

SPATIAL PLANNING REGULATION AND LEGAL GOVERNANCE FOR SUSTAINABLE URBAN DEVELOPMENT IN SEMARANG

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Abstract. *This study examines the implementation of spatial planning regulations and law-based urban governance in Semarang City under the leadership of Hendrar Prihadi, focusing on their impact on urban development, public services, and environmental management. This study answers three main questions: how regulations and spatial planning influence urban development, how law-based governance improves infrastructure, public services, and environmental quality, and what factors support successful implementation. The study uses a descriptive-analytical method with a socio-legal approach, examining policy objectives, regulatory validity, legal principles, norms, and values of justice in urban management, and the implementation of the Smart City concept. Data were obtained from legal documents, government reports, academic studies, and public records to assess the effectiveness of regulations in practice. The results show that consistent implementation of Regional Regulations and Mayoral Regulations, monitored through a web-based monitoring system, ensures high compliance and effective land use control. Integration with the Smart City masterplan supports innovation, service efficiency, and environmental sustainability. the combination of clear regulations, law-based leadership, community participation, and integrated city management creates orderly, inclusive, and sustainable urban development, making Semarang a model for law-based urban governance.*

Keywords: *Law-Based Management; Public Services; Smart City; Spatial Planning Regulations; Urban Governance.*

1. Introduction

Urban planning and spatial management are key elements of sustainable urban development. A well-organized city requires not only a well-thought-out technical plan but also leadership that understands the regulations, governance, and socio-economic impacts of development decisions. Integration of legal policies, spatial planning regulations, and city governance mechanisms is crucial to ensure development effectiveness, transparency, and urban sustainability (Nazarudin, 2015; Adiyanta, 2019).

The city of Semarang is a prime example of the implementation of this principle. Under Hendrar Prihadi's leadership, Semarang was awarded the best spatial planning award in Central Java in 2023, outperforming 35 other regencies/cities. Semarang's spatial planning score reached 97.5 on the Siswatek web-based technical monitoring system, reflecting consistent compliance and implementation of regional and mayoral regulations (Antara News, 2023; Adharani, 2017). This success is not solely the result of regulatory development, but also the implementation of legally based policies, systematic oversight, and integration between the government, community, and private sector.

Hendrar Prihadi, who completed his doctoral dissertation titled "Semarang Smart City Governance Model" at Diponegoro University, applied an evidence-based and legal approach to city management. This approach combines smart city principles, spatial planning, and efficient public governance (Siregar et al., 2023; Prihadi, 2024). Implemented policies include slum revitalization, renovation of uninhabitable houses, drainage management, and an integrated CCTV system, demonstrating the concrete implementation of spatial planning regulations and urban law (Wijaya, 2024). The implementation of this law-based city governance has also resulted in increased investment attractiveness, infrastructure quality, and public services, as evidenced by the 2017 Indonesia's Attractiveness Award (Detikcom, 2022). This model demonstrates that successful city governance depends not only on regulatory development but also on effective policy implementation and oversight. The implementation of e-government, a public complaints system, and integrated services serve as a means to ensure transparency, accountability, and public participation (Sulistyaningsih et al., 2023).

However, existing studies on Semarang's urban development mostly examine smart city initiatives, infrastructure improvements, or community-based programs, but rarely analyze how regulatory frameworks and spatial planning are integrated with law-based governance under a specific political leadership. Research on Semarang often highlights outcomes such as awards, investment growth, or service innovation yet lacks a deeper examination of the mechanisms linking legal policies, spatial planning regulations, and administrative governance. This gap indicates the need for a study that connects regulatory design with practical governance implementation to explain Semarang's consistent achievements. While Semarang has achieved significant success, important questions remain regarding the mechanisms for integrating regulations, spatial planning, and urban governance to achieve real and sustainable development.

Based on this context, this study formulates the following three research questions:

RQ1: How do regulations and spatial planning in Semarang City under Hendrar Prihadi's leadership influence urban development?

RQ2: How is law-based urban governance implemented to improve infrastructure, public services, and the environment?

RQ3: What factors support the successful implementation of regulations and urban governance in Semarang?

This study aims to examine how effective urban regulations and governance can be translated into policies that directly impact urban quality, infrastructure, and public services, with a focus on their impact on urban development, public services, and

environmental management. The combination of clear regulations, law-based leadership, community participation, and integrated city management will create orderly, inclusive, and sustainable urban development, making Semarang a model for law-based urban governance.

2. Research Methods

This research adopts a descriptive and analytical design aiming to provide a systematic explanation of how regulations and law-based urban governance are implemented in Semarang, as well as the factors that contribute to the city's development success. A descriptive approach is used to map the regulatory structure, policy programs, and governance mechanisms, while the analytical component enables an in-depth evaluation of how effectively these instruments function in practice. This dual approach is essential because urban governance is not only a matter of formal regulations but also depends on how those regulations are translated into concrete administrative actions, infrastructure planning, and public service delivery.

The approach used is socio-legal research, which examines policy objectives, regulatory validity, legal principles, norms, and values of justice in the implementation of spatial planning, Smart City, and public services. This method is chosen because spatial planning, Smart City policies, and public services involve not only legal compliance but also social dynamics, institutional capacity, political leadership, and community participation. Through this method, the study aims to bridge the gap between law in the books and law in action.

Data for this study consist of primary and secondary sources. Primary data include legal documents, such as national regulations, regional regulations, mayoral regulations, policy directives, planning documents (Rencana Tata Ruang Wilayah/RTRW, and Rencana Detail Tata Ruang/RDTR), government reports, and official public service records that directly reflect governance practices (Wahid, 2016). Secondary data consist of academic literature, previous studies, journal articles, news reports, and public records relevant to urban governance, Smart City implementation, and spatial planning in Semarang. The combination of primary and secondary data provides a comprehensive basis for assessing the effectiveness of regulatory implementation and its impact on urban quality, transparency, and sustainability.

3. Results and Discussion

3.1. The Role of Regulation and Spatial Planning in Urban Development under Hendrar Prihadi's leadership

Regulations and spatial planning in Semarang City under Hendrar Prihadi's leadership have proven to have a significant impact on urban development. The enforcement of regional and mayoral regulations on spatial planning is carried out consistently through the Web-Based Technical Supervision Information System (*Sistem Informasi Pengawasan Teknis/Siswatek*), a digital monitoring platform that recorded a performance score of 97.5. This high score indicates a high level of compliance with spatial planning regulations and the effectiveness of supervision and enforcement of the implemented rules (Antara News, 2023; Priyanta & Zulkarnain, 2024). With this system,

every stage of planning, implementation, supervision, and control in the spatial planning sector can be monitored transparently and accountably.

As a result of this consistent regulatory implementation, urban development in Semarang has become more organized. Clear zoning allows for effective control of land use, while the integration of development plans with Smart City principles ensures that development proceeds not only physically but also based on modern technology and public services (Wijaya & Permatasari, 2018). Legally based spatial planning not only limits illegal development but also encourages sustainable development through balanced management of residential, commercial, and public spaces, thereby improving overall urban quality (PPID Kota Semarang, 2025).

Furthermore, the Semarang City Master Plan 2021–2026, summarized in the Semarang City Medium-Term Development Plan (*Rencana Pembangunan Jangka Menengah Daerah*/RPJMD), emphasizes sustainable development through infrastructure development, improved public services, and the implementation of the Smart City concept. In terms of infrastructure, the government is targeting the construction of roads, bridges, and drainage systems to improve mobility and quality of life for residents while reducing the risk of flooding. Furthermore, the development of strategic areas such as Tanjung Emas Port and the revitalization of themed villages are also top priorities, as they can significantly support local economic growth (Wahjuono, 2014; Wedanti, 2016; Rusdiana et al., 2025).

The Smart City concept is implemented through the strengthening of digital-based public services, including in the transportation, health, and education sectors. This program aims to improve service efficiency while encouraging active public participation in decision-making. Furthermore, the master plan emphasizes environmental sustainability through greening programs, modern waste management, and coastal conservation. This integration of technology, infrastructure, and sustainability aims to make Semarang an inclusive and environmentally friendly city capable of facing future challenges.

Semarang's 2023 "Best Spatial Planning Champion in Central Java" award reinforces evidence of effective regulatory implementation. Semarang ranked first out of 35 other regencies/cities based on the Siswatek assessment, reflecting the success of land use control and spatial planning oversight. The assessment covers planning, implementation, supervision, and control of spatial planning, as well as the preparation of four Detailed Spatial Planning Plans (*Rencana Detail Tata Ruang*/RDTR) for parts of the city, such as the Old Town, Tambaklorok, and Tugu District (Riza, 2017; Anita et al., 2022). The integration of the RDTR with OSS (Online Single Submission)-based licensing also simplifies and expedites the licensing process, enabling efficient and orderly urban development.

Beyond administrative evidence and awards, academic studies on the development of zoning regulations in historical areas, such as Semarang's Chinatown, demonstrate how zoning regulations serve as a technical reference for controlling spatial use and preserving the area's character. This zoning allows for control over land use consistent with designated functions and zones, ensuring a balance between conservation and modernization in urban development (Mina, 2017; Priyanta & Zulkarnain, 2024). Thus, regulations act as a balance between development and spatial preservation, and provide a strong legal basis for sustainable urban management (Kautsary, 2018).

Furthermore, research on the integration of Smart City masterplans with regional spatial plans indicates that smart city development cannot proceed optimally without synchronization with the Spatial Planning (*Rencana Tata Ruang Wilayah*/RTRW). A study by Marisa Aprilia and Djunaedi (2022) revealed that nearly all dimensions of a Smart City, including smart living, smart branding, smart economy, smart environment, and smart society, are closely linked to spatial planning policies and strategies within the RTRW. Synchronization of planning documents, human resource capacity, institutional arrangements, evaluation, and funding are crucial factors influencing the link between the Smart City masterplan and the Spatial Planning. This synchronization ensures that city development is not only orderly but also inclusive, sustainable, and law-based (Adharani & Nurzaman, 2017; Hastri et al., 2022).

This shows that the integration of spatial planning regulations, Smart City masterplan implementation, and strict oversight forms the foundation of orderly urban development in Semarang. Consistent regulations enable controlled spatial use, while the Smart City masterplan facilitates innovation, efficient public services, and environmental sustainability. Furthermore, the award for best spatial planning regarding zoning demonstrates that regulations and spatial planning are not merely administrative documents, but strategic instruments that promote harmonious, sustainable, and high-quality urban development.

3.2. Implementation of Law-Based Urban Governance in Infrastructure, Public Services, and the Environment

The implementation of law-based urban governance in Semarang is clearly visible through various infrastructure development and improvement programs that directly address public needs. Programs such as slum revitalization, renovation of uninhabitable houses, drainage pumping, and the installation of integrated CCTV down to the neighborhood unit (*Rukun Tetangga*/RT/*Rukun Warga*/RW) level demonstrate the city government's efforts to create a more orderly, safe, and manageable urban environment (Wijaya, 2024). This infrastructure serves not only as a physical facility but also as part of a law-based governance strategy that emphasizes efficiency, transparency, and accountability, thus supporting responsive and equitable public services.

One important aspect of this governance implementation is administrative modernization through e-government and digital public services. The Semarang City Government has implemented an online service system that allows the public to access information, report complaints, and obtain services more quickly and transparently. The SiHati Smart City application, for example, demonstrates how technology can facilitate information transparency, accelerate government responses to public complaints, and reduce bureaucratic red tape, while simultaneously affirming accountability in city governance (Saputri et al., 2024). This digital service also enhances public participation in oversight and decision-making, although the implementation of online participation still faces challenges in broad citizen engagement (Triyanto et al., 2024).

In addition, developing physical infrastructure that supports public services has become a central element of Semarang's law-based governance. According to Fajariyah et al. (2018) the availability of communication networks and ICT infrastructure is fundamental for the effective implementation of Smart City initiatives, as it enhances the delivery of public services. Strong digital and physical infrastructure allows the city government to

align regulatory frameworks with on-the-ground practices, covering areas such as drainage systems, street lighting, public transportation, and civil administration. One example is the Smart Living program, which provides 24-hour ambulance services, a responsive system for handling citizen reports related to water pumps or infrastructure issues, and accessible public services through both online and offline channels (Wahyuni et al., 2021).

Law-based governance is also reflected in spatial and environmental planning. Efforts to manage slum areas, sanitation, and drainage not only improve the physical quality of the city but also support public health and environmental sustainability. This management process is often carried out through collaboration between the government, the community, and other stakeholders, as seen in the flood management in Semarang, which prioritized dialogue, shared commitment, and collaborative resource management (Adnan et al., 2023; Hidayatullah et al., 2023). This collaborative approach strengthens governance effectiveness, demonstrating that successful infrastructure and environmental management depend on a combination of legal regulations, inter-actor coordination, and active community participation.

The transformation of public services through technology also extends to economic and social aspects. A study by Maylasari and Rakhma (2025) showed that AI-based e-governance services in Semarang not only improved administrative efficiency but also positively impacted local economic conditions, including poverty reduction. This confirms that modernizing governance through technology is not merely an administrative formality but provides tangible benefits for public welfare, while strengthening the government's ability to respond quickly and appropriately to citizens' needs.

In addition to public services and the environment, law-based governance is also evident in more structured urban space management. The implementation of smart governance and the Smart City program in Semarang enables more efficient spatial utilization, reduces conflicts over spatial use, and supports sustainable development (Triyanto et al., 2024). This arrangement is supported by the integration of technology, infrastructure, and policies, enabling fast and accurate public services, while also facilitating public access to information and participation in decision-making.

Furthermore, innovative initiatives such as Smart Environment City are being implemented to maintain environmental quality and mitigate the negative impacts of urbanization. Integrated management of sanitation, environmental cleanliness, and drainage with digital systems provides the foundation for a healthier and more comfortable city, while also supporting disaster risk reduction efforts and improving residents' quality of life (Nurlukman & Basit, 2023). This program demonstrates that law-based governance extends beyond formal regulations to encompass holistic resource and environmental management, through technology, policy, and community participation.

Overall, the implementation of law-based urban governance in Semarang encompasses the integration of physical infrastructure development, digital public services, spatial planning, and environmental management. Urban infrastructure, from drainage and transportation to information technology, forms the foundation for effective regulations and public services. Public participation and collaboration between actors strengthen accountability and transparency, while technological innovations, including e-

government applications and AI-based services, enable more responsive, efficient, and sustainable city management (Wahyuni et al., 2021; Hidayatullah et al., 2023; Fajariyah et al., 2023; Saputri et al., 2024; Triyanto et al., 2024; Maylasari & Rakhma, 2025). Thus, these various programs and initiatives form a comprehensive pattern of law-based urban governance, encompassing aspects of infrastructure, public services, and the environment in an integrated manner.

3.3. Factors Supporting the Successful Implementation of City Regulations and Governance

The successful implementation of regulations and city governance in Semarang did not occur by chance, but rather resulted from a combination of several interrelated strategic factors. The first factor is academic and legal-based leadership, which provides an intellectual and methodological foundation for policymaking. Leadership that understands legal principles and urban development theory enables implemented policies to have a strong, logical, and accountable foundation. Under Hendrar Prihadi's leadership, for example, the implementation of regional regulations (*Peraturan Daerah/Perda*) and mayoral regulations (*Peraturan Walikota/Perwal*) related to spatial planning was carried out consistently and monitored using a web-based system, the Web-Based Technical Supervision Information System (*Sistem Informasi Pengawasan Teknis/Siswatek*). The system achieved a compliance score of 97.5, demonstrating effective oversight and a high level of public compliance with spatial planning regulations (Antara News, 2023). This legal and academic-based leadership is a key factor in ensuring that regulations are not merely formalities but are consistently and effectively implemented in the field.

The second factor contributing to success is cross-sectoral collaboration between the government, the community, and the private sector. This collaboration enables policy planning and implementation to be participatory and responsive to citizen needs. An example is seen in the flood management in Semarang, where the city government, the Regional Disaster Management Agency (*Badan Penanggulangan Bencana Daerah/BPBD*), local communities, and the private sector interacted through direct dialogue, building trust, and sharing a common understanding of priority actions (Hidayatullah et al., 2023). This collaborative approach strengthened governance effectiveness, as each party had a clear role, resources were optimally utilized, and decisions were made based on consensus and sound technical considerations. While challenges remain, particularly in aligning understanding between the private sector, communities, and government, a strong network structure, commitment, and openness of information are key drivers of successful collaboration (Jazuli, 2017; Pramuji & Putri, 2020).

The third factor is the use of technology through Smart City and e-government systems, which increase transparency, accountability, and oversight. The Semarang City Government has implemented digital public service applications such as SiHati Smart City, which enable the public to access information, report complaints, and obtain services quickly and transparently (Saputri et al., 2024). This technological integration not only simplifies regulatory implementation but also ensures real-time oversight of city development. For example, spatial planning and permit management can now be monitored through the Online Single Submission (OSS) system, making administrative processes more efficient, reducing opportunities for irregularities, and supporting

accountable, law-based governance. Furthermore, the use of AI-based e-governance services has also had a positive impact on the local economy, including poverty reduction, demonstrating that modernizing public services has a direct impact on community well-being (Maylasari & Rakhma, 2025).

The fourth factor is regional and national legitimacy and reputation earned through awards and independent assessments. Semarang City received the "Best Spatial Planning Champion in Central Java" award in 2023, ranking first out of 35 other regencies/cities based on the Siswatek assessment (Antara News, 2023). This award demonstrates successful land use control, consistent regulatory implementation, and effective spatial planning oversight. Furthermore, Semarang's success in designing Detailed Spatial Planning Plans (*Rencana Detail Tata Ruang*/RDTR) for strategic areas such as Kota Lama, Tambaklorok, and Tugu District, along with its integration with OSS-based permits, strengthens the city's image as a benchmark for urban governance practices. This legitimacy encourages program sustainability and facilitates the government's ability to secure support from the public and strategic partners.

In addition to these four key factors, the success of city governance in Semarang is also influenced by the synchronization of regulations, spatial planning, and the Smart City masterplan. A study by Marisa Aprilia and Djunaedi (2022) shows that effective Smart City implementation cannot be optimally implemented without integration with the regional spatial planning plan (*Rencana Tata Ruang Wilayah*/RTRW) (Ulenaung, 2019; Junef, 2021). All dimensions of a Smart City, including smart living, smart economy, smart society, smart branding, and smart environment, are closely linked to spatial planning policies. Synchronization of planning documents, human resource capacity, institutional evaluation, and funding are crucial factors enabling the integration of regulations, technological innovation, and sustainable development. With this integration, city development is not only orderly but also inclusive and law-based (Andriyansyah & Ashsyarofi, 2022).

Another crucial factor is holistic environmental and infrastructure management. Revitalization of slum areas, renovation of uninhabitable houses, drainage management, and the development of strategic areas such as Tanjung Emas Port and thematic villages demonstrate that law-based city governance encompasses the integration of physical development, public services, and environmental sustainability (Wijaya, 2024; PPID Kota Semarang, 2025). These efforts also include integrated sanitation, hygiene, and drainage management with digital systems to improve public health while reducing disaster risk (Nurlukman & Basit, 2023). The combination of clear regulations, law-based leadership, cross-sector collaboration, Smart City technology, legitimacy, synchronization of the master plan with spatial planning, and holistic infrastructure and environmental management have created effective city governance in Semarang. The implementation of these factors enables orderly urban development, improved public services, and a more livable environment, making Semarang an example for other cities in the practice of law-based governance (Wahyuni et al., 2021; Kautsary, 2018; Hidayatullah et al., 2023; Triyanto et al., 2024; Saputri et al., 2024).

4. Conclusion

Based on the research findings, it can be concluded that the success of urban development in Semarang is the result of the integration of spatial planning regulations,

the implementation of law-based governance, and interrelated strategic supporting factors. The consistent implementation of regional and mayoral regulations related to spatial planning, monitored through a web-based monitoring system, has ensured high compliance and effective land use control. These regulations not only limit illegal development but also encourage sustainable development by balancing residential, commercial, and public space, thereby improving overall urban quality.

Furthermore, the implementation of the Smart City master plan supports innovation, public service efficiency, and environmental sustainability. The integration of spatial planning and Smart City ensures that urban development is orderly, inclusive, and law-based. Physical infrastructure, digital public services, and holistic environmental management strengthen the government's ability to provide responsive and accountable services. Cross-sector collaboration between the government, the community, and the private sector is also crucial, enabling effective coordination and active public participation in decision-making.

Additional factors contributing to the success are the city's legitimacy and reputation earned through awards and independent assessments, as well as its use of technology for transparency, oversight, and efficient administration. Overall, the combination of clear regulations, law-based leadership, cross-sector collaboration, technological innovation, masterplan synchronization, and holistic infrastructure and environmental management have created effective city governance. This has resulted in orderly urban development, improved public services, and a more livable environment, making Semarang a model for other cities in the practice of law-based governance.

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