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# "NOT VIRAL, NOT POPULAR": WHAT IS THE FORMAT FOR THE DEVELOPMENT OF IKN? IN A PARTICIPATORY PLANNING LENS

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## Abstract

The Indonesian government administration, which was originally centered in Jakarta, will be moved in 2024. Interestingly, the construction of the IKN reaps pros–cons from the community. Discussions about the IKN planning pattern continue to be debated. To conduct this event, the orientation of the article is to invite public participation (*outside the government*) to determine the choice of what planning format is valid for the sustainability of the new IKN development. The profiles of respondents are local netizens who often use social media to test their insights who live around the IKN. The cluster sampling survey was carried out partially using online interviews throughout the 2022 period. Besides, the data collection process only focused on 251 respondents who have skills and are certified as urban planners who are members of associations with special expertise. The collected primary data is extracted into the Chi–Square model. As a result, it detects that the planning formulation suggested by netizens has an effect on the sustainability of the IKN development. From various walks of life including: scientists, observers/environmental activists, community leaders, social media observers, and entrepreneurs, the majority consider the most realistic planning approach for the sustainability of IKNs to be green cities. For the long–term, netizens reason and assume that this concept fulfills the necessary of green open space (RTH).

***Keyword***: IKN, Netizens, Public Engagement, Social Media, Chi–Square

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# INTRODUCTION

## Background

In the second quarter of 2021, the Indonesian economy managed to grow and even achieved the highest growth since the "sub-prime mortgage" crisis of 7.07 percent. Improvement in domestic demand resulted in all business sectors experiencing positive aggregates in the second quarter of 2021, including information and communication which grew to 6.87 percent (Amanda, 2021; Umar, 2019). According to Anas et al. (2022) and Prestianawati & Setyanti (2021), the increase in this component was triggered by a shift in people's behavior towards a "low-touch and contactless economy", especially during the pandemic. This situation is a digital transformation in various business potentials, so that it has positive implications for accelerating economic recovery (Legowo & Sorong, 2022).

Indonesia has a demographic bonus that supports superior digital escalation (Aniqo, 2020). The majority of Indonesia's population are generation Z and millennials aged 8 to 39 years who are talented with high levels of digital adoption (Hinduan et al., 2020; Rahadi et al., 2021; Soelasih & Sumani, 2022; Sudirman et al., 2022). As many as 37 percent of new digital economy consumers have emerged during Covid-19 and 93 percent of them will continue to utilize post-Covid-19 digital economy products, such as: Google, Bain, and Temasek. So far, digital economy routines in Indonesia have continued to increase, with 41.9 percent of ASEAN's total digital economy transactions in 2020 coming from Indonesia and reaching US$44 billion. For 2025, it is projected to reach US$ 124 billion. Torda (2020) explains that the Covid-19 situation has also driven advances in education and health technology which have reformed online learning and health consultations.

Furthermore, ElMassah & Mohieldin (2020) and Falah (2021) concluded that the flow of digitalization in developing markets, an example is Indonesia, which also provides opportunities to accelerate the Sustainable Development Goals (SDGs) which have become global commitments through 3 enablers including: (1) access to information and services available to every individual in urban-rural areas; (2) increased connectivity between individuals and organizations; and (3) resource efficiency from massive productivity. One of the examples in the implementation of the SDGs included in the Medium-Long Term Development Plan (RPJMN) of 2020–2024 is the concept of "smart city", "green city", and "sustainable city". Broadly speaking, Viola & Fitrianto (2022) defines a smart city as an urban arrangement or governance that applies technology to increase capacity and reduce the negative impacts of urbanization that may arise. The function of a smart city is needed to overcome various problems, for example: congestion, garbage accumulation, decreased water and air quality, and the dynamics of crime (Batty et al., 2012). Then, the target of a green city is to produce an integrated urban development in order to reduce the

negative impact on the consequences of development on the environment that combines spatial, infrastructure, and social intensity strategies (Ahmed, 2013). On the other hand, a sustainable city scheme for managing and strengthening regional-national scale planning that integrates environmental, economic and social corridors in rural, urban and suburban areas (Höjer & Wangel, 2015; Permana & Harsanto, 2020; Saad et al., 2017; Toli & Murtagh, 2020; Wang & Liu, 2016).

Explicitly, the “100 smart city” movement which is accommodated by the authorities has compiled master plans and quick win smart cities for 100 Regencies/Cities throughout Indonesia (Elanda et al., 2022; Heriyanti et al., 2019; Pratama, 2022). The focus of smart city design emphasizes 6 main pillars: smart governance, smart mobility, smart economy, smart living, smart people, and smart environment. Currently, the Indonesian government is also taking the initiative to prepare a "digital transformation strategic framework" as a basic guideline in completing the digitalization process which is directed at 3 aspects: digital government, digital economy, and digital society, where the output becomes an element in promoting as well as guaranteeing information disclosure.

At the same time, regulations related to the capital city of the archipelago or what is called "IKN" contained in Law no. 3 of 2022 has been issued. In principle, these rules are an effort to improve the governance of the Indonesian IKN area (Herdiana, 2020). In 2045, the scenario for moving IKN is located in Sepaku (Penajam Paser Utara/PPU, East Kalimantan). The relocation of the new government center allows for dispersion, equity, and is oriented towards a more stable Indonesian macroeconomic connection. However, the problem is that IKN spatial standards have not been determined. Talking of planning documents, priority development and urban clusters are also awaiting a decision in a forum that invites development stakeholders. Uniquely, the topic circulating around the categorization of IKN development is claimed by one party to lead to a green city. On the one hand, referring to regional characteristics, the initial technocratic framework tends to detect sustainable cities. Besides that, some community groups actually view that a suitable and competent criterion for the future IKN is a smart city. Even though the three of them are predicted to cause weakness, they also have advantages. Everything really depends on the extent to which the government can empower the community, maximize natural resources, socialize and invite all indicators to be involved in the planning cycle, understand procedures and commitment to the system chosen.

Towards productive and responsible governance, protection from civil society is needed. In this era of sophisticated technological adaptation, the conversations, highlights, and comments from netizens are increasingly

unstoppable. Freedom in channeling arguments is seen as an expression, including responding to the condition of the nation. In the context of democracy, the detective role channeled by netizens responds to open government policies. Yet, the current reality also sometimes conflicts with ethics in articulating opinions. Excessive reactions that are not followed by a comprehensive level of insight and education can trigger endless debates. The side effect of expanding public perception to assess and evaluate government performance often creates political mindset maneuvers. Improperness in displaying logic with minimal literacy often results in one-sided tension. Among these anomalies, it is also relatively constructive which provides solutions and is interpreted in terms of the objectivity of the polemic being discussed. In particular, the majority of the public agrees that the moment of moving to the new IKN is relevant to optimizing areas that were before isolated into inclusive development.

In fact, by utilizing social media, for example YouTube, Facebook, Instagram, and TikTok, it will make it easier for the government to inform progress about urban planning in IKN. The urgency is to be able to fend off hoax news and teach the public about the motives, mission, and benefits of relocating the IKN. Substantively, it also collaborates with all elements to make IKN successful. In the perspective of developing smart cities, green cities and sustainable cities for IKN, aggressive access to information is still needed that takes into account public assumptions. Stakeholder experience in supervising and proposing ideas regarding urban planning mechanisms in IKN must be heard, read, and shown to the Indonesian government in making decisions.

## Contribution and Motivation

The contribution of this paper is concentrated in two ways. *First*, to explore academic knowledge of the use and control of social media. *Second*, it aims to group the concepts of smart city, green city, and sustainable city theoretically. For this reason, the motivation for this paper is to investigate the attention of IKN development actors (outside the government) in relation to urban planning to the essence of sustainability.

# LITERATURE REVIEW

## Smart City

Albino et al. (2015) and Cavada et al. (2014) views that the term "smart city" needs to be clarified. Extensive literature review needs to explore and clarify the definition of a smart city which is often compared to a "traditional city". From the performance, features and physical versions, smart cities focus on the interaction between the environment and human activities. Ramaprasad et al. (2017), Stratigea (2012), and Toli & Murtagh (2020) argue that smart cities tend to be addressed to the prosperity agenda, where digital intelligence mobilizes

government, thus enabling humans to adapt to city innovations. As an illustration, smart cities are driven by rapid urbanization. Apart from the accessibility of citizens, the smart city introduces a distinctiveness in a striking urban structure. In a multidisciplinary foundation, smart cities simulate more complex landscapes. In practice, elaboration in social sciences, public policy, information technology, and urban design, smart cities are actualized as gaps to bridge development gaps holistically. Smart cities represent expectations that highlight 6 primary attributes: (1) effective integration between intelligence gathering and government institutional services; (2) network partnerships; (3) displaying the formulation of decisions; (4) prioritizing information and knowledge; (5) strengthening local creativity; and (6) preparing a modern digital network.

## Green City

Naturally, a green city is based on respect for environmental habitats. Nature that is protected, expanded, and maintained without expansively changing the typological face of the city, reflects the key in providing ideal services for the interests of city residents. That way, harmonious city development does not ignore green open space/RTH (Breuste, 2020). Green city does not eliminate socio-ecology as a cross-sectoral pollution prevention measure (Zain et al., 2022). Forming a green city must adjust the service ecosystem that is connected to nature. Drastic global climate change has invited many cities to compete in issuing quantitative parameters that classify and track environmental friendliness–social welfare–economic consistency over time (Pace et al., 2016). The outcomes of these three trends, make it a valuable tool in the "quality of green cities" index.

In general, Brilhante & Klaasgreen (2018) dedicates a green city as a manifestation, step, and ambition to save energy without destroying resources and on an environmentally friendly basis. In addition to carbon emissions and Gross Domestic Product (GDP), to track these achievements, green cities seek to consolidate and introspect air quality, sanitation factors, and population in a measurable manner. The green city pattern, not only compiles urban capabilities, greening thresholds, and land use, but also describes and makes solid and liquid waste management, reduces greenhouse gases, and electricity without putting pressure on the system (El Ghorab & Shalaby, 2016). To combat external risks from decreasing air quality, green cities provide rational alternatives to minimize the electrical power in each building material (Hameed, 2020).

## Sustainable City

Cohen (2017) tells that qualifications in a sustainable city project must ensure social, economic and environmental resilience to maintain the existing population without compromising future generations. Sustainable cities imply safe residential populations that are able to absorb well-being without disturbing nature or at least reducing the environmental impact to a minimum. In the long-term scenario, the leading paradigm of sustainable cities stimulates cities to fight crime, be sensitive to environmental degradation, become pilot programs, maintain the "environmentally friendly" label, and revitalize technology (Bibri & Krogstie, 2019). Given the large number of exploitation of natural resources that are still carried out conventionally, it is increasingly hampering the environment, economy and social. This clearly creates a new contradiction in the transition to a sustainable city (Hassan & Lee, 2015). Pira (2019) emphasized that the characteristics of a sustainable city are following SDGs elements which instill quality of life in human capital referring to environmental sustainability. Urban health determines livability. The best way to meet the challenges of a sustainable city is to synergize with the existence of technology and social behavior (Crane et al., 2021).

Sustainable city pioneered the formation of smart cities and green cities. In other words, the development of green cities and smart cities begins with the unification of the concept of sustainability (Ahvenniemi et al., 2017; Carro-Suárez et al., 2023; Trindade et al., 2017; Widiyastuti et al., 2021). The point is that smart cities and green cities have studied and observed the root causes related to the importance of embracing the environment and the economy into all classes of society.

## Hypothesis

Observing the premises and analogies in the literature discussed above, the development of the hypothesis is structured as follows:

1) *Alternative hypothesis ($H_a$)*. There is a relationship between the planning formulation suggested by netizens and the sustainability of the IKN development; and
2) *Null hypothesis ($H_0$)*. There is no relationship between the planning formulation suggested by netizens and the sustainability of the IKN development.

# METHODS

## Data Sources and Samples

The data type is primary. The sampling technique is cluster sampling, where data information is obtained from informants. The selection of sample measurements focuses on public (non-government) parties who are competent to fill in the data. The resource persons were identified as respondents who have competence and expertise on regional development planning. Too, their

expertise is tested by skill level, certified as planners, active on social media, and provides choices and recommendations for IKN planning documents that correlate with the concepts of smart cities, green cities, and sustainable cities. The sample volume is 251 units verified as scientists, environmental observers or activists, community leaders, social media activists, and entrepreneurs. Determination of the sample belongs to the "penta–helix".

## Data Collection Instruments

Data collection was taken online during 2022. The survey data collection technique was supported by a questionnaire made with 2 narratives (see Table 1). The sample demographics are located in 4 IKN areas: Balikpapan, PPU, Kutai Kartanegara, and Samarinda which are part of East Kalimantan.

**Table 1:** List of questions.

| Variables | Question | Item |
|---|---|---|
| Planning type | What are the appropriate planning criteria for IKN? | (1) smart city; (2) green city; (3) sustainable city |
| Sustainability of development | Does the chosen planning format coexist with the sustainability of the IKN development? | (1) yes; (2) no |

Below is a breakdown of the score based on the respondents' answers developed as follows:

1) *Planning*. If the informant answered "smart city", then a score of "1" was given. Meanwhile, informants who chose "green city", were given a score of "2" and if the answer was "sustainable city", then given a score of "3".
2) *Sustainable development*. If the informant took the "yes" option, then he was given a score of "1" and vice versa, the informant who concluded "no", was given a score of "2".

## Analysis Tools

After the survey questionnaire was tabulated, the data was entered and processed using SPSS. The analytical method used is Chi–Square ($\chi^2$). This model corrects non-parametric comparative tests on planning variables and development sustainability variables, where the data scale for both variables is nominal. In description, Chi–Square refers to the lowest degree. In outline, the plot shown in the Chi–Square table consists of: continuity correction, likelihood ratio, Fisher's exact, and linear–by–linear association. The basic Chi–Square equation function is written as follows:

$$\chi^2 = \sum_{i=1}^{k} \frac{(f_o - f_h)^2}{f_n}$$

where: $\chi^2$ = the Chi–Square symbol; $f_o$= observed frequency; $f_h$= expected frequency; n = sampling; $k$ = upper limit; $i$ = the sum index entered as a variable in the econometric function; and 1 = lower limit.

Furthermore, each component in Chi–Square is derived into continuity correction, likelihood ratio, Fisher's exact, and linear–by–linear association which are formulated as follows:

$$\chi^2_{Yates} = \sum \frac{\left[(n_{ij} - \hat{\mu}_{ij}) - 0.5)^2\right]}{\hat{\mu}_{ij}}$$

where: $\chi^2_{Yates}$ = Pearson; $n_{ij}$ = difference in observed values with contingencies; $\hat{\mu}_{ij}$= residue; and 0.5 = probability level.

$$G^2 = 2\sum_{i=1}^{c} O_i ln\left(\frac{O_i}{E_i}\right)$$

where: $G^2$ = Likelihood ratio; $c$ = coefficient; $O_i$ = expected frequency; $ln$ = logarithm; $E_i$= observation frequency; $i$ = the sum index entered as a variable in the econometric function; and 1 = lower limit.

$$\chi^2_{\rho} = \sum_{ij} \frac{(f_{ij} - E_{ij})^2}{E_{ij}}$$

where: $\chi^2_{\rho}$ = Fisher's exact; $ij$ = sampling; $f$ = frequency; and $E$ = cell.

$$\alpha = \frac{y_2 - y_1}{x_2 - x_1}, \text{with the provision of } x_2 \neq x_1$$

where: $\alpha$ = constant; $y, x$= linear Gradient on the independent and dependent variables; and $\neq$ = not equal.

The 2 basis for decision making in the Chi–Square hypothesis is represented by the Chi–Square score and probability (asymptotic significance) is illustrated below:

$$DF = (r - 1)(c - 1)$$

where: DF = degree of freedom; $r$ = correlation; and $c$ = coefficient.

It was confirmed that the table Chi–Square scores were: $DF = (2-1)(3-1) = 2$ and the significance level applied is 95 percent, then the critical limit is 0.05 on *DF* 2, so the table value is 4.709. In other words, collective causality among variables is detailed below:

1) Asymp. sig. > 0.05 and Chi–Square count < Chi–Square table indicates that $H_0$ is accepted and $H_a$ is rejected.
2) Asymp. sig. < 0.05 and calculated Chi–Square > Chi–Square table indicates that $H_0$ is rejected and $H_a$ is accepted.

## RESULTS

### Profile of Informant

In Table 2, describes the characteristics of informants based on age, gender, regional identity, profession, education, and social media used to monitor the development of IKN. Of the 251 netizen 31.5 percent were aged 44–50 years, 23.1 percent were aged 31–37 years, 16.7 percent were aged 38–44 years, 16.3 percent were over 51 years old, and 12.4 percent were 25–31 years. Besides that, the survey produced a gender background, where most of the informants were male (57.8 percent), while female informants (42.2 percent). The majority of the interviewees live in the capital city of East Kalimantan (Samarinda) reaching 46.6 percent, 27.9 percent are from Balikpapan, 15.1 percent live in PPU, and the remaining 10.4 percent are domiciled in Kutai Kartanegara. Informants are dominated by professional backgrounds as observers/environmental activists (32.7 percent), social media observers (25.5 percent), work positions as academics/scientists (25.1 percent), community leaders who are also partners with regulators such as : religious and customary leaders, village officials, education initiators, and other public figures are 13.9 percent, and the involvement of entrepreneurs is 2.8 percent.

**Table 2:** Netizen profile.

| Background | Item | Frequency (n) | Percentage |
|---|---|---|---|
| Age | 25–31 | 31 | 12.4% |
| | 31–37 | 58 | 23.1% |
| | 38–44 | 42 | 16.7% |
| | 44–50 | 79 | 31.5% |
| | >51 | 41 | 16.3% |
| Gender | Female | 106 | 42.2% |
| | Male | 145 | 57.8% |
| Population identity | Balikpapan | 70 | 27.9% |
| | PPU | 38 | 15.1% |
| | Kutai Kartanegara | 26 | 10.4% |
| | Samarinda | 117 | 46.6% |
| Profession | Scientist | 63 | 25.1% |
| | Environmental | 82 | 32.7% |
| | observer/activist | 35 | 13.9% |

| | | | |
|---|---|---|---|
| | Public figure | 64 | 25.5% |
| | Social media observer | 7 | 2.8% |
| | Entrepreneur | | |
| Last education | Diploma | 49 | 19.5% |
| | Bachelor | 51 | 20.3% |
| | Masters | 110 | 43.8% |
| | Doctor/Assoc. Prof. | 28 | 11.2% |
| | Professor (full) | 13 | 5.2% |
| Social media | Instragram | 7 | 2.8% |
| | WhatsApp | 105 | 41.8% |
| | Twitter | 32 | 12.7% |
| | YouTube | 55 | 21.9% |
| | Facebook | 52 | 20.7% |

*Source:* online interviews

Referring to the level of education, all resource persons had diplomas and completed campus education. A total of 43.8 percent held Master's degrees, 20.3 percent held Bachelor degrees, 19.5 percent held Diploma degrees, and 11.2 percent held Doctoral degrees or were classified as Associate Professors. In particular, among the respondents, 5.2 percent were those who served as full professors. Collectively, in conversations about IKN, informants are more interested and subscribed to social media platforms such as WhatsApp (41.8 percent), YouTube (21.9 percent), Facebook (20.7 percent), Twitter (12.7 percent), and few use Instagram (2.8 percent). Also, that type is media that has been installed on the mobile device self-taught.

## Validity

The level of accuracy of the interview, measured via the validity of the questionnaire. Table 3 to see if there is missing data during processing. Besides that, it also reads data packets, lost data and the amount of data. Based on the statistical output summarized in Table 3, the data is spread across 251 sources, all of which are input into SPSS. Invited participants have returned or filled out the questionnaire completely. Therefore, the level of data validity is 100 percent.

**Table 3:** Summary of case processing.

| Variable | Cases | | | | | |
|---|---|---|---|---|---|---|
| | Valid | | Missing | | Total | |
| | *n* | *Percent* | *n* | *Percent* | *n* | *Percent* |
| Planning | 251 | 100% | 0 | 0% | 251 | 100% |
| Sustainable development | 251 | 100% | 0 | 0% | 251 | 100% |

*Source:* IBM–SPSS v. 28

## Cross–Tab

Cross–tab is an analysis in the form of a table containing a sketch of the observed data. This cross–tab or contingency table is to determine the level of correlation or the strength of the relationship between variables. Table 4 displays the Cross–tab values. Overall, based on 251 participants who reviewed planning variables, they were grouped into 3 codes: smart city, green city, and sustainable city, while 2 codes for 2 responses: yes and no. With the existing conditions, 124 votes (49.4 percent) are for green city-based planning, 73 votes (29.1 percent) are for smart cities, and 54 (21.5 percent) are for sustainable cities. It was noted that based on smart city planning, 47 respondents (64.4 percent) agreed with this concept and 26 respondents (35.6 percent) did not, then for green city-based planning, 101 respondents (81.4 percent) agreed and The other 23 did not (18.6 percent), and specifically for sustainable cities, which reached 39 respondents (72.2 percent) and those who did not were 15 respondents (27.8 percent). Simultaneously, based on the three types of planning proposed, 187 respondents (74.5 percent) reacted that it could succeed in the development of a sustainable IKN, while 64 respondents (25.5 percent) indicated that it had no impact.

**Table 4:** Cross tab results.

| **Planning** | **Sustainable development** | | **Total** |
|---|---|---|---|
| | *Yes* | *No* | |
| Smart city | 47 | 26 | 73 |
| Green city | 101 | 23 | 124 |
| Sustainable city | 39 | 15 | 54 |
| n | 187 | 64 | 251 |

*Source:* IBM–SPSS v. 28

Referring to the question of sustainable development, 47 participants thought that if smart cities were implemented, it would affect the IKN. Implicitly, 101 participants who chose a green city, showed an increasing influence on the development of IKN and 39 participants who were recorded as taking the sustainable city option, estimated that IKN was getting closer to sustainable development.

## Chi–Square

Table 5 below reports the Chi–Square values. asymp. sig. and Exact sig. symbolized by probability (ρ). The first empirical results via Fisher's method, found that in one–way exact (ρ = .040) or two–way exact (ρ = .003) the relationship between planning and planning is significant. In other cases, with 4 models outside Fisher's including: Pearson, continuity correction, likelihood, and linearity, that all exceed the target or have a systemic effect.

**Table 5:** Test of $\chi^2$.

| | Value | Asymp. sig. (2–sided) | Exact Sig. (1–sided) | Exact Sig. (2–sided) |
|---|---|---|---|---|
| Pearson Chi–Square | 6.918 | .007 | | |
| Continuity correction | 5.741 | .036 | | |
| Likelihood ratio | 9.260 | .019 | | |
| Fisher's exact | | | .040 | .003 |
| Linear–by–linear association | 8.305 | .024 | | |
| n | 251 | | | |

*Source:* IBM–SPSS v. 28

Using table limit = 4.709, it can be concluded that Pearson Chi–Square ($\chi$ = 6.918; $\rho$ = .007), continuity correction ($\chi$ = 5.741; $\rho$ = .036), likelihood ratio ($\chi$ = 9.260; $\rho$ = .019), and linear–by–linear association ($\chi$ = 8.305; $\rho$ = .024). In short, preference for planning has a significant impact on sustainable IKN development. Throughout 2022, the more netizens' sensitivity in public communication is increased, the more it will give a positive signal to the IKN development plan.

## DISCUSSION

The entry of news in various media automatically facilitates the circulation of information. Humanity is dealing with revolution 4.0, where news coverage is currently dominated by social media (Barniat, 2021; Yilmaz et al., 2017). Ifigeneia & Dimitrios (2018) presented that public enthusiasm for highlighting an issue that originates from social media is getting higher. This also includes the scope of the relocation of IKN which creates a dilemma (Indrawati et al., 2022; Kodir et al., 2021). In planning, the simulation is still in its contemporary phase. Public trust is determined by actual news developments, but if it is unreliable and does not represent true reality, it will trigger wild opinions (Darmawan et al., 2023). Surprisingly, information about IKN is abstract and still requires fundamental initiation. Even though the IKN area is photographed into 4 zones, i.e: government administration: PPU, economic center: Balikpapan, national strategy: Samarinda, and buffer zone: Kutai Kartanegara, the spatial master plan shown is speculation, so it needs to be set separately (see Figure 1). In the stages of preparing the IKN planning documents, the government's role is to publish to the media and facilitate public statements as a form of legal documentation. But, limitations on IKN financing raise uncertainty. The controversy is what development entity to use? Then, what approach is applied? And what is the position of IKN in 2045?.

To answer the above questions, reasonable alibis and comparative studies are needed that focus on a nation or territorial division that successfully adopts the three planning experiments. Take for example Surabaya–Indonesia,

where smart cities tend to highlight "e–government" to expose local government performance. In the digital era, regional autonomy is determined by bureaucratic structures, attitudes, communication, and natural resources (Pangestu et al., 2021). Another case in the big cities of Greece. Formulating a coherent framework into digital projects, generating returns and mitigating risks that have the potential to derail the quality of services provided (Siokas, 2021). Smart cities are best practice for parts of the European Union, for example Vienna–Austria, Copenhagen–Denmark, Barcelona–Spain, Helsinki–Finland, and Amsterdam–Netherlands. With the speculated pressure of urbanization increasing, economic and social problems are also accumulating in urban agglomerations (Alaverdyan et al., 2018). Governments in big cities that use smart city management relatively speed up the process of public administration, so that the collected community inspiration can be processed appropriately. There is a conceptual shift in smart cities that rely on and operate "big data" commodities (Safitri, 2021). This transformation starting from a challenge that needs to be solved in big data quality.

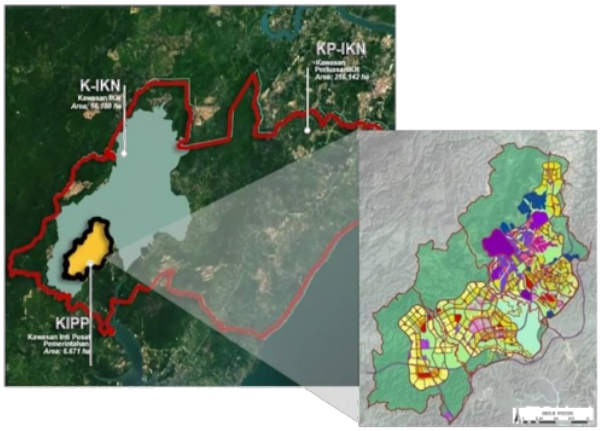


**Fig. 1:** Construction engineering of IKN.
*Source:* CNBC Indonesia (2022)

Moreover, Kurniawati et al. (2017) and Subadyo et al. (2019) discusses the competitive advantage of Malang–Indonesia which connects green cities with the harmony of nature. In its actualization, the Malang City accommodates green communities, green design, and green open spaces into thematic planning in collaboration with companies through a corporate social responsibility (CSR) scheme. In pioneering a green city in Surakarta–Indonesia,

it must focus on the balance of bioecosystems into a sustainable environmental architecture to create comfort at a low cost (Wicaksono, 2013). Aji et al. (2019) demonstrated a pilot project in urban housing in the Serpong area (South Tangerang–Indonesia). Recently, environmental degradation caused by resource scarcity, especially the water crisis, has prompted a regional review of modern housing that takes into account the balance of rainwater recycling.

With regard to the concept of a sustainable city, Bartniczak & Raszkowski (2022), Guimarães (2012), and Muhamad Khair et al. (2020) stated that the nature of the SDGs in EU nations in complex planning makes a city that is not only measured by the level of resilience, inclusiveness and security, but also emphasizes sustainable generation. For other cases, such as Malaysia for example, it has promoted the active participation of its civil society to be empowered and involved in monitoring environmental sustainability. To fight for achievements, the process also changed the face of southern cities in Brazil in protecting the environment and improving the quality of life of citizens.

Following up on the IKN case, the news operation that was converted into social media, has not yet indicated a development that has a specific identity. In detail, if the IKN replica is modified into: smart city–green city–sustainable city, these three options must also intensely study literacy, digital, or innovation. Thus, the first challenge that needs to be overcome is to pursue literacy and innovation to create a strong digital economy. In 2020, out of 131 countries, Indonesia's global innovation index is ranked 85$^{th}$ and Indonesia's digital literacy index is on a "medium" scale. In its terminology, internet infrastructure is still dominated by Java, so the disparity is very stark with regions outside Java.

Technically, to reach internet access throughout Indonesia, including IKN, provides a large proportion of financial incentives to develop internet supporting facilities, such as: (1) building towers and 4G networks through the deployment of base transceiver stations (BTS) in frontier areas, remote, and lagging (3T); (2) develop and train workers in the field of telecommunications; (3) cooperate with providers in the "public service obligation" scheme; (4) instructed to increase the capacity of the satellite network or launch the Republic of Indonesia Satellite I (SATRIA I); (5) migration of analog to digital television broadcasting which saves frequency, so that the remaining frequency at 700 MHz can be used by telecommunication operators to deploy 5G or 4G; and (6) gradual rollout of the 5G network to operate commercially to support internet connections. Through the digitization program, it can reflect GDP growth of up to 1 percent per year, thereby employing an extra 2.5 million workers, 600 thousand digital talents each year, 50 percent of SMEs that are digitalized (around 30 million ready on board), 82.3 percent internet users, and 5 thousand new start–ups.

In 2024, Indonesia will achieve various better rankings at the global level, such as in the "E-Government Survey of United Nations" which released a competitiveness index based on the digital institute for management development, information and communication technology development index, and World Bank ease of doing business index. Not only for IKN, but also for Indonesia if it is collected through good collaboration between the private sector and the government, the SDGs target will be achieved more quickly. Impressive IKN development, adjusted to the carrying capacity and planning aspirations.

## CONCLUSION

This paper aims to mediate and assist the government in determining appropriate planning proposals as a step towards sustainable IKN development. Through a survey process using the Chi–Square test, the results of the investigation confirm 2 main points: (1) planning creation contained in the concept of smart city, green city and sustainable city as a solution for the sustainability of IKN development in the future; and (2) the findings predict that the green city is the most desirable model, according to the criteria, and in line with the IKN planning strategy.

As a practical reference for stakeholders, we recommend that if the smart city concept is decided on for the IKN development document, then the government also needs to reconsider other alternatives, such as smart cities and sustainable cities. Then, when the transfer of IKN in 2024 is held, local wisdom must be stimulated so as not to trigger conflicts of interest and political passions that can interfere with the productivity of IKN development. In the future, development participation will consistently encourage the public through the critical thoughts of netizens in monitoring the development and dynamics of IKN on social media. Finally, the crucial weakness of this article is the model approach and questionnaire data collection techniques which are still limited. To look at the direction of future research, the link between participation in the IKN development plan also invites stakeholders from the government side.

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