# Mapping Collaborative Governance for Effective Community Engagement in Urban Hygiene Campaigns

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**Abstract**: *This paper presents an integrated, results-grounded governance framework for co-developing hygiene campaigns in informal settlements. Background: partnerships are undermined by misaligned incentives, resource scarcity, and institutional fragmentation, while inclusion and accountability claims often lack empirical support. Problem gap: existing participatory and network models under-specify enforceable power-sharing, measurable trust, and scalable feedback under constraints. Methodology: we apply a mixed-methods design combining document review, stakeholder mapping, interviews, workshops, surveys, and network analysis, operationalize seven dimensions with indicators, and aggregate composite scores using Multi-Criteria Decision Analysis (MCDA) via Analytic Hierarchy Process (AHP) and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), with triangulation, disaggregation, and reliability checks. Outcomes: cross-source evidence indicates increases in stakeholder satisfaction, engagement, adaptability, feasibility, and framework comprehensiveness, with partial alignment between perceived legitimacy and MCDA rankings; cooperatives tended to outperform transient clusters, while leadership turnover and resource-pooling*

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*gatekeeping sometimes slowed decisions. Contribution: the framework codifies resource-sharing compacts, inclusive decision protocols, and iterative monitoring and learning cycles, and embeds trust metrics for auditability. Limitations include short follow-up, small samples, and self-selection. Practical implication: the approach enables practitioners and policymakers to institutionalize transparent consultation, prioritize investments, and adapt campaigns responsively under capacity and data constraints.*

Keywords: Collaborative Governance, Community Engagement, Stakeholder Inclusion, Hygiene Promotion, Urban Informal Settlements, WASH Sector

## Introduction

This section frames the challenge of co-developing hygiene campaigns in informal settlements where misaligned incentives, resource scarcity, and institutional fragmentation undermine partnerships. Although interepistemic and transdisciplinary schemes promise alignment, claims in these settings remain under-evidenced and require empirical support (Morgan et al., 2025). We map collaborative models spanning participatory governance, network governance, and trust-building to derive adaptable dimensions: inclusive decision-making, resource-sharing compacts, and iterative accountability loops; and link them to indicators of framework scope, stakeholder satisfaction, engagement, and adaptability. Feasibility and generalizability are qualified. Pathways prioritize policy alignment and institutional learning, with integration conditions under-operationalized (Deutsch et al., 2025).

## Literature Review

This section synthesizes collaborative and inclusive governance for co-developing urban hygiene in informal settlements. Although participatory and network governance schemes promise inclusion, operational accountability, representation, and scalability under constraints remain unsettled. Power asymmetries shape agenda co-setting, resource pooling, trust-building, and iteration; engagement and legitimacy require metrics and recourse. Learning-oriented interventions can translate local insights into adaptive practice when organized as living labs and traced through learning pathways, but effectiveness claims require prior evidence (Bhatta et al., 2025). Socio-ecological framings widen actor scope, but claims linking infrastructure to more-than-human imaginaries need evidence and safeguards against elite capture and scaling limits (Hurst et al., 2025).

*Governance Models*

This section compares collaborative, network, and participatory governance for urban hygiene. Although each promises inclusion, power asymmetries, agenda co-setting, resource pooling, conflict resolution, and feedback loops operate differently, shaping legitimacy, accountability, and trust and thus behavioral uptake (Greenfield et al., 2025). Mechanisms include resource-sharing compacts, joint decision-making, monitoring, and learning pathways; effectiveness is contingent on fit and fidelity. Indicators include comprehensiveness, satisfaction, engagement, and adaptability (Greenfield et al., 2025). Equity and scalability hinge on marginalized representation and efficiency-inclusivity trade-offs. Cross-sector coordination and nature-based interventions require cautious transfer with boundary conditions (Enkirch et al., 2025; Lemes de Oliveira et al., 2025).

*Trust Dynamics*

Trust is a multidimensional lever for legitimacy, uptake, and sustainment. Although domains intersect, we distinguish interpersonal trust, institutional trust, and place-based affective trust (Meenar et al., 2025). Public acceptance is perception-sensitive; transparency, reciprocity, predictable benefits, and responsiveness matter (Seenath et al., 2025). Relative weight is context-specific and requires evidence. Mixed-methods: quantify satisfaction and engagement, and map emotional landscapes and narrative trust histories (Meenar et al., 2025). Peer-to-peer mobilization may multiply trust where institutions are weak, but selection effects vary (Hesse & Boenigk, 2025). Trust evolves; remediation can repair failures. Governance should embed trust metrics, codify resource-sharing, and institute adaptive feedback.

**Materials and Methods**

Although urban contexts vary, we used a mixed-methods integrating document review, stakeholder mapping, interviews, workshops, surveys, and network analysis. Core constructs used measurable indicators: power-sharing (co-decision share), co-setting (joint-agenda share), pooling (resource totals), feedback (closure rate), satisfaction (index), engagement (attendance, retention), adaptability (modification count), feasibility (cost, time). Sampling blended purposive and stratified frames to include marginalized groups and heterogeneity; quotas and snowballing limited voice bias. Instruments were co-developed and piloted, coders trained to kappa >= 0.75 using a shared codebook, with adjudication, analyses used parameters, and triangulation, sensitivity checks, member-checking, adapted consent, and ethics-approved anonymized storage sustained validity.

*Synthesis Design*

This figure (1) depicts cross-disciplinary inputs, stakeholder linkages, and feedback loops during campaign co-development.

This synthesis aligns participatory, network, and trust-building traditions for co-developing urban hygiene campaigns (Morgan et al., 2025; Bhatta et al., 2025). Although settlements differ, four dimensions steer practice. Power-sharing uses rotating chairs; indicators include agenda share and concordance. Co-setting relies on joint roadmaps and triage, marker is uptake. Resource pooling formalizes compacts and in-kind registries, tracked by budget share. Iterative feedback runs MEAL sprints and living labs, tracked by adaptation cycle time (Bhatta et al., 2025). Decisions balance representativeness and speed within capacity, funding-cycles, and political constraints (Morgan et al., 2025). Accountability rubrics, grievance channels, and archives safeguard marginalized voices.

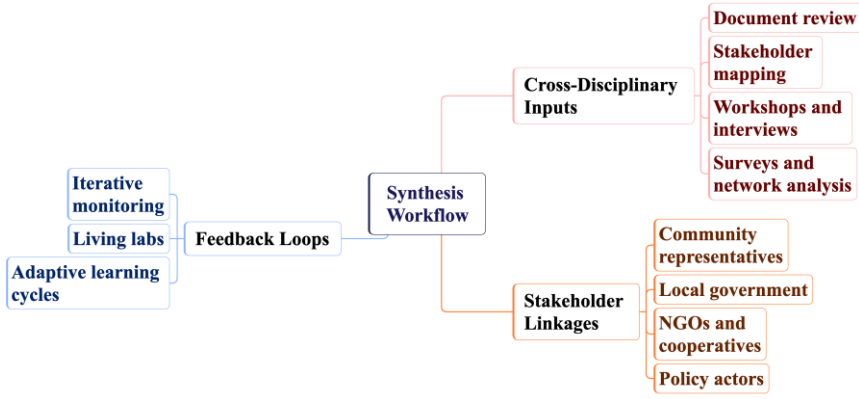


**Figure 1.** Interdisciplinary synthesis workflow overview

*Evaluation Metrics*

$$C_i^* = \backslash dfrac S_i^- S_i^+ + S_i^- \quad (1)$$

Equation (1) presents the closeness coefficient used in TOPSIS to aggregate heterogeneous indicators into comparative scores for governance alternatives.

Although metrics risk oversimplification, we specify a theory-informed suite aligned to seven governance dimensions with explicit operationalization. The dimensions are power-sharing, agenda co-setting, resource pooling, iterative feedback, legitimacy, trust, and engagement intensity, each with indicators, data sources, and short- and long-term horizons. We triangulate metrics with qualitative assessment from records and surveys, disaggregate by gender, location, and socioeconomic status, and require reliability, construct validity, stakeholder validation, and pilots. Composite scoring uses MCDA

(TOPSIS) with sensitivity analysis; thresholds trigger responses yet are contextual, prioritization needs empirical grounding (Wang et al., 2025), and refinement addresses alignment, curbing bias and gaming risks (Havaei & Malekitabar, 2025).

**Comparative Analysis**

This section defines a comparative lens for collaborative governance in urban hygiene. Although models vary, we appraise power-sharing, agenda co-setting, resource pooling, iterative feedback, representativeness, trust-building, and scalability. Normative indicators (equity, legitimacy, inclusion) pair with operational metrics (comprehensiveness, satisfaction, engagement, adaptability, feasibility). Cross-case synthesis uses transparent comparators and attends to informal-settlement contingencies, power asymmetries, and resource constraints (Gartler et al., 2025). We foreground reflexive, transdisciplinary analysis to surface assumptions and unintended effects (Gartler et al., 2025). Transfer risks include misaligned risk perceptions and capacity gaps; especially where public preferences diverge from expert frames (Seenath et al., 2025).

*Benchmark Table*

**Table 1.** Benchmark comparison of governance models for urban hygiene campaigns

| *Model* | *Stakeholder integration level* | *Trust mechanism* | *Decision method* | *Data requirement* |
|---|---|---|---|---|
| Administrative hierarchy | Token to consultative | Formal directives, compliance audits | Top-down administrative | Routine service metrics |
| Networked partnership | Consultative to co-lead | Community liaisons, joint planning sessions | Networked consensus | Qualitative community feedback and routine service metrics |
| One Health coordination | Co-lead across sectors | Formal incident protocols, shared surveillance | Coordinated cross-sector procedures | Multi-source surveillance and routine service metrics |

| | | | | |
|---|---|---|---|---|
| Nature-based governance | Consultative to co-lead | Stewardship compacts, co-monitoring | Consensus with adaptive management | Ecosystem service datasets and geospatial layers plus community feedback |
| MCDA (AHP-TOPSIS) | Consultative with expert weighting | Transparent criteria weights and documentation | Multi-criteria methods | Structured pairwise inputs, high-granularity indicators, geospatial and service data |

This table (1) presents a concise comparison of governance models across integration, trust, decision methods, and data demands to support urban hygiene campaign design.

The benchmark defines four columns: integration depth (token, consultative, co-lead), trust mechanism, decision rule, and data inputs. Although scalability is context bound, descriptors enable readability for practitioners and policymakers; they reduce cognitive load and sharpen contrasts. One Health coordination hinges on rapid surveillance and formal incident protocols to operationalize trust (needs support from outbreak coordination literature; Enkirch et al., 2025). Nature-based governance prioritizes place-based stakeholder fabrics and ecosystem service datasets (needs support from urban NBS governance literature; Lemes de Oliveira et al., 2025). AHP-TOPSIS implies granular data and structured pairwise inputs (needs support from decision-methods literature; Wang et al., 2025).

**Results**

This section reports improvements in engagement and legitimacy after implementing the governance framework. Although evidence remains context-specific, mixed sources converge on gains tied to power-sharing, agenda co-setting, resource pooling, and iterative feedback loops. Acceptance patterns align with public perceptions (Seenath et al., 2025). Central tendency and dispersion estimates indicate higher stakeholder satisfaction, engagement levels, adaptability, and feasibility, with expanded framework comprehensiveness. Triangulation showed partial alignment between perceived legitimacy and AHP-TOPSIS urgency rankings (Wang et al., 2025). Co-ops outperformed transient clusters; leadership turnover dampened scalability. Resource pooling sometimes induced

gatekeeping and decision latency. Limitations include short follow-up, small samples, and self-selection.

*Framework Dimensions*

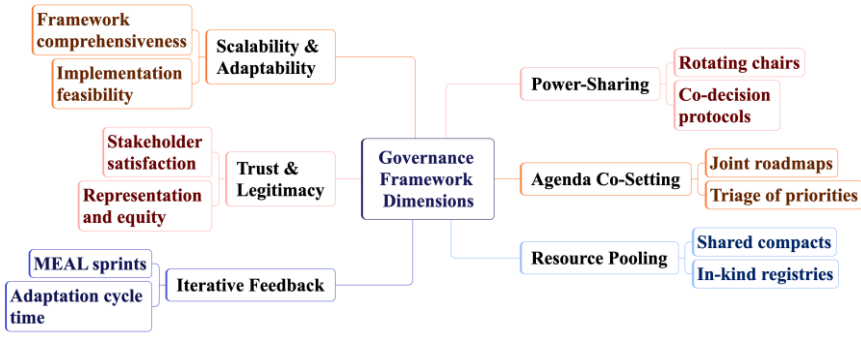


**Figure 2.** Integrated governance framework dimensions

This figure (2) visualizes how governance dimensions interact through feedback loops and scalability pathways to influence engagement and implementation feasibility in hygiene campaigns.

This section maps governance for co-developing hygiene promotion in informal settlements. Although inclusiveness can slow decisions, managing trade-offs is central. Prioritize power-sharing and legitimacy, agenda co-setting and representation, transparent resource pooling, feedback and monitoring, trust and social capital, and scalability/adaptability. Operationalize via resource-sharing compacts, inclusive decision protocols, and iterative learning cycles; validate with comparative cases, stakeholder satisfaction indices, and process-tracing of feedback loops. Calibrate systems-change claims and urban interdependencies against contextual evidence (Greenfield et al., 2025; Lemes de Oliveira et al., 2025). Measure comprehensiveness, engagement, adaptability, feasibility, and satisfaction, factoring informal leadership and local institutions.

## Discussion

This discussion interprets how power-sharing, agenda co-setting, resource-pooling, and iterative feedback loops underpin legitimacy, responsiveness, and sustainability, although causal claims need triangulation. Scalability and adaptability depend on governance capacity, resource heterogeneity, and trust. Tensions include institutional constraints versus autonomy and short-horizon funding versus community learning; stronger claims would require process tracing and budget audits. Specify and monitor resource-sharing compacts and inclusive decision protocols with mixed methods integrating spatial engagement and satisfaction indices, informed by transdisciplinary and geospatial analyses

(Gartler et al., 2025; Sibandze et al., 2025). Limitations include scope and selection bias. Future work should use longitudinal, participatory trials.

*Policy Implications*

Although co-development is often endorsed in policy rhetoric, institutionalization requires enforceable levers. Mandate inclusive consultation protocols, embed participatory metrics in funding criteria, and formalize resource-sharing compacts; pair these with clear roles, sanctions, and safeguards against tokenism or capture. Anticipatory legitimacy matters: perceptions of effectiveness and fairness shape uptake and compliance, so evidence on public acceptability should calibrate outreach intensity and framing (Seenath et al., 2025). Contextualized narratives that state co-benefits for health, resilience, and livelihoods can align actors and ease policy integration (Lemes de Oliveira et al., 2025). Enable adaptive learning via iterative monitoring, feedback loops, and institutional memory, and treat assertions on public attitudes or transferability as provisional pending targeted validation (Seenath et al., 2025) and (Lemes de Oliveira et al., 2025).

*Limitations*

This section delineates limits to empirical scope and external validity. Although the model integrates diverse literatures, empirical grounding is constrained by spatiotemporal data: uneven coverage, inconsistent resolution, and mismatches between indicators and lived dynamics, which require trend-supported claims (Sibandze et al., 2025). Theory-led mapping may not be operational under stakeholder selection bias, asymmetric power, and scarce resources; governance risks of tokenism, unequal benefits, and accountability gaps persist (Rasyid et al., 2025). Scalability is context-contingent. Metrics face construct validity, norm sensitivity, and monitoring burdens (Rasyid et al., 2025). Priorities include longitudinal, participatory evaluation and higher-resolution spatial analyses (Sibandze et al., 2025).

## Conclusion

This section distills four dimensions of collaborative governance into actionable principles for hygiene campaigns. Although local socio-ecological stressors likely influence community practices, such claims require empirical grounding (Pandey et al., 2025). Power-sharing drives inclusive decision-making, while agenda co-setting yields coauthored workplans. Resource pooling forms resource-sharing compacts with ledgers. Iterative feedback sustains adaptive governance and learning cycles. Define evaluation metrics, including stakeholder satisfaction indices, engagement levels, and feasibility. Individually modest; in combination, material, yet transferability and scalability hinge on capacity, power gaps, and trust. Transdisciplinary team-science warrants adoption with evidence-based support (Morgan et al., 2025), validated through mixed-methods and longitudinal tracking.

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