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Research Article

Implementation and Strategies for Creating Green Open Spaces to Achieve Sustainable Development Goals

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Abstract.
Rapid population and economic growth in Indonesia have led to a significant decline in air quality, exacerbated by a limited green open space (Ruang Terbuka Hijau or RTH) coverage of less than 30% for most cities, contributing to respiratory health issues. RTH is crucial for achieving SDG 11, sustainable cities and communities. However, implementing the RTH policy, mandated by Law number 26 of 2007 and amended by the Job Creation Omnibus Law, faces substantial challenges. This study aims to identify key obstacles hindering the RTH policy implementation in DKI Jakarta, South Tangerang City, Bandung City, and Surabaya. Through in-depth interviews with government officials and review of related literature, we explored the barriers to achieving the 30% RTH target. Preliminary findings indicate that several challenges contribute to this condition, including low awareness among both public officials and the public, the limitation and expense of available spaces, inadequate understanding of related regulations and their enforcement, and the absence of comprehensive RDTR documents for robust RTH master planning. This research also proposes actionable strategies to enhance RTH coverage at the provincial, district, and city levels, including reward and punishment mechanisms, increased public awareness, optimized spatial audits, strengthened law enforcement, improved interagency collaboration, and standardized RTH coverage calculations. Our findings are expected to inform the development of effective policies and strategies to increase RTH coverage, leading to improved air quality and overall urban sustainability in Indonesia.

Keywords: green open space, sustainable development goals, law enforcement

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1. INTRODUCTION

Sustainable development is an approach that aims to meet the needs of the current generation without compromising the ability of future generations to meet their needs. Sustainable development is a relationship between Economic, Social and Environmental aspects known as the “three pillars” of sustainability. The Sustainable Development

Goals (SDGs) are comprised of 17 interrelated targets grouped into four pillars. One of these pillars is environmental development, which encompasses six specific goals: clean water and sanitation (Goal 6), sustainable cities and communities (Goal 11), responsible consumption and production (Goal 12), climate action (Goal 13), life below water (Goal 14), and life on land (Goal 15).

Prioritizing environmental development directly impacts the quality of our environment, which can be assessed through the Environmental Quality Index (IKLH). IKLH provides a comprehensive overview of environmental conditions and progress toward sustainable development in a region by evaluating the quality of water, air, land, and seawater.

1. **Water Quality Index (IKA):** A numerical value representing the overall condition of water quality based on various water quality parameters.
2. **Air Quality Index (IKU):** A measure of air quality determined by a combination of air quality parameters.
3. **Land Quality Index (IKL):** A value indicating land quality, considering factors such as land cover and peat ecosystem health.
4. **Seawater Quality Index (IKAL):** A measure of seawater quality derived from a combination of seawater quality parameters

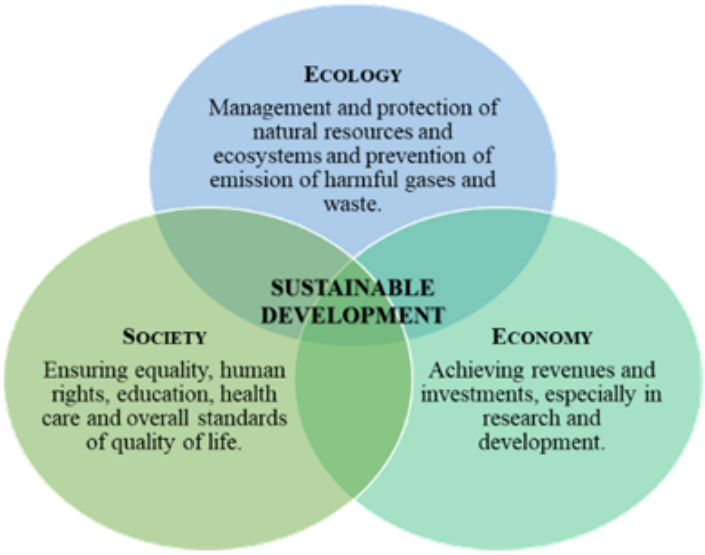

Figure 1: *Triple bottom-line* Concept Sustainable Development (1).

This study focuses on the air quality index (IKU) due to the escalating concern over deteriorating air quality, particularly in Indonesia's urban centers. Jakarta, for

instance, has consistently faced air pollution levels deemed unhealthy, with an air pollution standard index (ISPU) reaching 160. The Central Statistics Agency has regularly published air quality index data from 2018 to 2022, providing valuable insights into the evolving air quality situation.

The data presented demonstrates that major cities within the provinces of DKI Jakarta, Banten, and West Java possess IKU (Key Performance Indicators) that fall within the categories of “less than good” to “fairly good.” DKI Jakarta experienced an increase in its IKU score, yet it remains in the “less than good” classification. Similarly, West Java witnessed an improvement in its IKU score, but it still falls within the “fairly good” category. In contrast, Banten Province’s IKU score fluctuated between 71 and 74 from 2018 to 2022, consistently placing it in the “fairly good” classification.

Green open spaces (RTH) play a crucial role in improving air quality by reducing emissions of carbon monoxide, ozone, and dust. Studies suggest that green open spaces can reduce air pollution by 5% to 69%, depending on vegetation and local context. Expanding green open spaces and selecting appropriate vegetation, such as mahogany and bintaro plants, can help mitigate air pollution. Urban areas in Indonesia face global challenges related to climate change and environmental problems such as sea level rise, biodiversity loss, resource scarcity, and ecological disruptions.

A healthy ecosystem in line with its carrying capacity ensures sustainable quality of life. Open spaces provide various environmental services, including ecological, socio-cultural, economic, aesthetic, and disaster management functions (Harahap, I.H., 2021). Connectivity is crucial in creating a complete ecological system. It necessitates a regional or landscape scale approach that transcends administrative boundaries to establish a green and blue network. Therefore, green open spaces, non-green open spaces, and blue open spaces should be considered interconnected ecological units. Their provision and utilization should preserve and enhance the ecological and historical value of the area, including toponymy.

Law 26/2007 on Spatial Planning, amended by Law 11/2020 on Job Creation, mandates regional governments to provide open spaces, including Green Open Spaces (RTH) and Non-Green Open Spaces (RTNH). Previously, separate guidelines governed RTH and RTNH provision and utilization. However, the separation of green and non-green open spaces is seen as an obstacle to achieving the legal mandate of at least 30% open space in urban areas, with 20% public and 10% private green open space. All types of open spaces have ecological, socio-cultural, water absorption, economic, aesthetic, and disaster management potential for urban communities and their environment. Socially and culturally, green open space can be used as a public facility in the form

Provinsi *Province*	Indeks Kualitas Udara *Air Quality Index*				
	2018	2019	2020	2021	2022
(1)	(2)	(3)	(4)	(5)	(6)
Aceh	88,33	90,71	89,51	89,63	90,62
Sumatera Utara	85,72	86,58	89,22	89,55	89,69
Sumatera Barat	88,37	89,45	90,39	90,22	90,65
Riau	89,91	90,20	90,42	90,13	90,69
Jambi	88,04	87,25	85,65	87,08	89,85
Sumatera Selatan	85,32	87,13	86,57	86,28	89,10
Bengkulu	91,63	92,69	90,52	90,81	91,27
Lampung	82,98	86,62	85,45	85,46	87,32
Kepulauan Bangka Belitung	89,09	91,94	91,03	90,39	89,75
Kepulauan Riau	90,83	90,63	90,80	90,91	90,27
DKI Jakarta	66,57	67,97	66,69	66,52	68,06
Jawa Barat	72,80	75,10	78,46	79,34	80,31
Jawa Tengah	82,97	84,81	84,73	84,60	85,14
DI Yogyakarta	84,25	85,19	89,55	88,59	89,16
Jawa Timur	81,80	83,06	84,06	83,20	84,28
Banten	71,63	74,98	72,83	74,14	73,97
Bali	88,97	89,85	88,34	89,28	89,19
Nusa Tenggara Barat	87,17	87,51	88,63	88,52	89,30
Nusa Tenggara Timur	86,83	88,18	89,80	90,51	91,52
Kalimantan Barat	88,68	90,04	88,88	90,71	90,90
Kalimantan Tengah	87,07	88,82	89,84	90,39	91,25
Kalimantan Selatan	87,75	88,78	88,93	89,15	89,52
Kalimantan Timur	83,36	90,02	89,02	88,84	87,59
Kalimantan Utara	90,95	93,79	94,23	93,43	94,52
Sulawesi Utara	91,07	92,41	90,53	91,27	92,41
Sulawesi Tengah	93,56	92,98	91,80	91,33	91,86
Sulawesi Selatan	89,09	89,60	88,73	89,13	90,35
Sulawesi Tenggara	89,85	90,01	91,21	90,89	92,05
Gorontalo	92,17	86,88	93,89	93,96	94,47
Sulawesi Barat	89,26	89,97	89,72	90,97	91,88
Maluku	84,99	88,72	90,41	90,70	91,46
Maluku Utara	90,77	92,38	92,10	91,64	92,74
Papua Barat	90,41	92,64	94,83	95,60	95,79
Papua	89,89	92,56	94,57	94,02	95,32
Indonesia	**84,74**	**86,56**	**87,21**	**87,36**	**88,06**

Figure 2: Indonesia Air Quality Index (IKU) by Province year 2018-2022 (Indonesian Environmental Statistics, 2023).

of family recreation, sports facilities, educational facilities and a place to establish communication between residents in the surrounding area.(2)

Currently, green open spaces in 3 (three) major cities in Indonesia, namely Jakarta, South Tangerang and Bandung, have not fulfilled the 30% quota as mandated by the regulations. From the data, it can be seen that the correlation between the low fulfillment of green open spaces has an impact on the low air quality index.

Surabaya distinguishes itself among Indonesia's major cities by meeting the crucial policy of allocating 30% of its urban landscape to green open spaces. This remarkable commitment encompasses a staggering 7,358.87 hectares of verdant oases, which collectively absorb an impressive 642,794.59 tons of CO2 annually. Surabaya's unwavering dedication to environmental preservation has been recognized through numerous

Table 1: Comparison table of green open spaces in several large cities in Indonesia.

Cities	Land Area (km^2) *Permendagri 72/2019	Open Green Space Area (RTH) (km^2)	% RTH	Sources
DKI Jakarta	664.01	33.33	5.02%	Kompas.com (3)
City of Tangerang Selatan	164,86	6,80	4,18%	Mcmnews.id (4)
City of Bandung	167.67	20.96	12.50%	Detik.com (5)
City of Surabaya	350.54	105.51	30.10%	Jatimprov.go.id (6)

Source: interpretation of author according to the sources (2024)

prestigious awards, including the "5 ASEAN ESC Awards and 4 Certificates of Recognition" for boasting the cleanest air in Southeast Asia.(7) The city's green open space development program, initiated in 2002, has consistently transformed government-owned land into flourishing green spaces. Furthermore, Surabaya has embraced eco-friendly initiatives such as green transportation, green buildings, and solar power plants, showcasing its commitment to a sustainable future.

The scarcity of green open spaces in major cities is a pressing issue attributed to various factors, as highlighted by the Director General of Human Settlements of the Ministry of PUPR. These include the limited availability of land suitable for development as green open spaces by local governments, inadequate allocation of funds, and the intricate process of acquiring land for such purposes, often hindered by price concerns and non-strategic locations. Consequently, many city governments struggle to meet their green open space obligations.

In light of the aforementioned background, the purpose of this article is to address a number of inquiries. (1) How does the implementation of the RTH policy contribute to achieving sustainable development goals by enhancing the environmental quality index? (2) What is the strategy for implementing the RTH policy in order to improve the environmental quality index and achieve sustainable development goals?

2. THEORETICAL STUDY

2.1. Theoretical Review

2.1.1. Legal System Theory

The legal system plays a pivotal role in protecting the environment through various laws, regulations, and law enforcement mechanisms. Its primary objective is to ensure that human activities do not harm the environment and that natural resources are preserved for future generations.

Lawrence M. Friedman, a renowned legal scholar, proposed a comprehensive theory consisting of three key elements for effective law enforcement in environmental protection: legal substance, legal structure, and legal culture. These elements work together to create a robust legal framework for environmental protection. Legal substance refers to the applicable laws, judicial decisions, and new rules that govern environmental protection. It includes environmental statutes, regulations, and common law principles. These laws set forth specific standards for pollution control, natural resource management, ecosystem preservation, and corporate environmental responsibility. They establish the legal foundation for environmental protection and provide guidance to individuals, businesses, and government agencies on their environmental obligations.

Legal structure encompasses the courts, their jurisdiction, and the procedures for appeals in environmental cases.(8) Courts play a crucial role in enforcing environmental laws and resolving disputes between individuals, businesses, and government agencies. The jurisdiction of courts determines which cases they have the authority to hear and decide. Procedures for appeals allow for the review of lower court decisions by higher courts, ensuring that justice is served and that the law is applied correctly.

Legal culture refers to people's attitudes toward law and the legal system, particularly in the context of environmental protection. It includes the values, beliefs, and norms that shape how individuals and institutions perceive and interact with environmental laws. A strong legal culture promotes compliance with environmental laws, supports environmental stewardship, and encourages individuals to seek legal remedies when environmental harm occurs.

2.1.2. Public Policy Theory

Public policy is a complex and multifaceted field encompassing a wide range of actions and decisions made by governments, organizations, and individuals to address societal

problems, achieve goals, and overcome obstacles. The policy-making process typically involves several distinct stages (9):

1. Agenda Setting: This initial stage involves identifying and prioritizing policy issues that require attention. Problems and concerns are brought to the attention of policymakers through various channels, such as public input, media coverage, and research findings.
2. Policy Formulation: Once an issue has been placed on the agenda, policymakers begin to develop specific policy proposals. This stage includes researching the issue, identifying potential solutions, and drafting legislation or regulations.
3. Policy Adoption: In this stage, the proposed policy is debated and voted on by legislative bodies or other decision-making authorities. The outcome of this stage is the formal adoption or rejection of the policy.
4. Policy Implementation: Once a policy has been adopted, it must be put into action. This stage involves developing administrative rules and procedures, allocating resources, and training personnel to carry out the policy.
5. Policy Evaluation: The final stage of the policy-making process is evaluation, which assesses the impact and performance of the policy. This stage involves collecting data, analyzing results, and determining whether the policy is achieving its intended goals.

Policy evaluation is a critical component of the policy-making process as it provides valuable information for policymakers and stakeholders.(10) Evaluation criteria may include effectiveness (the extent to which the policy achieves its stated goals), efficiency (the cost-effectiveness of the policy), adequacy (the extent to which the policy addresses the needs of the target population), equity (the fairness and justice of the policy), responsiveness (the extent to which the policy is responsive to changing needs and circumstances) and appropriateness (the suitability of the policy given the context and available resources). Through evaluation, policymakers can identify areas for improvement, make necessary adjustments, and ensure that policies are having a positive impact on society.(11)

2.1.3. Sustainable Development and Environmental Management

Sustainable development aims to reconcile current societal needs with the preservation of resources and opportunities for future generations. This multifaceted approach encompasses development strategies and environmental policies designed to initiate

social and economic transformation. At its core, sustainable development is guided by several key principles:

1. Recognizing the finite nature of natural resources, sustainable development emphasizes the need to address environmental damage caused by both economic growth and poverty. It acknowledges that unbridled economic expansion and persistent poverty can have detrimental impacts on the environment, depleting resources and degrading ecosystems.
2. Adopting a long-term vision, sustainable development seeks to address the root causes of development issues rather than focusing solely on short-term solutions. It recognizes that many developmental challenges, such as poverty, inequality, and environmental degradation, are interconnected and require comprehensive strategies that consider their systemic causes.
3. Engaging in systematic and comprehensive thinking, sustainable development emphasizes the interconnectedness of environmental, social, and economic aspects of development. It acknowledges that these dimensions are interdependent and that actions taken in one area can have ripple effects on the others. For example, economic growth can lead to environmental degradation if not managed sustainably, and environmental degradation can hinder economic opportunities and social well-being.

To assist in planning and decision-making, there is a conceptual model of sustainable development that considers three potentially conflicting development goals:(12)

1. Economic growth, productivity, and efficiency (growth): This goal emphasizes the importance of economic development to meet the needs of the present population, generate wealth, and improve living standards. It focuses on increasing productivity, technological innovation, and resource utilization efficiency.
2. Social justice, equality, and economic opportunities (equity): This goal aims to ensure that the benefits of economic growth are distributed fairly and that everyone has equal opportunities to contribute to and benefit from development. It focuses on addressing issues such as poverty, inequality, and social exclusion.
3. Environmental sustainability (environmental protection): This goal prioritizes the protection of the natural environment, including ecosystems, biodiversity, and the climate. It emphasizes the need to minimize pollution, conserve resources, and ensure that development does not compromise the integrity of the Earth's life-support systems.

Balancing these three goals can be challenging, as they may sometimes conflict with each other. For example, pursuing economic growth too aggressively can harm the environment, and focusing solely on environmental protection can hinder economic development in the short term. Sustainable development seeks to find a delicate balance among these goals, recognizing that progress in one area should not come at the expense of the others.

2.2. Policies and Regulations Review

2.2.1. Law Number 26 of 2007 on Spatial Planning (13)

The Law on Spatial Planning Number 26 of 2007, amended by Law on Job Creation Number 11 of 2020, requires regional governments to provide open spaces, including Green Open Spaces (RTH) and Non-Green Open Spaces (RTNH). The Spatial Planning Law aims to manage national territorial space wisely, efficiently, and effectively through spatial planning.

Previously, separate guidelines regulated the provision and utilization of RTH and RTNH. The Regulation of the Minister of Public Works Number 05/PRT/M/2008 focused on Green Open Space in Urban Areas, while the Regulation of the Minister of Public Works Number 12/PRT/M/2009 addressed Non-Green Open Space in City Areas/Urban Areas.

The Spatial Planning Law (UUPR) Number 26 of 2007 sets a minimum land area requirement for green open space in urban areas at 30%. Article 29 (1) defines green open space as public and private green open space. Article 29 (2) stipulates that green open space should comprise at least 30% of the city area, and Article 29 (3) specifies that public green open space should account for at least 20% of the city area.

2.2.2. Government Regulation Number 21 of 2021 on the Implementation of Spatial Planning (14)

Government Regulation 21/2021, issued in Indonesia, aims to guide spatial planning and promote sustainable development throughout the country. This regulation plays a crucial role in shaping the future development of cities and regions. One of its key provisions is the requirement for each city's Regional Spatial Plan (RTRW) to include a comprehensive plan for green open spaces. These spaces are essential for maintaining a healthy and livable urban environment, providing numerous benefits for residents and the ecosystem.

The regulation establishes specific targets for the allocation of green open spaces within cities. Public green open spaces, such as parks, plazas, and recreational areas, must encompass at least 20% of the total city area (Imansari and Khadiyanta, 2015). On the other hand, private green open spaces, including gardens, green roofs, and landscaped areas on private properties, must encompass at least 10% of the city area. It's important to note that while the regulation sets minimum requirements for both public and private green open spaces, it also imposes a maximum limit on the combined area of these spaces. The total area of green open spaces, including both public and private, cannot exceed 30% of the city area. This provision ensures that while cities prioritize green spaces, they also maintain a balance with other land uses, such as residential, commercial, and industrial areas.

Government Regulation 21/2021 represents a significant step forward in promoting sustainable urban development in Indonesia. By mandating the inclusion of green open spaces in city planning, the regulation helps to ensure that future cities are designed with the well-being of residents and the environment in mind.

2.2.3. Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency Number 14 of 2022 Concerning the Provision and Utilization of Open Green Spaces to Regional Governments (15)

This ministry's regulation focuses on the provision and utilization of Open Green Spaces (Ruang Terbuka Hijau - RTH) by regional governments in Indonesia. This regulation is designed to ensure that regional governments at all levels—provincial, city, and regency—are responsible for providing and managing green spaces as part of their urban planning and environmental protection strategies. Open Green Spaces (RTH) are defined as areas dedicated to plant growth and ecological functions, including parks, gardens, and recreational areas within urban settings. The regulation distinguishes between public and private green spaces and highlights that regional governments must allocate at least 30% of urban areas as green spaces, with 20% of this dedicated to public use.

To achieve this, regional governments are required to integrate green spaces into their spatial planning documents (RTRW) and consider repurposing underutilized lands for these purposes. The regulation promotes sustainability by encouraging the use of local plants and sustainable designs in the development of green areas, which will also contribute to the protection of biodiversity, improve air quality, and enhance water absorption capacities. Management and maintenance of public green spaces are placed

under the responsibility of regional governments, with a strong emphasis on community participation. The regulation encourages collaboration between regional governments, private sectors, and local communities to ensure the successful development and upkeep of these spaces.

Lastly, the regulation stresses the importance of public education and awareness, urging regional governments to promote green spaces as essential to environmental sustainability and community well-being. Public campaigns and educational initiatives are encouraged to foster active use, preservation, and appreciation of green spaces in urban areas, in line with Indonesia's broader environmental goals.

3. METHODOLOGY

This article is using a normative-empirical legal approach. The analysis is based on a combination of journal articles and book reviews, environmental indices (such as air quality indices), and case studies from four major Indonesian cities: Jakarta, Bandung, Tangerang Selatan, and Surabaya. Data was collected through interviews with government officials, stakeholders, and environmental agencies, supplemented by secondary data from relevant legal frameworks (policies and regulations).

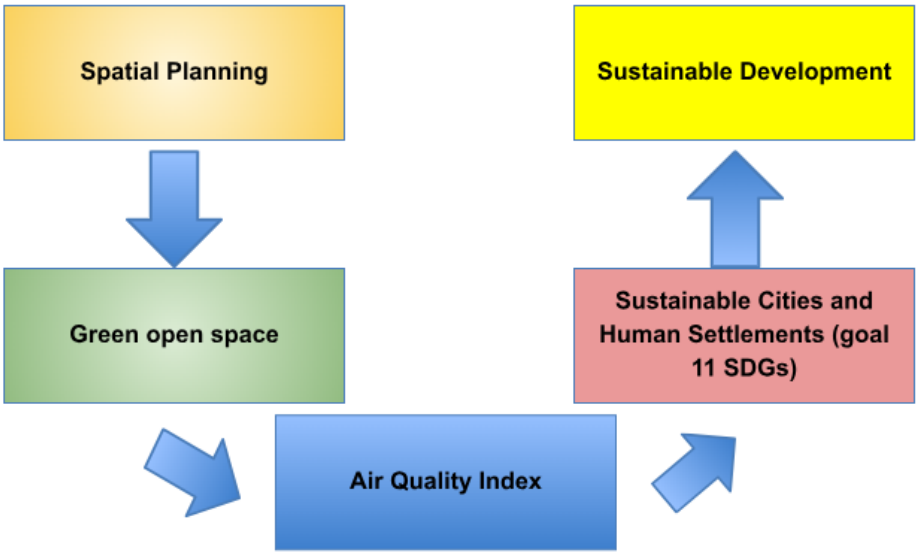

Figure 3: Framework of Thinking.

4. RESULTS AND DISCUSSION

4.1. Implementation and Strategies of RTH Policies to Achieve Sustainable Development Goals

The policy framework for Green Open Space (RTH) mandates a 30% allocation, comprising 20% public RTH and 10% private RTH. However, the implementation of public RTH faces significant challenges, primarily due to the uniformity of government policies that fail to account for variations between metropolitan areas, small towns, and districts. Large urban centers with high economic activity and rapid growth, such as Jakarta, Bandung, and Surabaya, encounter greater difficulties in meeting RTH targets due to land scarcity, escalating costs, regulatory inefficiencies, and weak enforcement mechanisms. Through in-depth interviews, several key challenges have been identified:

4.1.1. Land Availability & Acquisition

The limited availability of land in densely populated areas remains a critical obstacle to RTH expansion. High land prices, complex land tenure issues, and budgetary constraints further exacerbate the problem. In Jakarta, the Sub-Head of Parks and City Forests of DKI Jakarta Province acknowledged progress in RTH distribution, with over 1,600 designated green areas across the city. However, the total coverage remains at only 5.2% of Jakarta's land area. Similarly, in South Tangerang, government efforts to fulfill the 20% RTH requirement through Regional Spatial Planning (RTRW) and Detailed Spatial Planning (RDTR) have been hampered by rapid urban development, fluctuating land values, and fiscal limitations. These challenges are prevalent across Jabodetabek, except for Bogor, which benefits from extensive forest coverage.

4.1.2. Inter-agency Coordination

The fragmented responsibilities among government agencies and the absence of an integrated data-sharing system impede effective policy execution. The Ministry of National Development Planning (Bappenas) has called for regulatory breakthroughs, particularly from the Ministry of Home Affairs, to enhance community participation in RTH provision and management. Efforts include refining policies to integrate non-green open spaces (RTNH) and building layout plans (RTB) into RTH calculations, ensuring alignment with ecological functions. Synchronizing urban forest and urban jungle boundaries, alongside clarifying spatial limitations under the Layout Plan for

Buildings and Environment (RTBL), is essential for achieving coherent and enforceable regulations.

4.1.3. Public Participation

Enhancing public awareness and engagement is crucial for the sustainability of RTH initiatives. Surabaya serves as a best-practice model, successfully mobilizing local communities in green space conservation. However, public perception in many developing countries still regards RTH as a tertiary need, leading to minimal civic involvement. Insufficient oversight from government agencies has further contributed to suboptimal community participation. Strengthening public-private partnerships, increasing corporate involvement, and conducting awareness campaigns through social media and educational programs are essential to fostering a more environmentally conscious society.

4.2. Link to SDG's

The successful implementation of RTH policies directly supports multiple Sustainable Development Goals (SDGs), notably Goal 11 (Sustainable Cities and Communities), Goal 13 (Climate Action), and Goal 15 (Life on Land). Beyond environmental benefits, RTH contributes to improved urban resilience, enhanced public well-being, and increased recreational opportunities, ultimately fostering sustainable and livable cities.

5. CONCLUSION

The study underscores the importance of well-coordinated, legally supported RTH policies in achieving sustainable urban development. While several Indonesian cities lag in meeting RTH goals, examples from Surabaya show that success is possible through strategic planning, strong governance, and community involvement. Strengthening these areas will be key to aligning urban development with environmental sustainability and achieving the broader SDG's.

The new approach outlined in Ministerial Regulation Number 14 of 2022 on the Provision and Utilization and Utilization of Green Open Space has integrated Non-Green Open Space (RTNH) and Blue Open Space (RTB) into Green Open Space (RTH), which is expected to be an appropriate solution for urban areas and urban regions within districts/ cities to meet the minimum requirements for RTH. However, in its implementation, the provision and utilization of green open spaces, especially in large

cities in Indonesia, have not been adequately met. The city of South Tangerang has only reached 7.52% of its public green space composition, while the city of Bandung has only achieved 8.76% of its public green space composition. Meanwhile, the DKI Jakarta Province has a public green space achievement of just 5.21%, which is an asset of the local government.

On the other hand, only the city of Surabaya has achieved the minimum target mandated by regulations for public green space, which stands at 20.1%. The factors contributing to the failure to meet the 30% green space requirement (20% for the public sector and 10% for the private sector) include:

1. The awareness of local governments and communities regarding green open spaces is still low, a fact that is very different from developed countries. In developing countries, the need for green open spaces is still considered a tertiary need, so it has not yet become a top priority.

2. Another inhibiting factor in the provision of green open spaces is that building these spaces is not easy. This is due to limited land availability, which leads to high purchase prices, low community participation, and expensive/difficult plant maintenance, thus requiring cooperation among all parties involved.

3. The lack of oversight by the central or local government in protecting green open spaces makes it vulnerable to issues such as land conversion.

4. In several areas, one of the factors hindering the provision of green open spaces (RTH) is the absence of spatial planning regulations (RDTR) that support the provision of RTH. As a result, there are difficulties in allocating space for RTH and implementing effective policies.

5. The lack of law enforcement against violators of the conversion of green open spaces results in no deterrent effect shown to the public, leading to the continued conversion of these areas.

6. Some local governments have not yet understood the Ministerial Regulation ATR/BPN 14/2022, and there are still no local regulations regarding cooperation with the community/private sector or surrounding local governments in the realization of public green open spaces and the supporting incentive instruments.

RECOMMENDATIONS

1. **Policy Integration:** A unified approach involving both public and private sectors is essential to bridge the gap in green space provision. Local governments should leverage tax incentives to encourage private sector participation in RTH expansion.
2. **Enhanced Data Management:** Improved data systems are critical for tracking and monitoring green space coverage. A nationwide green index should be established to evaluate and reward cities achieving their RTH targets.
3. **Community Engagement:** Programs that incentivize community participation in urban greening efforts should be scaled up, drawing inspiration from Surabaya's model of public-private collaboration and environmental stewardship.
4. **Collaborative Innovation Programs:** the implementation of these programs through the recognition and management of green open spaces (RTH) involving mechanisms such as land rental and acquisition. Furthermore, regional governments can adopt innovative strategies to meet the statutory requirement of maintaining at least 20% public green open space. This can be achieved by employing the Indonesian Green Blue Index (IHBI) method for accurate calculation.

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