared value creation principles (Porter & Kramer, 2011). Aligning public service objectives with diverse stakeholder interests reinforces mutual commitment throughout the governance network. Critically, the public sector must function as a facilitative coordinator rather than a centralised authority, as excessive hierarchical steering increases transaction costs and risks stakeholder disengagement (Ansell & Gash, 2008; Huxham & Vangen, 2000).

Stage 3: The Collaborative Process and Social Internalization

Innovation internalisation requires embedding new governance practices into community social norms through relational trust-building and transparent communication processes (Luangprapat, 2020; Ostrom, 1996). While this process reduces implementation resistance and strengthens co-production arrangements, governance regimes remain susceptible to fiscal instability and external volatility. Maintaining adaptive capacity is therefore essential to prevent collaborative fragility from undermining iterative learning cycles (Boossabong et al., 2017).

Stage 4: Macro-policy Support and Innovation Scaling

Sustaining local governance innovations requires integration of evidence-based practices into national policy frameworks. Reforming rigid legal structures enables the central government to remove administrative barriers to cross-jurisdictional collaboration (Levi-Faur, 2012). Transitioning from prescriptive to enabling regulatory frameworks enhances the institutional capacity of LAOs to address boundary-spanning environmental challenges at regional and national scales (Emerson & Nabatchi, 2015; Nielsen et al., 2024).

Adaptive Learning and Evaluative Feedback

Environmental public service innovation within the collaborative governance model operates as an iterative cycle of learning and adaptation rather than a linear progression (Emerson & Nabatchi, 2015). Central to this framework is learning-oriented governance, wherein evaluative data and operational constraints are systematically reintegrated into planning processes to adjust incentive structures in response to evolving institutional conditions. Accumulated constraints function as critical junctures that compel stakeholders to reassess shared interests and renegotiate collaborative commitments (Mahoney & Thelen, 2010).

To strengthen fiscal resilience, LAOs have transitioned from centralised service delivery toward network coordination roles, mobilising private-sector technology and civil society expertise through

shared value creation mechanisms (Porter & Kramer, 2011). Rang Chorakhe SAO exemplifies this transition by integrating industrial collaboration to convert agricultural waste into revenue streams, progressively reducing dependency on central government subsidies.

Furthermore, LAOs utilise social internalisation processes during the collaborative implementation stage to sustain political stability across leadership transitions (Ostrom, 1996). By embedding innovative practices within community social norms — as demonstrated in Kong Thanu and Na Phan Sam — collective ownership is fostered through social capital mobilisation, generating institutional resilience that enables environmental innovations to withstand political volatility (Boossabong et al., 2017; Luangprapat, 2020).

Consequently, innovation sustainability derives not from rigid adherence to initial plans but from adaptive capacity that enables systematic error correction and institutional reconfiguration in response to evolving environmental and governance conditions, as illustrated in Figure 2.

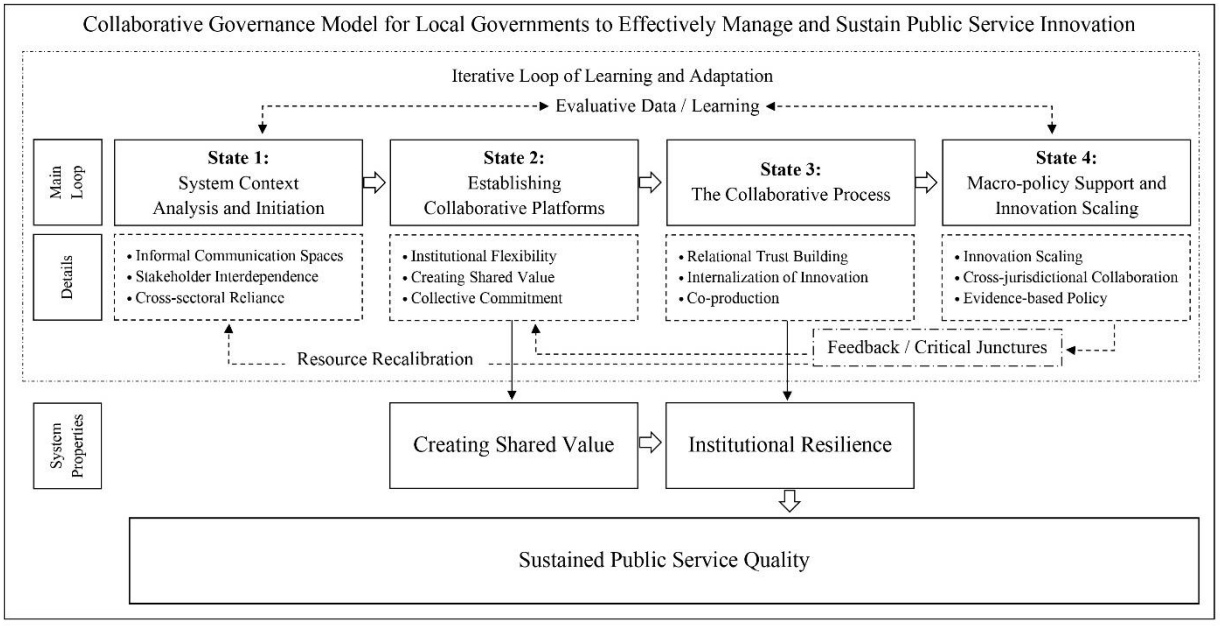


Figure 2 Collaborative Governance Model for Local Governments to Effectively Manage and Sustain Environmental Public Service Innovation

Note. Developed by the author

Conclusion

This study demonstrates that collaborative governance within Thai LAOs operates as an iterative cycle of learning and institutional adaptation rather than a linear administrative sequence (Emerson & Nabatchi, 2015). Local authorities transcend traditional regulatory roles to function as network coordinators and resource facilitators, enabling more effective navigation of complex environmental governance contexts.

The research extends the Collaborative Governance Regime framework by demonstrating that bureaucratic and fiscal constraints function as critical junctures that catalyse institutional innovation rather than producing inevitable governance failure (Mahoney & Thelen, 2010). Through facilitative leadership and social internalisation, organisations successfully transition from hierarchical power arrangements toward collaborative power-sharing, strengthening institutional resilience (Luangprapat, 2020; Ostrom, 1996).

Practically, LAOs can address budgetary constraints by integrating shared value creation mechanisms with private sector partners, linking ecological outcomes directly to community welfare as consequential incentives for sustained participation (Porter & Kramer, 2011). This approach transforms fiscal uncertainty into opportunities for co-produced environmental innovation.

Theoretically, this model contributes an empirically grounded understanding of the causal relationship between collaborative governance processes and innovative public service outcomes in developing-nation contexts (Boossabong et al., 2017). However, long-term sustainability requires scaling collaborative arrangements toward regional inter-local partnerships capable of addressing boundary-spanning environmental challenges beyond sub-district administrative capacity (Ansell & Gash, 2008; Nielsen et al., 2024).

Recommendations

Practical Recommendations for Local Governments

Findings indicate that critical success factors reside in social capital mobilisation, facilitative leadership, and multidimensional incentive design rather than resource availability alone. LAOs should transition toward adaptive management approaches emphasising institutional flexibility and continuous learning (Emerson & Nabatchi, 2015).

Specifically, LAOs should: (1) implement flexible logistics systems to manage waste volume variability; (2) institutionalise knowledge management frameworks to sustain innovative practices across leadership transitions (Luangprapat, 2020); (3) integrate social welfare incentives — including community healthcare and welfare funds — to deepen participatory engagement (Ostrom, 1996); (4) develop

reciprocal communication platforms combining digital tools with informal deliberative spaces to maintain relational trust; and (5) establish evidence-based evaluative feedback mechanisms for continuous public service refinement (Ansell & Gash, 2008).

Policy Recommendations for Strategic Integration

Structural barriers — including rigid regulatory frameworks and inflexible budgetary allocations — constrain LAO governance capacity (Kastelein, 2024). The central government should transition from a regulatory controller toward an enabling facilitator through three policy measures (Levi-Faur, 2012): (1) reform cross-jurisdictional legal barriers and introduce performance-based grant mechanisms to incentivise evidence-based outcomes over procedural compliance (Emerson & Nabatchi, 2015); (2) establish a digital innovation knowledge platform to systematise local-to-national learning transfer and standardise certification for waste-derived products; and (3) develop community-based revolving welfare funds to strengthen local fiscal resilience and reduce LAO dependency on centralised budget allocation (Ostrom, 1996). Executive Summary of Academic Recommendations

Future research should address two priority areas to advance public administration scholarship in developing-nation contexts (Emerson & Nabatchi, 2015). First, in-depth analysis of deliberative mechanisms — such as the “Coffee Council” in Na Phan Sam — would contribute to understanding how informal social capital transforms conflict into sustainable collaboration (Ansell & Gash, 2008). Second, investigating the conditions enabling replication of the “Kong Thanu Model” across diverse cultural settings would advance localised innovation diffusion theory for Thai local governance (Rogers, 2003).

Limitations of the Study

Three limitations warrant consideration. First, purposive selection of exemplary cases may introduce informant bias toward success factors, limiting analytical attention to governance failures (Patton, 2015). Second, the proposed model was developed within small-to-medium LAO contexts with established social capital, constraining direct transferability to large municipalities or politically polarised settings (Yin, 2018). Third, the cross-sectional design precludes assessment of long-term collaborative dynamics, including the effects of leadership transitions and macroeconomic fluctuations on governance sustainability (Creswell & Poth, 2018).

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