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Evaluating the Policy of Smart City in Indonesia

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Abstract - *Smart city development is a crucial component of urban transformation in Indonesia. However, policies and approaches to this concept vary, depending on institutional and sectoral focus. This article examines the differences in smart city policy approaches between the digital communications perspective and the physical infrastructure (PUPR) perspective. Through a literature review of academic documents and national policies, this article identifies that the digital communications approach emphasizes strengthening information technology-based public service systems, bold citizen participation, and data transparency. Meanwhile, the PUPR approach focuses more on developing basic infrastructure such as transportation, drainage, housing, and city utilities integrated with technologies like the Internet of Things (IoT). The study shows that both approaches have their respective advantages and challenges, but are not yet fully coordinated in policy practice. This article emphasizes the importance of cross-sector synchronization for effective, efficient, and sustainable smart city development.*

Keywords*: smart city, policy, city development.*

I. INTRODUCTION

The smart city concept in Indonesia has become a strategic direction for urban development over the past decade. Jakarta initiated this initiative in 2015 with the launch of the Jakarta Smart City program, after which the Government promoted the Movement towards 100 Smart Cities program in 2017 (Andrianingsih, 2025; Kusuma, 2015; Rizky, 2025). The implementation of this smart city involves the integration of digital technology and physical city management, so it naturally falls under the authority of two different but interrelated ministries. On the one hand, the Ministry of Public Works and Public Housing (PUPR) has a central role in spatial planning, basic infrastructure development, and spatial management of urban areas (Sarah & Poespita, 2025). On the other hand, the Ministry of Digital and Communication (Komdigi) is responsible for the digitalization of public services, the development of electronic-based government systems (SPBE), and digital transformation in the urban ecosystem (Halim et al., 2025). Therefore, these two ministries can be seen as the "parent policies" for implementing an ideal smart city: a city that is not only digitally intelligent but also physically organized, efficient in governance, and sustainable in development.

The two ministries, the Ministry of Public Works and Public Housing (PUPR) and the Ministry of Communication and Digital (Komdigi), have fundamentally different duties and functions, which directly influence the form, content, and orientation of policies in smart city development in Indonesia. The Ministry of Public Works and Public Housing holds primary responsibility for the physical development and management of urban spaces, including the development of basic infrastructure such as road networks, clean water, sanitation, public housing, and spatial planning through documents such as the Regional Spatial Plan (RTRW) and the Detailed Spatial Plan (RDTR). One of PUPR's strategic policy initiatives supporting smart cities is the Slum-Free City (KOTAKU) program and the development of Green Cities, which integrate environmental aspects into urban planning.

Meanwhile, Komdigi plays a role in advancing the digitalization of cities by focusing on the development of information and communication technology (ICT) infrastructure, the integration of digital-based public services, and the strengthening of the Electronic-Based Government System (SPBE). One of the ministry's flagship policies is the 100 Smart City Movement, launched in 2017. It aims to guide 100 cities and regencies in developing smart city masterplans tailored to local potential and needs. Furthermore, Komdigi also promotes the GovTech INA initiative and the integration of one data through the SPBE Index, as a foundation for digital government transformation. This difference in focus creates two pathways for smart city development: the Ministry of Public Works and Public Housing (PUPR) through a spatial and physical approach to cities, while

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Komdigi pursues a digital and technology-based governance approach. Without a strong coordination framework, these differing approaches have the potential to create policy fragmentation at the regional level, with city governments often struggling to align digital planning with spatial and infrastructure plans, key requirements for successful smart city implementation.

Given the complexity of the roles and policy directions of these two ministries, evaluating smart city policies in Indonesia is crucial to identify alignment, overlap, and coordination gaps in their implementation. This study aims to examine the smart city development policies designed by Komdigi and the Ministry of Public Works and Public Housing through a literature review to gain a more comprehensive understanding of policy direction, development focus, and challenges of inter-ministerial integration. By evaluating policy documents, academic studies, and implementation reports, this research is expected to contribute to strengthening cross-sectoral coordination in realizing smart cities that are not only technologically advanced, but also physically organized and socially inclusive.

II. METHOD

This study uses a descriptive qualitative approach with a literature review as the primary technique for data collection and analysis. The literature review focuses on research findings from the existing literature under consideration or combines findings with a focus on research methods and theories used in the literature (Bell & Harley, 2022). The primary objective of this method is to evaluate and compare the smart city policy directions developed by the two key ministries in developing the smart city concept in Indonesia, namely the Ministry of Communication and Digital (Komdigi) and the Ministry of Public Works and Public Housing (PUPR), based on official documents and relevant scientific literature. The documents used are smart city development study documents issued by the Ministry of PUPR and ministerial regulations issued by each ministry related to smart city implementation. Descriptive analysis will be used in this study to describe the context discussed in each regulation and identify shortcomings in both regulations (Pradana et al., 2024).

III. RESULT AND DISCUSSION

A. Smart City Policy in Indonesia

Over the past decade, the smart city concept has become part of the national development agenda in Indonesia. The government began systematically introducing this approach with the launch of the 100 Smart City Movement by the Ministry of Communication and Informatics (Kominfo) in 2017. This movement aims to help cities and regencies in Indonesia develop smart city master plans based on local potential and digital transformation. Meanwhile, the Ministry of Public Works and Public Housing (PUPR) conducted a study in 2014 on smart city development, including various literature studies on smart city concepts and models worldwide. In 2014, PUPR conducted a smart city study focusing on spatial planning. The smart city study analyzed several concepts from around the world that had already implemented the smart city concept, such as the Netherlands, France, and South Korea. The study also examined several Indonesian cities that had already begun implementing the smart city concept, such as Bandung, Bogor, and Makassar.

B. Smart City Implementation

The Smart City Study conducted by the Ministry of Public Works and Public Housing (PUPR) found that Bandung implements the smart city concept with the following development models:

1. Smart ICT Infrastructure (smart ICT infrastructure)
2. Smart government (smart city government)
3. Bandung open government (a concept of government services for the public that prioritizes the principle of openness)
4. Bandung empowerment (community empowerment by strengthening internet literacy, citizen engagement, and the digital industry)
5. Bandung technopolis (city management towards a modern, technology-based city).

Meanwhile, Bogor also has its own smart city concept with the following components:

1. Smart Citizen
2. Smart Governance
3. Smart Business

4. Smart Infrastructure
5. Smart Living
6. Smart Environment
7. Smart Mobility
8. Smart Economy

The Makassar City Government also applies five main concepts in developing a smart city: smart economy, smart environment, smart mobility, smart governance, and smart people. As follows:

1. Smart economy - The concept of smart Economic development is carried out by developing and structuring integrated business centers. Implementing appropriate information technology to facilitate transactions.
2. Smart mobility - Smart mobility focuses on facilitating access to public spaces through improving transportation facilities and infrastructure, creating ease, order, security, and comfort in moving between locations.
3. Smart environment - Smart environment is developed by restoring several functions of public spaces, developing comfortable living environments with comprehensive infrastructure, and revitalizing environmental spaces to support community life.
4. Smart people - The goal of smart people is to create a technology-literate society, raising public awareness of the various benefits of technology, particularly information technology, and providing insight into the negative impacts of technology itself.
5. Smart governance - Smart governance is developed and implemented to optimize government services that are needed and accessible to the public. In this case, the public is provided with easy access to information, services, and transparent government participation.

Findings by the Ministry of Public Works and Public Housing indicate that there is still a lack of a clear roadmap from each regional government for developing the smart city concept. Furthermore, from When comparing these three cities with regard to spatial planning, the smart city concept implemented so far by them has not addressed this aspect much. Based on these literature reviews, the Ministry of Public Works and Public Housing (PUPR) has developed the following recommendations for smart city models in Indonesia:

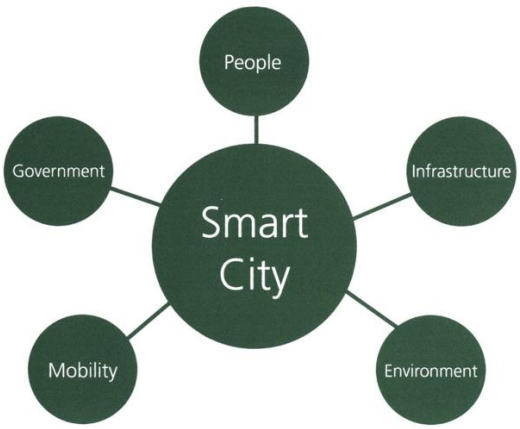

Figure 1. Smart City Implementation Model Recommendations

C. Policy

After reviewing the smart city concept, the Ministry of Public Works and Public Housing (PUPR) established regulations for Smart City Building Development through Ministerial Regulation No. 10 of 2023 concerning Smart Buildings. The core of this policy is the application of smart building principles, including energy efficiency, water management, automatic lighting systems, cybersecurity, and integrated management systems. This aligns with the strategy for sustainable smart city development, even at the micro-building level. This regulation not only regulates technological elements but also defines assessment and certification mechanisms, allowing buildings to be evaluated and labeled according to their level of technical compliance. Overall, this regulation is a more specific and operational regulatory instrument than smart city regulations at the city level. It covers technical aspects of buildings, management systems, certification, financing, and supervision, leading to smarter and greener urban development in the future.

Komdigi also has Ministerial Regulation No. 8 of 2019, which includes technical guidelines for the implementation of the Electronic-Based Government System (SPBE) at the regional level, as a derivative of Presidential Regulation No. 95 of 2018. Although it does not explicitly use the term "smart city" in its title, this regulation is a key foundation for realizing smart cities in Indonesia because it emphasizes the importance of interoperability, integration of digital services, and strengthening information technology governance in local governments. The primary objective of this regulation is to create efficient, transparent, and integrated public services based on digital technology, a key characteristic of a modern smart city.

This regulation stipulates the establishment of the Regional Government Service Interconnection Committee (SPBE) Committee, consisting of representatives from the regional head, regional secretariat, and technical agencies, including the Communication and Information Technology Agency. This committee is tasked with formulating policies, monitoring the performance of digital services, and ensuring interconnected information systems. This regulation also regulates the Regional Government Service Interconnection System (SPLPD), which serves as the primary platform for data and service exchange between regional agencies and with the central government. All regional applications, data, and digital systems are required to adhere to open standards and be interoperable through the SPLPD, which is essentially the backbone of the central government's smart city model.

In the context of smart city development, this regulation provides an institutional and technical framework, focusing not only on physical infrastructure such as roads or buildings, but also on digital governance, information security, and data optimization for public services. Therefore, this regulation serves as a foundation for regions to integrate various services such as online licensing systems, e-health, e-education, e-budgeting, and a connected and transparent public complaint system. Although this regulation does not stipulate technical building standards like PUPR Ministerial Regulation No. 10/2023, its role in smart city development is very strategic. It serves as a digital and systemic framework for smart cities, while PUPR Ministerial Regulation is more of a technical tool for smart buildings and infrastructure. Both can complement each other if developed within a single integrative framework by local governments. If presented in a table, the differences between the two are as shown in Table 1 below:

Aspect	Permen PUPR No. 10/2023	Permen Kominfo No. 8/2019
Scope & Objectives	Focus on smart buildings: energy efficiency, automation, security.	Focus on smart cities/provinces: governance, IT infrastructure, data, ecosystem.
Definition & Concept	Full definition: BGC, BGH, technical parameters, retrofit.	Definition of smart city through smart city committee, interoperable SPLPD, IT ecosystem.
Management Structure	Does not determine the city structure; more to the technical implementation (PU–PUPR).	Establish a Smart City/Province Committee: elements of government, business, academia, community.
Implementation Stages	Programming → design → construction → utilization → dismantling.	More on ecosystem development, interoperability, IT asset management.
Technical Standards	Automatic principles, cyber parameters, AC elements, CCTV, parking, etc.	E-gov interoperability standards and SPLPD; IT asset governance.
Systems and Interoperability	Internal building focus; system integration within BGC.	Require SPLPD to be connected between regions and the national/central center.

Aspect	Permen PUPR No. 10/2023	Permen Kominfo No. 8/2019
Guidance & Supervision	By the Director General of Human Settlements + regional; support, training.	The Communications and Information Technology Agency acts as an ecosystem facilitator and IT asset manager. Monthly reporting by the Committee.
Incentives and Sanctions	Technical incentives, certificates, awards; administrative sanctions for permits.	Not explicit about incentives/sanctions; focus on policy coordination.
Formal Output	BGC certificate/plaque + permit.	Decision on committee formation; SPLPD monitoring; policy recommendations.

Table 1. The difference between PUPR Ministerial Regulation No. 10/2023 and Kominfo Ministerial Regulation No. 8/2019
(Source: designed by Researchers)

IV. CONCLUSION

Ministerial Regulation No. 10 of 2023 and Ministerial Regulation No. 8 of 2019 are two important, complementary policies for smart city development in Indonesia. However, they have different focuses and scopes. Ministerial Regulation No. 10 of 2023 emphasizes the physical and technical aspects of buildings, specifically Smart Buildings (BGC) that are efficient, automated, and integrated, with comprehensive regulations from the planning, construction, utilization, and demolition stages. This regulation is crucial to ensure that every building in Indonesia, especially state or public buildings, is constructed with a high-tech approach, is environmentally friendly, and adapts to future challenges.

Conversely, Ministerial Regulation No. 8 of 2019 serves as a digital governance and institutional framework for implementing electronic government systems (SPBE) in the regions. It serves as the foundation for the formation of smart city committees, information system management, data integration between agencies, and the development of efficient and interconnected digital public services through the Regional Government Service Connector System (SPLPD). The focus is not on buildings, but on a smart and transparent digital government system.

Thus, these two regulations should not be viewed in isolation, but rather as part of a single smart city ecosystem. The Ministry of Communication and Informatics Regulation establishes a smart city system and structure, while the Ministry of Public Works and Public Housing Regulation establishes smart buildings and physical infrastructure. Their collaboration will strengthen the transformation of Indonesian cities toward sustainable, efficient, inclusive, and data-driven ones. If regions or institutions are able to implement both in parallel, it will create a smart city that is not only digitally connected but also physically and functionally realized.

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