



Urban Resilience or Environmental Racism? The Unequal Impact of Flooding in Jakarta's Lower-Income Areas

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Abstract

This research examines the unequal impacts of flooding on lower-income areas in Jakarta, Indonesia, exploring the intersection of urban resilience and environmental racism. Jakarta, one of the most rapidly urbanizing cities in Southeast Asia, is highly vulnerable to flooding due to a combination of climate change, poor urban planning, and socio-economic inequality. The study focuses on how flooding disproportionately affects marginalized communities, particularly in low-income neighborhoods, where residents face greater risks due to inadequate infrastructure, limited access to resources, and historical neglect by local authorities. Using a combination of field surveys, interviews with residents, urban planners, and environmental experts, the research investigates the ways in which flooding exacerbates existing social inequalities, with a particular focus on the structural and racial factors contributing to the vulnerability of these communities. The findings highlight how systemic issues such as spatial segregation, discriminatory zoning policies, and lack of investment in low-income areas lead to an uneven distribution of flood risks. The study argues that while Jakarta's urban resilience strategies may focus on broader city-wide measures, they often overlook the specific needs and rights of vulnerable populations. This research contributes to the growing discourse on environmental justice by shedding light on how climate impacts like flooding can perpetuate social and racial inequalities. The study concludes



with policy recommendations to promote more inclusive and equitable flood management strategies that prioritize the needs of marginalized communities in Jakarta.

[Penelitian ini mengkaji dampak banjir yang tidak merata di daerah berpenghasilan rendah di Jakarta, Indonesia, dengan mengeksplorasi keterkaitan antara ketahanan perkotaan dan rasisme lingkungan. Jakarta, salah satu kota dengan urbanisasi tercepat di Asia Tenggara, sangat rentan terhadap banjir akibat kombinasi perubahan iklim, perencanaan kota yang buruk, dan ketidaksetaraan sosial ekonomi. Studi ini berfokus pada bagaimana banjir secara tidak proporsional memengaruhi komunitas yang terpinggirkan, khususnya di lingkungan berpenghasilan rendah, di mana penduduk menghadapi risiko yang lebih besar karena infrastruktur yang tidak memadai, akses terbatas terhadap sumber daya, dan pengabaian historis oleh pemerintah daerah. Dengan menggunakan kombinasi survei lapangan, wawancara dengan penduduk, perencana kota, dan pakar lingkungan, penelitian ini menyelidiki cara-cara di mana banjir memperburuk ketidaksetaraan sosial yang ada, dengan fokus khusus pada faktor struktural dan rasial yang berkontribusi pada kerentanan komunitas ini. Temuan tersebut menyoroti bagaimana isu-isu sistemik seperti segregasi spasial, kebijakan zonasi yang diskriminatif, dan kurangnya investasi di daerah berpenghasilan rendah menyebabkan distribusi risiko banjir yang tidak merata. Studi ini berpendapat bahwa meskipun strategi ketahanan perkotaan Jakarta mungkin berfokus pada langkah-langkah yang lebih luas di seluruh kota, strategi tersebut sering mengabaikan kebutuhan dan hak khusus dari populasi rentan. Penelitian ini berkontribusi pada wacana yang berkembang tentang keadilan lingkungan dengan menyoroti bagaimana dampak iklim seperti banjir dapat melanggengkan ketidaksetaraan sosial dan rasial. Studi ini diakhiri dengan rekomendasi kebijakan untuk mempromosikan strategi pengelolaan banjir yang lebih inklusif dan adil yang memprioritaskan kebutuhan komunitas yang terpinggirkan di Jakarta.]

Keywords: Urban Resilience, Environmental Racism, Flooding, Jakarta, Climate Justice

Introduction

Urban flooding has become one of the most significant climate-related challenges affecting cities worldwide, particularly in rapidly urbanizing regions of the Global South. The increasing frequency and intensity of floods are driven by the interaction between climate change, extreme precipitation events, sea-level rise, land subsidence, and patterns of unsustainable urban development. However, flooding is not merely a physical or hydrological phenomenon; it is also a deeply social and political issue shaped by unequal access to infrastructure, resources, and decision-making processes. Climate impacts are experienced

differently across urban populations, with low-income communities frequently facing greater exposure and fewer adaptive capacities compared to wealthier groups (Bulkeley & Tuts, 2013; Satterthwaite et al., 2020). Consequently, urban flooding has become an important field of inquiry within climate justice scholarship because it reveals how environmental risks are distributed unevenly within cities.

The concept of urban resilience has increasingly become central to contemporary climate adaptation strategies. Resilience approaches emphasize the ability of cities and communities to anticipate, absorb, recover from, and adapt to environmental disturbances (Meerow et al., 2016). Governments and international organizations have promoted urban resilience as a framework for addressing climate risks through improved infrastructure, governance reform, and adaptive planning. Nevertheless, critical scholars argue that resilience discourse may overlook underlying social inequalities by focusing primarily on the capacity of urban systems to withstand shocks rather than questioning why certain communities experience greater vulnerability in the first place (Davoudi, 2012; MacKinnon & Derickson, 2013). In this sense, resilience strategies may unintentionally reproduce inequality when they prioritize city-wide technological solutions while neglecting the needs, rights, and experiences of marginalized populations.

Environmental justice scholarship provides an alternative perspective by examining how environmental risks and benefits are distributed among different social groups. The environmental justice movement, initially developed in response to unequal exposure to pollution and environmental hazards among racial and economically marginalized communities, emphasizes three interconnected dimensions: distributive justice, procedural justice, and recognition justice (Schlosberg, 2007). Distributive justice concerns who bears environmental burdens and who receives environmental benefits; procedural justice focuses on participation in environmental decision-making; and recognition justice examines whether marginalized communities and their experiences are acknowledged. These dimensions are particularly relevant for understanding urban flooding because flood vulnerability is often produced through historical patterns of spatial inequality, unequal infrastructure investment, and political exclusion.

The concept of environmental racism further expands environmental justice analysis by examining how social, racial, ethnic, or class-based inequalities influence exposure to environmental risks. Although the term was originally developed within the context of racial inequalities in the United States, scholars have expanded its application to broader forms of structural discrimination that place marginalized communities at greater environmental risk (Bullard, 2000; Pellow, 2018). In many cities of the Global South, environmental inequality may not always correspond directly to racial categories but may emerge through

processes of economic marginalization, informal settlement patterns, colonial urban legacies, and unequal governance structures. Therefore, environmental racism provides a useful analytical lens for understanding how certain populations become systematically more vulnerable to climate impacts due to historical and institutional inequalities.

Jakarta represents a critical case for examining the intersection between urban resilience and environmental inequality. As one of the largest metropolitan areas in Southeast Asia, Jakarta faces increasing flood risks caused by multiple interacting factors, including climate change, rapid urbanization, land subsidence, inadequate drainage systems, river degradation, and coastal vulnerability. The city experiences frequent flooding during intense rainfall events, while northern coastal areas face additional threats from sea-level rise and tidal flooding. Although Jakarta has implemented various flood management strategies, including river normalization, coastal protection projects, and infrastructure development, flooding continues to disproportionately affect low-income communities located in vulnerable areas.

The unequal impacts of flooding in Jakarta are closely connected to patterns of urban development and spatial inequality. Many lower-income communities live in areas with limited infrastructure protection, including riverbanks, coastal zones, and informal settlements. These communities often experience greater exposure to flood hazards because affordable housing options are concentrated in environmentally vulnerable locations. At the same time, residents in these areas frequently have limited access to resources needed for adaptation, including insurance, financial support, secure housing rights, and political representation. As a result, flooding reinforces existing social inequalities by imposing greater economic, health, and social costs on populations with fewer resources.

Jakarta's flood governance also reveals tensions between technical resilience approaches and social justice concerns. Large-scale flood control projects, including drainage improvements, river normalization, and coastal defense infrastructure, are often presented as essential components of urban resilience. However, such interventions may produce uneven outcomes when they fail to consider the needs and rights of vulnerable communities. For example, relocation programs associated with flood mitigation may reduce physical exposure to hazards but can also disrupt livelihoods, social networks, and community identity if implemented without meaningful participation. This demonstrates that resilience should not be measured solely by the effectiveness of infrastructure but also by whether adaptation strategies protect social equity and human rights.

The politics of urban space further shapes the unequal distribution of flood risks in Jakarta. Urban development processes have historically favored economic centers, commercial districts, and middle- to high-income

neighborhoods, while many low-income communities have experienced limited investment in basic infrastructure. Unequal access to drainage systems, waste management services, and flood protection reflects broader patterns of spatial injustice in which certain areas receive greater protection and recognition than others. Urban flooding therefore represents not only a failure of infrastructure but also a reflection of political decisions regarding whose safety and well-being are prioritized.

Climate change intensifies these existing inequalities by increasing the frequency and severity of environmental hazards. Lower-income communities often possess fewer resources to adapt to changing climate conditions, making them more vulnerable to repeated flooding events. This vulnerability is not simply a result of physical exposure but is produced through social, economic, and institutional processes that determine access to protection and adaptation capacity (Adger et al., 2006). Climate justice perspectives therefore emphasize that effective adaptation must address underlying inequalities rather than focusing exclusively on technological responses.

Despite extensive research on Jakarta's flooding challenges, much of the existing literature has focused on hydrological modelling, infrastructure management, land subsidence, and technical flood control solutions. While these studies provide valuable insights into the physical dimensions of flooding, fewer studies examine how flood governance interacts with social inequality, environmental justice, and structural exclusion. In particular, limited attention has been given to how lower-income communities experience flooding as a consequence of broader patterns of spatial inequality and governance failure.

This study addresses this research gap by examining Jakarta's flooding through the combined perspectives of urban resilience and environmental justice. It argues that flooding in Jakarta should not be understood solely as a natural disaster or infrastructure challenge but as a socially produced vulnerability shaped by unequal urban development patterns. The concept of environmental racism is used in this study to analyze how historical neglect, unequal investment, and exclusionary planning practices contribute to disproportionate flood impacts among marginalized communities.

Accordingly, this research seeks to answer three main questions: (1) How do patterns of urban development and governance contribute to unequal flood vulnerability in Jakarta's lower-income areas? (2) To what extent do existing urban resilience strategies address or overlook the needs of marginalized communities? and (3) What policy reforms are necessary to develop a more climate-just and inclusive approach to flood governance? By addressing these questions, this study contributes to broader debates on urban climate adaptation, environmental justice, and equitable resilience-building in rapidly urbanizing cities of the Global South.

Literature Review

A. Urban Resilience Theory and Climate Adaptation

The concept of urban resilience has become increasingly influential in contemporary discussions of climate adaptation and sustainable urban development. Urban resilience generally refers to the capacity of cities, communities, and institutions to anticipate, absorb, recover from, and adapt to various forms of disruption, including climate-related hazards such as flooding, heatwaves, and extreme weather events (Meerow et al., 2016). As climate change intensifies environmental risks in urban areas, resilience has been adopted by governments and international organizations as a strategic framework for improving urban preparedness and reducing vulnerability.

The growing popularity of urban resilience reflects a shift from traditional disaster management approaches, which often focused primarily on controlling hazards through technical infrastructure, toward more integrated approaches emphasizing governance, adaptive capacity, and social systems. According to Meerow and Newell (2019), resilience provides a useful framework for understanding cities as complex adaptive systems in which environmental, social, economic, and institutional processes interact. This perspective recognizes that urban vulnerability is not determined solely by physical exposure but also by social conditions, governance structures, and unequal access to resources.

However, critical scholars have questioned the political implications of resilience thinking. While resilience frameworks often emphasize adaptation and recovery, they may fail to address the structural causes that create vulnerability in the first place. MacKinnon and Derickson (2013) argue that resilience discourse can depoliticize urban problems by shifting attention away from questions of inequality, power, and responsibility. In this perspective, resilience may encourage communities to adapt to environmental risks without challenging the social systems that produce unequal exposure to those risks.

This critique is particularly relevant in cities of the Global South, where climate vulnerability is closely connected to poverty, informal urbanization, inadequate infrastructure, and historical patterns of exclusion. For marginalized communities, the ability to adapt to flooding depends not only on physical protection but also on access to secure housing, political representation, financial resources, and public services. Therefore, resilience should be understood not merely as the capacity of urban systems to survive shocks but also as the capacity of societies to address the inequalities that shape vulnerability.

Recent scholarship has increasingly emphasized the importance of “just resilience,” which integrates social justice considerations into climate adaptation strategies. Shi et al. (2016) argue that resilient cities must recognize uneven vulnerability and ensure that adaptation benefits are distributed equitably. Similarly, Anguelovski et al. (2016) highlight that climate adaptation projects

may unintentionally increase inequality when they prioritize investment in economically valuable areas while neglecting marginalized communities. Therefore, urban resilience must incorporate principles of fairness, participation, and recognition to avoid reproducing existing inequalities.

In the context of Jakarta, urban resilience strategies have largely focused on infrastructure-based solutions, including flood control systems, drainage improvement, and coastal protection. While these interventions are important, they may be insufficient if they do not address the socio-economic conditions that make certain populations more vulnerable. A resilience approach that prioritizes engineering solutions without considering social inequalities risks protecting urban spaces unevenly and leaving vulnerable communities exposed to continued risks.

B. Environmental Justice and Environmental Racism

Environmental justice provides a critical framework for understanding how environmental risks are distributed across society. Emerging from social movements against unequal exposure to environmental hazards, environmental justice scholarship argues that environmental problems are deeply connected to issues of power, inequality, and social exclusion (Bullard, 2000). Rather than viewing environmental risks as naturally distributed, environmental justice research examines how political, economic, and institutional processes determine who experiences environmental burdens and who receives environmental protection.

Schlosberg (2007) identifies three central dimensions of environmental justice: distribution, participation, and recognition. Distributive justice examines whether environmental risks and benefits are fairly allocated among social groups. Procedural justice focuses on whether affected communities have meaningful opportunities to participate in decision-making processes. Recognition justice emphasizes whether marginalized groups, their experiences, and their knowledge systems are acknowledged within environmental governance.

These dimensions are particularly relevant for analyzing urban flooding because flood impacts are rarely experienced equally across urban populations. Wealthier communities often possess greater capacity to avoid or recover from flooding through access to safer housing locations, insurance mechanisms, private infrastructure, and political influence. Conversely, low-income communities frequently experience repeated exposure due to limited housing options, inadequate infrastructure, and weak institutional support (Walker, 2012).

The concept of environmental racism expands this analysis by examining how structural inequalities shape environmental vulnerability. Bullard (2000) originally developed the concept to describe how racial minorities in the United

States were disproportionately exposed to environmental hazards due to discriminatory policies and institutional practices. Although environmental racism emerged from racial justice struggles, contemporary scholars have extended the concept to include broader forms of structural marginalization based on ethnicity, class, citizenship status, and political power (Pellow, 2018).

In rapidly urbanizing cities of the Global South, environmental inequality often operates through socio-economic and spatial mechanisms rather than explicit racial discrimination. Communities may experience environmental injustice because they are economically marginalized, excluded from planning processes, or located in areas considered less politically valuable. Therefore, environmental racism can be analytically applied to examine how historical governance structures produce unequal environmental protection and exposure.

Flooding provides a particularly important context for environmental justice analysis because flood vulnerability reflects both physical and social processes. The location of settlements, availability of infrastructure, land-use decisions, and government investment patterns influence which communities experience greater risks. As a result, flooding should be understood not simply as a natural hazard but as a socially produced condition shaped by unequal urban development.

C. Urban Political Ecology and Spatial Inequality

Urban political ecology (UPE) provides another important theoretical perspective for understanding unequal environmental conditions in cities. UPE argues that urban environments are not separate from social and political processes but are produced through interactions between economic systems, governance structures, and ecological transformations (Heynen et al., 2006). From this perspective, environmental problems such as flooding are not simply technical failures but outcomes of political decisions regarding land use, infrastructure investment, and urban development.

UPE challenges the assumption that cities are purely human-made spaces disconnected from ecological systems. Instead, it views urban environments as hybrid spaces where social relations and ecological processes continuously interact. Flood risks, therefore, emerge through complex relationships between rivers, drainage systems, land markets, infrastructure policies, and patterns of social inequality.

Spatial inequality is a central concern within urban political ecology. Urban development often produces uneven landscapes where some areas receive significant investment and environmental protection while others experience neglect and vulnerability. This uneven development reflects broader political-economic processes that determine whose environments are valued and whose risks are tolerated (Swyngedouw & Heynen, 2003).

In Jakarta, spatial inequality is evident in the contrast between highly protected commercial and residential areas and lower-income neighborhoods located in flood-prone zones. Many informal settlements have developed along rivers and coastal areas because residents face limited access to affordable formal housing. These locations provide affordable living opportunities but simultaneously expose communities to greater environmental risks.

Urban political ecology also emphasizes that infrastructure is not politically neutral. Flood protection systems, drainage networks, and urban development projects reflect decisions about resource allocation and priorities. Infrastructure investment can therefore become a mechanism through which certain populations receive greater protection while others remain vulnerable. This perspective helps explain why flooding continues to disproportionately affect marginalized communities despite extensive government intervention.

D. Flood Governance and Climate Vulnerability in Jakarta

Jakarta represents one of Southeast Asia's most vulnerable cities to climate-related flooding. The city faces multiple interacting challenges, including increasing rainfall intensity, sea-level rise, rapid urbanization, groundwater extraction, and land subsidence (Abidin et al., 2011). These environmental pressures are intensified by socio-economic inequalities that influence how different communities experience and respond to flood risks.

Government responses to Jakarta's flooding have historically emphasized large-scale infrastructure interventions, including river normalization, flood canals, dams, and coastal protection projects. Such approaches reflect a conventional understanding of flood management that prioritizes controlling water flows through engineering solutions. However, scholars have argued that infrastructure-centered approaches alone cannot resolve flooding because they often fail to address underlying social and spatial inequalities (Texier, 2008).

Flood governance in Jakarta also involves tensions between disaster reduction objectives and community rights. Some flood mitigation programs have involved relocation of residents from riverbanks and informal settlements. While relocation may reduce physical exposure to flooding, it can also create social and economic challenges when communities lose access to employment opportunities, social networks, and cultural spaces. This highlights the importance of integrating social justice considerations into flood governance.

Climate change further increases the urgency of developing equitable flood adaptation strategies. Since vulnerable communities often have fewer resources to adapt, climate impacts may reinforce existing patterns of inequality. Therefore, effective flood governance must combine environmental management with policies addressing poverty reduction, housing security, and community participation.

E. Conceptual Framework of the Study

Based on the reviewed literature, this study develops a conceptual framework that connects urban resilience, environmental justice, and environmental racism in analyzing Jakarta's flooding challenges. The framework argues that flood vulnerability is produced through the interaction of three dimensions.

First, environmental exposure refers to the physical risks experienced by communities, including flooding frequency, infrastructure limitations, and climate-related hazards. Second, social vulnerability refers to economic inequality, housing insecurity, and limited adaptive capacity. Third, governance inequality refers to unequal participation, recognition, and distribution of urban protection.

This framework suggests that flooding in Jakarta should not be understood solely as a consequence of climate change or inadequate infrastructure. Instead, it represents a broader issue of climate justice in which environmental risks are shaped by historical development patterns, institutional decisions, and unequal access to urban resources. By applying this framework, the study examines whether Jakarta's resilience strategies genuinely address the needs of vulnerable populations or whether they reproduce existing inequalities by prioritizing technical solutions over social justice.

Methods

This study employs a qualitative socio-environmental research approach to examine the unequal impacts of flooding in Jakarta's lower-income areas through the perspectives of urban resilience, environmental justice, and environmental racism. A qualitative approach was selected because the research focuses not only on the physical consequences of flooding but also on the social, political, and institutional processes that shape vulnerability. Flood impacts are understood as socially produced phenomena influenced by patterns of urban development, governance decisions, infrastructure distribution, and community participation. Therefore, qualitative methods provide an appropriate framework for exploring how marginalized communities experience, interpret, and respond to recurring flood events.

The research utilizes a combination of field observations, semi-structured interviews, and policy document analysis. Field observations were conducted in selected flood-prone neighborhoods in Jakarta, particularly areas characterized by high exposure to flooding, limited infrastructure capacity, and significant socio-economic vulnerability. The observations focused on physical conditions, including drainage systems, settlement patterns, housing conditions, flood adaptation practices, and interactions between communities and urban infrastructure. These observations were used to understand how spatial

conditions influence flood vulnerability and how environmental risks are experienced at the community level.

Semi-structured interviews were conducted with key informants, including residents from lower-income flood-prone communities, community leaders, urban planners, environmental researchers, and relevant stakeholders involved in flood management. The interviews explored community experiences of flooding, access to adaptation resources, perceptions of government responses, and participation in flood governance processes. Particular attention was given to understanding whether vulnerable communities experience recognition, inclusion, and meaningful participation within urban climate adaptation strategies. The interview data provided insights into the social dimensions of flooding that are often overlooked in infrastructure-focused approaches.

In addition to primary data collection, this research conducted a qualitative analysis of relevant policy documents and institutional frameworks related to Jakarta's flood management and climate adaptation strategies. The analyzed documents include urban planning regulations, flood management policies, climate adaptation programs, and government reports related to disaster risk reduction. The policy analysis aimed to examine how principles of resilience, sustainability, and community participation are incorporated into Jakarta's flood governance framework. It also assessed whether existing policies adequately address issues of environmental inequality and the specific needs of vulnerable populations.

The collected data were analyzed using thematic analysis based on three interconnected dimensions of environmental justice: distributive justice, procedural justice, and recognition justice. The distributive justice dimension was used to examine how flood risks, infrastructure protection, and adaptation benefits are distributed among different urban populations. Procedural justice was applied to evaluate community participation and decision-making processes in flood governance. Recognition justice was used to assess whether lower-income communities are acknowledged as legitimate actors with valuable knowledge and rights within urban climate adaptation. Through this analytical framework, the study seeks to demonstrate that flooding in Jakarta is not only an environmental challenge but also a manifestation of broader social and governance inequalities.

Analysis and Discussion

A. Flooding as a Climate and Social Inequality Crisis in Jakarta

The findings demonstrate that flooding in Jakarta represents a complex climate and social inequality crisis rather than merely a natural hazard or infrastructure failure. Although climate change has intensified flood risks through increasing rainfall variability, sea-level rise, and extreme weather events, the severity of flood impacts is strongly influenced by existing socio-economic

and spatial inequalities. Communities living in lower-income areas experience greater exposure and more severe consequences because they often reside in environmentally vulnerable locations, possess limited adaptive resources, and have weaker political influence in urban decision-making processes. Therefore, flooding in Jakarta must be understood as a socially differentiated climate impact shaped by both environmental changes and unequal urban development.

Jakarta's vulnerability to flooding results from the interaction between climatic pressures and decades of rapid urban transformation. The city has experienced significant population growth, land-use changes, groundwater extraction, and extensive conversion of natural landscapes into built environments. These processes have reduced ecological capacity for water absorption and increased pressure on drainage systems. Furthermore, land subsidence, particularly in northern Jakarta, has intensified flood risks by lowering land elevation relative to sea level (Abidin et al., 2011). While these physical factors contribute to flood occurrence, the findings indicate that social conditions determine which communities are most affected and how effectively they can recover.

The study findings reveal that lower-income communities experience flooding differently from more affluent urban populations. Wealthier residents often possess greater capacity to reduce flood exposure through access to safer residential areas, private adaptation measures, financial resources, and political connections. In contrast, lower-income communities frequently occupy flood-prone locations due to limited access to affordable housing markets. Many informal settlements develop along riverbanks, coastal zones, or low-lying areas because these locations provide relatively accessible housing options despite significant environmental risks. As a result, poverty and spatial exclusion become important factors contributing to flood vulnerability.

This pattern reflects the concept of distributive injustice within environmental justice theory. Environmental burdens, such as flood exposure, are not evenly distributed across Jakarta's population. Instead, marginalized communities often carry a disproportionate share of environmental risks while receiving fewer benefits from urban development and protective infrastructure. While major economic districts and high-value urban areas frequently receive significant investment in flood protection, drainage systems, and urban improvement projects, many lower-income neighborhoods continue to experience inadequate infrastructure and repeated flood exposure.

The unequal distribution of flood risks is closely connected to historical patterns of urban development. Jakarta's growth has been characterized by uneven investment, where economic development priorities have often concentrated infrastructure and services in areas considered strategically valuable. Meanwhile, peripheral and informal settlements have frequently experienced limited public investment. This uneven development has produced

what urban political ecology scholars describe as socially produced vulnerability, where environmental risks emerge through political and economic decisions rather than through natural conditions alone (Heynen et al., 2006).

The findings also demonstrate that repeated flooding creates cumulative social impacts for vulnerable communities. Unlike temporary disruptions experienced by wealthier residents, flooding in lower-income areas often results in long-term economic and social consequences. Residents may experience property damage, income loss, health problems, educational disruption, and increased household expenses related to recovery. For communities dependent on informal employment, flood events can significantly reduce economic stability because daily income-generating activities are interrupted. Therefore, flooding contributes to the reproduction of poverty by creating cycles of repeated loss and limited recovery capacity.

Climate change intensifies these inequalities by increasing uncertainty and frequency of extreme weather events. Although climate change affects entire cities, its consequences are filtered through existing social structures. Communities with limited financial resources, insecure housing conditions, and weak institutional support are less able to adapt to changing climate conditions. This reflects the principle of climate justice, which emphasizes that those who contribute least to climate change often experience some of its most severe consequences (Roberts & Parks, 2007).

The research findings further indicate that flood vulnerability in Jakarta is closely related to unequal access to adaptation resources. Adaptive capacity depends not only on physical infrastructure but also on social, economic, and institutional factors. Residents with secure property rights, financial savings, and access to government assistance generally possess greater ability to prepare for and recover from floods. Conversely, residents in informal settlements may avoid reporting damages or requesting assistance due to insecure tenure status or fear of eviction. This creates additional barriers to effective adaptation and reinforces existing marginalization.

Another important finding concerns the relationship between government flood management strategies and social inequality. While Jakarta has implemented various resilience initiatives, including flood control infrastructure and disaster risk reduction programs, these strategies often emphasize technical solutions rather than addressing underlying vulnerability. Flood barriers, drainage improvements, and river engineering may reduce physical risks in certain locations, but they do not necessarily resolve the social conditions that force vulnerable communities to live in high-risk areas.

The findings suggest that treating flooding primarily as an engineering problem limits the effectiveness of climate adaptation efforts. A purely technical approach may reduce flood exposure in selected areas while leaving broader patterns of inequality unchanged. Climate justice requires adaptation strategies

that address both environmental risks and the social systems producing vulnerability. This includes improving affordable housing access, strengthening community participation, and ensuring that adaptation investments reach populations most affected by climate risks.

The concept of environmental racism provides additional insight into these unequal outcomes. Although Jakarta's inequalities are not structured through racial categories in the same way as environmental racism debates in other contexts, similar mechanisms of structural exclusion exist through class-based marginalization and unequal recognition. Lower-income communities experience greater environmental risks because their needs have historically received less political attention and fewer public investments. This demonstrates how environmental inequality can operate through institutional practices and urban governance systems.

The findings ultimately show that flooding in Jakarta represents a convergence of climate vulnerability, social inequality, and governance challenges. The communities most affected are not simply victims of natural hazards but populations whose vulnerabilities have been produced through historical patterns of urban development and unequal access to resources. Addressing Jakarta's flooding challenges therefore requires moving beyond disaster response toward a climate justice approach that recognizes vulnerability as a social and political issue. The analysis demonstrates that Jakarta's flood crisis cannot be effectively addressed through infrastructure expansion alone. While climate change and environmental factors contribute to increasing flood risks, the unequal distribution of impacts is shaped by social and institutional processes. Building urban resilience requires acknowledging these inequalities and ensuring that climate adaptation strategies prioritize the rights, needs, and participation of vulnerable communities.

B. The Geography of Vulnerability: Why Low-Income Areas Experience Greater Flood Risks

The findings reveal that flood vulnerability in Jakarta is strongly shaped by spatial inequality, where the geography of risk closely corresponds with patterns of socio-economic marginalization. Flood exposure is not randomly distributed across the city but follows historical patterns of urban development, land allocation, housing inequality, and uneven infrastructure investment. Lower-income communities are frequently concentrated in areas with higher environmental risks, including riverbanks, coastal zones, and low-lying urban spaces. These patterns demonstrate that vulnerability is not simply determined by physical location but is produced through social and political processes that influence who has access to safe urban environments.

Urban geography plays a central role in understanding why certain communities experience greater flood impacts than others. Jakarta's rapid

urbanization has created significant pressure on land availability, particularly for low-income populations seeking affordable housing opportunities. As formal housing markets become increasingly inaccessible, many households are forced to settle in informal or semi-formal areas where land costs are lower but environmental risks are higher. These settlements often develop along rivers, drainage channels, and coastal areas because such locations provide proximity to employment opportunities while remaining financially accessible.

The concentration of vulnerable communities in flood-prone areas reflects broader patterns of spatial injustice. Spatial justice theory emphasizes that urban space is not neutral but shaped by political and economic decisions regarding resource distribution, planning priorities, and infrastructure investment (Soja, 2010). In Jakarta, decisions regarding land development have historically prioritized economic growth, commercial expansion, and strategic urban areas. Consequently, communities with limited political and economic power often occupy spaces considered less valuable within urban development processes, even when these areas expose residents to significant environmental risks.

The findings indicate that housing inequality is a major factor contributing to flood vulnerability. Access to safe housing is closely connected to income levels, land tenure security, and social status. Higher-income residents generally possess greater capacity to select residential locations with better infrastructure protection and lower exposure to hazards. In contrast, lower-income households often have limited choices and must accept environmental risks as part of their housing options. Flood exposure, therefore, becomes connected to broader patterns of economic inequality rather than individual decisions alone.

Informal settlements represent a particularly important dimension of Jakarta's flood vulnerability. These communities are often characterized by limited access to formal infrastructure, uncertain land tenure, and inadequate public services. However, the existence of informal settlements should not be understood simply as a planning failure or illegal occupation. Rather, they represent adaptive responses by marginalized populations attempting to survive within unequal urban systems. Residents frequently develop their own forms of resilience through community networks, local knowledge, and collective adaptation practices, even when formal urban governance provides limited support.

The research findings demonstrate that infrastructure inequality significantly influences flood impacts. Drainage systems, waste management services, road conditions, and flood protection infrastructure vary considerably across different urban areas. Wealthier neighborhoods often benefit from greater investment in environmental protection and urban services, while lower-income communities may experience inadequate drainage capacity and slower government responses during flood events. This uneven distribution of

infrastructure protection contributes to unequal exposure and recovery outcomes.

The geography of vulnerability is also connected to Jakarta's relationship with rivers and waterways. Historically, rivers have served important ecological and social functions within the city. However, urban development has transformed many rivers into drainage channels rather than integrated ecological systems. Informal communities located along riverbanks are frequently blamed for obstructing waterways and contributing to flooding, yet such narratives often ignore the structural conditions that force residents to live in these locations. The problem is therefore not simply the presence of settlements but the unequal access to alternative housing options.

The findings further indicate that flood management policies may sometimes reinforce spatial inequality. Government interventions, such as river normalization and relocation programs, often target vulnerable settlements as sources of flood problems. While these interventions may improve water management objectives, they can generate new forms of vulnerability when affected communities are displaced without adequate consideration of livelihoods, social networks, and housing security. In such cases, flood adaptation strategies may reduce environmental risks while increasing social insecurity.

This situation illustrates the tension between risk reduction and social justice within urban climate governance. From a conventional resilience perspective, relocating communities away from flood-prone areas may appear as an effective adaptation strategy. However, climate justice perspectives emphasize that adaptation must consider who benefits, who bears the costs, and whether affected populations have meaningful participation in decision-making processes. Without such considerations, resilience strategies may protect urban infrastructure while marginalizing vulnerable residents.

The research also highlights that spatial vulnerability is closely connected to political visibility. Areas inhabited by lower-income communities often receive less attention in urban planning processes because these populations have limited political influence. The absence of representation affects not only infrastructure investment but also the recognition of community knowledge and experiences. Residents who have lived with flooding for decades often possess valuable knowledge regarding water flows, adaptation practices, and local environmental changes, yet their perspectives are frequently excluded from formal planning processes.

From an environmental justice perspective, these patterns demonstrate failures of both distributive and recognition justice. Distributive injustice occurs because vulnerable communities receive fewer protective resources while experiencing greater environmental burdens. Recognition injustice occurs because their experiences and knowledge are insufficiently acknowledged in urban governance. Addressing flood inequality therefore requires not only

improving infrastructure but also transforming how urban authorities understand and engage with marginalized communities.

The findings suggest that reducing flood vulnerability in Jakarta requires addressing the underlying spatial inequalities that shape exposure and adaptive capacity. Policies must move beyond the assumption that vulnerable communities are simply located in “problem areas” and instead examine why these communities occupy such spaces in the first place. This requires integrated approaches involving affordable housing policies, secure tenure arrangements, equitable infrastructure distribution, and participatory urban planning.

Ultimately, the geography of flooding in Jakarta reflects broader questions about whose safety is prioritized in urban development. Flood risks are not only produced by environmental conditions but also by decisions regarding land use, investment, and governance. A climate-just approach to urban resilience must therefore recognize that protecting vulnerable communities requires addressing the structural inequalities embedded within the urban landscape itself.

C. Environmental Racism and Structural Neglect in Jakarta’s Flood Governance

The findings indicate that the unequal impacts of flooding in Jakarta reflect patterns of structural neglect that resemble the dynamics identified within environmental racism scholarship. Although Jakarta’s flood inequality is not primarily organized around racial categories as observed in some Western contexts, the mechanisms through which environmental burdens are distributed demonstrate similar characteristics of institutional marginalization. Lower-income communities experience disproportionate exposure to environmental risks because of historical patterns of spatial exclusion, unequal infrastructure investment, limited political representation, and insufficient recognition of their rights within urban governance processes.

Environmental racism provides an analytical framework for understanding how environmental risks become concentrated among socially disadvantaged populations. The concept emphasizes that environmental inequalities are not accidental outcomes but are often produced through institutional decisions, planning practices, and economic priorities that systematically disadvantage certain communities (Bullard, 2000; Pellow, 2018). In the context of Jakarta, these processes operate through socio-economic differentiation, where low-income communities frequently occupy vulnerable spaces and receive comparatively limited environmental protection.

The findings demonstrate that structural neglect plays a significant role in shaping flood vulnerability. Many lower-income neighborhoods affected by flooding have experienced decades of insufficient investment in basic infrastructure, including drainage systems, waste management facilities, road improvements, and flood protection mechanisms. While these communities are

often recognized as highly vulnerable during disaster events, their vulnerability is frequently treated as a temporary emergency issue rather than as a consequence of long-term governance failures. This approach shifts attention toward disaster response while overlooking the structural conditions that produce vulnerability.

One important dimension of structural neglect is the unequal distribution of urban infrastructure. Flood protection systems require significant financial investment, and decisions regarding infrastructure priorities reflect broader political and economic considerations. Areas with high economic value, such as business districts, commercial centers, and strategic development zones, often receive greater protection because flooding in these locations is perceived as creating larger economic losses. In contrast, flooding in lower-income neighborhoods is frequently normalized as an unavoidable condition of urban poverty. This differential valuation of urban spaces reflects deeper inequalities regarding whose environments are considered worthy of protection.

The findings reveal that this unequal protection contributes to a form of environmental marginalization in which vulnerable communities become trapped in cycles of repeated exposure and limited recovery. Residents living in flood-prone areas often invest significant personal resources into adaptation measures, such as raising household structures, modifying drainage systems, and developing community-based coping strategies. However, these individual and collective efforts cannot compensate for the absence of adequate institutional support. The responsibility for managing climate risks is therefore disproportionately transferred from public institutions to communities with the fewest resources.

Another important aspect of environmental racism is the unequal recognition of affected communities. In Jakarta's flood governance, lower-income residents are sometimes portrayed primarily as contributors to environmental problems rather than as citizens with legitimate rights and knowledge. Informal settlements are frequently framed as causes of flooding because of their proximity to waterways and perceived contribution to river obstruction. However, such narratives often ignore the socio-economic conditions that shape settlement patterns and overlook the structural factors that limit housing choices for marginalized populations.

The research findings indicate that this framing influences policy responses toward vulnerable communities. Instead of addressing housing inequality and infrastructure deficits, some flood management approaches emphasize relocation and removal of settlements from high-risk areas. While relocation can be justified as a risk reduction strategy, it may reproduce environmental injustice when affected communities lose access to employment opportunities, social networks, and cultural spaces. Without meaningful participation and adequate

compensation, relocation transforms climate adaptation into a process that transfers risks from the environment to society.

This dynamic reflects what scholars describe as the “green inequality” problem, where environmental improvement projects may produce unequal social outcomes when implemented without justice considerations (Anguelovski et al., 2016). In Jakarta, flood mitigation interventions may improve urban environmental conditions in certain locations while increasing vulnerability among displaced populations. Therefore, climate adaptation policies must consider not only ecological effectiveness but also social consequences.

The findings further show that procedural injustice is a central challenge within Jakarta’s flood governance. Many residents in vulnerable areas have limited opportunities to influence decisions regarding flood management, relocation, and urban redevelopment. Public participation often occurs after major policy decisions have already been established, reducing communities’ ability to shape outcomes. This limited participation reinforces power inequalities between government institutions, developers, and marginalized residents.

The lack of meaningful participation is particularly problematic because local communities possess important forms of environmental knowledge. Residents who experience flooding regularly often understand local water flows, seasonal patterns, infrastructure weaknesses, and effective adaptation practices. However, formal governance systems frequently prioritize technical expertise while undervaluing community knowledge. This creates a recognition gap where those most affected by environmental problems are excluded from producing solutions.

The concept of environmental racism also highlights the relationship between environmental risk and political power. Communities with greater economic and political influence are often better positioned to demand environmental protection and influence urban planning decisions. Conversely, marginalized communities may lack institutional channels to advocate for their needs. In this sense, flood vulnerability reflects not only exposure to environmental hazards but also unequal access to political resources.

The Jakarta case demonstrates that environmental inequality operates through institutional structures rather than explicit discriminatory intentions. Planning decisions, investment priorities, housing policies, and governance practices collectively shape patterns of protection and vulnerability. This understanding is important because addressing environmental injustice requires transforming systems and institutions rather than focusing only on individual behaviors or emergency responses.

The findings suggest that Jakarta’s flood governance requires a shift from a risk-management approach toward a rights-based climate justice approach. Such a transformation would involve recognizing vulnerable communities as

legitimate urban citizens, ensuring meaningful participation in adaptation planning, and addressing the historical inequalities that shape flood exposure. Environmental protection cannot be considered successful if it improves urban resilience while leaving marginalized communities behind. Overall, the analysis demonstrates that flooding in Jakarta reveals deeper patterns of environmental inequality and structural neglect. The issue is not simply that certain communities happen to live in vulnerable areas, but that urban systems have historically produced and maintained unequal levels of protection. A climate-just approach must therefore confront the institutional processes that distribute environmental risks unevenly and create pathways toward more inclusive and equitable urban governance.

D. Urban Resilience Policies and Their Limitations: Who Benefits from Jakarta's Adaptation Strategies?

The findings reveal that Jakarta's urban resilience strategies have produced important improvements in flood management capacity but remain limited in addressing the deeper social inequalities that shape vulnerability. Over the past decades, Jakarta's government has implemented various adaptation measures, including river normalization, flood canal development, drainage improvement, coastal protection initiatives, and relocation programs. These interventions demonstrate significant efforts to strengthen the city's capacity to respond to climate-related risks. However, the analysis indicates that resilience strategies have often been designed primarily around technical risk reduction rather than social transformation, resulting in uneven benefits across different urban populations.

Urban resilience policies frequently prioritize infrastructure-based solutions because flooding is commonly framed as a problem of water management and physical control. Large-scale engineering projects are attractive to policymakers because they provide visible evidence of government intervention and can significantly reduce flood exposure in selected areas. However, resilience scholars argue that infrastructure alone cannot eliminate vulnerability because climate risks are embedded within social, economic, and political systems (Meerow et al., 2016). In Jakarta, the effectiveness of flood infrastructure is constrained by persistent inequalities related to housing, income, land access, and political participation.

One of the major limitations of Jakarta's resilience approach is its tendency to focus on protecting urban assets rather than addressing the uneven distribution of vulnerability. Flood control projects are often prioritized in areas considered economically strategic, where infrastructure failure could generate significant financial losses. While such investments may provide broader economic benefits, they may not necessarily correspond with the needs of the communities experiencing the greatest social impacts from flooding. This creates

a distinction between protecting the city as an economic space and protecting vulnerable populations as urban citizens.

The findings suggest that resilience policies may unintentionally reinforce existing patterns of inequality when they prioritize certain forms of urban value over others. Infrastructural protection is often directed toward formal urban spaces with recognized economic importance, while informal settlements receive less attention or are approached primarily as areas requiring removal. This reflects a broader challenge within urban resilience planning: the assumption that improving the physical resilience of cities automatically improves the resilience of all residents. In reality, resilience benefits are distributed unevenly depending on social position and access to resources.

The case of river normalization projects illustrates this tension between environmental improvement and social justice. River normalization has been promoted as a strategy to increase water flow capacity and reduce flooding risks. However, implementation has frequently involved the relocation of communities living along riverbanks. While removing settlements from flood-prone areas may improve hydraulic management, relocation can create significant social consequences when communities lose access to employment opportunities, schools, social networks, and community support systems. Therefore, adaptation strategies may reduce environmental vulnerability while simultaneously increasing socio-economic vulnerability.

From a climate justice perspective, relocation policies raise important questions regarding participation and recognition. Adaptation decisions that directly affect vulnerable communities should involve meaningful engagement with residents, allowing them to participate in defining solutions that affect their lives. However, the findings indicate that community participation in some flood management processes remains limited, with residents often positioned as recipients of government decisions rather than active partners in adaptation planning. This weakens procedural justice and reduces the legitimacy of resilience initiatives.

Another limitation of Jakarta's resilience approach concerns the treatment of informal communities. Informal settlements are frequently viewed through a problem-oriented lens, where residents are associated with environmental degradation, blocked waterways, or urban disorder. Such perspectives overlook the fact that informal communities often emerge because of structural inequalities in housing markets and urban development. Residents living in these areas are not simply vulnerable populations but active urban actors who contribute to the city's economy and social networks.

The findings indicate that resilience strategies would benefit from greater recognition of community-based adaptation practices. Many low-income communities have developed their own mechanisms for managing flood risks, including collective evacuation systems, neighborhood cooperation, local

drainage improvements, and informal knowledge sharing. These practices demonstrate existing adaptive capacity within marginalized communities. However, formal resilience planning often emphasizes institutional and technological solutions while underutilizing local knowledge and community capabilities.

The concept of “resilience for whom?” is therefore central to evaluating Jakarta’s climate adaptation strategies. Resilience is not a politically neutral objective because decisions about what and whom to protect involve questions of value, priority, and power. A city may become more resilient in terms of infrastructure performance while simultaneously becoming less equitable if vulnerable populations are displaced or excluded from decision-making. Therefore, resilience must be evaluated not only through reduced flood exposure but also through improved social justice outcomes.

The findings also highlight the importance of integrating climate justice principles into urban adaptation governance. A climate-just resilience framework requires attention to three dimensions: equitable distribution of adaptation benefits, meaningful participation of affected communities, and recognition of marginalized groups as legitimate urban stakeholders. Without these principles, resilience initiatives risk reproducing the same inequalities that contribute to vulnerability.

The limitations of Jakarta’s resilience strategies also reflect broader challenges faced by rapidly urbanizing cities in the Global South. Many cities pursue modernization and climate adaptation simultaneously, but development priorities may conflict with the needs of vulnerable populations. Infrastructure-led resilience can improve urban competitiveness while leaving marginalized communities exposed if social considerations are treated as secondary concerns.

The findings suggest that Jakarta requires a transition from defensive resilience toward transformative resilience. Defensive resilience focuses on maintaining existing urban systems through infrastructure protection, while transformative resilience seeks to address the underlying causes of vulnerability by changing governance structures, planning practices, and social inequalities. For Jakarta, transformative resilience would involve integrating flood management with affordable housing policies, inclusive urban planning, secure tenure arrangements, and stronger community participation. Ultimately, Jakarta’s resilience policies demonstrate both progress and limitations. While infrastructure investment remains necessary to address increasing climate risks, resilience cannot be measured solely through engineering success. A truly resilient city must ensure that adaptation strategies protect those most vulnerable to climate impacts rather than prioritizing only economically valuable spaces. The future of Jakarta’s climate governance depends on whether resilience can evolve from a technical strategy into a justice-oriented approach that places vulnerable communities at the center of urban adaptation.

E. Toward Climate-Just Flood Governance in Jakarta

The findings demonstrate that addressing Jakarta's flood challenges requires a fundamental shift from conventional risk management toward climate-just flood governance. While infrastructure development remains an important component of flood adaptation, technical solutions alone cannot resolve the social inequalities that determine who is most affected by climate risks. A climate-just approach requires recognizing that flooding is simultaneously an environmental, social, and political issue. Therefore, effective flood governance must address not only the physical management of water but also the unequal distribution of vulnerability, resources, and decision-making power within the city.

A central implication of this study is the need to redefine urban resilience from a system-centered approach toward a people-centered approach. Conventional resilience strategies often evaluate success through indicators such as reduced flood frequency, improved drainage capacity, or increased infrastructure protection. However, these indicators may overlook whether vulnerable communities experience improved security, dignity, and adaptive capacity. Climate-just resilience requires evaluating whether adaptation policies reduce inequalities and enhance the ability of marginalized populations to participate in shaping their own futures.

One important pathway toward climate-just flood governance is strengthening community participation in urban adaptation planning. The findings indicate that lower-income communities are not passive victims of flooding but possess valuable knowledge and adaptive practices developed through years of experience. Community-based adaptation approaches can improve the effectiveness of flood governance by integrating local knowledge with scientific and technical expertise. Such approaches recognize residents as partners in climate adaptation rather than merely beneficiaries of government programs.

Participatory governance is particularly important because flood adaptation decisions often involve significant social consequences, including relocation, land-use changes, and infrastructure development. Communities affected by these decisions should have meaningful opportunities to participate throughout the planning process, from identifying problems to designing and evaluating solutions. Procedural justice requires moving beyond symbolic consultation toward genuine involvement where community perspectives influence policy outcomes.

Another critical component of climate-just flood governance is addressing housing inequality. The findings demonstrate that many flood vulnerabilities originate from unequal access to safe and affordable housing. Therefore, flood adaptation policies must be integrated with housing policies that provide secure and affordable alternatives for low-income residents. Relocation programs

should not simply remove communities from high-risk areas but should ensure that residents maintain access to livelihoods, public services, and social networks. Housing security is therefore not separate from climate adaptation but a fundamental element of urban resilience.

The research also highlights the importance of recognizing informal settlements as legitimate components of urban life. Informal communities are often viewed as obstacles to urban development or environmental management. However, these communities contribute significantly to Jakarta's economic and social systems. A climate-just approach requires replacing exclusionary perspectives with strategies that improve living conditions through infrastructure upgrading, secure tenure arrangements, and inclusive planning. Rather than eliminating vulnerable communities, governance should focus on reducing vulnerability.

Equitable infrastructure investment represents another essential element of climate-just flood governance. Adaptation resources should be distributed according to vulnerability levels rather than economic value alone. Areas experiencing the greatest environmental risks and social disadvantages should receive priority in flood protection, drainage improvements, and climate adaptation programs. Such an approach reflects distributive justice by ensuring that public investments reach communities that need them most.

The findings further suggest the importance of integrating climate adaptation with broader social policies. Flood vulnerability is connected to multiple dimensions of inequality, including income insecurity, employment conditions, healthcare access, and education. Therefore, flood governance cannot operate separately from social development strategies. Building climate resilience requires coordinated policies that strengthen community capacity and reduce the structural conditions that make certain populations more vulnerable.

Institutional reform is also necessary to overcome fragmented approaches to flood governance. Jakarta's flood challenges involve multiple actors, including municipal agencies, national institutions, private developers, community organizations, and residents. Effective governance requires stronger coordination among these actors and clearer mechanisms for accountability. Climate justice principles should guide institutional cooperation by ensuring that adaptation objectives remain connected to social equity goals. The findings also indicate that climate-just governance requires a transformation in how urban authorities understand vulnerability. Vulnerability should not be viewed as an inherent characteristic of certain communities but as a condition produced through historical and institutional processes. This perspective shifts responsibility away from vulnerable populations and toward the systems that create unequal exposure to risk. Such recognition is essential for developing fairer adaptation strategies.

At the broader policy level, Jakarta's experience provides lessons for other rapidly urbanizing cities facing similar climate challenges. Many cities in the Global South confront comparable conditions: rapid urban growth, informal settlements, infrastructure deficits, and unequal exposure to climate hazards. The Jakarta case demonstrates that climate adaptation cannot succeed without addressing social inequality. Resilient cities must therefore be designed not only to withstand environmental disruptions but also to protect the rights and well-being of vulnerable populations. Ultimately, climate-just flood governance requires combining environmental protection with social justice. Jakarta's future resilience depends not only on stronger infrastructure but also on more democratic, inclusive, and equitable decision-making processes. The challenge is not simply to build a city that can survive floods but to create a city where all residents have the capacity, recognition, and resources to adapt to climate change.

Conclusion

This study demonstrates that urban flooding in Jakarta is not merely an environmental or infrastructural challenge but a manifestation of deeper social, political, and economic inequalities. While climate change, sea-level rise, land subsidence, and rapid urbanization have intensified flood risks, the unequal impacts experienced by lower-income communities are largely shaped by existing patterns of spatial inequality, limited access to resources, and uneven urban governance. The findings reveal that vulnerable communities are disproportionately exposed to flood hazards because they are often located in high-risk areas with inadequate infrastructure protection and limited adaptive capacity. Therefore, Jakarta's flood crisis should be understood through a climate justice perspective that recognizes the unequal distribution of environmental risks and the structural conditions that produce vulnerability.

The study further concludes that existing urban resilience strategies, although important for improving flood management capacity, remain insufficient when they prioritize technical solutions without addressing social inequalities. Infrastructure-based approaches, relocation programs, and flood control projects may reduce physical risks but can also reproduce injustice when vulnerable communities are excluded from decision-making processes or experience loss of livelihood and social security. By applying the concepts of environmental justice and environmental racism, this research highlights that climate adaptation must move beyond protecting urban assets toward protecting communities, particularly those historically marginalized within urban development processes. A truly resilient Jakarta requires adaptation policies based on distributive justice, procedural participation, and recognition of vulnerable populations as legitimate urban stakeholders.

Ultimately, this research argues that achieving climate-just flood governance in Jakarta requires a transformative approach that integrates environmental management with social equity. Future adaptation strategies should prioritize inclusive planning, equitable infrastructure investment, affordable housing security, community-based adaptation, and meaningful participation of affected residents. Flood resilience should not be measured solely by the ability of the city to control water but also by its capacity to ensure that all residents, regardless of socio-economic status, have equal opportunities to survive and adapt to climate change. By placing vulnerable communities at the center of climate governance, Jakarta can move toward a model of urban resilience that is not only environmentally effective but also socially just and politically inclusive.

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