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Urban Dynamics in Semarang City: A Study of Livable Cities

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ABSTRACT

This study explores sanitation issues in urban Semarang in the context of achieving a Livable City, particularly concerning sanitation waste directly discharged into drains and rivers. This research piloted the Livable City Framework (LCF) as a rapid assessment methodology for city suitability. The research aims to identify livable areas that are performing well, which will be developed into sanitation investments, especially in neighborhoods traversed by the SPALD-T route. A mixed-method research approach was employed, utilizing two main instruments: web surveys and in-depth interviews. Research findings indicate strong social capital in Semarang, yet the ability to influence decisions remains low, indicating the need for increased education and community empowerment. Physical capital scores vary, with investments in public spaces needing attention to distribute development benefits evenly. Human and natural capital show potential for improvement, while some neighborhoods such as Kudu, Kalibanteng Kidul, and Kalipancur receive low scores and require further analysis and community engagement. This research provides a deep understanding of the complexity of urban development processes and emphasizes the need for cross-sector collaboration to achieve a Livable City.

Keywords: Urban Sanitation, Livable City, Sanitation Investment, Cross-Sectoral Collaboration.

ABSTRAK

Penelitian ini mengeksplorasi permasalahan sanitasi di perkotaan Semarang dalam konteks mencapai Kota Layak Huni, terutama terkait dengan limbah sanitasi yang dibuang langsung ke aliran selokan dan sungai. Penelitian ini menguji coba Kerangka Kota Layak Huni sebagai metodologi penilaian cepat terhadap kelayakan kota. Tujuan penelitian meliputi identifikasi bidang layak huni yang berjalan baik yang akan dikembangkan menjadi investasi sanitasi terutama di kelurahan yang dilalui jalur SPALD-T. Metodologi penelitian campuran digunakan, dengan dua instrumen utama: survei web dan wawancara mendalam. Temuan penelitian menunjukkan modal sosial yang kuat di Kota Semarang, namun kemampuan untuk memengaruhi keputusan masih rendah, menunjukkan perlunya peningkatan edukasi dan pemberdayaan masyarakat. Skor modal fisik bervariasi, dengan investasi di ruang publik perlu diperhatikan untuk meratakan manfaat pembangunan. Modal manusia dan alam menunjukkan potensi peningkatan, sementara beberapa kelurahan seperti Kudu, Kalibanteng Kidul, dan Kalipancur memperoleh skor rendah dan memerlukan analisis dan pelibatan masyarakat lebih lanjut. Penelitian ini memberikan pemahaman mendalam tentang kompleksitas proses pembangunan perkotaan dan menekankan perlunya kerjasama lintas sektor dalam mencapai Kota Layak Huni.

***Kata Kunci**: Sanitasi Perkotaan, Kota Layak Huni, Investasi Sanitasi, Kerjasama Lintas Sektor*

1. INTRODUCTION

Urbanization is a global phenomenon that has led to rapid changes in cities, affecting various aspects of urban life, including sanitation. In the context of Semarang, Indonesia, a city experiencing significant urban growth, the assessment of livable cities has become an important undertaking. Liveable cities are characterized by factors such as access to clean water, proper sanitation facilities, sustainable urban infrastructure, and a high quality of life for their residents (Akanmu et al., 2022). However, Semarang, like many other urban areas, faces challenges related to sanitation, waste management, and environmental sustainability (Kwiringira et al., 2014; Pangestuti et al., 2020). This study fills critical gaps in the literature by employing advanced assessment tools, offering a comprehensive and localized analysis, integrating diverse factors of livability, and providing detailed empirical data and actionable recommendations. Its innovative framework and modern methodologies set it apart from previous research and make it a valuable resource for understanding and improving urban livability in Semarang.

An assessment of Semarang as a livable city requires a comprehensive assessment that considers various dimensions, including environmental factors, infrastructure development, public perception, and public health impacts. Previous studies have highlighted the importance of understanding public knowledge and perceptions of environmental sanitation behavior in Semarang (Mustikaningrum & Puji, 2018). In addition, groundwater vulnerability mapping in Semarang provides an overview of environmental challenges that affect the sustainability of the city (Marjuanto et al., 2019). In addition, the availability of urban infrastructure plays an important role in establishing Semarang as a smart city, emphasizing the need for optimal waste management and disaster detection mechanisms (Fajariyah et al., 2018). Initiatives such as urban agriculture have been proposed as a way to promote sustainability and address environmental issues in Semarang (Hasanah et al., 2019).

By examining the linkage between urban feasibility and transportation, insights can be gained on how urban planning and infrastructure development can improve the overall quality of life in Semarang (Akanmu et al., 2022). This study aims to assess the livability in Semarang by examining various factors that contribute to urban sanitation, sustainability, and overall quality of life.

This study uses the Livable City Framework / LCF (Figure 1) which aims to assess areas that are still weak and can be developed by investment from sanitation development in Semarang city. By organizing the various components of a livable city into the relationship of

the whole part across 4 (four) dimensions, namely: built capital, human capital, natural capital, and social capital. Each dimension is further divided into 9 (nine) objectives and 25 (twenty-five) solutions for investment.

Some indicators that are considered important for measuring a livable city include the availability of basic needs, the availability of public facilities and social facilities, the availability of public spaces, security and safety, environmental quality, the support of the economic, social, and cultural functions of the city, and community participation in development.

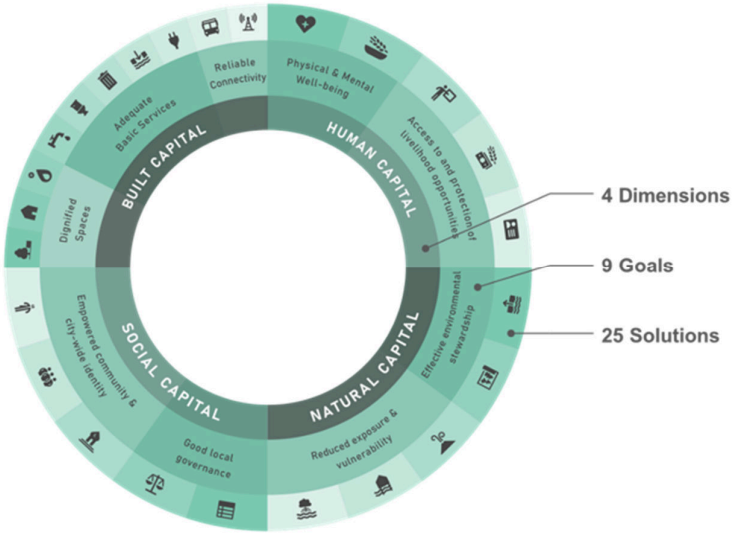

Figure 1. Livable City Framework
Sumber: Asian Development Bank, 2022

The Livable City Indicator is also put forward by the Association of Planning Experts (IAP) in the Most Livable City Index assessment where the indicators include:

a) Availability of basic needs (adequate housing, clean water, electricity grid, sanitation, food adequacy, and others);
b) Availability of public facilities and social facilities (public transportation, parks, health facilities, and others);
c) Availability of public space as a place to interact between communities;
d) Security and safety;
e) Environmental quality;
f) Support of the economic, social and cultural functioning of the city Community participation in development.

Looking at the indicators above, there are indeed some similarities with the concept applied to ADB's Livable City Framework / LCF, in this study related to investment This study will try to assess habitability indicators developed in LCF and provide recommendations from the results of discussions with experts / stakeholders with the FGD / Focus Group Discussion method. By considering the various explanations and backgrounds above, there are research questions from this study, namely: "What are the livable fields in Semarang City that have been running well? What areas do you want to improve?"

A summary of the approach of this study is described in the following table:

Table 1. Research Approach Summary

Purpose	Instrument	Methods	Sampling Framework	Analysis
To identify livable areas in Semarang City that are already running well and that have the potential to be improved	Survey Web-based residents	Quantitative (qualitative variable) with a linear numerical answer format with a scale of 1-5	Proportional Probability Sampling Size (PPS) and multistage clusters	Descriptive Statistics

Source: Author, 2023

By referring to the research approach above, this study aims to obtain a profile of habitability picture based on the Asian Development Bank's livable city framework / LCF as a sanitation investor to be developed in Semarang City.

2. METHODOLOGY

Conducted from January to August 2023, the research team piloted a blended research methodology to study urban habitability with two main instruments: web-based surveys and in-depth interviews through focus group discussions (FGDs). A blend of quantitative and this qualitative is expected to deepen understanding of how complex the process of identifying, prioritizing, and implementing urban development policies, programs, and projects in the city of Semarang is. Quantitative survey data is used to pinpoint specific areas with the lowest satisfaction, while interviews provide context and reasoning behind the data. By integrating quantitative and qualitative data, research becomes richer and the resulting solutions are more targeted, as they are based on a deep understanding of multiple perspectives.

A research approach that brings together qualitative, quantitative, and methodologies is used to test livable city indicators in Semarang City, especially related to urban sanitation. Quantitative methods, such as network infrastructure QoS analysis, provide insight into the

technical aspects of sanitation. Meanwhile, qualitative methods, through research on community perceptions and adaptation strategies, reveal social and behavioral aspects that affect sanitation management. The integration of these two methods provides a holistic understanding of urban sanitation challenges and provides a foundation for more effective policy recommendations. (Rahmatika et al., 2020; Aprillia &; Pigawati, 2018; Utomo, 2023; Wijaya &; Luthfi, 2021; Rini et al., 2019).

A target sample size of 1,067 respondents has been identified, which will provide a statistically significant representation of the population. This sample will help in accurately assessing the current public perception, needs, and concerns, particularly in the areas of public participation, infrastructure, employment, disaster preparedness, and sustainable development.

Table 2. Sample Size Calculation (Semarang City)

City	Population (2020)	Degree of Trust	Margin of Error	Standard Deviation	Sampel Total
	N	**Z = 1.96**	**e**	**0.5**	**N**
Semarang	1,653,524	95%	5%	0.5	385
			4%		601
			3%		1,067

Sumber: Analisis penyusun, 2023

Sampling Framework

a) First: 10 sub-districts selected through randomization method
b) Second: 2 RWs from selected villages, selected through the randomization method.
c) Third: 100 buildings in selected RWs, selected through randomization method
d) Individual: 1 individual per building Conducted by 11 local teams of enumerators
e) The total number of respondents collected was 1.792
f) After the validation process, out of 1.792 respondents, 1.192 respondents were selected which were used for data and analysis.

Study Sample Selection is limited to participants who live within the administrative limits of Semarang City. This research will use a type of probability sample called proportional probability sampling (PPS), using multistage grouping. By considering the strata present in the population, proportionally stratified random sampling is used when the population is inhomogeneous and proportionally stratified (Wardana & Fitrayati, 2022).

This method enables efficient data collection and analysis at different stages or levels, ensuring comprehensive coverage of the target population. In addition, purposeful sampling strategies have been recommended for implementation research, emphasizing the importance of sample selection. This approach ensures that each subgroup in the population is adequately represented in the sample, increasing the generalizability of the findings. The main sample

frame will include each kelurahan weighted by population size. The research team will then randomly select a weighted sample of urban villages to receive the survey. In Semarang City, due to limited data, the secondary sample frame will consist of a random selection of community members (Rukun Warga/RW) weighted based on population size, as proxied by the number of buildings. The tertiary sample frame will then consist of a random selection of buildings within each RW.

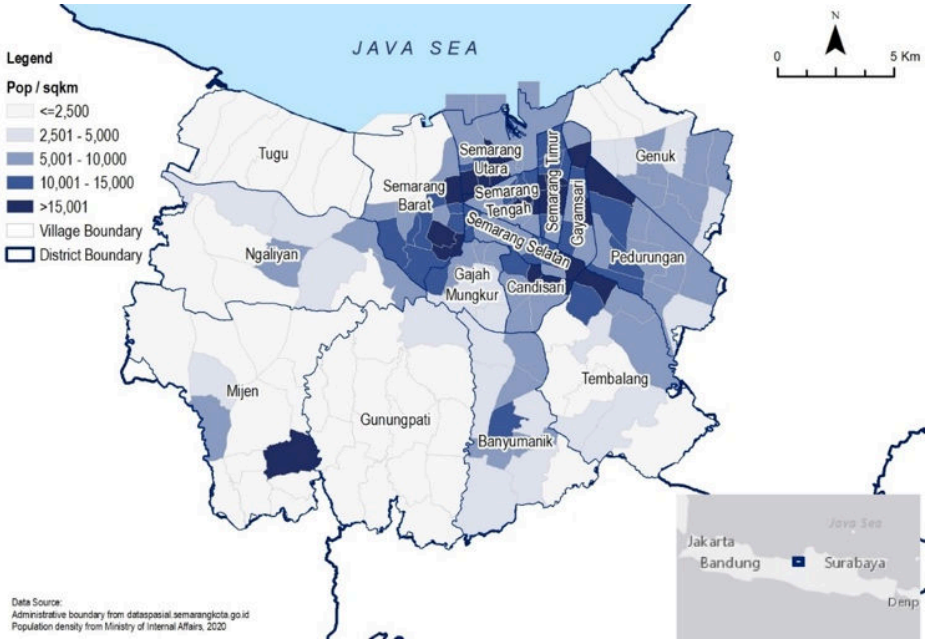

Figure 2. Map of Semarang City Population Density
Source: Author, 2023

3. RESULTS

3.1. Study Results

Research Question: What are the livable fields in Semarang City that have been running well? What areas do you want to improve?. This question was answered with a web-based rapid assessment survey as an instrument of quantitative data collection from citizens within the administrative limits of the city. The survey covered 23 out of 25 habitability indicators because there are no such indicators in Semarang City. To capture data on attitudes towards these indicators, a linear numerical answer format with the following scale is used:

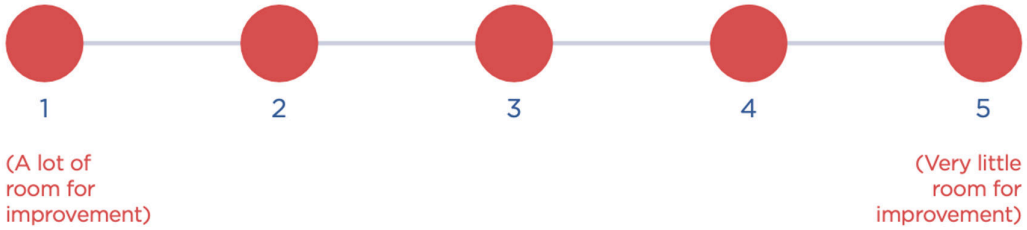

Figure 3. Linear Numeric Answer Format
Source: Author, 2023

The team used probability proportional to sampling size with multistage/stratified sampling clusters. In Semarang City, there were 1,192 answers entered as a data set (N = 1,192). The target sample size was 1,067 responses, and 1,792 total responses were collected. The margin of error is plus or minus 3 percentage points with a 95% confidence level.

a) First sampling frame: 10 randomly selected villages
b) Second sampling frame: 2 randomly selected community units (RWs) per selected kelurahan
c) Third sampling frame: 100 randomly selected buildings per RW selected (Chart 3)
d) Individual sample: 1 randomly selected person per pre-selected building
e) Most respondents were male (51.5%), aged between 35 and 44 years (26.1%) (Figure 4).
f) The highest level of education of the majority of respondents was high school (49.7%), followed by below the high school / equivalent level (29.8%).
g) The most dominant type of work is housewives (26%), followed by workers in the informal sector (22.0%)13.
h) Nearly 20% of respondents are subsidized electricity customers (450 W) or do not have electricity, implying that regional poverty lines may not accurately capture poverty levels. Almost all respondents are of Javanese ethnic background (98%) and most adhere to Islam (90.1%).

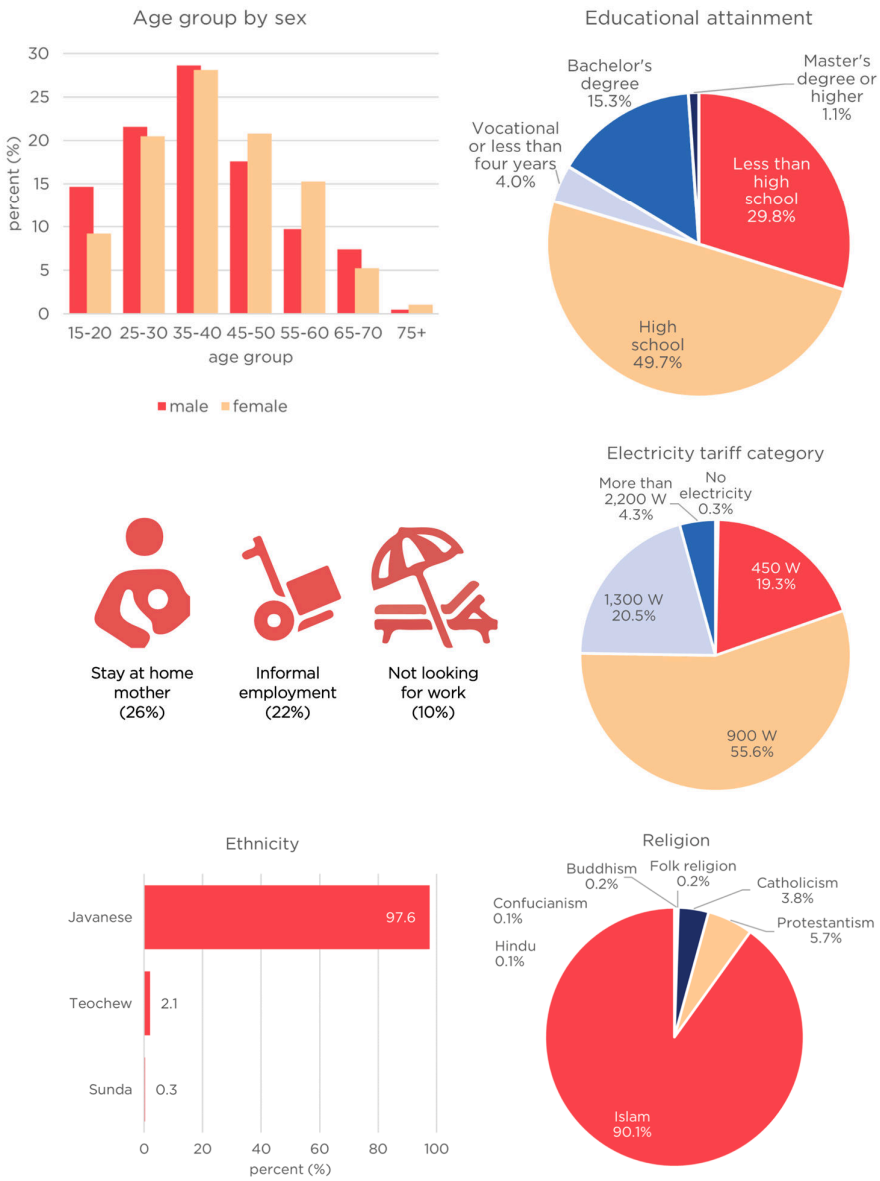

Figure 4. Responden Demographic
Source: Author (Web-Based Survey Assessment), 2023

Of the four aspects of city feasibility, respondents gave the highest rating to the city's Social Capital, with an average value (x) of 3.86 (Figure 5). This aspect includes assessments of security, acceptance, social ties, trust in government, and online public services (Figure 6). Overall, in Social Capital, respondents tended to agree that Gender Inclusion and Minority Groups (s = 0.76) and Strong Shared Identity and Culture (s = 0.61) needed only minor improvements. The second aspect with the highest score is the Physical Capital of the City, with an average score (x) of 3.77. This aspect includes indicators related to basic infrastructure and connectivity (Figure 6). However, the public space that can be utilized obtained the lowest

score (x = 3.19) among the 10 indicators. The average response score was higher than the median response score (3), indicating that most respondents were satisfied with the public space in their neighborhood. The average score (x) given by respondents for Human Capital was 3.56. This aspect involves indicators such as employment, healthcare, education, food security, and social protection (Figure 6). Among these indicators, Entrepreneurship Training and Development scored lowest (x = 3.22). Respondents' perceptions of employment opportunities that are at the middle level can reflect the unemployment rate in the city, which stood at 9.5% compared to the national rate of 4.4% in 2021.

Respondents rated Social Capital the highest, with an average score of 3.86, indicating strong security, acceptance, social ties, trust in government, and online public services. Although Gender Inclusion and Minority Groups, as well as Strong Shared Identity and Culture, received relatively high scores, suggesting minor improvements needed, policy efforts can still focus on enhancing social inclusion and cultural cohesion to sustain these positive perceptions.

Physical Capital received the second-highest score of 3.77, reflecting adequate basic infrastructure and connectivity. However, public space utilization scored the lowest within this category at 3.19, signaling a need for increased investment in public spaces. Enhancing these areas can foster social interaction and community well-being. Thus, local policies should prioritize developing and maintaining accessible and high-quality public spaces to meet residents' needs better.

Human Capital scored an average of 3.56, covering employment, healthcare, education, food security, and social protection. The lowest score in this category was for Entrepreneurship Training and Development at 3.22. The relatively high unemployment rate in Semarang (9.5%) compared to the national average (4.4%) underscores the necessity for more robust job creation initiatives and entrepreneurial support. Policies should focus on providing comprehensive job training programs, supporting local businesses, and developing new economic sectors to reduce unemployment and improve economic stability.

Overall, the study's findings suggest practical policy implications, such as enhancing public spaces, supporting entrepreneurship and employment, strengthening social inclusion, and maintaining high trust in government services. By addressing these areas, the local government can improve the overall livability and sustainability of Semarang, ensuring a higher quality of life for its residents amidst rapid urban growth.

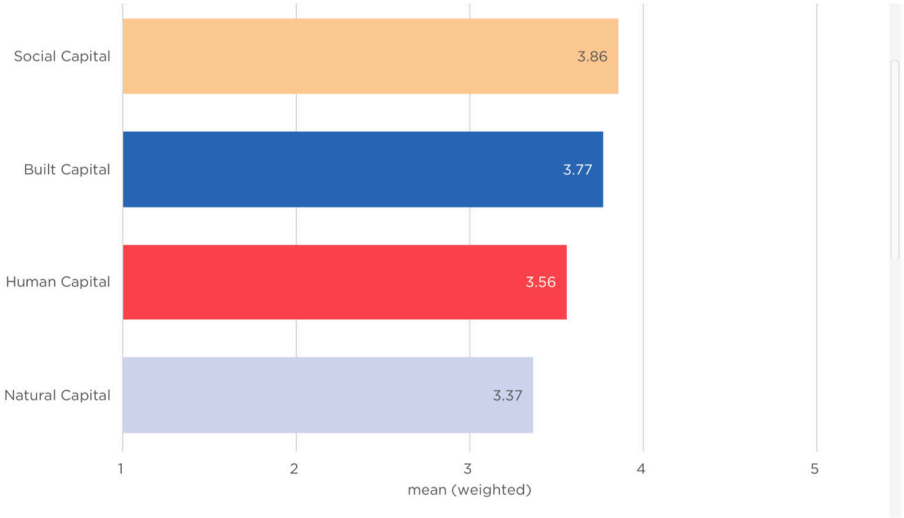

Figure 5. Livability Index Dimension
Source: Author (Web-Based Survey Assessment), 2023

Natural Capital scored lowest of the four dimensions, with an average score (x) of 3.37. This aspect includes indicators related to climate adaptation, disaster risk management, and environmental management (Figure 6). Based on 2021 data, the Semarang City Environmental Quality Index is rated Poor (59.6). Despite this, perceptions of environmental water and air quality were relatively high (x = 3.37). Regarding climate indicators, despite investment in flood adaptation and other resilience initiatives, flood preparedness at the environmental level remains low. Almost half (48.2%) of respondents stated that their neighborhood has no plans for future flooding, while 38.7% do not know whether their neighborhood has such plans or not. With intermediate scores for Disaster Risk Management (DRR) and climate adaptation at the Community Level, these figures show that resilience-related investments have not yet been fully implemented in community action.

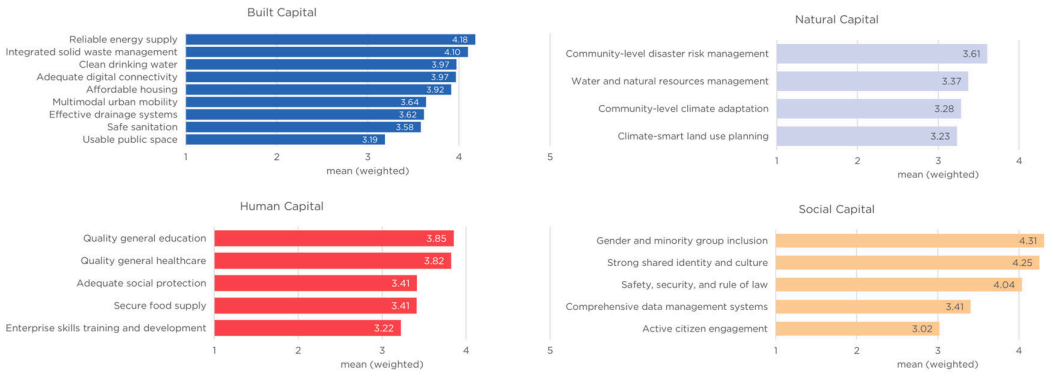

Figure 6. Study of Habitability of Semarang City by Dimension
Source: Author, 2023

3.2. Active Citizen Engagement

Community participation is one of the strategies implemented by Semarang City to achieve equal welfare for all citizens. Research conducted by Sardo et al (2022) discusses the importance of increasing participation in recruitment and evaluation in citizen science, by emphasizing the role of citizens in various stages of research, from formulating problems to evaluating processes.

Falanga (2019) highlights how citizen participation in Lisbon City has become a global reference for urban development initiatives. By involving citizens in policymaking and project implementation, governments and organizations can leverage the collective wisdom and diverse perspectives of communities to address complex challenges and foster sustainable development In 2020, the level of community involvement in urban development projects reached 87.5%.

However, research on community participation in Semarang City shows variations in forms of engagement at each stage of development, which depend on individual abilities and expertise. Although many citizens contribute with manpower, money, and goods, their involvement in decision-making is still limited. In 2021, the Semarang City Government issued Mayor Regulation (Perwali) No. 7/2022 concerning community participation in development.

The results of the initial evaluation showed that active community involvement achieved the lowest score of all indicators in the survey. About 33% of the respondents gave a score of 1 or 2 for their ability to influence decisions in their environment, while 13% gave a score of 1 for the same question. Of the 10 villages surveyed, Kudu, Jabungan, and Gajah Mungkur are the ones that most often get low scores (1 or 2) for active community involvement. A low score indicates that active community involvement requires significant improvement, and certain neighborhoods may feel their influence is very limited.

This data indicates an urgent need to enhance community involvement in decision-making processes in Semarang, particularly in the neighborhoods of Kudu, Jabungan, and Gajah Mungkur. The government needs to implement policies and programs designed to empower residents, increase transparency, and ensure that the community's voices are heard and considered in decision-making. With these measures, it is hoped that community engagement levels will rise, thereby improving the quality of life and the sustainability of development in Semarang.

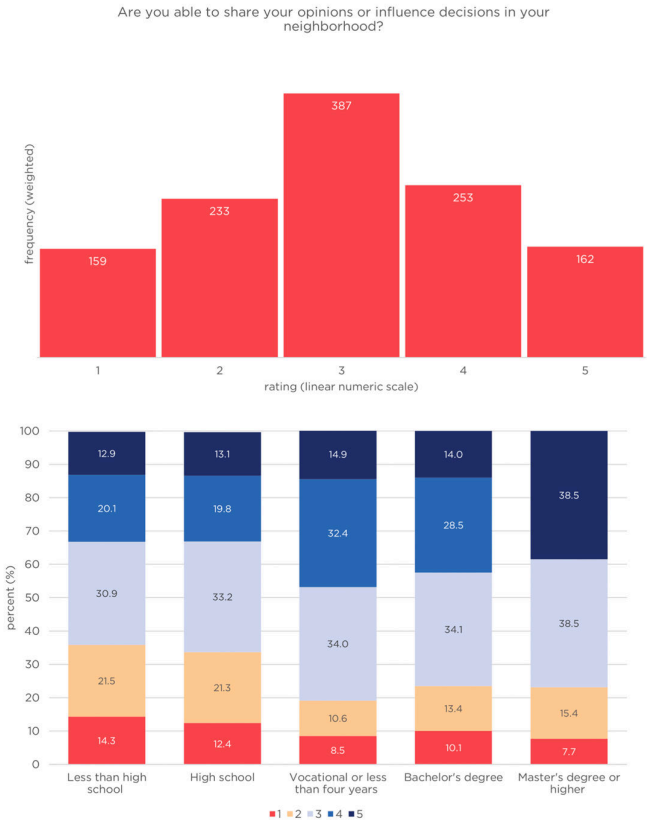

Figure 7. Study Findings from Active Citizen Engagement
Source: Author, 2023

Further analysis of education levels showed that respondents with at least D1/D2/D3 education were 1.7 to 2.5 times more likely to give a high score (4 or 5) regarding their ability to influence decisions compared to respondents with low scores. Conversely, respondents with a high school education level or lower were equally likely to give a high or low score. These preliminary findings indicate a positive correlation between the level of education and community involvement in Semarang City.

3.3.Usable Public Space

In Indonesia, public spaces are usually only considered as green open spaces (RTH) and do not include plazas, roads, and sidewalks. Semarang City has a total of 4,407 ha (11.8%) of RTH, which is far below the national RTH target of 30% of the total area. In 2020, there were 259 parks in Semarang, including active and passive parks managed by the Semarang City Housing and Settlement Office. Semarang City Government identifies RTH as one of the indicators in environmental quality measurement and natural resource management.

Wicaksono et al (2020) argue that the existence of open space is an important factor in the ability of a city to maintain its ecological sustainability. This should be an important note for stakeholders to maintain the sustainability of the people of Semarang city. Nissen (2008) adds that urban transformation and the importance of public space characteristics such as accessibility and usability for all citizens, highlight the positive impact of usable public space on people's well-being and satisfaction. Useful public open space should be able to provide comfort and habitability for residents.

The initial assessment attempted to measure open spaces in Semarang City, both hardened and green open spaces, by asking about frequently visited places to spend time. The survey results showed that Public Space That Can Be Utilized achieved the lowest score of all indicators surveyed (3,19). A quarter of respondents gave a score of only 1 or 2, and 13% gave a score of 1 for this indicator. Of the 10 sub-districts surveyed, three most often received low scores (1 or 2) for Public Space That Can Be Utilized, namely Kalipancur, Kalibanteng Kidul, and Kudu. A low score indicates that Usable Public Space requires significant improvement, and certain villages may have a lack of space to gather.

Cross-analysis of the availability of dense trees found a weak positive correlation (r = 0.19) between ratings on environmental shade trees and public spaces that could be utilized. Spatial analysis using the overlapping method between the location of public space and vegetation cover can explain this relationship more accurately. These preliminary findings support future investment plans to create more gathering spaces for residents, both green and hardened spaces. Where after this research can be developed studies that relate spatial analysis of the location of public spaces with the vegetation cover used.

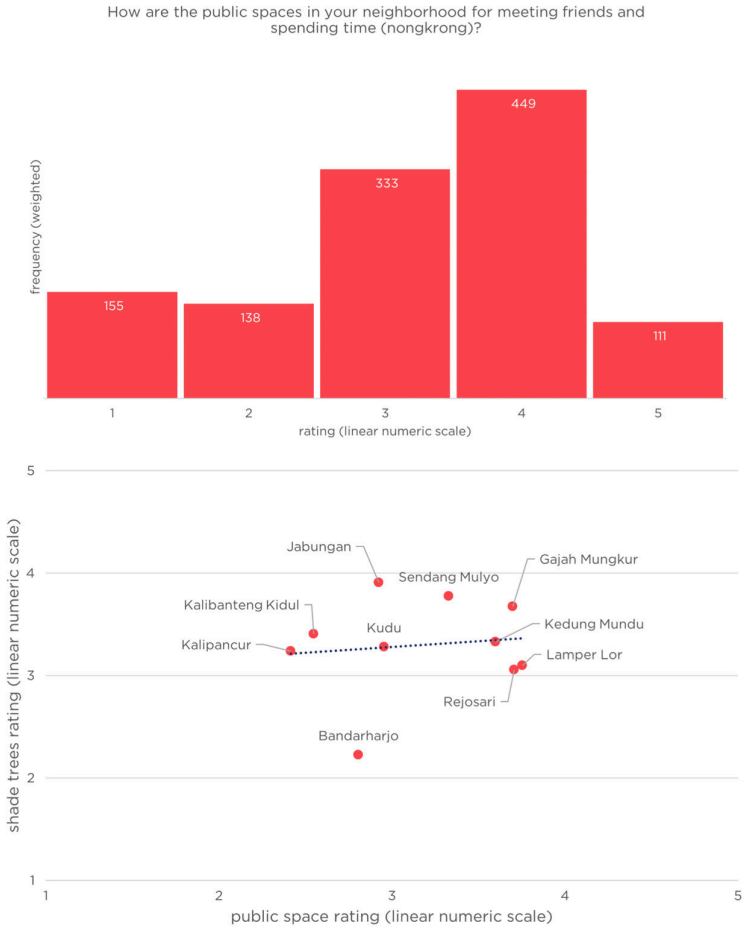

Figure 8. Study Findings from Public Space Utilized
Source: Author, 2023

3.4.Water and Natural Resources Management

Water and Natural Resources Management As a city traversed by estuaries, Semarang has rich biodiversity, especially in its land and waters, such as forests, rivers, beaches, and rice fields. There are 15 estuaries along the coast of Semarang, with the main rivers that empty into the coast divided into three watersheds: Bringin, Garang, and Mundu. Rapid urbanization has put pressure on overexploitation of groundwater, which in turn has led to land subsidence in many parts of the city.

Setiyono et al (2020) stated that inefficient water management has caused threats from natural disasters and climate change, including floods, sea level rise, and coastal erosion. This requires the integration of water and natural resources management using good concepts, such as the IUWRM concept. The IUWRM concept involves a holistic and sustainable approach in managing water resources in urban areas, covering various aspects such as water supply,

demand management, wastewater treatment, and rainwater management Burn et al., (2012) in Budiati (2024).

In this study, The Water and Natural Resources Management (SDA) indicator covers two aspects: water quality (in natural water bodies) and air quality. Although the composite average score (x) for Water Management and Natural Resources was 3.37, the assessment of water quality only achieved a score of 3.11, one of the lowest scores. About 26% of respondents gave a score of only 1 or 2 for the quality of water bodies. A low score indicates that Water and Natural Resources Management requires significant improvement.

Of the 10 villages surveyed, the three villages that most often get low scores (1 or 2) for Water Management and Natural Resources are Kalibanteng Kidul, Kalipancur, and Kudu. These preliminary findings point to the need for future investment to improve water and natural resource management.

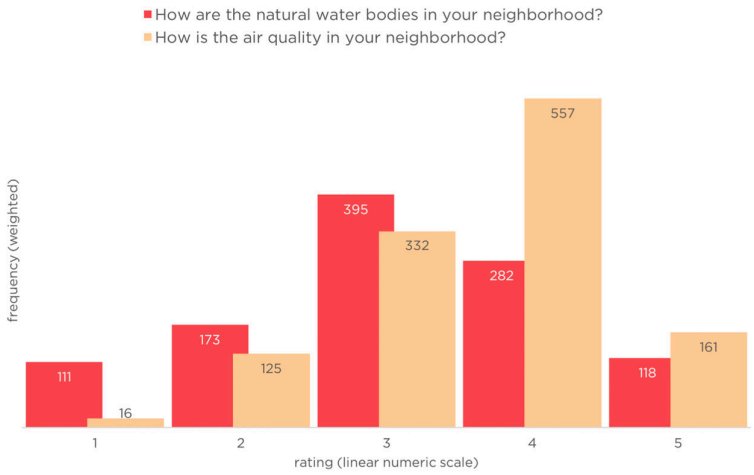

Figure 9. Frequency Histogram for Water and Natural Resources Management
Source: Author , 2023

In conclusion, the data underscores the urgent need for policy interventions to improve water and natural resources management, particularly in areas with consistently low scores. By targeting priority areas, investing in infrastructure and capacity-building initiatives, and adopting an integrated approach to sustainability, policymakers can work towards addressing these challenges and improving overall quality of life for residents.

4. CONCLUSION

Semarang, a coastal city rich in royal cultural heritage and colonial architecture, has become a cornerstone for its economic growth. In the past decade, Semarang's economic growth, reflected in the Gross Regional Domestic Product (GRDP/PDRB), has shown

consistency with an annual growth rate of around 5.5%, while the information and communication industry sector even achieved an average growth of 11%. Located at the junction of 15 river estuaries, the management of Semarang city growth is an opportunity and challenge for the achievement of sustainable development. In addition, Semarang is also known to have strong social capital, which is reflected in the achievement of high scores on several indicators. The high level of acceptance and social cohesion, followed by the level of security and trust in the government, shows great potential in terms of community empowerment. However, despite this, there are still weaknesses in the capacity to influence decisions, indicating the need for greater efforts in increasing public participation and awareness. Varying scores on aspects of physical capital showed differences in infrastructure quality, with waste management and electricity services scoring well, while public spaces for social interaction in residential neighborhoods showed deficiencies. This indicates the need for increased investment in public spaces to ensure equitable welfare for all communities. Meanwhile, analysis of human and natural capital shows potential for improvement. However, there are certain aspects, such as perceptions of employment opportunities and disaster warning systems, that receive low ratings and require special attention in future development plans. From the survey results of 10 villages, some of them, such as Kudu, Kalibanteng Kidul, and Kalipancur, showed unsatisfactory performance on several indicators, including three areas of focus. Therefore, further analysis and active community participation are needed to identify suitable projects and investments to improve conditions in these areas.

To improve public participation, infrastructure quality, and sustainable development in Semarang, a series of concrete actions have been identified for areas with unsatisfactory performance. First, a Public Participation and Awareness Program should be established by creating a "Community Empowerment Initiative." This would include regular town hall meetings, workshops, and information sessions aimed at educating residents on their role in city planning and decision-making processes. Additionally, an online platform for citizen feedback and participation should be developed, allowing residents to submit ideas, vote on projects, and receive updates on ongoing initiatives. This program should be launched within six months, with quarterly reviews and updates to ensure continuous improvement.

Next, investment in Public Spaces and Social Infrastructure is essential. Underserved neighborhoods such as Kudu, Kalibanteng Kidul, and Kalipancur should be prioritized for the development of parks, playgrounds, and community centers. Specific budget allocations for both the development and maintenance of these spaces will enhance social interaction and

community well-being. A pilot project should begin in one neighborhood within the first year, with expansion to other areas over the next three years.

Additionally, efforts should be made to Improve Employment Opportunities and Disaster Preparedness. By partnering with local businesses and educational institutions, job training programs and job fairs can be organized to increase employment opportunities for residents. At the same time, the city's disaster warning systems should be enhanced by installing more alert stations and conducting regular community drills and training sessions on disaster preparedness. The implementation of these training programs and job fairs should occur within the first year, while upgrades to disaster warning systems should be completed within 18 months.

A comprehensive audit is required to Enhance Infrastructure and Utility Services. This audit should focus on identifying critical areas needing improvement, particularly in waste management and electricity services. Targeted infrastructure projects should be launched to address these deficiencies and ensure that all areas of the city have equitable access to high-quality utilities. The audit should be completed within six months, and infrastructure improvements should begin within the first year.

Further, Conducting Analysis and Engaging in Continuous Improvement is critical. A detailed analysis of survey results from neighborhoods like Kudu, Kalibanteng Kidul, and Kalipancur is necessary to pinpoint specific issues and tailor interventions accordingly. Local advisory committees should be established in these neighborhoods to work closely with city planners and developers, ensuring alignment between projects and community needs. The initial analysis should be completed within six months, with ongoing monitoring and adjustments.

Finally, a Long-Term Sustainable Development Plan must be developed. This strategy should integrate environmental, social, and economic goals, incorporating renewable energy sources, green building practices, and sustainable transport options into the city's infrastructure projects. The development and finalization of this plan should occur within 18 months, with phased implementation over the next five years. By focusing on these concrete actions, Semarang City can leverage its strengths, address its weaknesses, and foster a more sustainable and inclusive urban environment.

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