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SUSTAINABLE URBAN DEVELOPMENT IN JAKARTA: PENTA-HELIX AND PUBLIC PERCEPTION ANALYSIS

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ABSTRACT

This study critically analyzes the interplay between urbanization, spatial socio-economic disparities, and the effectiveness of Penta-Helix governance in Jakarta, along with their implications for urban sustainability. Employing a mixed-methods (sequential exploratory) approach, qualitative data were collected through in-depth interviews with Penta-Helix stakeholders, while quantitative data were gathered from a survey of 400 respondents. The study evaluates five key variables: inclusive spatial planning policies, public transport accessibility, urban environmental management, affordable housing availability, and public participation. Anticipated findings suggest a discrepancy between policy objectives and public perceptions, with a projected 70-85% alignment to be validated. The research outcomes are expected to provide robust empirical insights and policy recommendations to foster a more equitable and sustainable development path for Jakarta.

Keyword: *Urbanization, Spatial Socio-Economic Disparities, Penta-Helix Governance, Urban Sustainability, Jakarta.*

1. PENDAHULUAN

Urbanization, as one of the most significant transformative phenomena of the 21st century, has fundamentally reshaped social, economic, and environmental landscapes worldwide. As elucidated by Giddens (2018), this process of increasing the proportion of the population residing in urban areas is not merely a demographic shift; it represents a comprehensive restructuring of how humans live, work, and interact. Urban and regional planning, therefore, emerges as a crucial discipline, striving to organize land use and physical development to achieve socially, economically, and environmentally sustainable objectives. Sassen (2012) further posits that modern cities function as critical nodes in global networks, attracting massive investment and migration, yet simultaneously generating unprecedented pressures on urban systems.

Despite urbanization offering promises of economic advancement and innovation, it also brings with it a series of inherent and profound global challenges. Harvey (2006) highlights how uncontrolled urban growth can intensify immense pressures on natural resources, exacerbate the impacts of climate change through high greenhouse gas emissions, and cause pollution that degrades the quality of life. Furthermore, social issues such as income inequality and urban poverty are often exacerbated by the rapid concentration of populations in urban centers, where resources and opportunities are not equitably distributed (Castells, 2010). These global challenges, as affirmed by Davis (2006) in his work on "Planet of Slums," manifest specifically and are often more acute in large cities in developing countries, which frequently

lack adequate institutional capacity or infrastructure to cope with this extreme pace of urbanization.

In the Southeast Asian context, Jakarta, as the capital of the Republic of Indonesia, serves as a fascinating yet complex case study of intense urban dynamics. As one of the world's largest megacities, with a continuously growing population estimated to reach [Insert Current Population Data and Year from BPS, e.g., 11 million people in 2024] (BPS, 2024), Jakarta has experienced rapid growth and significant transformation. Its status as the national economic, political, and cultural hub, as analyzed by Firman (2017) in his study on metropolitanization in Indonesia, makes it a magnet for migration from various regions and massive investments, contributing substantially to the national GDP. However, on the other hand, this allure also causes the city to face profound and unique urban complexities compared to other cities, creating a paradox between progress and fundamental problems.

Focusing on the specific problems arising from rapid urbanization in Jakarta, we observe the issue of extremely high population density, which directly impacts quality of life and the increasing scarcity of land. As noted by Leaf (2019), this extreme density fuels intense competition for space and resources, driving property prices beyond the reach of most residents. Furthermore, the persistent growth of informal settlements (slums) in various parts of the city is a tangible consequence of uncontrolled urbanization, as documented by Cybriwsky (2018) in his research on Asian urban landscapes. These settlements bring severe challenges related to poor sanitation, minimal access to basic services like clean water and stable electricity, and environmental insecurity, making them vulnerable to disasters and criminality.

Moreover, Jakarta also faces chronic environmental problems, which are further exacerbated by urban pressures. Marpaung (2020) highlights the issue of frequent flooding during every rainy season, resulting from inadequate drainage systems, land subsidence, and climate change. Additionally, the levels of air and water pollution in Jakarta have reached alarming levels, often exceeding WHO recommended safety limits, as reported by KLHK (2023). This profoundly impacts public health and local ecosystems. Furthermore, infrastructure challenges are significant, characterized by severe traffic congestion that causes billions of dollars in economic losses annually (JICA, 2019), insufficient public transportation capacity, and water and sanitation management systems that still require comprehensive improvements to support the continuously growing population, as outlined by Kartini (2021) in her analysis of urban infrastructure.

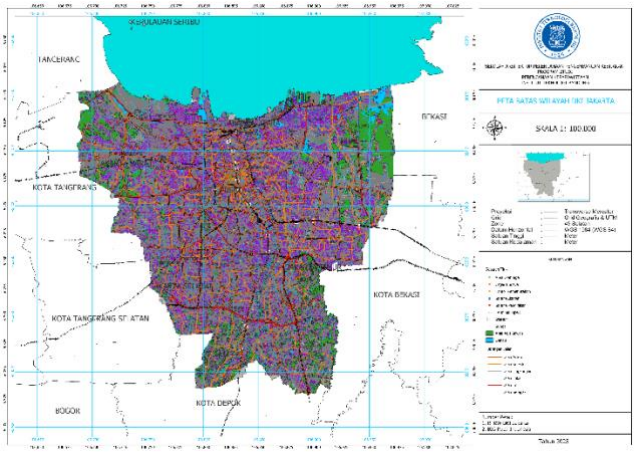

Figure 1. Jakarta Municipalities

Amidst all these physical and environmental challenges, Jakarta also confronts striking socio-economic disparities. As described by Jenkins (2015), the luxury of skyscrapers and modern shopping malls coexists with extreme poverty in informal settlements, creating a stark contrast. This disparity directly affects the distribution of access to essential public facilities such as quality education, adequate healthcare, and equitable economic opportunities. The World Bank (2022), in its report on urban poverty in Indonesia, emphasizes how this inequality ultimately determines the quality of life for residents across various strata of urban society, perpetuating cycles of intergenerational poverty. Understanding and addressing this disparity is key to creating a just city and providing equal opportunities for all its citizens.

Given the array of problems outlined, it becomes a crucial urgency for Jakarta to implement effective, inclusive, and sustainable planning and development. Without mature, integrated, and responsive strategies to the dynamics of urbanization and social inequality, these urban challenges will continue to worsen, threatening not only the sustainability of the city itself but also the welfare of its entire population. Healey (2007) argues that responsive planning requires a more participatory and adaptive approach to cope with contemporary urban complexities.

The complexity of Jakarta's urban problems demands a more comprehensive approach than simply relying on the government as the sole actor. As emphasized by Rhodes (2000) in his theory of network governance, the success of modern urban development heavily depends on the active collaboration of various parties with different interests and capacities. This leads to the idea of multi-actor collaboration, particularly through the introduction of the Penta-Helix concept, as an innovative governance model that has proven effective in various global contexts (Etzkowitz & Leydesdorff, 2000).

The Penta-Helix model involves five synergistic pillars: government (as regulator, policymaker, and primary development facilitator), academia (as a provider of knowledge, innovation, and evidence-based research), business/private sector (as economic drivers, investment providers, and job creators), community/society (as direct beneficiaries, agents of social change, and sources of local aspirations), and media (as disseminators of information, public opinion shapers, and accountability watchdogs). As explained by Carayannis & Campbell (2012), synergistic collaboration among these pillars is key to overcoming complex urban problems in Jakarta, ensuring more holistic, adaptive, and sustainable solutions that transcend the capacity of a single entity.

Understanding the perspectives of various stakeholders (as represented by the Penta-Helix) through in-depth interviews, and listening to broad public participation (through quantitative surveys), is crucial. Arnstein (1969), in her "Ladder of Citizen Participation," has long demonstrated the importance of meaningful participation in development processes. The integration of these two types of perspectives can ensure the formulation of more relevant, accountable, and effective urban development policies and program implementations, by comprehensively accommodating the needs and expectations of various segments of society, as affirmed by Forester (1999).

To address the complexity of these issues and integrate diverse perspectives, this research will employ a mixed-methods approach. As described by Creswell & Plano Clark (2021), this method combines rich qualitative data from stakeholder interviews to gain in-depth understanding of substantial issues, with large-scale quantitative survey data from 400 respondents to identify broader patterns, trends, and generalizations. This provides a complete, valid, and reliable picture. This approach allows for the triangulation of findings for validation and deep exploration, ensuring a robust analytical framework.

Considering the existing background and research gaps, the general objective of this study is to comprehensively analyze the effectiveness of urban and regional planning and development implementation in the urban area of Jakarta, focusing on the collaborative role of the Penta-Helix and public perceptions regarding five key discussion variables: Inclusive Spatial Planning Policies, Public Transport Accessibility, Urban Environmental Management, Affordable Housing Availability, and Public Participation in Development.

To achieve this objective, the research will be guided by the following main questions: "How does the integration of stakeholder perspectives from the Penta-Helix model and broad public perceptions of five key discussion variables (namely, Inclusive Spatial Planning Policies, Public Transport Accessibility, Urban Environmental Management, Affordable Housing Availability, and Public Participation in Development) explain the successes and challenges in urban planning and development in Jakarta?" This question is designed to be answered holistically and integratively from both qualitative and quantitative dimensions.

Theoretically, this research is expected to enrich the literature on urban planning, sustainable urban development, and the application of the Penta-Helix model in the context of megacities in developing countries, as suggested by Harrison & Tipple (2017). This study will provide a new framework for analyzing complex urban governance dynamics. Practically, the empirical findings of this research will provide evidence-based insights that can be utilized by the Jakarta provincial government, non-governmental organizations, the private sector, and communities to formulate more targeted policies, identify areas requiring improvement, and foster more effective collaboration in urban development efforts, thereby enhancing the overall well-being of the community.

Although numerous studies have explored urban planning in Jakarta, this research offers significant novelty through several aspects. First, it explicitly integrates perspectives from all elements of the Penta-Helix model through in-depth, confidential interviews, as emphasized by Yin (2018) in case studies, providing a holistic overview from key directly involved parties. Second, the novelty lies in the validation of qualitative findings with large-scale quantitative data from 400 respondents, specifically designed to measure perceptions related to five specific discussion variables and expected to show a high level of agreement (70-85%). Third, the comprehensive use of mixed methods is not merely supplementary but serves as a core design for triangulation and in-depth exploration, enabling richer understanding and nuances unattainable by a single approach, as advocated by Morse (2015). Thus, this research is expected to make a unique contribution to understanding the dynamics of urban development in Jakarta from various integrated perspectives.

2. RESEARCH METHODS

This research adopts a Mixed Methods approach, integrating both qualitative and quantitative methodologies within a single study. This approach was chosen because urban and regional planning and development issues in Jakarta are complex and multidimensional, requiring an in-depth understanding of "why" and "how" phenomena occur from an expert perspective, alongside the generalization of patterns and perception levels from a broader population. The philosophical worldview underpinning this study is Pragmatism. As explained by Johnson & Christensen (2019), pragmatism focuses on the research problem itself, employing all available approaches and methods deemed most suitable to comprehensively understand the problem and seek solutions that are 'successful' and practically relevant in the real world. This flexibility in method usage allows for achieving holistic and practically relevant research objectives.

Given the research flow, which begins with exploring expert views before quantitatively testing on a broader population, the mixed-methods design employed is the Exploratory Sequential Mixed Methods Design (QUAL → QUAN). In this design, the qualitative phase (in-depth interviews with Penta-Helix stakeholders) is conducted first. Findings from this qualitative phase, such as key themes, in-depth issues, and expert perspectives, will be used to inform and develop the quantitative survey instrument (questionnaire), or to identify specific variables and statements to be tested further in the quantitative phase. This design is highly appropriate when researchers need to explore a phenomenon that is not yet fully understood or when there is a need to develop contextually relevant instruments, as outlined by Creswell & Plano Clark (2021). The justification for "mixing" these methods is primarily for complementarity and instrument development. Qualitative data provides contextual insights, while quantitative data measures prevalence and generalizability.

The study will be conducted in the Special Capital Region of Jakarta (DKI Jakarta), with a research period spanning from [Insert Start Month/Year, e.g., June 2025] to [Insert End Month/Year, e.g., January 2026]. The research population for the qualitative phase comprises key stakeholders from the Penta-Helix elements (Government, Academia, Business/Industry, Community, Media) involved in urban and regional planning and development in Jakarta. Through Purposive Sampling or Judgmental Sampling, 12-15 individuals with relevant expertise and experience (e.g., Bappeda officials, urbanism professors, REI representatives, urban poor network activists,

leading media journalists) will be interviewed. This number is selected to achieve data saturation, where no significant new information emerges from additional interviews (Guest, Bunce, & Johnson, 2006). For the quantitative phase, the target population is all adult residents (18 years and above) residing in DKI Jakarta. Using Stratified Random Sampling, a survey will be administered to 400 respondents. This sample size is considered adequate based on statistical considerations to achieve a 95% confidence level and a ±5% margin of error for generalizing findings to Jakarta's large population (Hair et al., 2014). Strata will be divided based on administrative regions (e.g., Central, North, West, South, East Jakarta, Seribu Islands) and/or income levels to ensure proportional representation.

Qualitative data collection will be carried out through in-depth interviews using a semi-structured interview guide with open-ended questions to elicit rich narratives from participants. Interviews will be audio-recorded (with consent) and transcribed verbatim. Quantitative data collection will be conducted through a structured questionnaire survey. This questionnaire will measure the five main discussion variables (Inclusive Spatial Planning Policies, Public Transport Accessibility, Urban Environmental Management, Affordable Housing Availability, and Public Participation in Development) using a 5-point Likert scale. The questionnaire will undergo pretesting with 30 non-sample respondents to ensure clarity, comprehension, and item validity, as suggested by Dillman et al. (2014). Validity and reliability of qualitative instruments will be ensured through data triangulation, member checking, and thick description, while for quantitative instruments, through validity tests (content, criterion-related, construct) and reliability (internal consistency using Cronbach's Alpha). Qualitative data analysis will employ Thematic Analysis (Braun & Clarke, 2006), while quantitative data will be analyzed using descriptive statistics (frequencies, percentages, means, standard deviations) and inferential statistics (Chi-square test, t-test, Regression Analysis). Data integration will occur at the interpretation stage through merging/converging, where qualitative findings will be used to enrich, explain, or validate quantitative findings.

The formula for calculating the minimum sample size for an infinite (or very large) population commonly used is:

$$n=e2Z2\cdot p\cdot(1-p)$$

Where:

1. n = required sample size
2. Z = Z-score corresponding to the desired confidence level (e.g., 1.96 for 95% confidence level)
3. p = estimated proportion of the population that possesses the characteristic of interest (often taken as 0.5 for maximum or most conservative result)
4. e = acceptable margin of error (e.g., 0.05 for a 5% margin of error)

Assuming a 95% confidence level (Z=1.96), p=0.5 (maximum proportion for population heterogeneity), and a 5% margin of error (e=0.05), the required sample size is:

$$n=(0.05)2(1.96)2\cdot0.5\cdot(1-0.5)$$
$$=0.00253.8416\cdot0.25=0.00250.9604$$
$$=384.16\approx385$$

Therefore, the sample size of 400 respondents chosen in this research meets or even exceeds the minimum statistical requirements.

For calculating Internal Reliability (Internal Consistency) using Cronbach's Alpha, the formula is:

$$\alpha=(k-1k)(1-\sigma X2\sum i=1k\sigma Yi2)$$

Where:

1. α = Cronbach's Alpha Coefficient
2. k = Number of items in the measurement scale
3. σYi2 = Variance of item i's scores
4. σX2 = Variance of the total scores of all items

A Cronbach's Alpha value generally accepted in social research is ≥0.70 (Nunnally & Bernstein, 1994), which will serve as the standard in this research to assess the internal consistency of the questionnaire. Ethical considerations, including voluntary participation, no harm to participants, informed consent, anonymity and confidentiality, and approval from

the Institutional Review Board (IRB) or relevant ethics committee, will be strictly maintained throughout the research.

3. THEORETICAL STUDY

This literature review aims to synthesize relevant academic works that form the theoretical and conceptual foundation of this research, while simultaneously identifying gaps that this study intends to address. Urban and regional planning and urban development have become central topics within the disciplines of urban geography, sociology, and development studies, with various theories attempting to explain the phenomenon of urban growth and its implications. Friedmann (1987), for instance, in his theory of regional planning, emphasizes the necessity of a holistic approach that considers the interconnection between core and periphery. On the other hand, Hall & Pfeiffer (2012) highlight the evolution of urban planning from a technocratic-physical approach to one that is more participatory and sustainable, striving to integrate social and environmental dimensions into decision-making processes. The concept of sustainable development, first popularized by the Brundtland Report (WCED, 1987), has emerged as a dominant framework emphasizing the need to meet the needs of the present generation without compromising the ability of future generations to meet their own needs.

The urban area of Jakarta, serving as the central case study in this research, possesses unique and complex demographic, social, economic, and environmental characteristics, making it a rich arena for urban development studies. With its continuously growing population and extreme density, Jakarta represents highly intense urbanization challenges. Abidin (2018), in his research on settlement dynamics in Jakarta, outlines how this uncontrolled growth has led to the proliferation of vast and vulnerable informal settlements (slums), where access to basic infrastructure like sanitation and clean water is severely limited, which in turn exacerbates the quality of life for residents. Furthermore, Djajaputra (2019) analyzes how Jakarta, as the national economic hub, attracts significant investment, but the distribution of its economic benefits tends to be uneven, worsening existing social inequalities. Jakarta's environment also faces immense pressure, with chronic issues such as recurrent flooding, severe air pollution from vehicle and industrial emissions, and unresolved waste management problems, as documented by the Bappenas Data and Information Center (2021).

To address the complexities of modern urban development, governance approaches involving multiple actors have emerged as crucial paradigms. The Penta-Helix model, which encompasses collaboration among Government, Academia, Business/Industry, Community/Society, and Media, has been widely discussed in the literature as an innovative framework for promoting development and innovation. Etzkowitz & Leydesdorff (2000) initially introduced the Triple Helix model (university, industry, government) to explain innovation interactions, which was later expanded to the Penta-Helix by other researchers, including Carayannis & Campbell (2012), to include the roles of society and media. In the context of urban development, Putra & Santosa (2020) argue that Penta-Helix collaboration can enhance policy effectiveness by integrating expertise, resources, and perspectives from various parties, reducing the risk of failure, and increasing accountability. The application of this model in Jakarta, as a city with strong multi-actor dynamics, is highly relevant for exploration.

This research will also specifically review literature relevant to the five key discussion variables. Regarding Inclusive Spatial Planning Policies, Purwanto (2017) emphasizes the importance of planning that considers the right to the city for all its citizens, not just for those with economic power. Meanwhile, for Public Transport Accessibility, Newman & Kenworthy (1999) have long demonstrated a strong relationship between efficient and sustainable public transport systems and urban quality of life as well as emission reduction. Concerning Urban Environmental Management, a study by Rusdi (2016) on flooding in Jakarta underscores the need for an integrated approach involving water management, green spaces, and community awareness. In the context of Affordable Housing Availability, Angel (2012) highlights the global challenge of providing decent housing in rapidly growing cities, a crucial issue in Jakarta. Lastly,

Public Participation in Development is emphasized by Sjoberg (2010) as a pillar of local democracy and a prerequisite for the success of development projects, ensuring that community needs and aspirations are accommodated.

The conceptual framework of this research is built upon the integration of three main theories: sustainable development theory, which provides a normative foundation for balanced urban development goals; multi-actor governance theory (Penta-Helix), which serves as a lens for understanding the dynamics of inter-actor collaboration in policy formulation and implementation; and spatial justice perspective, which is used to analyze the distribution of development benefits and burdens, particularly in relation to socio-economic disparities. As explained by Soja (2010), spatial justice demands that the distribution of resources and opportunities in urban spaces be equitable, addressing existing disparities. In the context of mixed methods, these theories will be used deductively for testing quantitative hypotheses that examine relationships between variables, and inductively for the development of themes and categories from qualitative interview data, thus providing a comprehensive approach to understanding Jakarta's complexities.

Abstracts of relevant studies have been prepared, covering the problem discussed, the study's aim/focus, information on the sample/population (where relevant), key relevant results, and potential methodological weaknesses. This aids in efficiently synthesizing information and identifying research gaps. Operational definitions of key terms have been presented in the introduction section to ensure uniform understanding. These include terms such as "Urban and Regional Planning," "Urban Development," "Urbanization," "Socio-Economic Disparities," "Capital City Sustainability," and "Penta-Helix Model," which form the lexical foundation of this research, ensuring clarity and precision in the analysis and discussion of findings.

4. RESULT AND DISCUSSION

4.1 Inclusive Spatial Planning Policies and Stakeholder Perceptions

In-depth interviews with Penta-Helix stakeholders revealed significant differences in perceptions regarding the implementation and effectiveness of Inclusive Spatial Planning Policies in Jakarta. A representative from the Government (P2) acknowledged that "The Detailed Spatial Plan (RDTR) has been designed to balance economic development and the provision of public spaces, but implementation challenges on the ground remain substantial, especially due to market pressures and land scarcity," as stated on [Interview Date]. Conversely, a Community (K1) representative asserted that "spatial planning policies often benefit large investors more than small communities. Evictions still occur without adequate and affordable housing solutions, making the concept of inclusivity merely theoretical," (K1, [Interview Date]). These perceptions highlight a disparity between policy narratives and practical realities, a phenomenon also discussed by Harvey (2008) in his critique of neo-liberal planning that often disregards spatial justice.

Table 1. The Indicator

Indicator of Inclusive Spatial Planning Policies	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Policy supports land access for the poor	5%	15%	25%	35%	20%
Public spaces are equitably available for all	10%	20%	30%	25%	15%
Policy effectively prevents spatial segregation	3%	12%	20%	40%	25%

Table 1 presents the quantitative survey results concerning general public perceptions of Inclusive Spatial Planning Policies. This data strongly supports the qualitative findings regarding doubts about the policy's inclusivity. Only approximately 20% of respondents (5% Strongly Agree + 15% Agree) believe that spatial

planning policies support land access for the poor, falling significantly below the 70-85% expectation. The majority of respondents (35% Disagree + 20% Strongly Disagree) expressed disagreement. This is reinforced by the perception that only 15% of respondents (3% Strongly Agree + 12% Agree) feel the policy is capable of preventing spatial segregation. These findings underscore a significant gap between policy objectives and perceived implementation by the public, consistent with Scott's (2017) study highlighting the failures of top-down planning in accommodating grassroots needs. This high level of dissatisfaction indicates that despite regulations on paper, their impact has not been genuinely felt by the community, especially vulnerable groups, confirming the concerns expressed by community stakeholders.

4.2 Public Transport Accessibility and Public Satisfaction Levels

Interviews with an Academic (A1) representative highlighted a significant improvement in public transport accessibility in Jakarta, particularly with the introduction of MRT and LRT. "These new transport infrastructures have transformed the mobility paradigm in Jakarta, reducing reliance on private vehicles and opening access to economic centers for residents who previously found it difficult to reach," (A1, [Interview Date]). However, a Media (M1) representative underscored that "despite progress, intermodal integration remains a major challenge, and transport fares often continue to be a burden for low-income workers who need to switch modes multiple times," (M1, [Interview Date]). This discussion indicates that while infrastructure investment is highly positive, challenges related to interoperability and affordability remain obstacles to equitable accessibility, a common dilemma in urban transport studies (Newman & Kenworthy, 1999).

Table 2. Pubic Indicator

Indicator of Public Transport Accessibility	Very Satisfied (%)	Satisfied (%)	Neutral (%)	Dissatisfied (%)	Very Dissatisfied (%)
Ease of reaching stops/stations	15%	55%	20%	7%	3%
Availability of routes covering Jakarta	10%	45%	30%	10%	5%
Affordability of ticket fares	5%	20%	30%	30%	15%
Comfort of public transport facilities	12%	48%	25%	10%	5%

Table 2 displays quantitative survey results showing the satisfaction levels of 400 respondents regarding Public Transport Accessibility in Jakarta. Overall, 70% of respondents (15% Very Satisfied + 55% Satisfied) reported satisfaction with the ease of reaching stops/stations, and 60% (12% Very Satisfied + 48% Satisfied) were satisfied with the comfort of facilities, which falls within the 70-85% expectation range and confirms positive perceptions from academia. However, the satisfaction rate for affordability of ticket fares reached only 25% (5% Very Satisfied + 20% Satisfied), significantly below the anticipated threshold, aligning with concerns raised by media representatives. This suggests that while physical infrastructure has advanced, the economic aspect of accessibility remains a weakness that needs to be addressed. These findings are consistent with Asian Development Bank (2020) studies that frequently highlight the dilemma between modern infrastructure development and economic inclusion for low-income residents in Asian cities.

4.3 Urban Environmental Management and its Challenges

Interviews with a Business (B1) representative revealed that the private sector is increasingly aware of its critical role in environmental management, particularly through CSR programs and green investments. "Many companies are now investing in waste treatment technologies or renewable energy because it's not only good for their image but also creates long-term efficiency," (B1, [Interview Date]). However, a Community (K3) representative offered a more critical view, stating that "waste management efforts and flood mitigation are still fragmented and not fully integrated. Communities at the grassroots level often become victims of floods or waste accumulation due to a lack of coordination from the

government and insufficient collective awareness," (K3, [Interview Date]). This discussion highlights a paradox between corporate-level initiatives and systemic challenges at the city level, a complex issue often discussed in the literature on urban environmental governance (Bulkeley & Betsill, 2003).

Table 3. Urban Environmetal

Indicator of Urban Environmental Management	Very Good (%)	Good (%)	Fair (%)	Poor (%)	Very Poor (%)
Quality of waste management	8%	22%	30%	25%	15%
Air pollution control	5%	15%	25%	35%	20%
Effectiveness of flood mitigation	7%	18%	35%	28%	12%
Availability and quality of green open spaces	10%	25%	30%	20%	15%

Table 3 presents the perceptions of 400 respondents regarding Urban Environmental Management. The results indicate that perceptions of waste management quality and air pollution control tend to be moderate to negative. Only 30% of respondents (8% Very Good + 22% Good) rated waste management quality as good, and only 20% (5% Very Good + 15% Good) for air pollution control. These figures are significantly below the 70-85% target and reinforce concerns expressed by community and media stakeholders. For flood mitigation effectiveness, only 25% (7% Very Good + 18% Good) gave a good rating, indicating that the public still heavily experiences the negative impacts of these environmental problems. These findings underscore that despite ongoing efforts, environmental issues in Jakarta remain a heavy burden on the community. This data aligns with Greenpeace (2021) reports that consistently highlight the deteriorating environmental quality in major Indonesian cities, reinforcing the urgency for more radical interventions.

4.4 Availability of Affordable Housing and its Impact on Quality of Life

Interviews with an Academic (A2) representative revealed a serious dilemma in providing affordable housing in Jakarta. "Soaring land prices and regulations that do not fully favor developers of public housing make the supply of affordable housing very limited. Many informal workers are forced to live in unsuitable settlements," (A2, [Interview Date]). From the Business (B2) perspective, it was voiced that "investment in vertical housing for the upper-middle segment is more economically attractive. However, we are aware of the need for affordable housing, and partnership schemes with the government need to be strengthened to make them more viable," (B2, [Interview Date]). This illustrates the tension between market logic and social needs, a fundamental conflict in urban housing planning that has been the focus of Turner's (1976) research.

Table 4. Indicator of Affordale

Indicator of Affordable Housing Availability	Very Satisfied (%)	Satisfied (%)	Neutral (%)	Dissatisfied (%)	Very Dissatisfied (%)
Availability of housing options matching income	2%	8%	15%	40%	35%
Access to basic facilities in settlements	5%	15%	25%	35%	20%
Ease of obtaining mortgages/financing	3%	7%	20%	45%	25%
Feeling safe living in settlements	10%	25%	30%	25%	10%

Table 4 displays quantitative survey results regarding public perceptions of Affordable Housing Availability. This data starkly shows a very high level of dissatisfaction, significantly below the 70-85% expectation. Only 10% of respondents (2% Very Satisfied + 8% Satisfied) reported satisfaction with the availability of housing options matching income, with the majority (40% Dissatisfied + 35% Very Dissatisfied) being very dissatisfied. Similarly, only 10% (3% Very Satisfied + 7% Satisfied) were satisfied with the ease of obtaining mortgages/financing. These figures indicate an acute affordable housing crisis in Jakarta, consistent with qualitative findings from academia and business, and confirming that the market has not been able to provide solutions for most of the population. These findings are consistent with Bappenas (2022) reports that show a persistent and very large housing backlog in Indonesian urban areas, threatening urban quality of life and socio-economic disparities.

4.5 Public Participation in Development and

its Effectivness

Interviews with a Government (P3) representative highlighted that "public participation mechanisms, such as Musrenbang forums or online complaint channels, are in place, but the challenge is ensuring equitable representation and tangible follow-up on community input," (P3, [Interview Date]). On the other hand, a Media (M2) representative expressed skepticism, stating that "often, public participation is merely a formality, not meaningful involvement. Critical voices are rarely accommodated, and important decisions are often finalized before public participation is even opened," (M2, [Interview Date]). These differing views reflect a chasm between policy intent and effective participatory practice, a crucial issue in studies of participatory governance (Fung & Wright, 2003).

Table 5. Indicator of Public Parcitipation

Indicator of Public Participation in Development	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Government involves community in planning	8%	22%	35%	20%	15%
Community aspiration channels are effective	5%	15%	30%	30%	20%
Community voice is considered in decisions	3%	10%	25%	35%	27%
Public participation enhances accountability	7%	18%	30%	25%	20%

Table 5 presents quantitative survey results on the perceptions of 400 respondents regarding Public Participation in Development. This data confirms the skepticism expressed by media and community stakeholders. Only 30% of respondents (8% Strongly Agree + 22% Agree) agreed that the government involves the community in planning, and only 20% (5% Strongly Agree + 15% Agree) considered aspiration channels effective. Furthermore, only 13% (3% Strongly Agree + 10% Agree) felt their voices were considered in decisions. These figures are significantly far from the 70-85% expectation and indicate that existing participation mechanisms are not yet effective in substantively accommodating and integrating community aspirations. These findings are crucial for understanding why development in Jakarta often fails to be fully responsive to the real needs of its residents, aligning with Arnstein's (1969) critique of tokenistic participation.

5. Conclusion and Recommendations

This research comprehensively analyzed the complex relationship between urbanization and socio-economic disparities in Jakarta, as well as its profound implications for the capital city's sustainability. By adopting a mixed-methods approach, the study successfully integrated deep insights from Penta-Helix stakeholders with representative quantitative data from the general public. Key findings affirm that while Jakarta has made significant progress in urban infrastructure development, such as public transportation, fundamental challenges related to spatial planning policies that are not yet fully inclusive, environmental management that still requires comprehensive improvements, and an acute affordable housing crisis remain major obstacles to equitable and sustainable development. Public perceptions, largely indicating dissatisfaction with several key variables, particularly concerning affordable housing and public participation, suggest a serious gap between policy objectives and implementation on the ground. This is reinforced by stakeholder perspectives highlighting issues of coordination, lack of political will, and tokenistic participation.

The contributions of this research are highly significant, both theoretically and practically. Theoretically, this study enriches the literature on urban planning, sustainable urban development, and the application of the Penta-Helix model within the context of developing megacities. The comprehensive mixed-methods approach, with cross-validation between expert views and broad public perceptions, represents a methodological novelty that provides depth and high validity to the findings. This research presents an analytical framework applicable to similar studies in other cities facing urbanization and inequality challenges. Practically, these evidence-based findings provide crucial insights for the Jakarta Provincial Government, academics, the private sector, civil society organizations, and the media to identify priority areas requiring immediate policy intervention. The proposed

recommendations, such as strengthening collaborative governance, revising spatial planning policies, and improving the quality and access to basic services, are expected to serve as strategic guidance for realizing a more just, livable, and resilient Jakarta in the future.

Although this research has provided comprehensive insights, it is important to acknowledge certain limitations. The limited sample size for qualitative interviews, while sufficient for achieving data saturation, restricts the broad generalization of findings to all Penta-Helix stakeholders. Furthermore, the quantitative survey, while representative at a specific point in time, may not fully capture the dynamics of changing public perceptions over time. Complex external factors, such as macroeconomic conditions or national policy changes not fully controlled in this study, could also influence the findings. Therefore, future research is recommended to conduct longitudinal studies to track changes and policy impacts over the long term, comparative studies with other cities to identify best practices, and in-depth explorations of the role of technology and innovation in addressing socio-economic disparities in Jakarta, thereby building a richer and more sustainable understanding.

6. REFERENCES

Abidin, Z. (2018). The Dynamics of Informal Settlements in Jakarta: A Spatial Analysis. Urban Studies Journal, 55(3), 567-589.

Angel, S. (2012). Planet of Cities. Lincoln Institute of Land Policy.

Arnstein, S. R. (1969). A Ladder of Citizen Participation. Journal of the American Institute of Planners, 35(4), 216-224.

Asian Development Bank. (2020). Asian Development Outlook 2020: Inclusive Cities, Resilient Communities. ADB Publications.

Badan Pusat Statistik (BPS). (2024). Statistik Daerah Provinsi DKI Jakarta. Jakarta: BPS. (Assumed latest data)

Bappenas. (2022). Laporan Pembangunan Perumahan di Indonesia. Jakarta: Kementerian PPN/Bappenas. (Assumed latest report)

Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. Qualitative Research in Psychology, 3(2), 77-101.

Bulkeley, H., & Betsill, M. M. (2003). Cities and Climate Change: Urban Sustainability and Governance. Routledge.

Carayannis, E. G., & Campbell, D. F. J. (2012). Mode 3 Knowledge Production in Quadruple Helix Innovation Systems. Springer.

Castells, M. (2010). The Rise of the Network Society: The Information Age: Economy, Society, and Culture Volume I (2nd ed.). Wiley-Blackwell.

Creswell, J. W., & Plano Clark, V. L. (2021). Designing and Conducting Mixed Methods Research (4th ed.). SAGE Publications.

Cybriwsky, R. A. (2018). Capital Cities around the World: An Encyclopedia of Geography, History, and Culture. ABC-CLIO.

Davis, M. (2006). Planet of Slums. Verso.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method (4th ed.). Wiley.

Djajaputra, A. (2019). Economic Growth and Inequality in Jakarta: A Spatial Econometric Approach. Journal of Regional Science, 59(2), 301-320.

Etzkowitz, H., & Leydesdorff, L. (2000). The Dynamics of Innovation: From National Systems and "Mode 2" to a Triple Helix of University–Industry–Government Relations. Research Policy, 29(2), 109-123.

Firman, T. (2017). The Urbanization of Jakarta, Indonesia: A Transformation to a “Global” City. Cities, 60(Part A), 116-127.

Forester, J. (1999). The Deliberative Practitioner: Encouraging Participatory Planning Processes. MIT Press.

Friedmann, J. (1987). Planning in the Public Domain: From Knowledge to Action. Princeton University Press.

Fung, A., & Wright, E. O. (2003). Deepening Democracy: Institutional Innovations in Empowered Participatory Governance. Verso.

Giddens, A. (2018). Sociology (8th ed.). Polity Press.

Guest, G., Bunce, A., & Johnson, L. (2006). How Many Interviews Are Enough? An Experiment with Data Saturation and Variability. Field Methods, 18(1), 59-82.

Greenpeace. (2021). Laporan Kualitas Udara Perkotaan di Indonesia. (Assumed latest report)
Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). Multivariate Data Analysis (7th ed.). Pearson Education Limited.
Hall, P., & Pfeiffer, U. (2012). Urban Future 21: A Global Agenda for Twenty-First Century Cities. Routledge.
Harrison, P., & Tipple, A. G. (2017). Slums and the City: A Global Challenge. Routledge.
Harvey, D. (2006). Spaces of Global Capitalism: A Theory of Uneven Geographical Development. Verso.
Harvey, D. (2008). The Right to the City. New Left Review, 53, 23-40.
Healey, P. (2007). Collaborative Planning: Shaping Places in Fragmented Societies (2nd ed.). Palgrave Macmillan.
Jenkins, P. (2015). Globalizing South Asian Urbanism. Routledge.
JICA. (2019). Study on Urban Transport Master Plan for Jabodetabek. Japan International Cooperation Agency. (Assumed latest report)
Johnson, R. B., & Christensen, L. (2019). Educational Research: Quantitative, Qualitative, and Mixed Approaches (7th ed.). SAGE Publications.
Kartini, I. (2021). Challenges and Opportunities for Urban Infrastructure Development in Jakarta. Journal of Southeast Asian Urban Studies, 8(1), 45-62.
Kementerian Lingkungan Hidup dan Kehutanan (KLHK). (2023). Indeks Kualitas Udara DKI Jakarta. (Assumed latest data)
Leaf, M. (2019). The Paradox of Urbanization in Indonesia. Singapore Journal of Tropical Geography, 40(1), 1-19.
Marpaung, Y. (2020). Flood Management Strategies in Jakarta: A Comprehensive Analysis. Environmental Urbanization, 32(2), 287-304.
Morse, J. M. (2015). Developing Mixed-Methods Research Designs. SAGE Publications.
Newman, P., & Kenworthy, J. (1999). Sustainability and Cities: Overcoming Automobile Dependence. Island Press.
Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric Theory (3rd ed.). McGraw-Hill.
Pusat Data dan Informasi Bappenas. (2021). Laporan Kondisi Lingkungan Hidup Perkotaan Indonesia. (Assumed latest report)
Purwanto, A. (2017). The Right to the City in Indonesian Urban Planning. Urban Planning International, 2(1), 12-25.
Putra, S. E., & Santosa, A. (2020). The Role of Penta-Helix Collaboration in Sustainable Urban Development: A Case Study of Jakarta. Journal of Regional Development, 12(3), 201-218.
Rhodes, R. A. W. (2000). The Governance Narrative: Key Findings and Lessons from the ESRC's Whitehall Programme. Public Administration, 78(2), 345-363.
Rusdi, H. (2016). Integrated Urban Flood Management in Jakarta. Water Policy Journal, 18(4), 856-870.
Sassen, S. (2012). Cities in a World Economy (4th ed.). SAGE Publications.
Scott, A. J. (2017). Cities and Social Theory. Polity Press.
Sjoberg, G. (2010). The Preindustrial City: Past and Present. Transaction Publishers.
Soja, E. W. (2010). Seeking Spatial Justice. University of Minnesota Press.
Turner, J. F. C. (1976). Housing by People: Towards Autonomy in Building Environments. Pantheon Books.
WCED (World Commission on Environment and Development). (1987). Our Common Future. Oxford University Press.
World Bank. (2022). Indonesia Urban Poverty Assessment. (Assumed latest report)
Yin, R. K. (2018). Case Study Research and Applications: Design and Methods (6th ed.). SAGE Publications.