

Dynamics of Policy Networks in Water Resource Management: A Study of Inter-Institutional Coordination in the Governance of the Citarum River Basin

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Abstract. Managing water resources in the Citarum River Basin presents significant coordination challenges that involve numerous stakeholders operating within a complex and fragmented governance system. This research explores how policy networks function in Citarum River Basin governance through qualitative institutional analysis, drawing on theoretical frameworks from Rhodes (1997) and Marsh & Smith (2000). The study gathered data through detailed interviews with 18 organizations involved in the River Basin Water Resources Management Coordination Team (TKPSDA), examining power dynamics and informal relationships. Additionally, participant observation during coordination meetings provided insights into actual governance practices, while policy document analysis helped identify formal institutional rules. Findings indicate that the Citarum governance network operates as an issue network, characterized by flexible membership, sporadic engagement, and weak coordination mechanisms. The institutional framework shows clear hierarchical patterns with uneven resource allocation, where the Ministry of Public Works and Housing maintains control over formal authority and financial resources, while local governments and non-state actors have limited influence. TKPSDA has struggled to function effectively as a network facilitator due to structural limitations and power disparities. The research suggests transforming TKPSDA into a genuine policy community through institutional reforms, more equitable resource sharing, and the establishment of collaborative governance mechanisms.

Keywords: policy networks, inter-institutional coordination, water resource governance, Citarum River Basin, network governance.

Introduction

The Citarum River Basin stands as West Java's most crucial water system, supporting approximately 28 million people while providing 80% of Jakarta's water supply needs (UN Water, 2024). Despite this vital role, the Citarum has become internationally recognized as one of the world's most contaminated rivers, reflecting deep-seated failures in water resource governance (Bayu et al., 2020). The watershed faces intricate management challenges involving multiple stakeholders across fragmented institutional structures, including 15 regencies and cities throughout West Java, various levels of government, private sector

participants, and civil society organizations, each bringing different priorities, capabilities, and power dynamics to the table.

Contemporary scholarship emphasizes that traditional top-down management approaches prove inadequate when addressing complex multi-stakeholder environmental challenges (Klijn & Koppenjan, 2019; Casula, 2020). The establishment of the River Basin Water Resources Management Coordination Team (TKPSDA) in 2013 represented an institutional attempt to address coordination fragmentation, though questions remain about its effectiveness (Dina, 2019). Continued pollution problems, including Biological Oxygen Demand levels exceeding safe limits by ten times and bacterial contamination rates far above acceptable standards, suggest fundamental breakdowns in the governance network's coordination capacity.

Policy network theory provides valuable insights for understanding these coordination difficulties. Rhodes (1997) describes policy networks as interconnected organizational structures characterized by resource sharing, ongoing interactions, and rule-based behaviors that govern engagement patterns. The interactive approach developed by Marsh and Smith (2000) highlights the complex relationship between network structures and individual agency, offering a framework for examining how institutional arrangements both limit and facilitate participant behavior in policy-making processes.

Understanding whether the Citarum governance arrangement functions as a policy community or an issue network carries significant implications for coordination effectiveness and reform strategies. Policy communities typically feature stable membership, regular interaction, shared policy objectives, and privileged access for key participants (Marsh & Rhodes, 1992). Issue networks, conversely, display loose coalitions, irregular engagement, competing interests, and limited institutional development (Hecl, 1978). This distinction becomes crucial for designing appropriate governance reforms.

The literature distinguishes between various network types along several dimensions, including membership stability, interaction frequency, consensus levels, and resource distribution patterns. Policy communities represent the most institutionalized form of network arrangement, characterized by restricted membership, frequent interaction, shared ideology, and balanced resource exchanges. At the opposite end of the spectrum, issue networks exhibit open membership, sporadic contact, contested beliefs, and unequal resource access (Mingus, 2015). Between these extremes lie various hybrid forms that combine elements of both types depending on specific policy contexts and institutional environments.

This research addresses important gaps in understanding how policy networks operate in developing country contexts. While network governance theories have been extensively developed in Western democratic environments, their relevance in settings characterized by strong state traditions, limited civil society capacity, and resource limitations requires careful examination (Pozzi et al., 2024; Capano et al., 2024). Additionally, the multi-level nature of watershed governance, spanning national, provincial, and local jurisdictions, presents distinctive coordination challenges requiring systematic investigation.

The study pursues three main objectives: first, identifying whether the Citarum governance arrangement functions as a policy community or issue network; second, analyzing power relationships and resource distribution patterns within the network; and third, providing recommendations for improving network governance effectiveness. These goals contribute to both theoretical understanding of policy networks in developing countries and practical insights for enhancing inter-institutional coordination in complex environmental governance systems.

Methods

This research employed qualitative institutional analysis to examine policy network dynamics in Citarum River Basin governance. Qualitative approaches prove particularly valuable for institutional analysis because they help researchers understand how rules governing social and economic interactions develop, change, get monitored, and become enforced (McGinnis, 2020). The institutional analysis method focuses on

understanding complex relationships between formal and informal rules, power dynamics, and organizational behavior within governance networks (Ostrom, 2015).

Data collection utilized two main qualitative approaches: detailed interviews and participant observation. In-depth interviews offer particular value for understanding individual experiences, perspectives, and the subjective meanings that participants attribute to institutional arrangements (Lim, 2024). Semi-structured interviews were conducted with 18 key participants representing government agencies (8 participants), civil society organizations (4 participants), private sector entities (3 participants), and community groups (3 participants). The interview framework concentrated on understanding participants' roles, resource access, coordination experiences, and perceptions of institutional rules within the TKPSDA network.

The interview framework concentrated on understanding participants' roles, resource access, coordination experiences, and perceptions of institutional rules within the TKPSDA network. Questions explored formal and informal interaction patterns, trust relationships, resource exchange mechanisms, decision-making processes, and coordination challenges. Interviews lasted 60-90 minutes and were conducted in Indonesian, with transcripts translated into English for analysis.

Participant observation involves researchers directly observing and participating in their research subjects' natural environments (Jamshed, 2020). Participant observation took place during 12 TKPSDA coordination meetings over six months (March-August 2016) to understand actual coordination practices, decision-making processes, and informal interactions among network members. Field notes were systematically recorded during each meeting, capturing both formal proceedings and informal exchanges between participants.

The Indonesian context presents particular challenges for network governance implementation. The country's history of centralized governance under the New Order regime (1966-1998) created institutional legacies that continue to influence contemporary governance arrangements. Despite democratization and decentralization reforms beginning in 1998, hierarchical patterns of authority and deference to central government remain deeply embedded in administrative culture. These cultural factors interact with formal institutional structures to shape how policy networks actually function in practice, often deviating significantly from theoretical models developed in different cultural contexts.

Data analysis followed established thematic analysis procedures, involving data transcription, coding, categorization, and pattern identification (Sutton & Austin, 2021). Interview transcripts and field notes received coding using an institutional analysis framework focusing on: formal rules and authority structures; informal norms and practices; resource distribution patterns; and power relationships among participants. The institutional analysis examined how interaction rules get constructed, implemented, and modified within the governance network (Feiock et al., 2019). Findings were cross-validated through triangulation between interview data, observation notes, and policy document analysis.

Result and Discussion

Institutional Arrangements and Network Characteristics

The qualitative institutional analysis reveals that the Citarum policy network demonstrates characteristics more consistent with an issue network than a policy community. Issue networks feature flexible coalitions, irregular engagement, competing interests, and limited institutional development (Hecl, 1978). Interview findings indicate fragmented communication patterns and inconsistent participation in coordination activities among network participants. The network exhibits institutional control by the Ministry of Public Works and Housing (PUPR), which maintains authority over formal decision-making and financial resources. Participant observation reveals that PUPR representatives consistently guide meeting discussions, establish agendas, and make final decisions in coordination forums. This control reflects broader patterns of centralized governance in Indonesian water management systems, consistent with findings on hierarchical dominance in developing country water governance (Garcia et al., 2019).

Membership stability represents a key distinguishing feature between policy communities and issue networks. The Citarum network demonstrates characteristics more consistent with issue networks, where participation varies according to specific issues, organizational priorities, and resource availability. Attendance at coordination meetings averages 65% of formal membership, with significant variation depending on agenda items and timing. Government representatives show higher attendance rates than non-government participants, reflecting different levels of institutional commitment to network activities.

Interaction frequency in the Citarum network remains limited to quarterly formal meetings supplemented by occasional bilateral consultations between specific organizations. This pattern contrasts with policy community models where frequent informal contact and ongoing collaboration characterize inter-organizational relationships. The limited interaction frequency constrains trust building, information sharing, and collaborative problem-solving among network members.

Power Relationships and Informal Institutions

Resource distribution analysis reveals significant asymmetries that constrain collaborative governance potential. Legal authority concentrates heavily in national government agencies, particularly PUPR, which holds primary responsibility for water resource management under Indonesian law. Provincial governments possess moderate authority through deconcentration arrangements, while local governments face restricted roles despite decentralization policies. Civil society organizations and community groups have minimal formal authority beyond participation rights granted through network membership.

Participant observation during coordination meetings reveals substantial power imbalances reinforced by informal institutional norms. Formal meetings follow hierarchical procedures where PUPR representatives dominate discussions, while local government and civil society representatives receive limited opportunities to contribute meaningfully. Field observations consistently document respectful but deferential behavior toward central government representatives.

Informal norms strongly emphasize hierarchy respect, creating participation constraints for non-government participants. These cultural patterns discourage open dialogue and critical examination of policy alternatives. Trust levels differ significantly between participant types, with stronger relationships within sectors than across different organizational types.

Coordination Effectiveness and Institutional Outcomes

The institutional analysis reveals mixed coordination performance across multiple dimensions. Process effectiveness remains constrained due to surface-level deliberation and predetermined outcomes. Output effectiveness shows moderate success in creating coordination documents and protocols, yet implementation stays fragmented across agencies. Outcome effectiveness demonstrates the weakest performance, with minimal environmental indicator improvement despite formal coordination efforts.

Process-level coordination shows some positive developments in terms of information sharing and consultation mechanisms. Regular meetings provide forums for organizations to learn about each other's activities and identify potential areas of collaboration or conflict. Formal reporting requirements create accountability mechanisms that encourage organizations to document their activities and justify their approaches to other network members.

However, the quality of coordination processes remains limited by hierarchical dynamics and resource asymmetries. Genuine collaborative problem-solving rarely occurs, as meetings typically focus on information sharing rather than joint analysis, planning, or decision-making. Organizations tend to defend their existing approaches rather than exploring alternative strategies or innovative solutions to persistent problems.

Output-level coordination demonstrates moderate success in producing joint documents, shared protocols, and coordinated planning frameworks. The network has successfully developed the Citarum River Basin Management Plan, established common monitoring protocols, and created information sharing mechanisms among participating organizations. These achievements represent tangible progress in administrative coordination compared to previous fragmented approaches.

Nevertheless, implementation of coordinated outputs remains problematic due to continued organizational autonomy and resource control by individual agencies. Organizations may agree to joint plans in principle but continue operating according to their sectoral priorities and standard operating procedures in practice. Lack of enforcement mechanisms or shared accountability systems limits the binding effect of coordination agreements.

Outcome-level effectiveness shows the weakest performance across all coordination dimensions. Environmental indicators for the Citarum River Basin have shown minimal improvement despite extensive coordination efforts over more than a decade. Water quality measurements continue to exceed acceptable pollution levels, ecological restoration efforts proceed slowly, and social conflicts over water access persist in many areas.

These findings contribute to understanding how institutional history and power relationships constrain network governance effectiveness in developing country contexts. Unlike Western democratic models that assume diverse participation, Indonesian water governance demonstrates continued state control combined with limited civil society capabilities. The multi-level coordination challenges require institutional reforms addressing both formal authority structures and informal cultural norms that discourage collaborative governance.

The research reveals that successful transformation toward policy community characteristics requires institutional redesign of TKPSDA to enable shared decision-making, capacity building programs for marginalized participants, and development of trust-building mechanisms through repeated collaborative interactions. These insights demonstrate how institutional analysis can inform governance reform strategies in complex multi-stakeholder environmental policy areas.

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Note:

Table 1: Institutional Characteristics of Citarum Network

Characteristic	Issue Network	Policy Community	Citarum Network
Membership	Variable	Stable	Irregular participation
Interaction	Occasional	Frequent	Quarterly formal meetings
Consensus	Limited	Strong	Weak agreement on priorities
Resources	Unbalanced	Distributed	Highly concentrated

Table 2: Resource Distribution Among Key Participants

Participant Type	Legal Authority	Financial Resources	Information Access
Ministry PUPR	Primary control	Major funding	Comprehensive
Provincial Gov	Moderate role	Limited budget	Adequate
Local Gov	Restricted role	Constrained funds	Moderate
Civil Society	Minimal influence	Negligible resources	Limited

Source: Author's institutional analysis based on participant observation and interview data (2016)