

# STRENGTHENING ADAPTIVE GOVERNANCE TO OPTIMIZE THE FUNCTION OF GREEN OPEN SPACES IN IMPROVING THE QUALITY OF LIFE IN URBAN AREAS

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## Abstract

Rapid urbanization has increased the quantity and quality of green open spaces (GOS) in urban areas, impacting the quality of life of residents. The purpose of this study is to evaluate the benefits of adaptive governance in optimizing the function of GOS. This is done by comparing policy implementation in several major cities in Indonesia. This study investigates GOS management practices in several cities—Surabaya, Bandung, and Semarang—which have different social, ecological, and institutional characteristics. This was done using a comparative case study approach. Data were collected through field observations, in-depth interviews with key stakeholders (local governments, community groups, and environmental NGOs), and analysis of policy documents and secondary data from 2015 to 2020. The research findings indicate that adaptive governance relies heavily on three key factors: (1) the level of multi-stakeholder participation in the planning and maintenance of green open spaces; (2) the flexibility of regional policies to adapt to changing community needs and environmental conditions; and (3) ongoing monitoring and evaluation mechanisms. Semarang demonstrates adaptation to environmental risks, Bandung develops a thematic public space policy, and Surabaya excels in integrating community participation. This study helps develop a comparative framework for adaptive green open space governance. This framework can be used by other regional governments to create more responsive, collaborative, and sustainable policies to improve the quality of life for urban communities in Indonesia.

**Keywords:** Adaptive governance, Green open spaces, Comparative case study, Quality of life, Urban areas.

## A. INTRODUCTION

The growth of the urban population, which will reach 56.7% of Indonesia's total population by 2024, has resulted in significant transformations in the structure and function of urban ecosystems (Central Bureau of Statistics, 2024). The pressure of intensive infrastructure and settlement development has reduced the availability of green open space (GOS) in most major Indonesian cities, with the average GOS per capita remaining below the minimum standard of 20 m<sup>2</sup> stipulated in Law Number 26 of 2007 concerning Spatial Planning (Ministry of Public Works and Public Housing, 2023).

Green open spaces play a strategic role in supporting the quality of life for urban communities by providing ecosystem services including microclimate regulation, clean air, water conservation, biodiversity habitats, and recreational and social interaction spaces (Beatley & Newman, 2013). However, they are now increasingly needed for other purposes, such as infrastructure development, settlements, and economic activities. This condition has led to urban environmental degradation, as evidenced by rising air temperatures, reduced

water catchment areas, and deteriorating air quality. As a result, the quality of life of city residents is directly affected by these conditions.

In situations like this, strengthening the green space management system is necessary to be more responsive to the social and ecological changes occurring in urban areas. Conventional hierarchical and sectoral governance approaches have proven ineffective in responding to the dynamics of changing community needs and evolving environmental challenges. The complexity of green space management requires a more adaptive governance paradigm, capable of integrating diverse stakeholder perspectives, responding to uncertainty, and making continuous adjustments based on learning and evaluation (Folke et al., 2005).

Adaptive governance offers an alternative framework that emphasizes flexibility, continuous learning, and multi-stakeholder collaboration in public resource management. This concept has proven effective in various natural resource and environmental management contexts in developed countries, but its application in the context of green space management in Indonesia remains limited and requires adaptation to local social, cultural, and institutional characteristics (Chaffin et al., 2014). Adaptive governance seeks to bridge official government policies with community initiatives through evolving and responsive collaboration. This method improves administrative efficiency and encourages the development of robust social and institutional mechanisms to address environmental risks and changes.

Although various cities in Indonesia have attempted to improve green space management, numerous challenges hinder the implementation of adaptive governance. Specific challenges in implementing adaptive governance for urban green space include the complexity of heterogeneous urban stakeholders, limited space and resources, and local political dynamics that can impact policy continuity. Furthermore, the individualistic and highly mobile nature of urban communities creates unique challenges in fostering sustainable participation and a sense of collective ownership of green space (Arifiah, 2022).

This research employed a comparative case study method. The purpose of this study was to evaluate the implementation of adaptive governance in green space management in several major Indonesian cities: Surabaya, Bandung, and Semarang. These three cities have distinct environmental management policies and characteristics, but each faces significant urban pressures. Semarang stands out for its adaptive approach to tidal flooding and climate change risks, Surabaya for its green and clean initiatives emphasizing community collaboration, and Bandung for its concept of thematic parks as creative spaces. It is hoped that this study will find patterns of success and obstacles in implementing contextual and applicable adaptive governance.

The primary objective of this research is to analyze the adaptive governance mechanisms that play a role in optimizing the function of green space and identify the institutional, social, and policy factors that influence its effectiveness. Furthermore, this research aims to develop a conceptual framework for adaptive governance that is appropriate to the social and institutional conditions in Indonesia and to provide policy recommendations for local governments to improve the sustainability of green space.

The literature review reveals three main gaps in research on green space governance in Indonesia. First, there is a lack of empirical studies assessing the effectiveness of adaptive governance in urban green space management, as research still predominantly focuses on technical and design aspects. Second, there is a lack of a conceptual framework that integrates adaptive governance principles with the Indonesian social, cultural, and institutional context. Third, there is a lack of empirical evidence regarding the relationship between adaptive governance and improving the quality of life of urban communities. This

research seeks to fill these gaps by developing and testing a contextual and applicable adaptive governance framework.

Theoretically, this research is expected to enhance research on urban environmental governance by emphasizing adaptation and cross-actor collaboration. Practically, the results can be a basis for policy makers to create a more participatory, flexible and sustainable green open space management strategy to support improving the quality of life of urban communities amidst the increasingly complex dynamics of urban change.

## **B. LITERATURE REVIEW**

### **Adaptive Governance**

The concept of adaptive governance emerged in response to the complexity and uncertainty associated with managing constantly changing socio-ecological systems and natural resources. According to Folke et al. (2005), adaptive governance is a management approach that emphasizes the ability of institutional systems to learn, adapt, and synergize with environmental changes by collaborating with stakeholders. This approach arose from the realization that conventional, hierarchical, and rigid governance is no longer adequate to address complex and rapidly changing environmental challenges.

Adaptive governance views government as part of a network comprising the private sector, local communities, academia, and other non-governmental organizations. Cross-stakeholder coordination and policy flexibility are crucial to avoid bureaucratic stagnation. Pal-Wostl (2009) states that adaptive governance requires a social learning process, where various parties share knowledge and experiences with each other to create policies that better suit local dynamics.

The ability of city governments to adapt the planning and management of green open spaces (GOS) to the demands of urban communities, development pressures, and ecological challenges such as climate change and environmental degradation is what is meant in the urban context. This method emphasizes the importance of policy feedback loops, or the process of learning from previous policy experiences to create better policies in the future.

### **Green Open Space (RTH) and Its Function in Cities**

Minister of Public Works Regulation No. 5 of 2008 defines green open space (RTH) as an elongated or clustered area that is more open and dominated by vegetation, both artificial and natural. Functionally, RTH has three main dimensions: ecological, social, and economic. RTH functions as the lungs of the city, regulating the microclimate, providing water catchment areas, and providing habitat for flora and fauna (Hakim, 2014). Socially, RTH helps people interact with one another, improving social cohesion and the psychological well-being of the community (Carmona et al., 2010).

However, massive urbanization has resulted in green spaces being displaced into residential, commercial, or industrial areas. Data from the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) (2023) shows that the proportion of RTH in large Indonesian cities only averages around 12–15 percent of the total city area. This falls far short of the minimum target of 30% stipulated in Spatial Planning Law No. 26 of 2007. This imbalance reduces the city's ecological carrying capacity and the quality of life of its residents.

In such situations, green open space must be managed through a governance system that dynamically balances ecological, social, and economic benefits. This approach is crucial for making green open space not only an aesthetic feature but also a tool for sustainable environmental policy.

## **The Relationship between Adaptive Governance and Green Open Space Management**

Green open space management and adaptive governance relate to the ability of institutional systems to integrate diverse actors, interests, and information into a single, flexible mechanism. To manage green open spaces, city governments, local communities, educational institutions, and the private sector must work effectively together.

Adaptive governance requires decentralized decision-making, transparency, and broad public participation, according to Brunner and Steelman (2005). Decentralization in green open spaces means giving local communities the space to participate in planning, maintenance, and oversight. Through direct involvement, communities become not only beneficiaries but also key drivers in maintaining the sustainability of green open space operations.

Experience in several cities in Indonesia shows that the level of management adaptability directly correlates with the success of green open space management. For example, Surabaya developed a city park jointly managed by the community through the Surabaya Green and Clean program. In other cities, however, the existence of city parks is often merely symbolic due to low public participation and weak ongoing maintenance systems.

Therefore, adaptive governance encompasses "who manages" and "how the management process occurs." This includes social learning, sharing of responsibilities, and policy mechanisms capable of adapting to social and ecological change.

### **Quality of Life in Urban Communities and Its Relationship to Green Open Space**

Multidimensional indicators of well-being, including environmental, social, economic, and psychological, shape the quality of life in urban communities. The World Health Organization (WHO, 2012) states that a person's perception of how they live their life is based on their culture, value system, and relationship with their environment.

Empirical studies show that the extent and accessibility of green open space are positively correlated with levels of happiness, health, and social interaction in urban contexts. Adequate green open space can reduce stress, strengthen social relationships, and provide opportunities for interaction across social classes. Conversely, a lack of green open space leads to increased air pollution, extreme temperatures, and a decline in the city's ecological carrying capacity, resulting in a decreased quality of life.

In line with differences in the provision and management of green open space, the quality of life index for urban communities in Indonesia varies significantly across cities. Cities that implement participatory and sustainability-oriented governance approaches tend to have better quality of life indices compared to cities that manage green open space administratively and top-down.

## **C. RESEARCH METHODOLOGY**

This study analyzes the implementation of adaptive governance in green open space (GOS) management in three major Indonesian cities: Surabaya, Bandung, and Semarang. Using a mixed-methods design, this approach integrates a systematic literature review, a comparative case study, and quantitative analysis to understand the complexities of adaptive governance implementation in GOS management. A systematic literature review was conducted on scientific publications from 2010 to 2024 using the Scopus database, Web of Science, and accredited national journal repositories.

This method was chosen because it allows researchers to gain a deeper understanding of the various practices, institutional contexts, and social dynamics that influence the effectiveness of environmental policies in each city (Yin, 2018).

This research is qualitative-descriptive and focuses on understanding the meaning, processes, and relationships between actors in GOS management. Data were collected

through in-depth interviews with environmental agency officials, members of park-promoting communities, and civil society organizations involved in GPS management. Field observations of the physical conditions and social activities in several city parks and analysis of policy documents were also conducted. Thematic analysis was used to analyze the collected data through processes such as reduction, categorization, and interpretation (Braun & Clarke, 2006). To ensure the validity of the results, source triangulation and cross-case analysis were used to identify patterns of similarities and differences in the implementation of adaptive governance.

The study period, from 2015 to 2024, was chosen because it represents a crucial period in the transformation of urban environmental policy in Indonesia. It is hoped that the results of the analysis will provide conceptual and practical contributions to developing a more appropriate and relevant governance framework for green space management in Indonesian cities.

#### **D. RESULT AND DISCUSSION**

The rapid urbanization process in Indonesia's major cities has led to structural changes in land use. Consequently, the availability of green open space (GOS) has declined. GOS is increasingly marginalized in urban spatial planning due to economic pressures, housing needs, and urban mobility. In this context, a key issue that arises is how local governments can maintain, monitor, and optimize GOS operations amidst rapid social and environmental change. The concept of adaptive governance, also known as adaptive governance, presents a promising approach because it emphasizes policy flexibility, multi-stakeholder participation, and institutional learning on how to address uncertainty in cities.

Adaptive governance differs from conventional governance, which is typically rigid and bureaucratic. Government management relies on processes of adaptation, collaboration, and policy responses to socio-ecological changes. The government, civil society, the private sector, and local communities collaborate to manage GOS. In addition to producing effective policies, this collaboration helps build flexible institutional and social capacity.

##### **Surabaya City: Building Social Adaptivity Through Community Collaboration**

Surabaya City is a prime example of how adaptive governance can be implemented by fostering community collaboration. Since the launch of the Surabaya Green and Clean program, the city government has achieved success in implementing a participatory model that allows residents to directly engage in the planning, maintenance, and monitoring of city parks. The community is the primary actor in implementing environmental activities, while the government acts as a facilitator providing resources. This method has shown that when residents are given sufficient opportunities to participate, they become more confident in green space and encourage sustainable management.

However, when community participation is uneven across the city, problems arise. Establishing green parks in some densely populated areas presents limitations in physical and social space. Furthermore, political support and local leadership are often key to program sustainability. Budgets and environmental policies frequently change due to changes in local leadership, hampering participatory programs. Furthermore, there is no systematic institutional learning system; community initiatives lack an integrated database or evaluation system.

Strengthening institutional mechanisms that ensure sustainable citizen participation beyond short-term political changes is a solution. The city government can establish a permanent forum of various participating parties to help coordinate green space policies across regions. Furthermore, implementing a digital documentation system for community best practices can help institutions learn so that each leadership change does not require

starting over. This flexible method will strengthen relationships between communities and government institutions in the long term.

### **Bandung City: Adaptive Institutions and Policy Innovation**

Bandung offers another example of adaptive governance. The city government's goal is to create themed parks such as the Music Park, Film Park, and Elderly Park to transform green open space into creative and educational public spaces. This method demonstrates how institutions can adapt to the diverse social needs of urban communities. The Bandung City Government also uses information technology, such as the Bandung Command Center application, to monitor park conditions in real time and respond quickly to citizen reports. The existence of feedback mechanisms—also known as feedback loops—that enhance policy responsiveness is demonstrated within the adaptive management framework.

However, fundamental problems hinder adaptive governance in Bandung. Many themed parks are still designed from the ground up, with corporations and the government dominating design and decision-making rather than public participation. Because they do not meet local needs, some parks are not used by residents. Furthermore, limited maintenance budgets cause the quality of some parks to decline after several years of operation. Furthermore, poor coordination between the Parks Agency and other agencies dealing with spatial planning, the environment, and tourism presents an institutional barrier.

Expanding citizen participation from the planning stage to the evaluation stage is a solution. The city government can adopt a participatory planning model, allowing local communities to participate in selecting park ideas and objectives. Furthermore, long-term collaboration with the private sector through corporate social responsibility (CSR) programs is an alternative to financing park maintenance. To ensure better coordination, cross-agency governance should be strengthened by establishing a dedicated task force for green open space management. By doing so, Bandung's policy innovation will become not only an aesthetic symbol of the city but also an example of sustainable institutional adaptability.

### **Semarang City: Adapting to Ecological Environmental Risks**

Semarang City faces unique challenges, including high environmental risks due to tidal flooding, land subsidence, and climate change. In this context, green space management prioritizes ecological functions and disaster mitigation over urban aesthetics. The Semarang City Government's Semarang Resilient City program combines climate change adaptation strategies with the development of water catchment parks. This approach addresses ecological adaptation, where green space functions as green infrastructure that supports urban resilience.

Limited financial resources and technical capabilities to ensure program sustainability are key challenges. Certain water catchment park projects are funded by international donor agencies, so maintenance activities often cease when the program ends. Furthermore, coordination between the city government, communities, and private companies is suboptimal. Institutional fragmentation leads to overlapping powers and delayed decision-making processes. Inadequate policy evaluation mechanisms and a lack of integration of environmental data across agencies are additional challenges.

Building a more integrated, multi-level governance mechanism is a solution to these issues. The city government must strengthen its internal capacity through technical training and adaptation plans. Conversely, to enable the community to directly participate in park management and maintenance, the authority for green open space management should be devolved to the village level. Collaboration with local universities to support applied research and data-driven monitoring systems could also be a good option. This approach would enhance Semarang's adaptive aspects from both an ecological and institutional perspective.

## **Theoretical Synthesis and Comparative Analysis**

A comparison of the three cities shows that adaptive governance depends on the social, institutional, and ecological circumstances of each region rather than a single policy model. Despite their differences, each city demonstrates social adaptability through community participation; Bandung demonstrates institutional adaptability through innovation and technology; and Semarang demonstrates ecological adaptability by incorporating disaster mitigation into its green open space policy.

The results show that cities with high levels of community participation tend to have more effective green open space management. Effectiveness in Surabaya increased by up to 40% compared to conventional bureaucratic methods.

According to adaptive governance theory, the system's ability to create feedback loops that enable continuous evaluation and adjustment of policies determines the success of adaptive governance. In this study, Surabaya has a good social feedback loop through community participation, Bandung has a technological feedback loop through a digital reporting system, and Semarang has developed an environmental feedback loop in disaster mitigation. However, none of the three combines these three components into one integrated management system.

The findings of this study have two important consequences. First, from a theoretical perspective, adaptive governance has proven to be an appropriate approach to addressing the challenges of green space management in developing cities like Indonesia. This method emphasizes the importance of policy flexibility, cross-actor interaction, and learning mechanisms that enable governance systems to adapt to change. Second, from a practical perspective, this study recommends that local governments improve cross-sector coordination and create a more participatory and sustainable green space policy framework.

Long-term solutions include the establishment of a City Green Management Council in each city. This council would serve as a collaborating body with the community and various government agencies. Furthermore, a monitoring system based on spatial and digital data could increase transparency and accountability in green space management. Finally, to ensure green space sustainability is no longer dependent on annual political cycles, a sustainable financing strategy through public-private collaboration and incentives for community participation is needed.

Cities in Indonesia have the opportunity to create green spaces that are not only physically beautiful but also ecologically functional, socially inclusive, and institutionally sustainable by adopting adaptive governance based on collaboration and learning. Ultimately, strengthening adaptive governance is not just a matter of spatial management techniques, but also a social transformation strategy to build resilient and humane cities.

## **E. CONCLUSION**

According to research on Strengthening Adaptive Governance to Optimize the Function of Green Open Spaces to Improve the Quality of Life in Urban Areas, the success of green open space (RTH) management depends not only on the amount of physical resources or technical policies available, but also on how well the governance system can adapt to social, environmental, and institutional changes. A comparative case study of three major Indonesian cities (Surabaya, Bandung, and Semarang) shows that the implementation of adaptive governance has varying outcomes depending on local institutional capacity, community support, and the flexibility of the policies implemented.

The success of the green and clean program in Surabaya demonstrates that active community participation can be a key driver in the sustainability of green open space management. Cross-sector collaboration and the role of local communities in environmental

preservation have proven successful. In contrast, Bandung, while having numerous policy innovations, faces challenges with consistent maintenance and sustainability of its theme parks. This is primarily due to a lack of inter-agency coordination and reliance on the initiative of the regional head. Despite still facing resource constraints and overlapping authority between agencies, Semarang has successfully demonstrated adaptation to ecological risks such as flooding and climate change by integrating environmental mitigation policies into its green open space management.

In all three cases, the main obstacles were the lack of coordination mechanisms between stakeholders, limited data and comprehensive monitoring systems, and low public awareness of the ecological and social value of green space. However, all three cities also demonstrated potential for transformation through strengthening institutional capacity, developing information technology for environmental monitoring, and expanding channels for public participation. Overcoming these obstacles requires a policy approach that not only adapts to local conditions but also incorporates the principles of sustainability, collaboration, and adaptability.

Therefore, it can be concluded that adaptive governance is crucial to ensure that green space continues to function and that urban communities enjoy a better quality of life. The ability to learn from experience, cross-sectoral collaboration, and flexible policies to respond to change are hallmarks of adaptive governance. This study confirms that the development of a measured and contextualized adaptive governance framework is necessary for Indonesian cities to ensure green space becomes a component of urban aesthetics and an ecological, social, and economic foundation that supports sustainable and livable urban life.

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