



Facing climate change and potential disaster: Lessons from Jakarta slums and the impact of modern-day individualism

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ABSTRACT

Background: Jakarta faces significant climate change risks due to rapid urbanization and insufficient infrastructure. These challenges are compounded by increasing population pressures and environmental degradation, especially in urban slums. Leveraging social capital, particularly community cooperation, can enhance resilience to climate-related impacts by promoting collective action and resource mobilization. **Method:** This study employed a dual-phase strategy, starting with an extensive literature review to understand the context and theoretical frameworks. It also utilized comparative analysis and systems thinking to assess the roles of social capital and community resilience in mitigating climate risks. The research incorporated a variety of credible sources and opposing viewpoints for a balanced approach. **Findings:** The study highlights the importance of social capital, particularly the collectivist culture of mutual cooperation (*gotong royong*) in Jakarta, which aids in overcoming resource limitations and fosters community cooperation. This social capital is crucial for enhancing resilience, particularly in slum and disaster-prone areas. However, urban planning issues and rising individualism present challenges to fully harnessing these resources. **Conclusion:** Integrating the communal practices and cultural values of *gotong royong* into urban planning, along with promoting social engagement, is essential for building a climate-resilient city in Jakarta. Strengthening social networks and addressing governance and infrastructure issues are key steps toward mitigating climate change impacts. **Novelty/Originality of this article:** This study provides a unique perspective on the role of social capital in climate resilience, specifically in Jakarta's slums, and highlights the importance of integrating cultural practices like *gotong royong* into urban planning to build a more resilient city. It combines insights from environmental science, sociology, and psychology to develop a comprehensive approach to climate adaptation.

KEYWORDS: community resilience; climate change; Jakarta; local community potential; individualism.

1. Introduction

One of the four competence that has become crucial to the fundamental study of English is writing. Rao (2019) state that “writing is considered the most difficult skill among the four skills and the ELLs (English language learners) need to spend more time to practice it. Whatever ideas the learners get into their mind, immediately they have to note them down and later organize these ideas whenever they wish to write something. As there is no correspondence between the spelling and pronunciation of the English, the ELLs

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getconfused in writing the correct spelling of the words. Moreover, the learners need to organize all the points in a systematic way when they aim at writing a good text. As writing involves more practice and commitment, the English teachers should apply several techniques such as group and pair works so that the learners can discuss their points with the others and develop their writing skills enormously in the ELL environment.” (Rao, 2019). Even though writing comes as the last skill, it can't be neglected and needs a lot of attention from the teacher and the student because it is necessary in daily academic life. Students are expected to learn how to be good writers. If they can't write correctly and logically using appropriate language and style, life will be difficult for them not only at school but in adult life.

In recent years, climate change has grown in importance as a global concern. Its consequences are particularly noticeable in urban areas like Jakarta, where the city is vulnerable to a range of climate-related threats such as extreme weather, flooding, rising sea levels, and water shortages due to rapid urban growth and inadequate infrastructure (Wicaksono & Herdiansyah, 2019). As Jakarta struggles with the increasing threats posed by climate change, it is essential to explore innovative and effective strategies to overcome and adapt to these challenges (Asian Development Bank, 2022). One potential strategy lies in harnessing the potential of local communities as social capital. By engaging and mobilizing the community, Jakarta can get into the collective knowledge, resources, and resilience of its residents to mitigate the harm effects of climate change and build a more sustainable and climate-resilient city (Fazey et al., 2018).

Social capital, as defined by the first source, can be seen as an asset in addressing climate change. It represents the relationships, networks, trust, and norms of a community that enable individuals to collaborate towards common goals. By leveraging the social capital present within Jakarta's local communities, the city can foster collaboration, innovation, and collective action in response to climate change (Saptutyningsih et al., 2020). The concept of social capital plays a crucial role in the adaptation and resilience of Jakarta urban slums, particularly in the context of climate change and disaster risk management. (Mavridis & Tsakas, 2021) describes social capital as the networks, norms, and trust that facilitate coordination and cooperation for mutual benefit. In the case of urban slums, social capital is manifested through collective action, community organizations, and the strength of social networks within the community (Wilhelm, 2011).

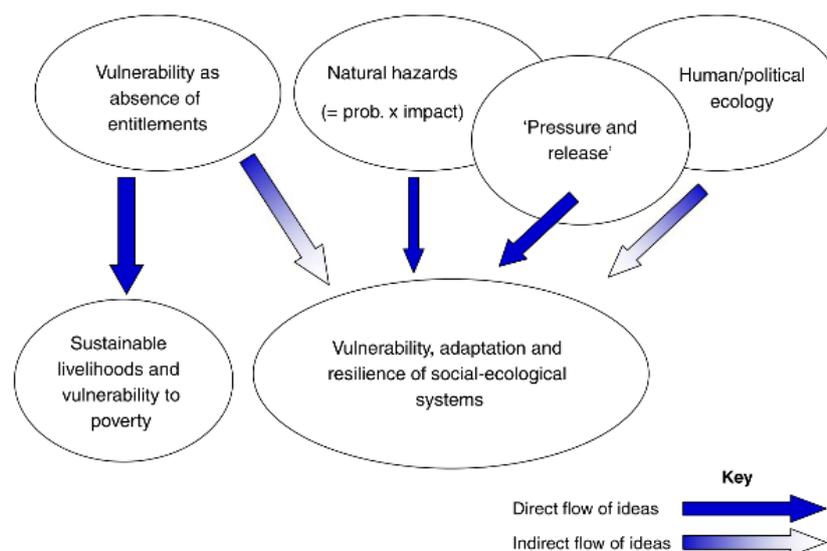


Fig. 1. Traditions in vulnerability research and their evolution (Adger, 2006)

One key theoretical framework that can inform a study on "Facing Climate Change: Lessons from Jakarta Slums and Modern-Day Individualism" is Urban Resilience Theory

(Asian Development Bank, 2022). Urban Resilience Theory examines how cities can absorb, recover, and adapt to various shocks and stresses, including those caused by climate change (Fitzpatrick & Dunn, 2019). This theory would be particularly relevant when examining the adaptive capacities of Jakarta's slums and their inhabitants in responding to environmental challenges such as flooding, extreme weather events, and rising sea levels (Nurulhuda et al., 2021). Another important theoretical framework to consider is the Vulnerability and Adaptation Framework. The Vulnerability and Adaptation Framework focuses on understanding the vulnerability of individuals and communities to climate change impacts and their capacity to adapt effectively (Adger, 2006). This framework would give for an analysis of the vulnerabilities faced by residents in Jakarta's slums and the strategies they apply to adapt and overcome with climate change (World Bank Group, 2023). As shown in Fig. 1, the traditions in vulnerability research have evolved over time, reflecting the changing perspectives and methodologies used in the field.

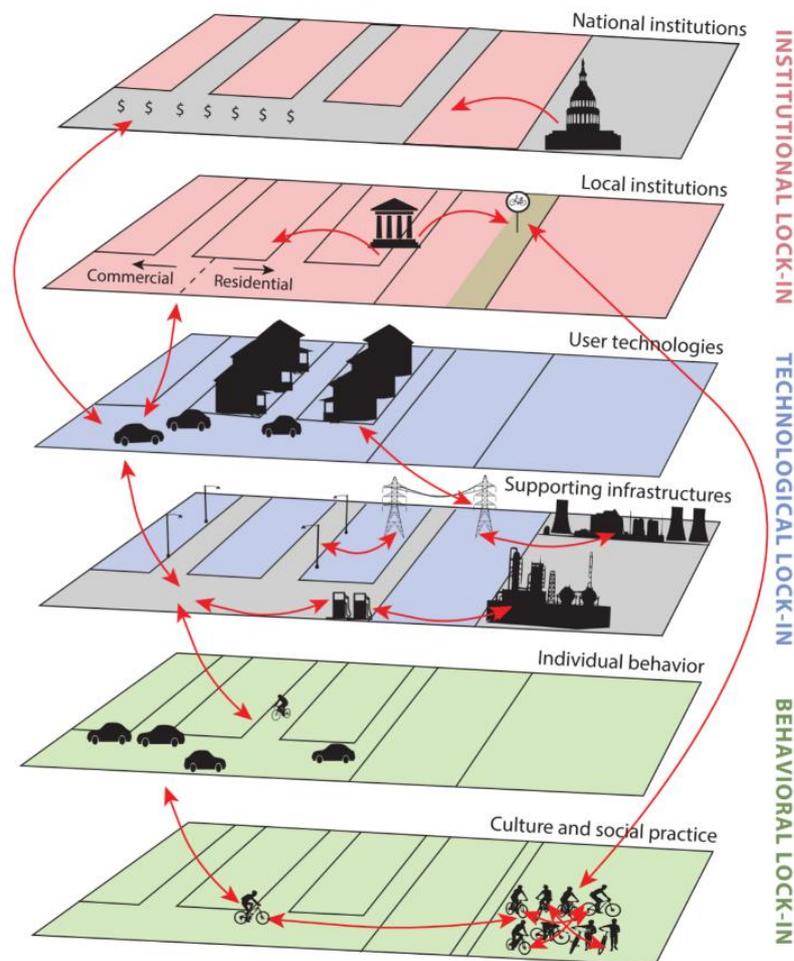


Fig. 2. Example of interaction and interconnection between individual behaviour, social practice, supporting infrastructures, technologies and institutions (Seto et al., 2016)

Additionally, theories from environmental science, sociology, and psychology could be drawn into this study. For instance, insights from environmental science can supply a deeper understanding of the ecological context in which these slums are located and the potential impacts of climate change on the natural environment (Marpaung & Senders, 2020). Psychological theories can explain individual attitude, behaviour, and decision-making processes related to climate change adaptation and mitigation. Sociological theories can help analyze the social structures and norms that influence individual and collective responses to climate change in Jakarta's slums. These interdisciplinary theories and

concepts would provide a comprehensive framework for studying the lessons learned from Jakarta's slums in facing climate change. In addition to Urban Resilience Theory and the Vulnerability and Adaptation Framework, another relevant theoretical framework for this study is the concept of Behavioural Change Theory. Behavioural Change Theory explores how individual behaviour and societal norms can influence responses to climate change. This theoretical framework would focus on the role of individual behaviours, attitudes, and motivations in shaping climate change adaptation and mitigation strategies (Seto et al., 2016). As illustrated by Seto et al. (2016), individual behavior, social practices, infrastructure, technologies, and institutions are interconnected in shaping urban transportation choices and sustainability (Fig. 2).

Modern-day individualism can be explored through sociological and psychological theories that emphasize the increasing focus on individual rights, responsibilities, and self-reliance in contemporary societies. This contrasts with the collective approaches often necessary in slum communities for survival and resilience against climate change. The tension between individualism and collectivism is a critical point of analysis in understanding responses to climate challenges. One sociological theory that could be applied to understand modern-day individualism is the theory of social change and modernization. This theory highlights how societal changes, such as urban, have led to a shift in values and priorities towards individualism (Elliott et al., 2012). Another psychological theory that could be relevant is social identity theory, which examines how individual identities are shaped by the groups they belong to and how these group identities influence behaviour. These theoretical frameworks can provide a comprehensive understanding of the interplay between urban dynamics, individual behaviour, and climate change in Jakarta's slums and urbanization (Hogg, 2021). These theories and concepts would help to analyze how social structures and norms in Jakarta's urban society influence individual and collective responses to climate change.

Recent research underscores the complexity and urgency of addressing climate change impacts in urban slums like those in Jakarta. It highlights the need for a multifaceted approach that combines community resilience, equitable governance, behavioural insights, and technological innovations (Seto et al., 2016). Lessons from these environments can inform broader strategies for enhancing urban resilience in the face of growing climate challenges. (1) Effective adaptation in slums often hinges on strong community networks and localized knowledge. Lessons from Jakarta show that community-driven initiatives can significantly enhance resilience, (2) Decentralized and participatory governance models are crucial for addressing the unique challenges faced by informal settlements. Policymaking should prioritize inclusivity and equity, (3) Modern urban planning must find a balance between fostering individual responsibility and encouraging collective action. Policies should support community cohesion while empowering individual initiatives, (4) Leveraging appropriate technologies can provide critical support for adaptation efforts, especially in resource-constrained environments, for instance early warning systems mobile apps for certain circumstances, flooding in Jakarta slum area (Alam et al., 2021).

This study contends that urban planners and government officials may be considering the marginalization of communities in slum areas while favouring those belonging to the upper middle class. From a social standpoint, residents of slum areas possess robust social capital for addressing climate change challenges, whereas modern middle-class urban communities exhibit individualistic traits that may not adequately prepare them to confront such changes and pressures, including those stemming from climate change. Maintaining a balance between social connection and individuality in urban planning is essential for developing inclusive and adaptable communities. Urban planners must prioritize fostering community engagement, promoting fairness in resource allocation, and strengthening social bonds to ensure that urban residents from all backgrounds can prosper. By nurturing a sense of belonging and collective responsibility, cities can improve their ability to address intricate challenges such as climate change. Previous research has primarily focused on distinct aspects: the social potential of individuals living in slum areas or the individualistic nature of modern urban society. This study aims to explore how enhancing social cohesion

stemming from the combined social capital of both slum dwellers and individuals in modern urban communities can bolster a city's resilience when confronted with the complexities associated with climate change impacts. This paper presents an analytical framework, offers a thorough review and analysis of the subject's findings and discussions, and explores the importance of social cohesion in the social capital of slum communities as well as individualism typical of urban modern society in the conclusion section.

2. Methods

To thoroughly investigate the issue of community potential and resilience in Jakarta, this study employed a two-phased approach designed to ensure a comprehensive and well-rounded analysis. The first phase involved information gathering to build a foundation of knowledge. This was followed by the second phase, which applied analytical frameworks to synthesize the gathered information, draw meaningful conclusions, and identify arguments and counterarguments. The methods utilized in each phase are specified as follows.

2.1 Information gathering

The information gathering consists of literature review. A literature review method is a systematic and rigorous approach to examining a corpus of scholarly literature to develop insights, critical reflections, future research paths, and research questions (Massaro et al., 2016). The literature review was conducted to gain an understanding of the current state of research surrounding Indonesian community potential and resilience. This involved a systematic search and analysis of academic articles, books, reports, and other credible sources. The search strategy included the use of databases such as Google Scholar, JSTOR, DOAJ and Connected Papers, employing keywords and phrases relevant to Indonesian local community potential in facing climate change impacts, such as "Jakarta", "community resilience", "social capital", "climate change" and "individualism". Literature search with the keywords "Jakarta" + "community resilience" yielded a total of 5.670 results in Google Scholar, 105 results in JSTOR, and 10 results in DOAJ. The keywords "Jakarta" + "social capital" yielded a total of 44.900 results in Google Scholar, 792 results in JSTOR, and 57 results in DOAJ. The keywords "Jakarta" + "climate change" + "urban" + "community" yielded a total of 33.600 results in Google Scholar, 1.131 results in JSTOR, and 7 results in DOAJ. The keywords "Jakarta" + "individualism" yielded a total of 17.300 results in Google Scholar, 889 results in JSTOR, and 10 results in DOAJ. The keywords "Jakarta" + "urban" + "individualism" yielded a total of 7.090 results in Google Scholar, 546 results in JSTOR, and 1 result in DOAJ. The keywords "Jakarta" + "social cohesion" yielded a total of 13.000 results in Google Scholar, 409 results in JSTOR, and 6 results in DOAJ.

These numbers are result of raw search and several of the articles overlap in each keyword combination search and databases, therefore further screening of distinct sources was required. Criteria for inclusion involved selecting sources published in the last ten years to maintain the relevance and timeliness of the information, particularly when addressing case studies of Jakarta. However, seminal works predating this period are considered for their foundational knowledge and insights. An overview of the literature selection process is elaborated in Table 1.

Table 1. Literature selection

Keyword search	Total (N=)	Since 2019 (N=)	Within last year (N=)	Located in Jakarta (N=)	Selected articles
Google Scholar	121.560	52.960	61	98	42
JSTOR	2958	412	69	19	10
DOAJ	78	72	23	19	4
Total	124.596	53.444	153	136	56

2.2 Analytical frameworks

Following the collection of information, our analysis utilized various analytical frameworks to extract insights from the amassed body of knowledge. Among these frameworks, comparative analysis played a fundamental role. By thoroughly examining findings from diverse studies, reports, and expert opinions, we aimed to uncover both commonalities and discrepancies. This systematic comparison illuminated intricate patterns and differing viewpoints, providing a comprehensive understanding of the subject matter.

Alongside comparative analysis, systems thinking is also considered when comparing each of the arguments and solutions proposed by each source. Systems thinking involves perceiving the components of a system, their interrelationships, and communication with each other to develop a holistic understanding of the system (Singh et al., 2022). This approach is suitable for addressing complex problems and the multi-faceted nature of human-environment interactions (Nakamori, 2009; Sevaldson, 2017).

To ensure the accuracy and reliability of the study's findings, only reputable and verifiable sources were utilized. These sources included peer-reviewed academic articles, official reports from recognized organizations, and authoritative books. Each source was carefully evaluated for its methodological rigor and relevance to the research topic. If a relevant source did not meet these criteria, its methodology, content, author credibility, and connected references were meticulously scrutinized before being included as a reference. To ensure a balanced and comprehensive discussion, the study considered counterarguments and diverse perspectives. This involved critically examining opposing viewpoints and integrating them into the analysis to underscore the topic's complexity. By adopting this approach, the research aimed to offer a nuanced perspective that accurately reflects the spectrum of opinions and findings on Jakarta community resilience.

3. Results and Discussion

Jakarta, the capital of Indonesia, is currently encountering various difficulties connected to global challenges such as climate change, rapid urbanization, and environmental deterioration. In Jakarta, a multitude of challenges converge, encompassing recurrent flooding intensified by rising sea levels and diminished green spaces, land subsidence stemming from excessive groundwater extraction, substantial air pollution emitted by vehicular and industrial emissions, traffic congestion aggravated by a densely populated urban landscape, critical solid waste management dilemmas with limited sustainable disposal avenues, the urban heat island effect elevating city temperatures compared to surrounding areas, and water pollution compromising the quality of life for millions of residents, further exacerbated by limited access to clean water sources. These complex issues underscore the imperative for comprehensive and sustainable strategies to mitigate the city's environmental and urban challenges while ensuring the well-being and health of its inhabitants. (World Bank Group, 2011). During the Jakarta flood of 2020, over 173,000 individuals had to be evacuated, 66 lives were lost, more than 60% of residential areas were submerged, and the economic damages surpassed US\$700 million (Indra et al., 2022). The research conducted by (Purba et al., 2021) provides important findings, revealing that about 45-90% of Jakarta's shallow groundwater is polluted with *Escherichia coli* (*E. coli*) bacteria. This contamination stems from untreated household waste, which includes detergents, bathing water, home industry activities, cooking, cleaning, and outdoor activities. The study by Syuhada et al. (2023) provides essential statistics on air pollution in Jakarta, revealing it causes over 7,000 negative health effects in children, more than 10,000 deaths, and over 5,000 hospitalizations each year. Additionally, research by (Zulfikri, 2023) that the levels of particulate matter and nitrogen dioxide in Jakarta surpass the World Health Organization's guidelines, highlighting the critical nature of the city's air pollution problem. These challenges underscore the urgent need for comprehensive and sustainable solutions

to address Jakarta's urban and environmental issues, safeguarding the well-being of its residents and ensuring the city's resilience in the face of ongoing global changes.

Urbanization in Jakarta not only sharpens environmental issues but also intensifies social and economic challenges, including increased demand for land, widening social inequalities, and limited access to economic opportunities, particularly among marginalized communities. The city's increasing population and economic advancement have led to substantial expansion of the urban landscape, resulting in various challenges, as discussed in the preceding paragraph. Another crucial concern pertains to land allocation for residential purposes (Alam, 2018). The gentrification caused by escalating land costs and development pressures can result in societal problems such as the expansion of informal settlements and heightened inequality. Meeting the challenge of ensuring inclusive urban development that offers sufficient housing for residents across all income brackets is a major concern (Department of Economic and Social Affairs Social Inclusion, n.d.).

The centralization of economic activities in Jakarta due to urbanization has profound impacts on various aspects of life in both the city and the broader region. The prominent level of economic activities in Jakarta leads to higher wages relative to other areas (Gadgil, 2016). However, this rise in income is frequently coupled with an increased cost of living, which can worsen the gap between different income levels. A large number of inhabitants find it difficult to meet essential needs like housing, healthcare, and education, contributing to a rise in socio-economic inequality. The rapid urban growth often outpaces the development of adequate housing, resulting in the proliferation of informal settlements and slums. These areas lack basic amenities such as clean water, sanitation, and proper housing, leading to poor living conditions for a sizeable portion of the population (Satterthwaite et al., 2020). An informal settlement, also referred to as a slum, shantytown, or squatter settlement, is an area where residents lack legal ownership or formal recognition of their homes and often face challenges in accessing basic services and infrastructure. These areas are typically characterized by the absence of formal land tenure for residents, substandard housing structures made from temporary materials with little regard for building codes or safety standards, limited access to essential services such as clean water and sanitation, high population density without proper urban planning, and increased vulnerability to eviction as well as health and environmental hazards like flooding or landslides (Satterthwaite et al., 2020). (Alzamil, 2017) growth in Jakarta has resulted in the emergence of various communities, each displaying different facets of the city's rapid expansion and socio-economic landscape. Several notable communities have developed due to urbanization: gated neighborhoods, informal housing settlements, suburban areas, high-density residential zones, mixed-use developments, cultural and historical districts, as well as low-income housing projects. The process of urbanization in Jakarta has given rise to a diverse array of communities with distinct features and issues (Alzamil, 2017).

Many cultures in Asia, including Indonesia, practice a form of collectivism in their society. In Indonesia, it manifests in the concept of *gotong royong* (loosely translate to 'mutual aid' in English), in which *gotong* means "work" or "carry" and *royong* means "together" (Koentjaraningrat, 1984). In contrast to the competitive dynamics inherent in the prevailing capitalist framework of contemporary urban environments, *gotong royong* advocates for communal cooperation to accomplish tasks, whether for individual or collective benefit, thereby serving as a significant form of social capital within Indonesian society. This form of social capital demonstrates its capacity to surmount capital limitations in socioeconomic endeavours, particularly in micro and small enterprises. The *gotong royong* culture is seamlessly integrated into various aspects of business operations, including adherence to established business practices to minimize costs and efforts, sharing resources such as equipment and energy, exchanging business insights, and mutual assistance in workforce tasks (Lukiyanto & Wijayaningtyas, 2020).

This culture also appears in urban settings, particularly in informal slum settlements or '*kampung*' communities of Jakarta, where the poor living conditions of residents are often underestimated, yet they harbor significant social capital within their community infrastructure. In such informal settlement environments, social capital manifests in

numerous ways and plays a crucial role in bolstering community resilience, facilitating economic activities, and fostering social cohesion. It involves the networks, norms, and confidence among individuals that facilitate cooperation and reciprocal assistance. Here are several essential elements of social capital in informal settlements (Aldrich & Meyer, 2014) (Table 2).

Table 2. Essential elements of social capital in informal settlements

No	Element social capital	Description
1	Community Networks and Support Systems	Strong community networks through organizations such as RTRW and religious groups where residents rely on each other for support. These networks provide mutual aid and social safety nets (Woolcock, 2001).
2	Collective Action and Community Organizations	Community-Based Organizations (CBOs) such as Youth Organization/ <i>Karang Taruna</i> , <i>Community Empowerment Organization</i> , <i>Community Association/Paguyuban</i> , and Neighborhood and Community Units/ <i>Rukun Tetangga dan Rukun Warga (RT dan RW)</i> that work on improving living conditions, advocating for residents' rights, and facilitating access to services. Informal leaders mediate conflicts and organize activities.
3	Economic Activities and Informal Markets	Informal settlements are hubs of economic activity with residents engaging in informal businesses, trades, and entrepreneurship. Small established shops (<i>warung</i>) provide groceries or basic needs for the community.
4	Knowledge and Skill Sharing	Informal settlements are sites for sharing cultural and practical knowledge, including construction, crafts, and trades. Maintaining and sharing cultural traditions strengthens community bonds.
5	Resilience and Adaptability	Coping mechanisms and innovations to adapt to challenges like natural disasters, economic shocks, and other hardships. Social networks facilitate collective action and creative solutions to problems such as drainage, security patrols, housing, and waste management (Adger, 2006; Berkes & Ross, 2013).

This practice of community resilience through social capital appears in many kampungs in Jakarta, particularly in North Jakarta where residents face the environmental threat of prevalent flooding from the coast and socioeconomic threats from the government's attempts to manage flooding through sea wall infrastructures and land reclamation (Betteridge & Webber, 2019). Municipal flood management has led to evictions of these residents from their homes and interrupt their livelihood. Kampung residents manage to prevail in these transformations through practices of resilience employing the *gotong royong* concept, reworking and resistance despite clashes between existing livelihood practices and social relations and attempts to engineer urban resilience by the government. Social and material relations are crucial in providing mutual aid and support such as sharing of resources, financial loan, and reparation after flooding events. Taking advantage of new infrastructure to rework livelihood opportunities emerged as a response to land reclamation and eviction.

Other kampungs such as Jati Village in East Jakarta and Kebon Kosong Village in Central Jakarta demonstrate a form of community resilience against climate change impacts through community empowerment programs such as the Climate Village Program (ProKlim) (Faedlulloh et al., 2019). Community empowerment generally is implemented via three means: 1) fostering an environment and climate conducive to the optimal development of community potential, 2) enhancing community capacity through the implementation of tangible measures, accommodating diverse inputs, and offering both physical and social infrastructure and amenities that can be utilized by the community and 3) protecting the weak and the interests of the community. The ProKlim program facilitates these means by having creative residents play a key role as initiators to encourage community participation in the program, implementing waste bank projects and reforestation to increase community awareness of nature. The bottom-up implementation of the program at the two research

sites conclude that climate change relates to everyday activities and community behaviour, in which awareness turns into small action.

The trend and demand in urban planning also contribute to structurally limiting the ability for people to develop social relations and sense of community. In the study by (Tobing, 2022), the author argued that as metropolitan cities develop, city planners often implement vertical occupancy to relocate residents from slums. This shift redefines the concepts of space and distance, as well as the relationships among residents. The presence of elevators, closed doors, and the absence of terraces for socializing disrupts collectivist interactions and information sharing. Residents must adapt to these modern, efficient, and economical residential units, which are more suited to an individualistic society. By favoring vertical residential units, the challenge of fostering a sense of community and enhancing community resilience is intensified, complicating the already difficult implementation of community programs. This is evident in the resilience practices observed in North Jakarta kampungs, which vary greatly, often involve disagreements, and can be contradictory. These practices can be individual or collective, sometimes redistributing resources and other times contributing to existing inequalities, making systematic organization by city officials impractical. Similarly, the ProKlim program implemented in two villages in East and Central Jakarta demonstrates the difficulty of enacting systemic changes through a top-down approach. These examples underscore the complexities and limitations of current urban planning and resilience initiatives in Jakarta, as well as the threat of individualism eroding collectivism and social capital.

Proofs of these social capital further shine a new light on the perspective of the urban poor and their role in slum communities. Wilhelm (2011) contends that instead of seeing slums as a problem in urban growth, they should be considered as a solution to urban issues. The findings of this study suggest that there is a high degree of social cohesion, self-organization, self-regulation, and self-reliance within these kampung dwellers that could be adopted into mitigation and adaptation strategies to urban Jakarta threats, it can be seen on Fig. 3.

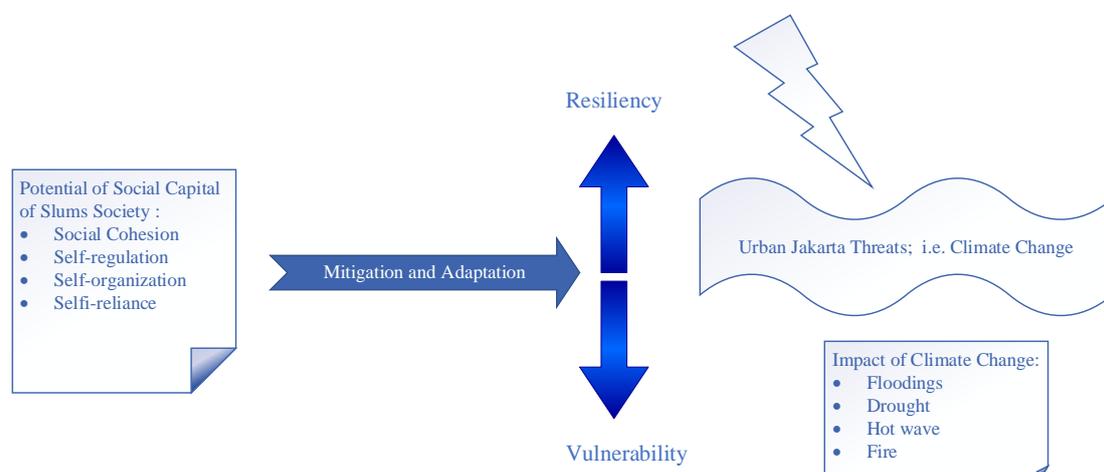


Fig. 3. Illustration of interconnection of potential of the social capital that will be capitalized for climate change mitigation and adaptation. It will increase resiliency and reduce vulnerability of society in facing impact of climate change

The dynamic nature of these communities and urban sprawl do not follow the technocratic approach used by urban planners and engineers when designing for climate change resilient cities. Therefore, city leaders and planners should not dismiss the existence of this social capital, but rather they should be considered as an integral part to urban life whose perspective and adaptation strategies should be included when deriving climate change mitigation decisions.

However, there are threats to the preservation of these collectivist social capital. In Jakarta, the transformation into a metropolitan hub, along with the rise of adjacent suburban cities, has altered social dynamics. With many commuters traveling to Jakarta mainly for work, the city has become a liminal space where social interactions are largely transient and transactional. One reason for this is the post-suburban areas, often referred to as "edge cities", symbolize individualism and freedom, characterized by the prevalence of automobiles and luxurious private spaces (Garreau, 1991). This change signifies a broader movement towards individualistic behavior in urban communities, in stark contrast to traditional *gotong royong* values.

While developing a metropolitan city, the city planner uses vertical occupancy as a solution to relocate residents from slums. There is a change in the meaning of space and distance and the relations between citizens in this settlement. The elevator, closing doors, none of the terraces to sit in front of their house, are destructive to this collectivistic person on interacting and sharing information. Citizens must be adapted to these modern residential boxes, which are more efficient and economical, and common use for individualistic society (Tobing, 2022).

Strategies to combat these threats to Indonesian collectivistic values may lie in the ability to improve urban social cohesion and design an environment in which interactions between people could flourish. Social cohesion is evaluated based on five factors: trust, recognition, participation, reciprocity, and integration (Amir et al., 2023). In Jakarta Bay, social capital is utilized to manage plastic waste through initiatives such as the Waste Bank, Citizen Relations Management, Joint Responsibility Garbage (Sampah Tanggung Jawab Bersama/Samtama), and Jakarta Recycle Center programs (Nabillah, 2022). This approach highlights the importance of community resilience and social capital, which can also be strengthened through community programs and preserving *gotong royong* values, especially in challenging times. *Gotong royong*, the Indonesian principle of cooperation, plays a crucial role in fostering community solidarity and collective action. This cultural practice becomes especially important during crises, as demonstrated by the experiences of street vendors during the pandemic. The research showed that all street vendors faced declines in turnover, income, and profits, which forced them to adjust their household expenses to survive. During these challenging times, they relied significantly on social capital, particularly social cohesion and inclusion, to assist each other in business development, financial support, knowledge transfer, and trade skills (Nurbaiti, 2021).

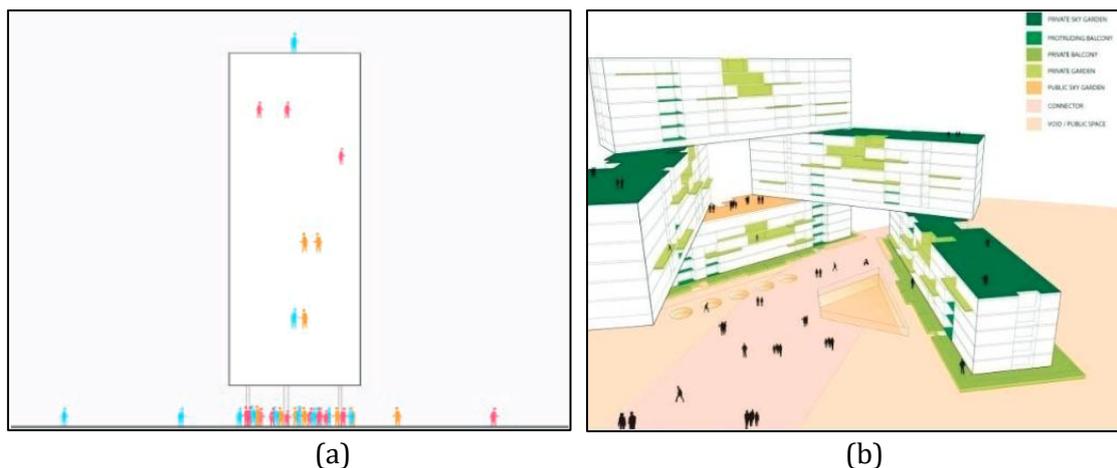


Fig. 4. (a) Tower-type buildings can implement design elements, such as ground-level public access and scattered public programs at different story levels, to shift individual functions to collective functions and increase "chance encounters". (b) A courtyard-type architecture, such as The Interlace apartment complex building in Singapore can produce more intimate public spaces which support more social interaction

Intentional architectural considerations with vertical spaces when designing urban spaces can enhance social interactions. In a tower-type vertical housing, social interactions can be observed through public access, programs, hybridization, and periscopes (Wie & Dewi, 2019). Architectural considerations can optimize vertical housing configurations to encourage social engagement. Additionally, third places like reading parks and markets offer people an escape from their routines, contributing to an improved social life (Manuel & Trisno, 2021).

With these findings, we developed a causal loop diagram (CLD) to illustrate the relationships among various factors contributing to community resilience in urban environments (Fig. 5). The diagram emphasizes the crucial role of social capital in bolstering community resilience. Strategies from slum communities for leveraging social capital could be highly relevant to Jakarta's urban context. As vertical housing becomes more prevalent, it is advisable for developers and municipal authorities to introduce community-building programs for high-rise residents. These initiatives can enhance social capital by encouraging collectivism and cooperation ("*gotong royong*"). Additionally, the CLD underscores the significance of architecture that promotes social interaction. By integrating social interaction-based designs, such as communal areas and shared spaces, developers can create settings that naturally facilitate relationship-building and trust among residents, thereby boosting social capital. This, in turn, strengthens community resilience to environmental challenges, creating a reinforcing feedback loop that benefits the broader urban ecosystem. Therefore, incorporating these elements into urban planning and development strategies can greatly enhance community cohesion and resilience in densely populated urban areas like Jakarta.

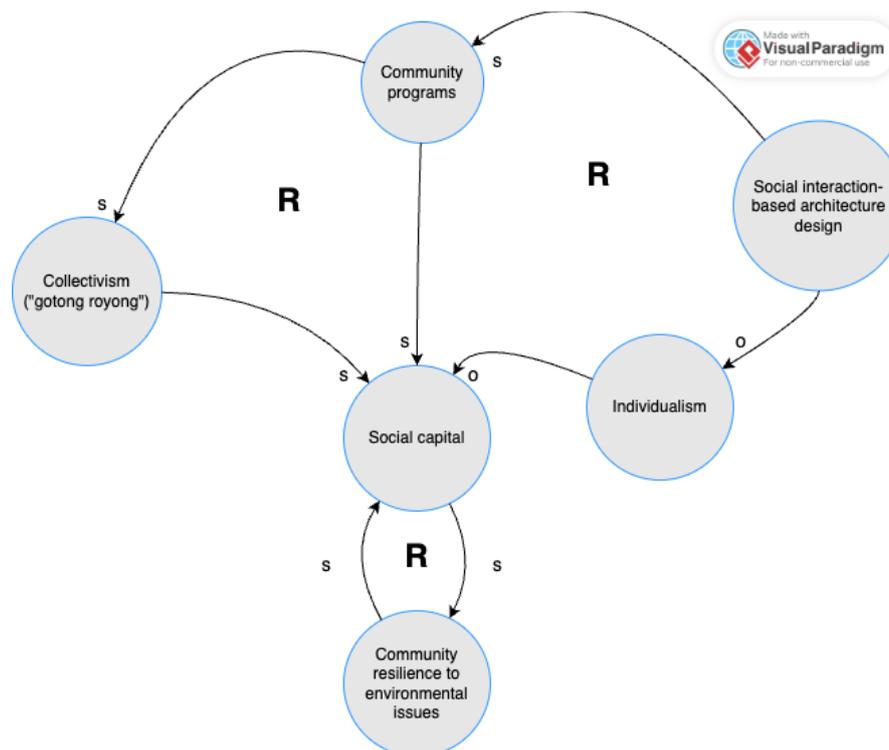


Fig. 5. Causal loop diagram of factors contributing to urban social capital and community resilience

4. Conclusions

As a megacity, Jakarta is endowed with as a substantial social capital within its urban communities, largely due to the deeply ingrained Indonesian culture of *gotong royong*, which fosters communal interaction as a natural aspect of life. However, modern urbanization and technocratic approaches to city development threaten to undermine this

valuable social capital by promoting increasing levels of individualism. But despite the growing individualistic tendencies, many communities still display social capital through informal forms of self-reliance, self-resilience, and self-regulation within their area of living particularly in slum communities and disaster-impacted areas such as coastal Jakarta. Therefore, it is wise to not dismiss these communities' practices in planning for a climate resilient city regardless of their complexities and dynamics. Further research and discussions regarding a framework of local and city leaders' participation in building community resilience may be required to appropriately harnessing this valuable social capital. Additionally, creating third places like reading parks and markets can provide citizens with opportunities for social engagement and improved quality of life. By focusing on both structural and cultural aspects, Jakarta can address its urban and environmental challenges while fostering a resilient and cohesive community. Drawing from this research, integrating social capital values into modern society could counteract rising individualism amid urbanization. Implementing programs like *gotong royong* or community cleaning days, encouraged by the government and developers in urban infrastructures, can strengthen community bonds. These activities foster togetherness, reduce individualism, and enhance social cohesion and resilience, helping society face challenges of climate change more effectively.

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Author Contribution

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