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Adaptive Governance in Makassar City Administration: A Theoretical Study of Urban Complexity

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ABSTRACT

Urban governments increasingly operate in conditions of uncertainty, interdependence, and rapid change that exceed the capacity of hierarchical administration. This article examines adaptive governance as a theoretical lens for understanding the administration of Makassar City, a coastal city in eastern Indonesia. The study aims to build a conceptual argument that links the principles of adaptive governance, namely institutional learning, policy flexibility, collaboration, polycentric coordination, and administrative capacity, with evidence on how the city administration addresses flooding, green open space provision, land registration services, and neighborhood-based innovation. The study employs a qualitative conceptual design based on a structured review of secondary sources, including peer-reviewed articles, a municipal regulation, and a recent spatial analysis, and applies thematic matching between theoretical dimensions and empirical findings. The analysis shows that Makassar already displays adaptive features, particularly participatory neighborhood innovation and public and private collaboration. However, these features remain uneven because of fragmented sectoral authority, limited human resources, inconsistent political support across periods, and weak institutional learning. Green open space covers only 12.42 percent of the urban area, far below the 30 percent benchmark, while 34.8 percent of the study area falls within high and very high flood hazard classes. The article proposes a framework that places learning loops and collaborative capacity at the Centre of administrative reform, and it formulates four propositions for future empirical testing. The novelty lies in integrating complexity perspectives and adaptive governance into the study of municipal public administration in Indonesia.

INTRODUCTION

Urbanization turns cities into arenas of interrelated problems. Population growth, land conversion, disaster risk, demands for public services, and climate change operate simultaneously and influence one another. A systematic review of 91 studies linking complexity theory to urban sustainability treats the city as a *complex adaptive system*, in which new behaviors emerge from interactions among social, economic, environmental, and technological elements, so that adaptive governance becomes a prerequisite for urban resilience (Abujder Ochoa et al., 2024). At the same time, McMillan (2019) cautions that complexity theory can paint an incomplete picture when its assumptions about urban

environments are flawed, especially in understanding the vulnerability of poor and marginalized residents, and she offers political ecology as a more useful lens. This caution matters for public administration: complexity is not merely a technical problem but also a problem of power, capacity, and justice.

Adaptive governance grew out of studies of social-ecological systems to address conditions of uncertainty and change that no single authority can control. Folke et al. (2005) emphasize knowledge, learning networks, and institutional flexibility, while Chaffin et al. (2014) synthesize a decade of scholarship showing that adaptive governance rests on learning, participation, and coordination across scales. In the urban context, Ni'mah et al. (2021) conclude that adaptive governance requires flexibility within the policy formulation cycle, whereas anticipatory governance requires proactivity through foresight. The main challenges include involving communities, strengthening the capacity of local governments, and integrating actors, networks, and collaborations.

Adaptive governance should be distinguished from neighboring concepts. *Collaborative governance* emphasizes formal arrangements in which public and nongovernmental institutions make decisions together, whereas adaptive governance highlights the ability of the whole system to learn and adjust when conditions change. Collaboration is therefore one mechanism of adaptive governance, not a substitute for all of it. This distinction underpins the analysis in this article.

Makassar City is a relevant case. As a coastal city and one of the largest cities in eastern Indonesia, Makassar faces highly variable rainfall, expanding built-up areas, and limited green space. A recent spatial analysis shows that high and very high flood hazard classes cover 34.8 percent of the study area, while green open space makes up only 12.42 percent of the urban area, far below the 30 percent benchmark in spatial planning (Djamaluddin et al., 2026).

These problems are not purely physical. A survey of 120 respondents from relevant local agencies found that analytical, institutional, and political capacity significantly affect the effectiveness of flood governance. Institutional capacity was the most dominant factor, while the political dimension was weakest because of inconsistent support across periods and minimal public participation (Iskandar, 2025). A study based on complexity theory also concluded that the flood management system in Makassar involves many interdependent actors, yet cross-sector coordination remains weak and tends to be hierarchical (Tusshalihah, 2026).

On the other hand, the city government has developed several innovations that open space for adaptation. The *Lorong Wisata* programme, which evolved from *Lorong Garden*, makes the neighbourhood alley a unit of community development and is regulated through a mayoral regulation (Pemerintah Kota Makassar, 2022). The mayor describes it as an innovation involving the whole community, with 21 content areas including food security, inflation control, and the circular economy. The *Sombere' and Smart City* vision behind it combines technology with local cultural character (Putri, 2024). In green open space management, a partnership among the city government, the private sector, and the community was assessed as effective despite limited human resources (T. et al., 2025), whereas the absence of collaboration and of a sound management strategy at one city park shows the opposite outcome (Paranoan et al., 2023). In administrative services, the complete systematic land registration programme runs well but still faces a shortage of human resources, disputed

land, applicants' delays in completing requirements, and land parcels whose owners are unknown (Aslinda et al., 2023).

Nevertheless, these findings are generally sectoral and stand alone. Studies of adaptive governance in Makassar have so far focused largely on climate change (Rusnaedy et al., 2021), and, to the best of the author's search, no theoretical synthesis has been found that places flooding, green space, land services, and alley-based innovation within a single framework of city administration. For public administration scholarship, this perspective matters because Indonesian government administration is built on the principle of legality, hierarchy, and procedural accountability, whereas an adaptive approach demands room for experimentation, repeated rule adjustment, and a more fluid distribution of authority. This tension between legal certainty and flexibility makes Makassar an interesting case for theoretical study.

This article aims (1) to outline the theoretical framework of adaptive governance for understanding urban complexity, (2) to map the extent to which the administrative practices of Makassar City contain the dimensions of adaptive governance, and (3) to formulate implications for strengthening city administrative capacity. The argument is that Makassar already has promising adaptive practices, but these have not been institutionalised because of weak institutional learning, polycentric coordination, and human resource capacity.

The novelty of the article lies in three points. First, it brings together several domains of city administration that are usually studied separately into one analytical framework. Second, it positions administrative capacity and the tension between legality and flexibility as core issues in applying adaptive governance to local government administration. Third, it formulates propositions that later empirical research can test.

METHOD

This study uses a qualitative approach with a theoretical-conceptual design based on a structured literature review. The design was chosen because the aim is not to test relationships among variables but to build a conceptual argument by bringing together adaptive governance theory and published empirical evidence on Makassar. The object of study is the administration of Makassar City government, with four case domains selected purposively because they represent different kinds of urban complexity: (1) flood risk management, (2) green open space management, (3) land administration services through the complete systematic land registration programme, and (4) alley-based social innovation. *Adaptive governance* is operationalised through five dimensions drawn from Folke et al. (2005), Chaffin et al. (2014), and Ni'mah et al. (2021): (a) institutional learning, (b) policy flexibility, (c) collaboration and participation, (d) polycentric coordination across sectors and scales, and (e) administrative capacity.

The data are secondary data collected through online searches of documents and literature in scholarly journal portals, university repositories, local legal document databases, and official news reports. Sources were selected on three criteria: relevance to Makassar City or to adaptive governance theory, containing findings or provisions that can be traced, and, preferably, publication within the last five years. The main sources include articles on collaborative governance of green open space (T. et al., 2025), implementation of the complete systematic land registration programme (Aslinda et al., 2023), a study of flood governance capacity (Iskandar, 2025), a spatial analysis of flood resilience (Djamaluddin et al., 2026), and

the mayoral regulation on Lorong Wisata (Pemerintah Kota Makassar, 2022).

The search used the keywords *adaptive governance*, Makassar City, flood, green open space, complete systematic land registration, and Lorong Wisata. Retrieved documents were then screened against the criteria above, and only sources whose findings could be verified on the original page or document were included in the analysis.

The analysis applied thematic content analysis in three steps. First, the findings of each source were coded to case domains and dimensions of adaptive governance. Second, the findings were matched to the theoretical dimensions to identify indications of adaptive practice and their gaps. Third, the researcher qualitatively assessed the adequacy of each dimension in three categories, strong, partial, or weak, based on the amount of supporting evidence and its consistency across sources. This assessment is the author's analytical interpretation, not a quantitative measurement. The main limitation of this study is the absence of primary data, so the findings are conceptual and need to be tested through fieldwork.

To maintain reliability, the author used source triangulation, namely research articles, regulatory documents, and official news reports, recorded the limits of each source's claims, and distinguished findings reported by sources from the author's interpretation. Figures are quoted as reported by the sources without recalculation. Because the study involves no human subjects, ethical considerations are limited to accurate citation and acknowledgement of others' work.

RESULT AND DISCUSSION

The search shows that the urban complexity of Makassar appears in five interrelated layers: hydrological and spatial, green space, institutional, administrative services, and social innovation. Table 1 summarises the empirical findings for each layer.

Table 1. Layers of Urban Complexity in Makassar and Their Empirical Findings

No	Layer of complexity	Empirical findings	Source
1	Hydrological and spatial	Monthly rainfall in 2015–2024 ranged from 42.7 to 612.4 mm (coefficient of variation 48.1%); 34.8% of the study area lies in high and very high flood hazard classes; 41.2% of exposed assets are in those zones	Djamaluddin et al. (2026)
2	Green open space	Green open space is 12.42% of the urban area, below the 30% benchmark; a government, private sector, and community partnership was assessed as effective, but human resources are limited	Djamaluddin et al. (2026); T. et al. (2025)
3	Institutional	Institutional capacity is the most dominant influence on flood governance effectiveness; the political dimension is weakest; cross-sector coordination tends to be hierarchical	Iskandar (2025); Tusshalihah (2026)
4	Administrative services	The complete systematic land registration programme runs well with shortcomings; obstacles are limited human resources, disputed land, delayed documents, and unknown owners	Aslinda et al. (2023)
5	Social innovation	*Lorong Wisata* evolved from *Lorong Garden*, is regulated by a mayoral regulation, has 21 content areas, and involves the community	Makassar City Government (2022); Putri (2024)

Source: Compiled by the author from the cited sources (2026)

Table 1 reveals two patterns. First, Makassar's problems are layered and mutually reinforcing hydrological pressure meets limited green space, while the institutional ability to respond is constrained by hierarchical coordination. Second, capacity issues appear in every layer, especially the shortage of human resources that recurs in green space and land services, and institutional capacity that dominates flood governance. On the other hand, social innovation and partnerships show that the city government is able to open space for adaptation.

Figure 1 shows the gap between pressure and adaptive spatial capacity. The share of green open space (12.42%) is less than half of the 30% benchmark, while 34.8% of the study area lies in high or very high flood hazard classes and 41.2% of exposed assets are in those zones.

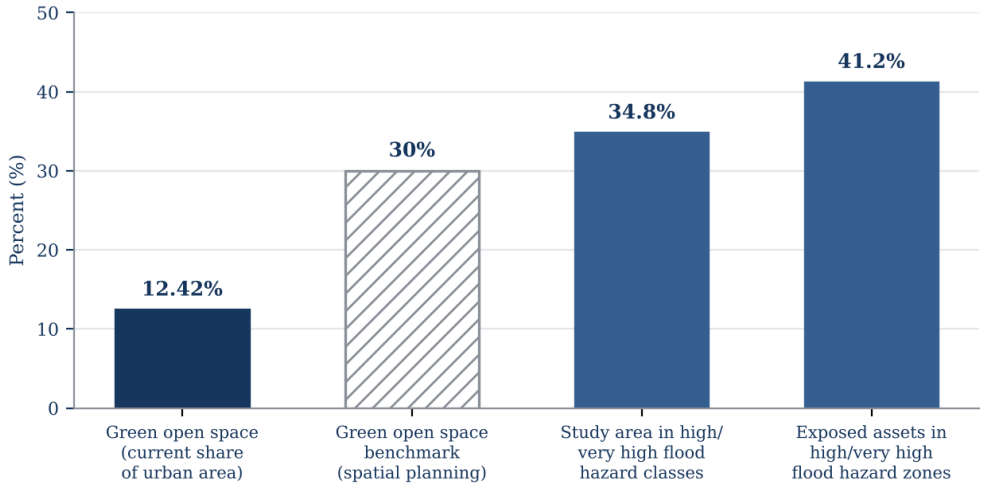


Figure 1. Green Open Space Against the Benchmark and Exposure to Flood Hazard (%)

Source: Adapted from Djamaluddin et al. (2026)

The mapping of the five dimensions of adaptive governance onto these findings is presented in Table 2. Overall, the collaboration and participation dimension is the most developed at the programme level, whereas polycentric coordination and administrative capacity are the weakest.

Table 2. Mapping of Adaptive Governance Dimensions in Makassar City Administration

Dimension	Indications of adaptive practice	Gaps	Assessment
Institutional learning	Planning based on spatial data; analytical capacity has a significant effect (Iskandar, 2025; Djamaluddin et al., 2026)	Weak support across periods; no documented mechanism for repeated evaluation in the sources reviewed	Partial
Policy flexibility	*Lorong Garden* upgraded to *Lorong Wisata* through a mayoral regulation (Pemerintah Kota Makassar, 2022)	Shifting priorities make many flood programmes unsustainable (Iskandar, 2025)	Partial
Collaboration and participation	Government, private sector, and community partnership in green space (T. et al., 2025); alleys involve residents (Putri, 2024)	Minimal public participation in flood policy; park without collaboration neglected (Paranoan et al., 2023)	Strong (programme level)

Dimension	Indications of adaptive practice	Gaps	Assessment
Polycentric coordination	Many interdependent actors in flood management (Tusshalihah, 2026)	Hierarchical cross-sector coordination and fragmented programmes	Weak
Administrative capacity	Analytical and institutional capacity recognised as influential (Iskandar, 2025)	Limited human resources in green space and land services (T. et al., 2025; Aslinda et al., 2023)	Weak

Source: Author's analysis (2026)

On the learning dimension, the evidence shows that data and analysis exist that could support learning, but weak support across periods hinders their sustained use. On the flexibility dimension, the change from Lorong Garden to Lorong Wisata shows programme adjustment yet shifting priorities in the flood sector interrupt continuity. The collaboration dimension shows the best results at the programme level, while polycentric coordination and capacity show the gaps documented most consistently across sources.

Figure 2 presents the conceptual framework derived from this mapping. Urban complexity pressures are received by the city government administration, whose adaptive response is shaped by the five dimensions of adaptive governance. Institutional learning closes the feedback loop so that policy results become input for the next round of policy formulation.

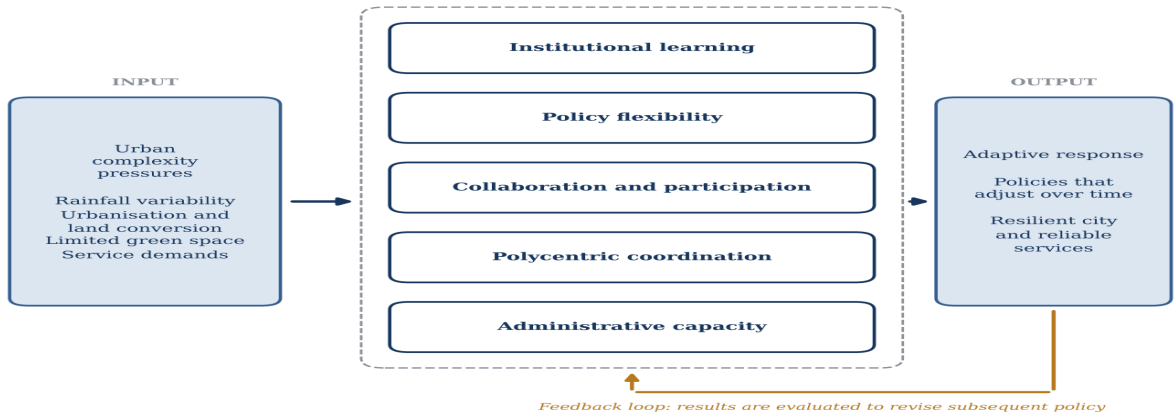


Figure 2. Conceptual Framework of Adaptive Governance in Makassar City Administration

Source: Author's construction based on Folke et al. (2005), Chaffin et al. (2014), and Ni'mah et al. (2021)

Discussion

These findings support the view that Makassar should be understood as a complex adaptive system, one whose new behaviour emerges from interactions among physical, social, and institutional elements (Abujder Ochoa et al., 2024). Flooding in Makassar, for example, cannot be explained by rainfall or drainage alone. High rainfall variability meets narrow green space, exposed assets, and fragmented cross-agency programmes (Djamaluddin et al., 2026; Iskandar, 2025). McMillan's (2019) caution is relevant here: a complexity analysis that looks only at actor networks and feedback risks overlooking who is most vulnerable and who sets budget priorities. Applying *adaptive governance* in Makassar therefore needs attention to justice and power relations.

The practice closest to adaptive governance appears in alley-based innovation. Making the alley the smallest unit of the city allows policy experiments at a manageable scale, and the change from Lorong Garden to Lorong Wisata shows gradual programme adjustment

(Pemerintah Kota Makassar, 2022; Putri, 2024). This pattern is consistent with the principle of flexibility within the policy cycle (Ni'mah et al., 2021). However, flexibility does not automatically become learning. Folke et al. (2005) stress that adaptive capacity depends on an organisation's ability to process and use experience. The sources reviewed show no mechanism of repeated evaluation that links the results of the alley programme to policy revisions in other sectors, including flooding and green space.

The collaboration dimension shows the most consistent results. Green open space management in Ujung Pandang District works effectively because the roles of the parties are clear, management policies exist, and the private sector is financially committed (T. et al., 2025), whereas city parks without collaborative support tend to be neglected (Paranoan et al., 2023). This contrast suggests that collaboration functions as an adaptive mechanism when government capacity is insufficient. Even so, Chaffin et al. (2014) remind us that adaptive networks require engagement across scales. A partnership at a single park or alley does not guarantee change at the level of the city system. In flood governance, low public participation and political support that changes between periods (Iskandar, 2025) indicate that collaboration is still project-based and has not yet become the way administration works.

The complete systematic land registration programme offers a different perspective because it is procedural and standardised. Although it runs well, its obstacles, namely disputed land, unknown owners, and applicants' delays, are sources of uncertainty that standard procedures alone can hardly resolve (Aslinda et al., 2023). Through the lens of adaptive governance, this case can be read as a need for more flexible protocols for problematic parcels, involvement of neighbourhood leaders and community figures as in the alley programmes (Zalsabilah & Khalik, 2025), and stronger human resources. This reading is interpretive and needs empirical testing.

The weakest dimensions are polycentric coordination and administrative capacity. Institutional capacity is the dominant factor in flood governance (Iskandar, 2025), and limited human resources recur in green space management and land services (T. et al., 2025; Aslinda et al., 2023). This finding underscores that Makassar faces a capacity problem, not a shortage of ideas. Coordination that tends to be hierarchical (Tusshalihah, 2026) runs counter to the polycentric principle of interconnected decision centres. The anticipatory governance perspective (Ni'mah et al., 2021) adds a direction: city administration needs to use risk projections, such as spatial data on flood hazard and green space, to set priorities before disasters occur.

Theoretically, these findings extend the discussion of *adaptive governance*, which has long been rooted in studies of social-ecological systems (Folke et al., 2005; Chaffin et al., 2014). Rusnaedy et al. (2021) have already shown the relevance of adaptive governance to climate change issues in Makassar. This article takes it into a wider administrative domain and adds two observations. First, administrative capacity appears to act as a limiting condition for the other dimensions: learning, flexibility, and collaboration are hard to sustain without sufficient and trained staff. Second, in an administration founded on the principle of legality, flexibility must be designed legally and cannot be assumed to arise by itself.

Finally, applying adaptive governance in Indonesian administration must confront the tension between flexibility and legal certainty. Local government administration is bound by the principle of legality and procedural accountability, so policy experiments need a regulatory umbrella that permits limited trials, periodic evaluation, and revision without sacrificing accountability. The mayoral regulation that underpins the alley programme shows that such instruments are available at the city level, though not necessarily across all sectors. Based on this discussion, the article offers four propositions for future research. First, the more institutionalised repeated evaluation mechanisms are, the greater the ability of city programmes to adjust. Second, programme-level collaboration improves local performance, but system-level impact depends on polycentric coordination. Third, human resource capacity

constrains all other dimensions of adaptive governance. Fourth, a regulatory umbrella that allows limited experimentation reduces the tension between flexibility and accountability.

CONCLUSION

This article shows that *adaptive governance* provides a useful theoretical lens for understanding the administration of Makassar City government amid urban complexity. That complexity appears in the meeting of high rainfall variability, narrow green space, limited institutional capacity, administrative services facing uncertainty, and rapidly developing social innovation. In line with the research objectives, the study yields three findings. First, a five-dimension framework, namely institutional learning, policy flexibility, collaboration and participation, polycentric coordination, and administrative capacity, can be used to read city administrative practice. Second, the mapping shows that collaboration is strong at the programme level, learning and flexibility are only partially realised, while polycentric coordination and administrative capacity remain weak. Third, adaptive practices in Makassar have not been institutionalised, so they struggle to move from one programme or sector to another.

The implications for city administration cover five points: institutionalising learning loops through periodic cross-agency evaluation, integrating cross-sector data as a basis for priorities, shifting collaboration from a project model to systemic collaboration across scales, investing in human resources, and providing a regulatory umbrella for limited policy experiments that remain accountable. For example, periodic cross-agency evaluation could bring flood hazard data, green space availability, and alley programme results into one learning forum whose outcomes are used to revise budget priorities. At the same time, the partnerships that have succeeded in green space could serve as a model for flood control, by widening community involvement and ensuring support across leadership periods.

The contribution of the article lies in its effort to unite complexity and adaptive governance perspectives in the study of city government administration in Indonesia, and in four testable propositions. Its limitations are the use of secondary data and a qualitative assessment that depends on the author's interpretation. Further research is recommended to use interviews and field observation, actor network analysis, and comparative studies across cities so that the propositions can be tested empirically.

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AUTHOR CONTRIBUTIONS

NAT: conceptualization, investigation, formal analysis, and writing–original draft preparation. MIA: methodology, theoretical framework development, validation, and writing–review and editing. NA: literature review, data curation, and writing–review and editing. MRSO: supervision, interpretation of findings, and writing–review and editing. All authors have read and approved the final version of the manuscript.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest related to the research,

authorship, or publication of this manuscript.

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