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Jurnal Ilmu Pemerintahan

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Table of Contents

Political communication of the Prime Minister of Malaysia Anwar Ibrahim on Twitter **364-376**

**Firdaus Muhammad^{1*)}, Andi M. Faisal Bakti², MD. Rozalafri Johori³,
Sadhriany Pertiwi Saleh⁴**

^{1,4} Department of Communication and Islamic Broadcasting, UIN Alauddin Makassar, Indonesia

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Digital dilemma: technology in the vote counting process for general elections and local head elections in Indonesia **377-389**

Muhammad Habibi^{1*)}, Alam Mahadika², Widia Astuti³

¹ Center for Research, Development, Education and Training; Election Supervisory Board, Indonesia

² Departement of Politics Regional and Etnopolitict, Kazan Federal University, Rusia

³ Department of Public Administration, Universitas Muhammadiyah Makassar, Indonesia

Bridging the gender gap: women in fisheries industry policy on the North Coast of West Java, indonesia **390-405**

Dewi Indriasih^{1*)}, Sri Mulyantini², Aminul Fajri³, Teguh Rimbawan⁴

^{1,3} Department of Accounting, Universitas Pancasakti Tegal, Indonesia

² Department of Management, UPN Veteran Jakarta, Indonesia

⁴ Department of Accounting Politeknik Muhammadiyah Tegal, Indonesia

Fulfillment of women's political rights through mainstreaming gender quotas in Election Supervisory Board **406-423**

Ricky Santoso Muharam^{1*}, Ari Pradhanawati², Fitriyah³, Supratiwi⁴

^{1,2,3,4} Department of Politics and Governance Studies, Faculty of Social and Political Sciences, Universitas Diponegoro, Indonesia

Governing green open space in indonesia: barriers and opportunities to enhancing enviromental quality **424-439**

Muhamad Yusuf^{1*)}, Denok Kurniasih², Anggara Setya Saputra³

¹ Department of Public Administration, Universitas Muhammadiyah Palangka Raya, Indonesia

² Department of Public Administration, Universitas Jenderal Soedirman, Indonesia

³ Department of Public Administration, Universitas Wijayakusuma, Indonesia

Institutionalizing local government accountability: a case of Nabire, Indonesia **440-453**

Petrus Izaach Suripatty^{1*)}, Edyanto²

¹ Department of Government Studies, Universitas Satya Wiyata Mandala, Nabire, Indonesia

² Department of Government Studies, IISIP YAPIS Biak, Indonesia

Developing e-government policy through social media platform in Makassar city, Indonesia 454-468

Yusmanizar^{1*)}, Nur Alim Djali², Yulhaidir³, Alyas⁴

^{1,2,3} Department of Communication Studies, Universitas Fajar, Indonesia

⁴ Department of Public Administration, Universitas Muhammadiyah Makassar, Indonesia

Trade finance evolution: a comparative study of regulatory reforms in factoring policies for SMEs in India and China 469-485

Amit Kumar Kashyap^{1*)}, Simran Lunagariya²

¹ Centre for Corporate Law Studies, Institute of Law, Nirma University, India

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The impact of innovation policy and the bureaucratic structure reform of organizational citizenship behavior (OCB) of the government agencies in Padang city, Indonesia 486-499

Haira Zulfia^{1*)}, Syamsir²

^{1,2} Department of Public Administration, Universitas Negeri Padang, Indonesia

Successes and failures of conflict governance: Lessons from Aceh, Indonesia and Moro, Philippines 500-510

Muhammad Nasir Badu^{1*)}, Syafhendry², Christine B. Tenorio³

¹ Department of International Relations, Universitas Hasanuddin, Indonesia

² Department of Government Science, Universitas Islam Riau, Indonesia

³ Department of Public Administration, Bukidnon State University, Philippines

Navigating digital platforms: a comparative study into Turkish political communication strategies on tiktok and twitch 511-526

Canan Uyumaz^{1*)}, Md. Nazmul Islam^{2,3,4,5}

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COVID-19 pandemic and population density problem in Indonesia: transmigration policy as an alternative program 527-541

Arifin Saleh^{1*)}, Rizal Khadafi², Achmad Nurmandi³, Mujahiddin⁴, Agung Saputra⁵, Soritua Ritonga⁶, Sigit Hardiyanto⁷

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Governing green open space in indonesia: barriers and opportunities to enhancing enviromental quality

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Abstract

This article discusses the enhancing of governing green open space in Indonesia. It began by looking at the current condition of green open space in Indonesia, highlighting the barriers faced in governing these areas, looking at opportunities to enhancing, and making recommendations to improve green open space governance. Literature review on governance frameworks that can maximize the potential of green open spaces in Indonesia. The results of this study show that there are several constraints in governing green open spaces, including less awareness and understanding among stakeholders, limited funding and resources, inadequate urban planning, limited community involvement, limited law enforcement and monitoring, urbanization and land scarcity, and weak coordination among government agencies in their management bodies. Our findings point to opportunities in governing greenspace areas, by learning from successful projects, exploring global good practices; innovative financing and partnerships; integrating greenspace into urban planning for cohesive neighborhoods; engaging communities for long-term success and shared responsibility; raising awareness of the value of greenspace through educational campaigns; and utilizing technology for data-driven decision-making and community participation. These opportunities contribute to policy recommendations that can be used by the central government and local governments to improve green open space governance in Indonesia.

Keywords: governing, green open space, enviromental quality, barriers and opportunities

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Introduction

Green open spaces are essential to urban environments because they provide much-needed relief from the concrete jungles that dominate the majority of the world's cities. These areas, which are characterized by lush vegetation, trees, gardens, and recreational areas, are essential for the health and quality of life of urban residents (Achmad et al., 2015). The fundamental reason for the significance of green open spaces is that they may fulfill several roles and give numerous advantages. The provision of recreational options for residents is an essential part of a community's use of green open spaces (Mangopa Malik, 2017). Amid the bustling urban landscape, these areas serve as havens for relaxation and recreational activities. They provide respite from the stresses of daily life by providing a location where people of all ages, including families, can go for walks, have picnics, and engage in social interaction. Ample space for children to play in public areas such as parks,

gardens, and open fields fosters their physical development and social skills (Ali et al., 2021). Access to these recreational spaces is crucial for enhancing the overall livability of cities, promoting healthier lifestyles, and reducing sedentary behaviors. In addition to serving the recreational needs of communities, Green open spaces provide a substantial contribution to the environmental quality of metropolitan areas (Ardiansah & Fahmi, 2018). They function as natural filters, absorbing pollutants and particulate matter to improve the air and water quality in which they are found. In these regions, trees and other forms of vegetation contribute to the reduction of carbon dioxide levels, which in turn mitigates the effects of climate change. Green areas with ample open spaces play an important role in water management (Sulistyo & Widjajanti, 2018). They function as natural stormwater retention areas and prevent flooding by absorbing excess precipitation (Ariyaningsih et al., 2023). In addition, they promote biodiversity by providing habitats for a variety of plant and animal species, thereby contributing to the preservation of urban ecosystems and ecological equilibrium (Mangopa Malik, 2017).

Moreover, the creation of sustainable and resilient cities is difficult without an abundance of green space. In response to the difficulties faced by climate change, fast urbanization, and rising population densities, green infrastructure is becoming increasingly significant in urban areas (Ajrina & Kustiwan, 2019). Green open spaces can mitigate the urban heat island effect by providing shade and cooling, which reduces the amount of energy required to cool buildings (Sunarto et al., 2020). In addition, they contribute to the regulation of local microclimates, aiding in the maintenance of temperature and humidity levels, while enhancing overall air quality. If cities plan and design their environments with open green spaces in mind, they can increase their resistance to climate change and create more sustainable and habitable environments.

Given the significance of green and open spaces, it is essential to prioritize the governance and management of these areas. Observing at the global trends, Factors such as urbanization, population density, and climate change all have an impact on global trends in green open space management. Cities all across the globe are understanding the benefits of green urban planning, which may lower temperatures, reduce air pollution, and improve environmental resilience. One of the most important developments is the increasing importance of green spaces in urban settings, particularly as migration to cities grows. For example, in rapidly urbanizing countries such as China, balancing the growth of green spaces with residential areas is a concern (Lu et al., 2023). Due to rapid urbanization, high population density, and limited urban area, the well-being of city dwellers is also a worry (Lu et al., 2023). The study of the relationship between green spaces and mental health, particularly for seniors, has grown in popularity, with the United States, China, and the United Kingdom leading the way in relevant publications (Wu et al., 2023). Human development and population density are intimately linked to urban green space patterns (Bille et al., 2023). Despite the fact that cities are created for people, roadways are only assigned a small fraction of land, even in planned regions.

Meanwhile, looking at the conditions in Indonesia, green open spaces in large cities are still minimal. This can be seen from the following, which shows how the percentage of green open space in Jakarta is stagnant and does not meet city standards, namely, 30% of

the city area. In contrast to Singapore, although it is stagnant, it has exceeded city standards (City Stats, 2022).

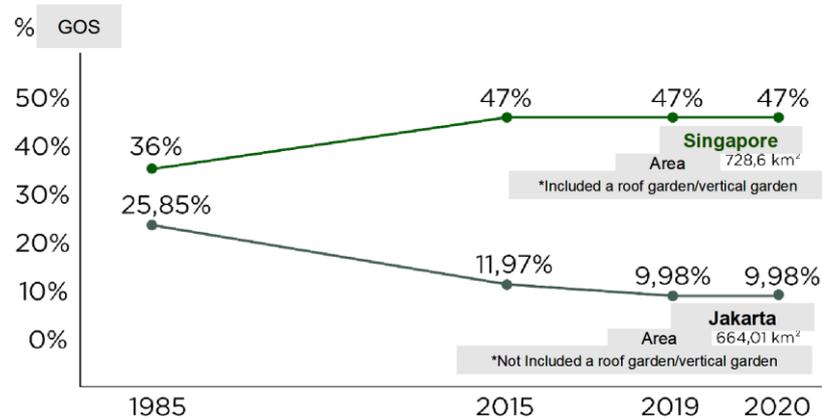


Figure 1. Comparison of % green open space: total area in Singapore and Jakarta
Source: (City Stats, 2022)

As a result, an effective management system ensures that these regions are properly maintained, developed, and safeguarded for both present and future generations. The management of these places' entails developing and implementing laws, rules, and strategies to maximize the potential of green open spaces while addressing any possible issues. This involves the coordination and participation of several stakeholders, including public agencies, urban planners, community groups, and members of the community. Given the importance of green open spaces and their management, the goal of this research is to identify the barriers and potential for increasing the amount and quality of green spaces in Indonesia. After conducting an analysis of the current management framework and identifying the obstacles preventing the optimal utilization of these spaces, strategies and recommendations can be developed to overcome these obstacles and capitalize on improvement opportunities. By conducting this research, we hope to make a substantial contribution to the ongoing conversation on environmentally responsible city planning and the crucial role that parks and other green spaces play in this process. Previous research has analyzed many of the obstacles in the development of green open spaces from various case studies in districts such as Tarakan (Madani & Mustari, 2022), and Sigi (Talantan et al., 2022) where the problems faced are related to the lack of regulatory strengthening. Meanwhile, in several cases in big cities such as Bandung (Afriyanie et al., 2020), Surabaya (Nalle & Moeliono, 2023), and Jakarta, it is related to the challenge of balancing economic and environmental needs. Besides, Improving its quality is necessary to build resilient infrastructures (Dahlan et al., 2022). However, no one has mapped and outlined the lessons learned from these cases. Moreover, study by Afriyanie et al. (2020) suggest the future research that needed to be fulfilled in this topic is about review of the challenges in spatial planning practices. Thus, this research will fill this gap and follow the suggestion to map the obstacles in green open space management based on previous research.

By conducting research in the Indonesian context and presenting our findings, this study provides insights and recommendations that can inform policymaking, urban planning, and community engagement initiatives. Our objective was to encourage the improvement of

green open space management in Indonesia, which will result in the growth of more vibrant, healthy, and environmentally sustainable cities. In the following paragraphs, we examine the current state of green open space management in Indonesia, identify the obstacles faced in effectively managing these spaces, examine opportunities for improvement, and provide recommendations for enhancing green open space management. By conducting an in-depth literature study on these topics, we hope to contribute to the development of a governance framework that will maximize the potential of Indonesia's green open spaces and ensure a long and healthy future.

To comprehend the state of green open space management in Indonesia, it is necessary to analyze the current environment, the in-place policies, and the involved parties. According to Law Number 26 of 2007, Green Open Space is a swath and/or grouping area with open use characteristics, where plants can be cultivated naturally or artificially (Subadyo et al., 2019; Sulistyono & Widjajanti, 2018). The establishment of Law Number 26, 2007, is extremely suitable since green open space is dwindling and transitioning into commercial areas, which have a larger economic value than green open space. The law tackles the issues and challenges those Indonesian cities face. As a result, it should be supported by all stakeholders, including the federal government, local governments, economic players, and society. But it would be even better if the rule could be implemented, because good rules that cannot be implemented are akin to rules that cannot solve current issues and have no value (Ardiansah & Fahmi, 2018). These regulations stipulated that the proportion of green open space in urban areas must be at least 30% (20% for public green open space and 10% for private green open space) (Ajrina & Kustiwan, 2019). These include the requirement that 30 percent of river basins be forested and that 30 percent of all municipal areas be verdant open space. These specifications define environmental carrying capacity thresholds that would enable construction to proceed. The Ministry of Public Works (MoPW) has released a variety of technical instructions to ensure that local governments satisfy these allocation levels. Guidelines on the technical examination of physical, environmental, economic, and socio-cultural factors in the formation of spatial plans (MoPW Decree 20/PRT/M/2007) and the supply and use of natural open spaces in urban areas (MoPW Decree 05/PRT/M/2008) are among them. In Indonesia, both principles are essential for spatial planning (Afriyantie et al., 2020). The administration of parks and other publicly accessible green areas in Indonesia is governed predominantly by numerous national, provincial, and local laws and regulations.

Research Methods

The research strategy employed in this study is mostly based on a complete literature review analysis of various national and international papers in Google Scholar. Literature study is one of the research methods used to collect and analyze information from literary sources pertinent to the research topic. In this methodology, researchers collect literature data from a variety of sources, including scientific journals, articles, books, conferences, and electronic sources, such as Scopus and Google Scholar. In this context, we will discuss a literature review methodology that includes data collection from Scopus and Scholar over the past decade (Putra & Sajida, 2023). It is essential to understand the purpose of the literature review before proceeding with it. The purpose of a literature review is to identify, evaluate, and synthesize prior research related to the topic of the current study (Templier &

Paré, 2015). Through a thorough literature review, researchers can develop a solid understanding of previous research, identify knowledge gaps, and steer their research in a more productive direction. The research digs into the significance of green open spaces in urban contexts, highlighting their role in increasing quality of life, offering recreational opportunities, improving environmental quality, and helping to the establishment of sustainable and resilient cities. Since then, the research has sought to identify impediments to and potential solutions for expanding the amount and quality of green areas in Indonesia. To do this, the study analyzes the current management framework, identifies impediments, and aims to propose methods and recommendations based on past research.

Results and Discussion

Indonesia's capacity to maintain, develop, and utilize green open spaces is hindered by several obstacles to effective green space management. The fact that neither policymakers nor the general public has sufficient awareness or comprehension of the significance of green open spaces is one of the greatest obstacles. This was one of the most significant obstacles. Numerous decision makers place a higher priority on economic development than on the preservation and enhancement of green spaces. This is similar to what occurred in Semarang, where the Simpang Lima area is an example. The Simpang Lima area is more economically productive than it is as a green open space (Arifiah, 2022). This way of thinking frequently leads to the neglect of green open spaces, which results in inadequate funding, limited attention, and the absence of supportive policies. Green open space is also decreasing in another city, Batu, as a result of the conversion of the RTHK function into a built-up area (Hanafi & Fitrianto, 2022). Furthermore, the government's limited understanding of the benefits and functions of green open spaces contributes to their underuse and undervaluation, which leads to green open spaces not being included as development priorities, as was the case in Tangerang (Hafiz et al., 2022).

The inability to raise and maintain sufficient funds and resources is a significant barrier to the effective management of green open spaces. For many local governments, allocating sufficient funds for the maintenance, development, and improvement of these areas can be a challenge, as experienced by Pekanbaru (Ardiansah & Fahmi, 2018). A lack of financial resources frequently results in insufficient staffing, insufficient maintenance activities, and delays in the implementation of improvements. Others in Karawang had similar experiences. Resources are a barrier to implementing this green open space planning policy because the budget spent is still insufficient, and there are still human resources who do not meet the competencies required to carry out structuring activities in the field (Putri et al., 2020).

Another obstacle is inadequate urban planning and design considerations. One such instance is what occurred in Jakarta. Some of the green spaces in downtown Jakarta have the appearance of squares but do not operate as actual green spaces due to the presence of concrete. In this regard, it is vital to examine not only the connection, but also the quality of green places (Kim, 2012). Balancing the tension between providing urban green spaces for human well-being and preserving the long-term viability of urban ecosystems is one of obstacles in managing green open spaces (Afriyanie et al., 2020). As a result of the failure to incorporate green open spaces into urban planning processes, green areas are frequently treated as afterthoughts rather than as integral components of urban landscapes.

Consequently, development is frequently fragmented. When factors such as connectivity, accessibility, and functional design are neglected, the aesthetic value and usability of green open spaces suffer.

Others, Insufficient community engagement and participation hinders the effective management of green open spaces. The communities are the primary users and beneficiaries of these spaces; therefore, their participation is crucial for their effective management. As is the case in Semarang, where community engagement in the management of green open spaces is frequently limited, resulting in limited input and participation opportunities (Arifiah, 2022). While in other areas such as in Purbalingga, findings by Riyanto & Subekti (2023) explained how the community's perception of space for green open space was non-commercial, so many functions that should have been for green open space were transferred to other functions.

In Indonesia, the administration of green open spaces faces obstacles in the areas of enforcement and monitoring. This supervision is related to two things: supervision of existing green open spaces and supervision of those that will be built. In Bojonegoro, for example, merchants walk around with baskets of merchandise and create garbage piles at the site from the remains of visitor activities, which include a large amount of waste in plastic packaging for food and beverages (Ali et al., 2021). Despite the existence of regulations and policies, the mechanisms for their enforcement are frequently lacking, leading to violations and encroachments on green spaces. There are others associated with this as well as unauthorized land use, land grabbing, and illegal development threaten the originality and long-term viability of green open spaces. (Hafiz et al., 2022) discovers Tangerang's difficulties as a result of his absence of punishments for violators who cause damage or unlawfully construct buildings in green open space (RTH) regions. This is characterized by a lack of firmness or clarity in legislation guiding the implementation of punishments to offenders in the responsibility to fulfill or offer green open space (RTH), both for parts of the community and for individual developers.

The problems caused by the lack of available land both contribute to the complexities of green open space administration. Depok facing the limit land, land for urban green open space in Depok City is still limited owing to increasing population density each year (Mangopa Malik, 2017). Also, population growth put pressure on the land, which ultimately results in the conversion of green open spaces to other uses. In Surakarta, also facing growth in population density. This is owing to a huge number of uncontrolled land-use changes, such as woods and agricultural land, to become structures and residences (Nurhayati et al., 2020). Others, Land speculation, unauthorized land-use changes, and insufficient land-use planning frequently result in the destruction of green spaces.

In addition, the diversity and complexity of the stakeholders involved in the administration of green open spaces can occasionally present obstacles. Various government agencies, including those in charge of urban planning, environmental protection, parks and gardens, and spatial planning, manage different aspects of the management of green open spaces. The inability of these agencies to collaborate, communicate, and coordinate their efforts frequently results in disjointed decision-making, competing priorities, and difficulties in implementing cohesive strategies for the management of green open spaces. This is similar to what happened in Jakarta, where each of the city's regional apparatus groups uses

a different green open space calculation technique (Setiowati et al., 2018). Meanwhile, data is an important foundation for developing green open space development plans.

Investigating the Possibilities of Improving the Management of Green Open Spaces

The allocation of green open space is encouraged by Law No. 26 of 2007 pertaining to Spatial Planning, which stipulates that every planning area unit is obligated to provide 30% of the area in green open space. However, compliance with its implementation is hindered in the majority of urban areas. According to data provided by the Ministry of Public Works and Public Housing (PUPR), a mere 13 out of 174 identified cities in Indonesia, or approximately 7.5%, have achieved compliance with the aforementioned provisions (Hidayah et al., 2019).

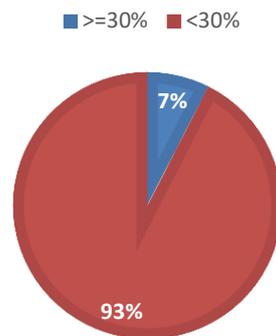


Figure 2. Distribution Of Green Open Space In All Regencies/Cities In Indonesia 2019

Source: Ministry of Public Works and Housing, 2019

Despite the challenges that exist in the administration of green open spaces in Indonesia, there are a number of opportunities to improve the management and utilization of these areas. Significant advancements in green open space management are possible if the aforementioned opportunities are identified and a suitable strategy to capitalize on them is developed as presented in figure 3.



Figure 3. Barriers and Opportunities in the Management of Green Open Spaces

Source: Data Analysis. 2023

Learning from successful green open space projects and initiatives implemented in Indonesia and other nations is one of the most important opportunities awaiting exploitation. Moreover, examining at the global context. Various nations have implemented successful strategies for maintaining green open spaces in urban settings, using insights from individual case studies. In the United States, governmental policies handle urban expansion concerns while also protecting green places (Bengston et al., 2004). To enhance environmental conditions, European towns focus on initiatives such as expanding urban nature and encouraging green roofs (Lange et al., 2021). Due to limited resources, England is experimenting with new techniques of providing regionally tailored services (Space, 2010). Singapore adopts a green approach to urban development in order to improve environmental resilience. In Slovakia's Bratislava, solutions include planting trees, constructing "pocket parks," and adding greenery to rooftops. These case studies emphasize the need of encouraging social cohesiveness, investing in green space management, and incorporating green spaces into urban design for sustainable and comfortable living conditions, increasing social engagement, and improving the well-being of urban people (Belčáková et al., 2022).

When attempting to improve management practices, case studies of thoughtfully planned and well-maintained green open spaces can serve as useful references. As in Malang, whereas it is still ongoing and requires more and better green open space. However, the city has done an excellent job of maintaining green open areas and providing public spaces for its residents (Hanan & Ariastita, 2021; Yasmine & Wicaksono, 2019). It is possible to gain valuable insights by researching previously documented instances of achievement, identifying exemplary models of behavior, and understanding the factors that contributed to this achievement. These findings can be applied to the planning, design, and management of green open spaces in Indonesia, resulting in the formation of more vibrant and environmentally friendly urban environments.

Additionally, the practices and experiences of other nations regarding the administration of green open spaces can provide instructive and motivating examples and data. Numerous cities worldwide have successfully implemented novel approaches for the governance of green open spaces. As in Korea, several cities are recognized as green city models, with the common trait of a marriage between an emphasis on urban-related goods based on networked innovative technology and eco-friendly technologies. The latter are primarily concerned with minimizing carbon emissions by building cities with environmentally friendly infrastructure (water recycling and automated water collection systems) and securing land (30%) for green areas to absorb emissions of carbon (Mullins & Shwayri, 2016). The establishment of specialized agencies for the management of green spaces, adoption of inclusive and participatory decision-making procedures, and implementation of sustainable financing models are among these measures. It is possible to develop effective strategies for the better management of green open spaces in Indonesia if these global best practices are researched and adapted to Indonesian conditions.

Therefore, there is significant room for improvement in the administration of green open spaces, and innovative financing models and partnerships present significant opportunities to do so. It is possible that traditional funding sources for the management of green open spaces are insufficient, resulting in insufficient maintenance and development.

Investigating alternative sources of financial support may help to overcome this obstacle. There are many potential funding avenues that can be explored, including public-private partnerships, corporate sponsorships, and community organizations. Some previous studies mentioned how public private partnership could be one of solution related to urban green space development (Dupont et al., 2015; Koppenjan & Enserink, 2009; Stan, 2014). It can not only increase the financial resources for the management and maintenance of green open spaces, but also foster a sense of shared responsibility and stewardship among those involved.

Then, Incorporating the planning of green open space into more comprehensive urban development frameworks is another way to improve management. Instead of being viewed as distinct entities, urban parks and green spaces should be regarded as vital components of the urban infrastructure. Green open spaces can create synergies with other aspects of urban development, such as transportation, housing, and infrastructure, if they are incorporated into city planning processes (Hansen et al., 2019; Hansen & Pauleit, 2014). This integration has the potential to produce more cohesive and sustainable urban environments. Collaborative approaches to planning and design, such as planning for green infrastructure, can help ensure that green open spaces are effectively integrated into the urban fabric, thereby maximizing the potential and benefits of these spaces (Ali et al., 2021).

Next is increasing community engagement and participation is one of the significant opportunities presented by enhancing green open space administration (Ardiansah & Fahmi, 2018). Communities are the most significant stakeholders in the management and use of these spaces, and their participation is essential for the long-term success of these spaces. It is possible to foster a sense of ownership and autonomy among residents by facilitating meaningful community engagement. In the case of *kampung kota*, image, identity, and memory shape green space meanings and build the community's feeling of place (B. D. Putra et al., 2019). Childhood or hometown experiences might influence *kampung kota* green space identity and image construction. Participatory planning processes, community-led initiatives, and regular dialogue between various stakeholders are examples of such platforms. By contributing their local knowledge, insights, and resources, communities have the ability to enhance the governance and management of green open spaces. In Depok, for example, there is the Depok Green Community Forum. The Green Community Forum in Depok City also openly opposed the attitude of criticism in response to the potential of a government policy, notably development that ignores ecological concerns and only considers commercial objectives. Socialization and invitations to this forum in support of its ecological lifestyle campaign are carried out by cooperating with and collaborating with the communities under its auspices so that later in existence it can be spread and known more widely by the public (Rofi & Efendi, 2023). If communities are involved in the decision-making processes, it is possible to create green open spaces that meet their needs, preferences, and objectives.

Education and awareness campaigns play a crucial role in identifying opportunities for enhancing the administration of green open spaces. Building a stronger foundation for effective management can be accomplished by increasing policymakers', communities', and the general public's awareness of the significance of green open spaces, the functions they serve, and the benefits they provide. This is because, as presented in the case of Pekanbaru,

the lack of awareness of the people about the importance of green open land leads to obstacles in this management (Ardiansah & Fahmi, 2018). Individuals and communities can be motivated to actively participate in the management and preservation of green open spaces by fostering a sense of pride and appreciation for these spaces through awareness campaigns (Ali et al., 2021)

Furthermore, technological advancements have created opportunities to enhance the management of green and open spaces. With the assistance of Geographic Information Systems (GIS), remote sensing, and data analytics, it is possible to evaluate the distribution, quality, and accessibility of green open spaces (Afriyani et al., 2023). Dahlan et al. (2022) suggest that we need to build the green factor tool as the a versatile and creative urban design technique aimed at developing green infrastructure in open spaces. These technologies can be utilized to determine where coverage is lacking, how the vegetation is changing, and how these areas are typically utilized by people. Frequently, data-driven decision-making and evidence-based planning can lead to more effective management strategies. If mobile applications and online platforms that facilitate public participation, information sharing, and feedback mechanisms are created, communities will be able to actively participate in the management of green open spaces.

Recommendations to Enhance Green Open Space Governance in Indonesia

In order to overcome the barriers and seize the opportunities presented by the possibility of enhancing the management of green open spaces in Indonesia, a number of key recommendations may be proposed. These recommendations seek to improve the governance framework, coordination among stakeholders, securing sustainable funding, and community engagement. Significant advancements in the administration, development, and utilization of green open spaces could result from the implementation of these recommendations.

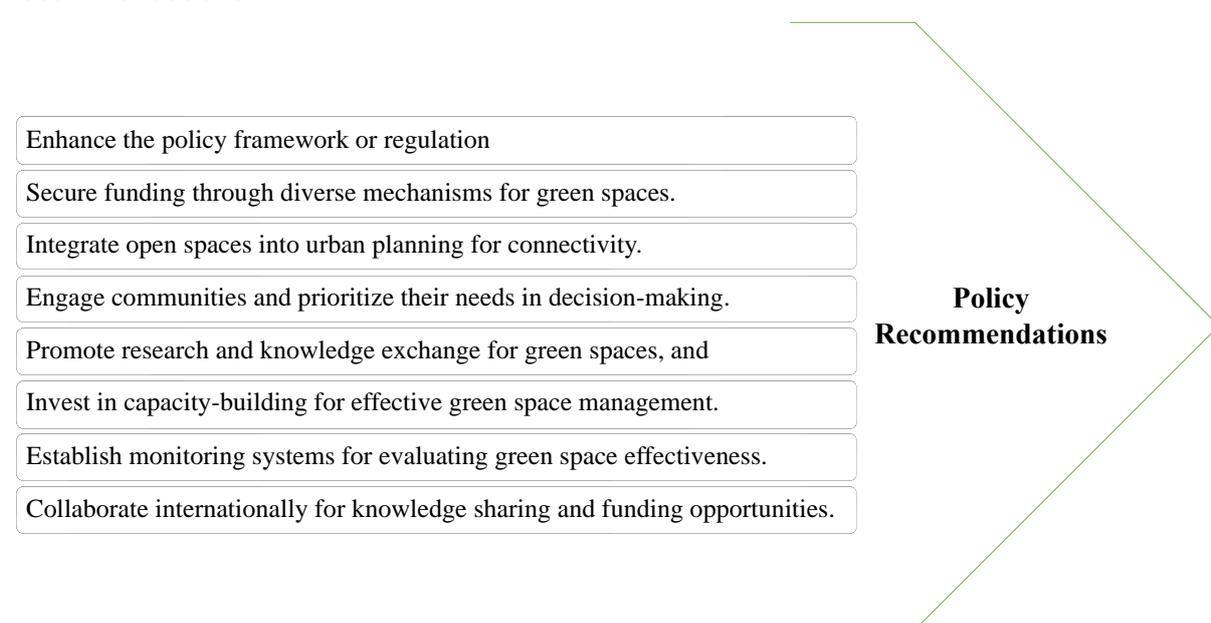


Figure 4. Recommendations to Enhance Green Open Space

Source: Data Analysis. 2023

First, government might enhance policy framework and implementation. Examine and revise green open space governance policies and regulations to ensure they meet sustainable development goals and current best practices (Adiyanta, 2018). Green open space planning, design, and management must be standardized. These standards should address accessibility, connectivity, and functionality. Improve enforcement to prevent unauthorized land use changes, encroachments, and illegal activities in green open spaces. To ensure consistent decision-making and implementation, centralize or coordinate government agencies managing green open space. As in Pekanbaru, where the government planned to create a regulation on Regional Spatial Planning of the City of Pekanbaru imposing principles for the provision of green open spaces. The purpose of Regional Regulation Number 7, 2012 on construction permit fees is to ensure liability provision of green open space for community building on a piece of land, as well as to develop excellent cooperation and harmony among private and public enterprises (Ardiansah & Fahmi, 2018).

Those first recommendation also become main approach if we learn from best practices in Singapore. Where Singapore's green space management is instructive by sets a number of standards and guidelines (Henderson, 2013; Xue et al, 2017). A special department, the Skyrise Greenery Section, enforces government greenery design rules in high-density areas. They have added 40 hectares of greenery to various buildings to encourage community involvement in city greening (Xue et al, 2017). By hiring skilled workers and funding landscape architecture, the government shows its commitment to high standards (Henderson, 2013). It is also supported by the citizen. This approach balances dense building with livability and greenness.

Secure funding through diverse mechanisms for green spaces. Set aside national, provincial, and local funding to maintain, create, and improve green open spaces. To supplement government funding and ensure financial sustainability, consider public-private partnerships, corporate sponsorships, and crowd-funding platforms. In Malang, Over 17 GOS development projects have been funded by CSR funds in the past three years (Wikantiyoso & Suhartono, 2018). This strategy needs to be improved by communicating and negotiating GOS revitalization design to minimize the impact of reducing green open space (Wikantiyoso et al., 2020). Therefore, it is important to establish private, community, and charitable foundation-eligible green open space funds. To attract private investment for green open space projects, promote innovative financing models like impact investing and green bonds.

Connecting urban planning with open spaces through integrate green open space planning into larger urban development frameworks in the planning and design process. Green infrastructure planning should prioritize city green spaces' connectivity, accessibility, and functionality (Ajrina & Kustiwan, 2019). In rapidly urbanizing areas, protected areas, green corridors, and green belts are essential to preserve and expand green open space. It is essential to promote sustainable, mixed-use, compact cities that prioritize green open spaces as urban infrastructure. Therefore, green open spaces should be site-specific and include native plant species, which have adapted to the local environment. Plant health is essential to environmental health, hence green areas should be well maintained (Zain et al., 2022). Next, involve communities in decision-making. Engaging the community could be done through citizen-led initiatives, participatory planning, and regular public consultations. Engage community meaningfully. To manage and maintain green open spaces, community

organizations, non-governmental organizations, and government agencies must find it easier to partner and collaborate. In Surakarta, The Surakarta Green Movement, through the planting and maintenance of urban forests, is the right impetus and concrete action for all aspects of society to take in order to preserve the environment (Nurhayati et al., 2020).

Moreover, encourage green space research and sharing. We suggest to encourage green open space management research on best practices, effects, and innovative approaches. GIS and remote sensing should be used to monitor the distribution, quality, and use of green open spaces (Edwards et al., 2013). Encourage researchers, practitioners, and policymakers to share information and success stories in green open space management. To improve green space management and evidence-based decision making, create platforms and networks for data, research, and case studies. Others, Green space management requires capacity-building. It is needed to invest in programs to educate government officials, urban planners, landscape architects, and other green open space administrators. To administer green open spaces effectively, train staff on planning, design, management, and community engagement. In collaboration with educational institutions and research facilities, create interdisciplinary green space management programs and courses. Create platforms, workshops, and conferences for field-based professionals to share knowledge and best practices. This step could be done by doing collaboration. Since, lack of intersectoral collaboration and institutional fragmentation has consequently diminished the definition of a green city in Indonesia (Zain et al., 2022).

Establish green space effectiveness monitoring systems. It is essential to involve the community in monitoring the implementation of the design of verdant open space. Communities are required to submit written or verbal notice to the authorized for violations of urban design regulations (Ardiansah & Fahmi, 2018). Green open spaces must be regularly assessed for quality, accessibility, functionality, and environmental, social, and economic benefits. Use monitoring and evaluation data to make evidence-based decisions, improve areas, and prioritize green open space investments. Furthermore, Share knowledge and funding globally. It could be done by join international organizations and networks that manage green open space and urban sustainability to learn, share, and find funding (Zuniga-Teran et al., 2020). Encourage partnerships with other nations that have successful green open space governance to share information and learn. Implementing these suggestions can help Indonesia better manage its green spaces. This preserves, grows, and optimizes these vital urban resources. Government agencies, local communities, academic institutions, and international partners must work together to implement these recommendations and build resilient, sustainable, and livable cities for future generations.

Conclusion

Green and open spaces are vital for cultivating sustainable, livable, and vibrant Indonesian cities, contributing to physical and mental well-being, recreation, environmental conservation, and social cohesion. However, challenges such as urbanization, land scarcity, low awareness, limited funding, planning gaps, lack of community involvement, and weak law enforcement have resulted in poor governance. Despite these hurdles, there is potential for improvement by taking lessons from successful projects in Indonesia and beyond. Long-term funding can be secured through public-private partnerships and crowdfunding, while community engagement, awareness initiatives, and technology adoption can further refine

management practices. Implementing key recommendations, such as enhancing the policy framework, integrating green spaces into urban planning, promoting community participation, fostering research and knowledge sharing, building capacity, and establishing evaluation mechanisms, is crucial. These measures will contribute to the development of a governance structure prioritizing the protection, development, and utilization of green areas in Indonesia. The active involvement of governmental agencies, local communities, academic institutions, and international partners is vital for success. Effective governance will integrate green spaces into urban infrastructure. Better green and open space management will yield benefits for sustainable development, climate change mitigation, and biodiversity conservation across the country. The implementation of these recommendations requires continued dedication, collaboration, monitoring, and evaluation. Regular reviews and adjustments are necessary to accommodate evolving urban contexts, technological advancements, and changing community needs. Establishing public participation and feedback mechanisms will maintain engagement and receptivity. To enhance Indonesia's green areas, government agencies, local communities, academic institutions, and international partners must collaborate. Through the preservation, development, and optimization of those open spaces, Indonesia can build resilient and high-quality cities, promoting environmental protection and societal well-being. By seizing these opportunities and implementing the suggested strategies, Indonesia can create a greener, healthier for its urban areas and people.

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