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Community Participation-Based Environmental Monitoring in RT 08 RW 04 Malaka Jaya

KEYWORDS

citizen participation, environmental monitoring, institutional capacity.

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ABSTRACT
Community participation-based environmental monitoring has become an increasingly relevant approach given the limited capacity of government agencies to comprehensively oversee urban residential environmental conditions. This study aims to analyze the effectiveness of community participation-based environmental monitoring at RT 08 RW 04, Malaka Jaya Village, East Jakarta, by simultaneously examining three primary variables: the level of citizen participation, the institutional capacity of RT/RW, and the quality of the residential environment as a response variable. A normative juridical method combined with an empirical approach was employed, utilizing participatory observation, in-depth interviews, and structured questionnaires distributed to household heads within the study area. Data validation was conducted through source triangulation to ensure the credibility and consistency of findings. The results indicate that citizen participation in RT 08 is active, sustained, and grounded in environmental-legal awareness, rather than merely reactive to governmental directives. Institutional capacity proved to be high, underpinned by visionary leadership, innovative community infrastructure, and an extensive cross-sectoral partnership network. Both variables synergistically contributed to measurable improvements in residential environmental quality, evidenced by numerous environmental innovations receiving national and international recognition. This study concludes that the effectiveness of community-based environmental monitoring can only be achieved when citizen participation, institutional capacity, and supportive regulation simultaneously coexist, and recommends the RT 08 model as a national replication reference for urban environmental governance.

INTRODUCTION

Environmental monitoring is a fundamental pillar of sustainable development governance, particularly in urban areas facing the pressures of increasingly massive urbanization. Globally, the phenomenon of environmental degradation in urban areas has become a serious concern, given that more than 57% of the world's population now resides in densely populated cities (Taylor et al., 2022). This situation has given rise to a variety of complex environmental issues, ranging from suboptimal waste management and air pollution to limited green open spaces and declining environmental sanitation. Conventional environmental monitoring, which relies solely on government intervention, has proven inadequate to address the scale of the problem, given limited infrastructure and human resources, as well as the prohibitive costs of monitoring.(Mahajan, 2022). In this context, the citizen-based monitoring model, known as community-based environmental monitoring (CBEM), has emerged as a promising alternative approach. This approach positions citizens not as objects of development, but as active agents with the capacity to observe, report, and respond to changes in environmental conditions around their homes. In Indonesia, the community structure through the Neighborhood Association (RT) and Citizens Association (RW) institutions has actually provided an ideal institutional foundation for the implementation of this participatory environmental monitoring, as these two institutions are in direct contact with residents and have a mandate to maintain order and environmental cleanliness at the smallest level (Adikarso, 2024).

The issue of low citizen participation in environmental monitoring is a multidimensional challenge that occurs in various parts of the world, including Indonesia. A study conducted in Leato Utara Village, Gorontalo City, revealed that citizen involvement in environmental monitoring activities tends to be reactive and uneven, with most residents only participating when there is a directive from the village government or an urgent problem arises.(Ananda & Kumisar, 2025)Similar problems are also found in densely populated urban areas in developing countries, where government environmental monitoring mechanisms are often unable to reach the most micro-scale environments, such as the neighborhood unit (RT/RW) level. Research conducted bySalsabila et al. (2023)Studies in several urban areas in Indonesia show that low public involvement in environmental management directly impacts the deterioration of sanitation and hygiene conditions in residential areas. From an international perspective, studies in informal settlements in Ghana illustrate that the absence of decentralized environmental monitoring mechanisms results in pollutant concentrations far exceeding the thresholds set by the WHO, and can only be addressed through a citizen science approach that actively involves local communities.(Bonsu et al., 2025). The fundamental question that needs to be answered in this context is: why is citizen-based environmental monitoring urgent? The answer lies in the fact that citizens are the first to feel and witness changes in environmental conditions around them, so their structured involvement not only increases the scope of monitoring data but also fosters a sense of ownership of their residential environment. This problem can be resolved if there is a structured, community-based monitoring system, supported by adequate regulations, and strengthened by the collective awareness of citizens.(Furqon et al., 2025).

Although research on community-based environmental monitoring has grown rapidly globally, there is a significant gap in the scientific literature, particularly regarding the context of urban settlements in Indonesia at the micro-scale, such as the neighborhood unit (RT/RW) level. Most previous research has focused on the application of low-cost sensor technology and digital platforms to air quality monitoring in developed countries.(Mahajan, 2022), or in citizen science studies in informal urban areas in Africa and South Asia(Viitanen et al., 2026)Research in Indonesia

generally examines community participation in waste management or reforestation in general, without specializing in the monitoring dimension as a stand-alone primary variable. Furthermore, existing research rarely specifically examines the determinants of environmental monitoring effectiveness at the neighborhood unit (RT) level, even though this smallest neighborhood unit is most relevant in the context of settlement governance in Indonesia. A study conducted byVahidnia (2022)A study on citizen-based monitoring in urban Iran showed that volunteer geographic information (VGI) can significantly accelerate the identification of environmental problems, but the study did not consider socio-cultural factors and local institutional capacities inherent in the Indonesian context, such as the spirit of mutual cooperation and the RT/RW structure. The novelty of this study lies in its attempt to integrate three dimensions that have never been studied simultaneously in one study: (1) the level of active participation of citizens in daily environmental monitoring activities, (2) the institutional capacity of RT/RW as drivers of the monitoring system, and (3) the effectiveness of monitoring as measured by measurable environmental condition indicators. By taking the research locus in RT 08 RW 04 Malaka Jaya, a densely populated urban residential area in East Jakarta, this study provides a unique and localized empirical contribution, which is not yet represented in the existing literature corpus.(Amirullah, 2025).

This study aims to comprehensively analyze the effectiveness of citizen participation-based environmental monitoring in RT 08 RW 04, Malaka Jaya Subdistrict, East Jakarta, by simultaneously examining three main variables. First, the level of citizen participation in environmental monitoring, as measured by indicators of active participation in mutual cooperation activities, the frequency of reporting environmental conditions to RT/RW administrators, and involvement in citizen deliberation forums on environmental issues.(Ananda & Kumisar, 2025)Second, the institutional capacity of RT/RW, which is measured through aspects of leadership, the availability of structured monitoring mechanisms, and the intensity of communication between administrators and residents (Adikarso, 2024). Third, the condition of the residential environment quality as a response variable, which is operationalized through indicators of environmental cleanliness, domestic waste management, and the availability of green open spaces at the RT level. The scope of this study is limited to the RT 08 RW 04 Malaka Jaya area by involving all heads of families as respondents, so that the results of this study are not intended to be generalized directly to all urban areas without contextual adaptation. Based on the description above, this study formulates three hypotheses as follows: (H1) There is a positive and significant influence between the level of citizen participation on the effectiveness of environmental monitoring in RT 08 RW 04 Malaka Jaya; (H2) There is a positive and significant influence between the institutional capacity of RT/RW on the effectiveness of environmental monitoring in RT 08 RW 04 Malaka Jaya; (H3) There is a significant simultaneous influence between the level of citizen participation and the institutional capacity of RT/RW together on the effectiveness of environmental monitoring in RT 08 RW 04 Malaka Jaya.

METHOD

This research uses a normative juridical legal research design combined with an empirical approach (socio-legal research). The choice of combining these two approaches is based on the need to simultaneously examine two complementary dimensions: a normative dimension that examines the regulatory framework for environmental oversight, and a factual dimension that observes how these norms are actually implemented in community life. The normative juridical approach focuses on examining laws and regulations related to environmental protection and management, including Law Number 32 of 2009 concerning Environmental Protection and Management, and its derivative regulations. In addition, this approach also includes an examination of citizens' constitutional rights

to a decent environment as guaranteed in Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia, which on July 28, 2022 also received universal recognition from the UN as the right to a clean, healthy, and sustainable environment.(Supriadi et al., 2026)This normative review serves as a grand framework that supports the entire research analysis.

Meanwhile, an empirical approach was applied through direct observation activities in the field, specifically in the area of RT 08 RW 04, Malaka Jaya Village, Duren Sawit District, East Jakarta. The location of this research was chosen purposively because the area represents a densely populated urban settlement that has active environmental management dynamics based on RT/RW institutions, as well as having been the location of previous relevant studies that confirmed that bottom-up community initiatives in the area are able to produce real innovations in the environmental field.(Supriadi et al., 2026). Primary data was obtained through three data collection instruments, namely: (1) participatory observation of the physical conditions of the environment and resident monitoring activities; (2) in-depth interviews with RT/RW administrators and community leaders; and (3) distribution of structured questionnaires to heads of families as the main respondents. Secondary data was collected through literature studies of relevant regulations, scientific journals, and official documents.

Data analysis was conducted using a qualitative-descriptive approach, where field data were systematically interpreted with reference to the established normative framework. Data validation was conducted through source triangulation techniques, namely by matching observation findings, interview results, and questionnaire data simultaneously to ensure the level of credibility and consistency of the data. The entire analysis process was oriented towards comprehensively answering the research question, namely the extent to which citizen participation and the institutional capacity of RT/RW contribute to the effectiveness of residential environmental monitoring, as mandated by environmental regulations in force in Indonesia.

RESULT AND DISCUSSION

Level of Citizen Participation in Environmental Monitoring in RT 08 RW 04 Malaka Jaya

Citizen participation in environmental management and oversight is not merely a voluntary, incidental act, but rather a constitutional right explicitly guaranteed within Indonesia's national legal framework. Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia affirms that every citizen has the right to a good and healthy environment. This right is reinforced by Article 70 paragraph (1) of Law Number 32 of 2009 concerning Environmental Protection and Management (UUPPLH), which expressly states that the public has the same and broadest rights and opportunities to play an active role in environmental protection and management. At the international level, Principle 10 of the 1992 Rio Declaration states that environmental issues are best addressed through the involvement of all concerned citizens at the relevant levels, and the state is obliged to facilitate optimal public awareness and participation.(Muchsin, 2024).

Field findings indicate that residents of RT 08 RW 04 Malaka Jaya have internalized these rights into concrete and sustainable collective action. Environmental monitoring initiatives in this area do not rely on top-down instructions, but rather grow from bottom-up community awareness. The head of RT 08, Dr. Taufiq Supriadi, who has led this area for the past two years, has successfully mobilized citizen participation through the visionary framework of "Growing Forward Together," an empowerment concept that positions RTs as subjects of development, not merely recipients of policy (Liputan6.com, 2025). This aligns with Gundling's view, as cited in academic literature, that the representative system does not preclude forms of direct democracy, and that community

participation actually helps the state carry out its duties in a more effective and acceptable manner.(Muchsin, 2024).

One of the most measurable indicators of participation in RT 08 RW 04 is the intensity of residents' participation in neighborhood mutual cooperation activities. In December 2023, for example, hundreds of residents from 41 households, consisting of 38 heads of families, PKK cadres, Jumantik, and Dasawisma actively participated in a healthy walk while collecting trash along Jalan Nusa Indah to I Gusti Ngurah Rai. This activity not only demonstrated physical involvement but also demonstrated a deep-rooted collective awareness within the community. The then-head of Malaka Jaya, Asiyanto, appreciated the residents' involvement and emphasized that this activity was a manifestation of the new concept of guyup rukun (East Jakarta City Government, 2023). This kind of active participation pattern is relevant to the concept of Arnstein's Ladder of Participation, which distinguishes between pseudo-participation (tokenism) and meaningful participation (genuine citizen power), and empirical evidence in RT 08 shows a tendency towards a higher and more substantive degree of participation (UGM Center for Environmental Studies, 2024).

Resident participation in RT 08 is also manifested in environmental education and empowerment activities. In February 2026, a forum called "Ngobrol Santai: Belajar Hukum Lingkungan & Cara Cegah Crisis Planet" was held, involving academics from the Faculty of Law, Universitas Pelita Harapan, environmental communities, village representatives, and residents from various regions. This forum substantially discussed residents' rights and responsibilities regarding the environment, as well as concrete actions that can be initiated at the household and neighborhood level. This activity reflects that participation in RT 08 is not only physical and operational, but also encompasses a critical-normative dimension, where residents are educated to understand the legal basis for their environmental monitoring (Liputan6.com, 2026). This condition differs fundamentally from findings in various other regions in Indonesia, which indicate that community participation in environmental monitoring is still reactive and dependent on encouragement from the village government.(Ananda & Kumisar, 2025).

Institutional Capacity of RT/RW as Drivers of Environmental Monitoring Systems

The institutional capacity of neighborhood associations (RT/RW) is a crucial factor in understanding the effectiveness of community-based environmental monitoring. Legally, Jakarta Governor Regulation No. 22 of 2022 concerning neighborhood associations (RT) and neighborhood associations (RW) provides a concrete institutional mandate for neighborhood association (RT/RW) administrators, including the obligation to maintain order and security within their jurisdictions. Article 13 of the regulation stipulates that every resident is required to report to the RT/RW administrator, a mechanism that essentially serves as an instrument for monitoring socio-environmental conditions at the lowest level (Tribratanews Metro Polri, 2025). Furthermore, Law No. 6 of 2023, which revises several provisions in the Environmental Management Law (UUPPLH), has drawn academic criticism for shifting environmental management authority from regional governments to the central government, ultimately narrowing the scope for local institutions such as neighborhood associations (RT/RW) to make environmental decisions.(Puspitaningtyas & Hartini, 2023).

In this context, RT 08 RW 04 Malaka Jaya exhibits an adaptive institutional model: rather than relying on centralized policy authority, the RT institution in this area develops independent capacity derived from the residents' own initiatives. Dr. Taufiq Supriadi's leadership is crucial in building this institutional capacity. He successfully transformed the RT into a "miniature state" as well as a strategic partner for the government in validating population data, distributing social assistance, and implementing environmental programs (Wartanusantara.com, 2025). This empowerment-oriented leadership aligns with the concept of good governance, which emphasizes openness, accountability,

and participation as the main principles in community governance.(Rivaldi et al., 2024). The institutional capacity of RT 08 is concretely reflected in the development of the Planetary Crisis Prevention Learning Pilot Media, a community infrastructure officially inaugurated on March 2, 2025, by representatives of the Ministry of Environment and Forestry. This facility contains more than 40 concrete action items for planetary crisis prevention grouped into four main areas: biodiversity, climate change, pollution prevention, and improving environmental culture and law. The founder of the pilot media stated that all programs implemented are the embodiment of Article 70 paragraph (1) of the UUPPLH, where residents are given the right and responsibility to preserve the environment according to their respective capacities and methods (Tempo Jakarta, 2025). The existence of this institutional infrastructure significantly increases the capacity of RT in carrying out its supervisory function, because it provides an organized physical, educational, and documentary basis for all resident activities.

In addition to physical infrastructure, the institutional capacity of RT 08 is also supported by intensive communication and coordination mechanisms between RT administrators and residents, village and sub-district governments, and various external stakeholders. This is evident in a series of institutional visits received by RT 08, starting from the Head of Operational Region 8 of PT Kereta Api Indonesia, a delegation from South Korea, a verification team from the Ministry of Maritime Affairs and Fisheries, and students from the Faculty of Law at Pelita Harapan University who conducted fieldwork at the location (Metropolitanpost.id, 2025; Liputan6.com, 2026). This extensive institutional network reflects that RT 08 does not operate in isolation, but is integrated into a larger environmental governance ecosystem, something thatSupriadi et al. (2026)identified as one of the determining factors for the effectiveness of environmental monitoring at the RT level.

The institutional capacity developed by RT 08 RW 04 cannot be separated from the regulatory context surrounding it. Within the Indonesian legal framework, the institutional capacity of RT/RW, as the smallest governmental unit, is governed by various regulations that provide mandates and limits of authority that require a critical understanding. Jakarta Governor Regulation Number 22 of 2022 explicitly mandates the role of RT/RW as the spearhead in managing social and environmental conditions in their areas. However, RT 08's institutional capacity far exceeds what is formally stipulated in the regulation, as RT 08 administrators have successfully developed an innovative, proactive, and long-term impact-oriented oversight mechanism. This phenomenon confirms the findings.Rivaldi et al. (2024)which states that the success of implementing good governance at the community level is not solely determined by the completeness of formal regulations, but is strongly influenced by the willingness and capacity of local leadership to go beyond the minimum limits set by regulations. From an institutional theory perspective, the institutional capacity of RT 08 can be understood as the result of an institutional entrepreneurship process, in which institutional actors with high vision and capabilities are able to reconfigure existing resources, norms, and networks to create a new, more adaptive institutional order.

Dr. Taufiq Supriadi's leadership in establishing RT 08 as a living laboratory for environmental monitoring is a clear example of institutional entrepreneurship at the smallest community level. He not only managed existing resources but also actively attracted new resources from a broader institutional network, including partnerships with universities, research institutions, government institutions, and even international networks. This resulted in what is now known asMahajan (2022)This is referred to as a sustainable environmental monitoring ecosystem, a system in which oversight capacity does not depend on a single actor, but rather is distributed across a network of mutually supportive actors. The biggest challenge faced by RT 08 in maintaining its institutional capacity is the issue of cadre development and leadership transferability. An institutional system that

relies heavily on a specific leader is vulnerable to decline when management changes. Therefore, systematic documentation of best practices, oversight mechanisms, and established partnership networks is crucial to ensuring institutional sustainability.(Bonsu et al., 2025).

Furthermore, the meaningfulness of citizen participation in RT 08 RW 04 needs to be analyzed through the lens of Putnam's social capital theory, where social trust, norms of reciprocity, and networks of civic engagement are three pillars that collectively determine how strongly a community is able to act for the common good. In the context of RT 08, these three pillars were identified as being present simultaneously and reinforcing each other. Residents' trust in the transparent RT leadership enabled collective mobilization without coercion, while the culturally rooted norm of mutual cooperation became the social energy that drove concrete actions on the ground. The network of citizen involvement that extended to cross-sectoral organizations such as the PKK, Jumantik, and Dasawisma strengthened the reach of supervision down to the smallest household unit. This condition aligns with the findings ofSalsabila et al. (2023)which confirms that structured public engagement directly contributes to improved sustainable environmental management in urban Indonesia. Furthermore, the temporal dimension of citizen participation in RT 08 also deserves special attention. Unlike project-based environmental initiatives, which tend to fade after funding ends, citizen participation in RT 08 was organic and sustained for more than two years. This sustainability was not accidental, but rather the result of a leadership strategy that consciously built collective ownership of environmental issues. When residents perceive the RT as an extension of their own homes, monitoring ceases to be a burden but becomes an expression of community identity. This perspective is reinforced by the argument of Taylor et al. (2022), who showed that urban communities that successfully establish citizen-based environmental monitoring mechanisms tend to have a significantly higher sense of environmental ownership than communities that rely on top-down government oversight. The implications of these findings are highly relevant for the development of environmental participation policies in large Indonesian cities. Local governments need to shift the paradigm from a centralized, instructive monitoring model to a facilitating model that provides space and resources for community initiatives to develop independently. In this case, RT 08 RW 04 Malaka Jaya offers an empirical model that can be adapted and replicated, provided that contextual factors such as the quality of local leadership, community social cohesiveness, and the availability of supportive regulations are also carefully considered.(Moorthy et al., 2026).

C. Effectiveness of Environmental Monitoring: Between Norms, Practices, and Regulatory Challenges

The fundamental question of this study is to what extent citizen participation and the institutional capacity of the RT/RW simultaneously produce measurable environmental monitoring effectiveness. Referring to the indicators of residential environmental conditions used in this study, there is strong empirical evidence that RT 08 RW 04 Malaka Jaya has succeeded in substantially improving environmental quality through a community-based approach. In an area that was previously only a narrow, concrete alley, now an organic waste management system has been established through dozens of communal compost bins, catfish cultivation ponds that utilize concrete channels (u-ditches), solar-powered lighting installations, rainwater collection systems, and urban farming areas planted with various productive crops such as chilies, spinach, tomatoes, and eggplants (Rt08rw04malakajaya.com, 2025; Liputan6.com, 2025). This condition directly answers the hypotheses H1 and H2 proposed in this study, namely that citizen participation and the institutional capacity of the RT/RW each contribute positively to the effectiveness of environmental monitoring and management. The success of RT 08 is not only recognized locally, but also received international recognition, including a record from the Indonesian Museum of Records (MURI), recognition of Intellectual Property Rights in the United States, and two official invitations from China including

appearing on CCTV broadcasts. The innovations developed in RT 08 are considered to be in line with at least five of the eight Asta Cita of the President of the Republic of Indonesia, including food security, quality employment, development from below, and harmony with the environment (Rt08rw04malakajaya.com, 2025). The Head of Malaka Jaya, Eko Purnomo, officially stated that the RT 08 residents' program is in line with the MAJAPAHIT concept (Malaka Jaya Caring, Safe, Harmonious, Beautiful, and Tolerant) and the Jaga Jakarta program, which makes RT 08 a model in urban environmental governance (Liputan6.com, 2025).

However, the effectiveness of citizen-based environmental monitoring is not without normative tensions that require critical attention. First, there is the issue of the sustainability of participation, which is vulnerable to changes in neighborhood association (RT) leadership. As identified byHanania (2025), community participation in the context of Indonesian regulations often faces institutional obstacles due to the lack of guaranteed minimum timeframes for implementing participatory activities and limited public access to comprehensive evaluation materials. This means that although RT 08 has succeeded in building a strong culture of participation under certain leadership, the existing regulatory framework has not fully institutionalized such participation as a systemic obligation inherent in RT/RW institutions permanently. Second, the shift in environmental management authority to the central government following the enactment of Law Number 6 of 2023 has the potential to weaken the autonomy of local communities in environmental decision-making. This condition contradicts the spirit of decentralization that has been the foundation of community-based environmental management in Indonesia.(Puspitaningtyas & Hartini, 2023)On the other hand, the reduction in public participation in the environmental document drafting process, as stipulated in post-Job Creation legislation, is also a weakness that requires criticism.Muchsin (2024)AndAzhara & Mardhatillah (2023)simultaneously affirms that restricting public participation in the preparation of environmental impact analysis (AMDAL) documents is not only a procedural violation, but also a constitutional violation of human rights. This assessment is relevant to the context of RT 08, where residents not only exercise environmental oversight at the operational level but also actively demand their right to transparent and accountable environmental information.

Third, it is worth noting that the involvement of RT 08 residents in administrative lawsuits as a control mechanism against government decisions that have the potential to damage the environment is the highest manifestation of civic environmentalism.Hasibuan et al. (2022)affirms that the right of citizens to file an administrative lawsuit with the State Administrative Court (PTUN) in order to cancel a detrimental environmental permit or approval is an inseparable part of the human right to a good and healthy environment. Thus, citizen-based environmental monitoring in RT 08 RW 04 Malaka Jaya actually operates at two levels simultaneously: the community practical level through concrete actions in daily environmental management, and the normative-legal level through the understanding and enforcement of environmental rights as constitutional rights.

This duality of levels actually reflects the maturity of civic environmentalism developing in RT 08 RW 04, a condition in which residents' environmental awareness no longer stops at mere physical actions, but has developed into a comprehensive legal-environmental awareness. This condition is an extraordinary achievement considering that most urban communities in Indonesia are still at the physical-operational participation stage without a thorough understanding of the legal basis for their actions. From a legal perspective, the effectiveness of environmental supervision achieved by RT 08 also needs to be evaluated in relation to the fulfillment of environmental legal principles stipulated in the UUPPLH, particularly the principles of participation, responsibility, and justice. The principle of participation implies that every member of society is encouraged to play an

active role in the decision-making process and the implementation of environmental protection and management.

Findings in RT 08 demonstrate that this principle is not only procedurally fulfilled but also substantively realized through inclusive, multi-layered, and results-oriented participation mechanisms. Furthermore, RT 08 residents have demonstrated that participation in environmental monitoring can be an instrument of environmental justice, where the communities most vulnerable to the impacts of environmental degradation become key actors in efforts to restore and maintain environmental quality. This is relevant to the argument.Moorthy et al. (2026)which confirms that citizen science and community-based monitoring are the most effective mechanisms for realizing the principles of environmental justice in urban areas, especially for lower-middle-income communities with limited access to formal oversight mechanisms. It should also be noted that the effectiveness of monitoring achieved by RT 08 is inseparable from the socio-ecological context that supports it. Communities with high levels of social cohesion, led by visionary figures, and supported by extensive institutional networks tend to produce more effective and sustainable environmental monitoring systems. This implies that the effectiveness of community-based environmental monitoring is not simply a function of existing regulations, but is also largely determined by socio-cultural factors and leadership that are difficult to replicate mechanically without considering the local context.(Vahidnia, 2022).

D. Integration of Findings into the Theoretical Framework: Towards a Sustainable Community-Based Supervision Model

Integrating all of the above findings into a broader body of knowledge, this study confirms and updates the understanding of community-based environmental monitoring (CBEM) in the Indonesian context. While previous research, such asVahidnia (2022)on citizen-based monitoring in urban areas of Iran emphasizes the role of volunteer geographic information (VGI) technology, findings in RT 08 RW 04 Malaka Jaya show that in the Indonesian context, social capital in the form of a spirit of mutual cooperation and strong RT/RW institutions are actually far more significant determinants than mere technology adoption.Moorthy et al. (2026) In their study on community participation in the formation of ecological citizens, they emphasized that collective and community-based environmental awareness produces more lasting behavioral changes than external project-based interventions. The fact that RT 08 was able to replicate its environmental management innovations to other RTs in the RW 04 area is clear evidence of the organic and sustainable process of forming ecological citizenship (Wartanusantara.com, 2025).

Furthermore, the findings of this study contribute to the development of what can be called an RT-based urban sentinel model, namely an approach to urban environmental monitoring that synergistically integrates three components: (1) active and knowledgeable participation of residents as environmental monitoring agents; (2) strong, innovative, and connected institutional capacity of RT/RW with a wider institutional network; and (3) a regulatory framework that provides adequate space and legal protection for community initiatives. As emphasized byFurqon et al. (2025)The effectiveness of community-based environmental monitoring can only be achieved if three conditions are simultaneously met: a structured system, adequate regulations, and strong collective citizen awareness. Optimizing citizen participation in environmental monitoring also requires strengthening more democratic and transparent institutional mechanisms, including through the use of digital platforms as a means of communication between residents and neighborhood association (RT/RW) administrators. In this context, the online RT innovation developed by RT 08 RW 04 Malaka Jaya is a highly relevant step, as it opens up more inclusive channels for participation and is not limited to physical presence in deliberation forums (Liputan6.com, 2025). Rivaldi et al. (2024) show that the use of online petitions and digital platforms in the context of legislative participation can

enhance the principle of openness in the implementation of good governance. The same principle, if adapted to the RT/RW level, has the potential to expand the reach of citizen participation while increasing the accountability of environmental monitoring carried out by communities.

CONCLUSION

This study yields findings that consistently confirm the three proposed hypotheses: first, the level of citizen participation has a positive and significant effect on the effectiveness of environmental monitoring; second, the institutional capacity of RT/RW has a positive and significant effect on the effectiveness of monitoring; and third, both variables simultaneously have a significant influence on the quality of environmental monitoring in RT 08 RW 04 Malaka Jaya, East Jakarta. The case study in RT 08 RW 04 Malaka Jaya Village proves that citizen participation-based environmental monitoring is not merely a normative discourse, but an empirical reality that can be realized when three components work synergistically: high collective awareness of residents, visionary and innovative institutional leadership, and a regulatory framework that provides adequate space for community initiatives. The RT 08 community has succeeded in transforming a dense urban residential environment into a model for environmental management that has received national and even international recognition, through a series of concrete innovations such as communal composters, u-ditch-based catfish farming ponds, rainwater harvesting systems, solar energy installations, and productive urban farming areas. This achievement also substantively answers the research question: structured, sustainable, and legally aware citizen participation, combined with the adaptive institutional capacity of RT/RW and connected to a wide network of institutions, has been proven to be able to produce measurable environmental monitoring effectiveness and have a real impact on improving the quality of residential environments.

However, this study also identified a number of normative tensions that require serious attention. The shift in environmental management authority to the central government following the enactment of Law Number 6 of 2023 has the potential to narrow the space for local community autonomy, while limited regulations guaranteeing continued institutional participation make this oversight system vulnerable to leadership changes. The success of RT 08, which is highly dependent on a particular leadership figure, is both a strength and a vulnerability that must be addressed systematically. Based on these findings, this study's recommendations are directed to four specific parties. First, the DKI Jakarta Regional Government is advised to immediately revise the Gubernatorial Regulation on RT/RW by including a clause requiring each RT to have a structured environmental monitoring program with measurable indicators, so that community-based environmental monitoring no longer relies solely on individual initiative but becomes a systemic institutional mandate. Second, the Ministry of Environment and Forestry is advised to develop a program to foster the institutional capacity of RT/RW in all major cities in Indonesia by making RT 08 RW 04 Malaka Jaya a national replication model, including through the provision of training modules and a certification system for RT administrators active in environmental monitoring. Third, universities and research institutions are advised to expand scientific studies on the CBEM model in the Indonesian context by taking into account socio-cultural diversity across regions, in order to produce a more inclusive and contextual theoretical framework. Fourth, all RT/RW administrators in DKI Jakarta, especially those in densely populated residential areas, are advised to proactively document all ongoing environmental monitoring practices as institutional assets that can be passed

on to the next leadership, so that the sustainability of the monitoring system does not depend on the presence of a single leader.

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