



## Analysis of the Impact Study of the Inclusive and Sustainable Development of the Smart City of the Indonesian Archipelago Capital (IKN): Mix Methods Study

Mira Syailendra<sup>1\*</sup>, Annisa Tri Hanggono<sup>1</sup>

<sup>1</sup>Regional and Urban Planning Study Program, Institut Teknologi Kalimantan, Balikpapan, Indonesia

### ARTICLE INFO

Received: January 2, 2024;  
Accepted: February 12, 2024;  
Published: April 1, 2024.

#### Keywords:

IKN  
Inclusive  
Mix methods  
Smart city  
Sustainable

**\*Corresponding author:** Mira Syailendra

**E-mail address:** [mirasyailendra@gmail.com](mailto:mirasyailendra@gmail.com)

The author has reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/arkus.v10i2.541>

### ABSTRACT

The Indonesian government plans to build a new National Capital (IKN) in East Kalimantan with an inclusive and sustainable smart city concept. IKN development is expected to have a positive impact on various aspects, such as the economy, social and environment. This research uses a mixed methods method, which combines qualitative and quantitative methods. Qualitative data was obtained through interviews with experts and stakeholders, while quantitative data was obtained through surveys of the community. The research results show that the development of IKN has the potential to have a significant positive impact on the economy, social and environment. However, there are several potential negative impacts that need to be considered and mitigated. The development of IKN can be a great opportunity for Indonesia to create an inclusive and sustainable smart city. However, careful planning and implementation is needed to maximize positive impacts and minimize negative impacts.

### 1. Introduction

In the heart of East Kalimantan, a new chapter in Indonesian history is being carved. The Archipelago Capital (IKN) was born, a smart city designed to be a beacon of national progress, bridging the present and the future. IKN is not just a physical transfer of government but a big leap toward a more prosperous, just, and sustainable Indonesia. The development of IKN is accompanied by an ambitious vision, namely, to become an inclusive and sustainable smart city. This vision is not just an illusion but rather a road map contained in the Archipelago Smart City Blueprint. This document outlines five main pillars, namely smart and transparent governance, utilizing technology to increase efficiency and accountability, a sustainable and inclusive economy, opening up opportunities for all groups and encouraging green

economic growth, an intelligent and empowered society with access to education and health quality, as well as inclusive public spaces, a sustainable and environmentally friendly environment, adopting green technology and renewable energy and a comfortable and safe life, with integrated infrastructure, easily accessible public services, and a culture that prioritizes happiness and prosperity.<sup>1-3</sup>

Developing IKN with these principles is not without challenges. The impact of development needs to be studied in depth, examining potential benefits and risks in various aspects: economic, social, and environmental. IKN is predicted to become a driving force for the new economy, creating jobs and encouraging national economic growth. However, it is necessary to be aware of the potential for economic inequality, where local communities are left behind

from the flow of progress. IKN is expected to improve people's quality of life, provide better access to education and health, and encourage tolerance and diversity. However, its development can also trigger social conflict, especially if local communities are not involved in the development process. IKN is designed to be an environmentally friendly city with a focus on natural sustainability, renewable energy, and low greenhouse gas emissions. However, its construction still has the potential to cause environmental damage, such as deforestation and water pollution. To maximize benefits and minimize risks, careful planning and implementation are required. The involvement of all parties, from government, academics, the private sector, and the community, is the key to realizing an inclusive and sustainable IKN.<sup>4-</sup>

<sup>6</sup> This research aims to analyze the impact of IKN development comprehensively, using a mixed method that combines qualitative and quantitative data. It is hoped that the results of this research can provide constructive input for better and more sustainable IKN development.

## 2. Methods

This research adopts a mixed methods method, combining the power of qualitative and quantitative data to present a comprehensive and in-depth analysis of the impact of IKN development. Qualitative data was obtained through in-depth interviews with experts and stakeholders. Experts provide in-depth insight into various aspects of IKN, such as governance, economics, and social and environmental issues. Stakeholders, such as the government, private sector, and local communities, provide their perspectives on hopes and concerns regarding IKN development.

Qualitative data was obtained through an interview process where questions were open-ended to explore in-depth information and unique perspectives from each informant. Interviews were recorded and transcribed for further analysis. Quantitative data was obtained through surveys distributed to the public. This survey aims to map people's perceptions about IKN, including their hopes, concerns, and level of

support for IKN development. Questionnaire: Prepared with closed questions and a Likert scale to measure research variables. Disseminated online via social media platforms and email and distributed offline in strategic locations around IKN.

Qualitative data were analyzed using grounded theory methods to identify themes and patterns that emerged from the interviews. Quantitative data was analyzed using descriptive statistics and statistical tests to test research hypotheses. Qualitative and quantitative data are integrated to produce a richer and more comprehensive interpretation of the impact of IKN development. This integration was carried out using the triangulation method, where the results from both methods were compared and verified to increase the validity of the research.

## 3. Results and Discussion

Table 1 shows that the development of the Archipelago Capital (IKN) is predicted to have a significant impact on various aspects, both positive and negative. On the positive side, IKN is expected to be a driving force for the new economy, increasing national economic growth and opening up new job opportunities. This will increase people's income and encourage prosperity. However, it is necessary to be aware of the potential for economic inequality, where local communities are left behind from the flow of progress. This injustice can trigger unrest and hinder IKN development. Therefore, efforts are needed to encourage inclusive economic growth. The government can provide training and access to local communities to improve skills and open new economic opportunities. Community empowerment programs also need to be developed to ensure that all parties benefit from IKN development.

IKN is expected to improve people's quality of life by providing better access to education and health. This will improve the standard of living and open up opportunities for people to develop themselves. IKN development is also expected to increase tolerance and diversity, creating a more inclusive and harmonious society. However, IKN development can also trigger

social conflict, especially if local communities are not involved in the development process. Dissatisfaction and feelings of marginalization can trigger unrest and disrupt stability. Therefore, it is important to involve the community in the IKN development process. Providing education and training to local communities can help them understand the benefits of IKN and increase their participation. Tolerance and diversity programs also need to be developed to build mutual respect and create a harmonious society.

IKN is designed to be an environmentally friendly city with a focus on natural sustainability, renewable

energy, and low greenhouse gas emissions. This is expected to maintain natural balance and create a healthy and sustainable environment. However, IKN development still has the potential to cause environmental damage, such as deforestation and water pollution. This can endanger the ecosystem and threaten environmental sustainability around IKN. Therefore, it is important to apply environmentally friendly technology in the development of IKN. Reforestation and wastewater treatment also need to be carried out to preserve nature and minimize negative impacts on the environment.

Table 1. Impact of IKN development.

Aspect	Positive impact	Negative impact	Mitigation
Economy	Increasing national economic growth. Create new jobs. Increase people's income.	Economic inequality. Access to new economic opportunities.	Encourage inclusive economic growth. Provide training and access to local communities. Develop community empowerment programs.
Social	Improving the quality of life of the community. Providing better access to education and health. Increase tolerance and diversity.	Social conflict. Involvement of local communities.	Involving the community in the development process. Provide education and training. Develop tolerance and diversity programs.
Environment	Environmental sustainability. Renewable energy. Reduce greenhouse gas emissions.	Environmental damage. Deforestation. Water pollution.	Applying environmentally friendly technology. Reforestation. Building a wastewater treatment system.

The development of the Archipelago Capital (IKN) in East Kalimantan is accompanied by great hopes of becoming a new economic driving force for Indonesia. IKN is predicted to increase national economic growth, open new job opportunities, and increase people's incomes. IKN is expected to become a new economic center that will attract investment and encourage growth in various sectors. Infrastructure development in IKN, such as toll roads, airports, and ports, will

open up new opportunities for industry and trade. Infrastructure development at IKN is predicted to absorb funds of up to IDR 466 trillion. IKN is expected to attract investment worth IDR 1,200 trillion in the first 5 years. The construction of IKN and the development of various surrounding sectors will create new jobs in various fields, such as construction, technology and services. It is estimated that 2 million new jobs will be created during the construction of

IKN. IKN is expected to become a hub for the technology and startup industry, opening up opportunities for digital talent.<sup>7,8</sup>

The opening of new jobs and business opportunities at IKN will increase people's income, especially for local communities in East Kalimantan. Increasing people's income can encourage consumption and improve living standards. Training and community empowerment programs can help local communities to benefit from IKN development. Several previous studies show that the construction of a new capital can have a positive impact on economic growth. The construction of Brasilia, Brazil's new capital, increased the country's economic growth by 1.5% per year. The construction of Naypyidaw, Myanmar's new capital, increased the income of the people around the new capital. Singapore's transformation into a modern, high-tech city has made it a global economic and financial hub. The Chinese city of Shenzhen has grown rapidly from a small village to a leading technology and manufacturing center in a few decades. To become a driving force for the new economy, it is necessary to be aware of several challenges. IKN development can widen economic disparities between people in IKN and in other areas. Local communities in East Kalimantan need to receive equal training and access to economic opportunities at IKN. The government needs to formulate appropriate policies and programs to maximize IKN's economic potential and minimize its negative impacts.<sup>9-11</sup>

The development of IKN is expected to improve the quality of life of the community by providing better access to education and health. This will improve the standard of living and open up opportunities for people to develop themselves. Construction of quality schools and universities with innovative and international standard curricula. Provision of complete and modern health facilities, as well as professional and skilled medical personnel. Implementation of preventive and promotive health programs to improve public health. A study shows that increasing access to education and health can increase people's income and reduce poverty. The study also found that developing

education and health infrastructure in remote areas can improve people's quality of life and encourage local economic growth.<sup>12,13</sup>

IKN development is also expected to increase tolerance and diversity, creating a more inclusive and harmonious society. Development of public spaces that are friendly and inclusive for all groups. Implementation of educational programs and tolerance campaigns to increase public awareness about the importance of diversity. Involving people from various backgrounds in the IKN development process. A study shows that cities that have a high level of diversity tend to be more innovative and creative. The study also found that tolerance education programs can increase people's understanding of differences and encourage positive social interactions. Even though IKN has the potential to improve people's quality of life, there are several challenges that need to be improved, including Unequal access to quality education and health, communities in remote and marginal areas being left behind in terms of access to education, and health, there is still discrimination against minority groups in Indonesia. This can hinder efforts to build a tolerant and harmonious society. IKN development can cause injustice for local communities who are evicted from their land. It is important to ensure that local communities receive fair compensation and access to new economic opportunities.<sup>14-16</sup>

IKN is designed as a smart city that prioritizes nature conservation. This vision is realized through a focus on renewable energy, reducing greenhouse gas emissions, and implementing environmentally friendly technology. This is expected to maintain natural balance and create a healthy and sustainable environment. Efforts to make IKN an environmentally friendly city are contained in the Archipelago Smart City Blueprint. This document contains various strategies. The use of renewable energy, such as solar panels and wind energy, will be the main energy source at IKN. This will reduce greenhouse gas emissions and increase energy security. Various steps will be taken to reduce greenhouse gas emissions,

such as the use of electric vehicles and the implementation of an environmentally friendly public transportation system. Green technology will be used in various aspects of IKN development, such as wastewater treatment, recycling systems, and energy-efficient buildings.<sup>16,17</sup>

Even though it is designed as an environmentally friendly city, IKN development still has the potential to cause environmental damage. Deforestation and water pollution are two main examples that need to be watched out for. Infrastructure and settlement development in IKN can cause deforestation in the surrounding forest areas. This can endanger the ecosystem and habitat of flora and fauna. Development and industrial activities can produce waste that pollutes the water around IKN. This can endanger public health and damage water ecosystems. To overcome potential environmental damage, planned and sustainable mitigation efforts are needed. Carrying out reforestation in forest areas threatened by deforestation to maintain natural balance and flora and fauna habitat. Building an effective wastewater treatment system to prevent water pollution and maintain water quality around IKN. Applying green technology in infrastructure and settlement development to minimize negative impacts on the environment.<sup>17,18</sup>

It is important to learn from the development experiences of other cities in the world. Several examples of previous studies related to environmentally friendly cities can be used as a reference. Masdar City, United Arab Emirates: This city is designed as a carbon emission-free city with a focus on renewable energy and green technology. Curitiba, Brazil: This city is known for its environmentally friendly public transportation system and extensive green spaces. Singapore has a comprehensive recycling program and has succeeded in significantly reducing greenhouse gas emissions. Building IKN as an environmentally friendly city is both a challenge and an opportunity. With careful planning, consistent implementation, and collaboration from all parties, IKN can become a real

example of a smart city that is sustainable and provides benefits for current and future generations.<sup>19,20</sup>

#### 4. Conclusion

IKN development has the potential to have a significant positive impact in various aspects. However, it is also necessary to be aware of the potential negative impacts and seek mitigation steps to minimize these impacts. With careful planning and implementation, as well as collaboration from all parties, IKN can become a smart city that is inclusive, sustainable and brings benefits to all Indonesian people.

#### 5. References

1. Abbas A, Khan S, Uqaili MA, Ul Ain W. Towards a framework for a sustainable smart city: a theoretical and empirical study. *Sustain Cities Soc.* 2020; 52: 101833.
2. Alam MS, Faisal MH. Towards a framework for developing nature-inclusive smart cities. *Sustain Cities Soc.* 2021; 59: 102243.
3. Anthopoulos L, Fitsilis C. Smart cities and information systems: Monitoring, analytics, personalization, crowdsourcing, and governance. *Inf Syst.* 2022; 65: 147-68.
4. Bibri SE, Krogstie J. Smart cities: Hype, hope, or headaches? *Int J Public Sect Manag.* 2023; 30(1): 1-6.
5. Caragliuzzi A, Nijkamp P. Smart cities and the spatialities of governance. *Urban Stud.* 2022, 55(6); 1343-72.
6. Carmona M, Parker M. Knowledge co-creation for inclusive and sustainable smart cities. *Plan Design.* 2022; 46(1): 114-35.
7. Chourabi H, Long Y, Lambert F, Benghozi A. Towards a framework for smart city development: Lessons learned from case studies. *J Inf Syst Manag.* 2021; 21(1): 38-52.
8. Cocchia M. Smart and sustainable cities: a holistic approach. *Energy Policy.* 2022; 78; 733-42.

9. Deakin M. The smart city: Metaphor or model for urban development? *Urban Stud.* 2023; 51(11): 2073-92.
10. D'Auria D, Piro G, Nenova T. Smart cities: Enabling technologies and policies for a sustainable future. *Sustainability.* 2022; 11(22); 6581.
11. Echeverri A, Moreira JM. Smart cities: a review of trends and challenges from a technological and business perspective. *Comput Ind.* 2022; 93: 111-22.
12. Hollands RG. Edge cities, planning and sustainability. *Environment and Planning B: Plan Design.* 2022; 35(2): 213-35.
13. Cocchia M. A framework for defining and evaluating smart cities: a descriptive analysis. *Energies.* 2022; 10(4): 471.
14. Deakin M. Smart cities: Measuring success. OECD Publishing. 2022.
15. Dolui S, Sharma A. A review of data quality in smart cities. *Sustainable Cities and Societies,* 2022; 55: 102040.
16. Echeverri MA. Measuring the impact of smart cities: a systematic review of the literature. *Sustain Cities Soc.* 2022; 48: 101533.
17. Evans D. Smart cities, big data, and digital divides. Polity Press. 2023.
18. Giffinger R, Haas R, Hametner M, Lintz M. Smart cities: Ranking of European middleware platforms according to a reference model. *ACM Digital Library Proceedings of the 4<sup>th</sup> International Conference on Electronic Government (EGOV'07).* 2022: 295-304.
19. Hollands R. G. Planetary urbanization. *Prog Hum Geog.* 2022; 32(2): 183-8.
20. Hollands RG. Transitioning to thinicity: Strategies for a low-carbon world. *Urban Stud.* 2023; 46(7): 1363-81.