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DISCUSSION DOCUMENT

Transformative Adaptation to Climate Change and Informal Settlements in Coastal Cities Entry Points for Jakarta and Ho Chi Minh City



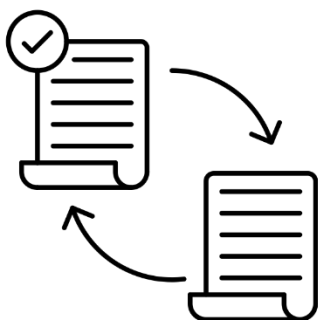
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Transformative Adaptation to Climate Change in Coastal Cities



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This is a Discussion Document

Summary

This case study is part of the UNRISD project “Transformative Adaptation to Climate Change in Coastal Cities” which explores adaptation decision-making processes and barriers to transformative solutions in order to inform more progressive policy making in the context of Southeast Asian coastal cities.

This paper synthesizes the findings from case study research that was undertaken on adaptation in the context of informal settlements and urban development in Ho Chi Minh City, Viet Nam and Jakarta, Indonesia. Both cities are emblematic for rapidly urbanizing coastal cities that are highly exposed to the increasing impacts of climate change. Through the comparative analysis, it seeks to dissect and imagine how cities may address root causes of vulnerability to flood risks experienced by inhabitants of informal settlements. Through this analysis, the authors hope to initiate a debate on policy pathways to more transformative adaptation that achieves social justice.

Case study papers

- Huynh, Thi Phuong Linh, and Hong Quan Nguyen. 2019. *Transformative adaptation and social justice in Ho Chi Minh City, Viet Nam. Discussion Document*. Geneva: Rosa-Luxemburg-Stiftung and UNRISD.
- Simarmata, Hendricus Andy, and Gusti Ayu Ketut Surtiari. 2019. *Adaptation to Climate Change. Decision Making and Opportunities for Transformation in Jakarta, Indonesia. Discussion Document*. Geneva: Rosa-Luxemburg-Stiftung and UNRISD.

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1. Introduction

While generations of governors have proposed different interventions to Jakarta's slums that coexist with its skyscrapers (Andapita 2019), in April 2019, the Indonesian administration faced a different scale of problem, announcing the relocation of the entire capital city as the island is sinking at an alarming rate (Watts 2019). Elsewhere in Asia, in October 2019 a group of researchers published new findings suggesting that by 2050, Ho Chi Minh City will disappear underwater at high tide (Lu and Flavelle 2019), while city planners and architects still debate issues around informal settlements and pollution along the city's canals.¹ Climate change impacts are threatening the very existence of these cities, and unfortunately the struggles of Jakarta and Ho Chi Minh City are not unique. They are emblematic of many coastal cities around the world confronting climate change impacts and development challenges concurrently.

Located on the interface between land and sea, coastal cities are economic engines of many nations, concentrating large numbers of people and assets, albeit with high degrees of socio-economic inequality and political marginalization. Coastal cities are also faced with a multiplicity of challenges due to a combination of sea level rise, land subsidence, heavy rainfall and climate change. The adverse impacts of climate change and their uncertainty have rendered incremental adaptation inadequate: Infrastructure-heavy, protective interventions such as dykes and sea walls are ill-equipped to address long-term vulnerability. In response, the global policy discourse has shifted its attention to transformative adaptation – adaptation that seeks to change the fundamental attributes of systems in response to actual or expected climate impacts. Transformative adaptation includes measures of a greater scale and magnitude and involves governance system reforms (IPCC 2014). Transformative adaptation involves systemic changes that address entrenched injustices and ensure sustainable, resilient and inclusive futures (GCA 2019).

While transformative adaptation has been adopted at the political level, little is known about what it actually looks like on the ground. This paper analyses adaptation initiatives involving informal settlements in Jakarta and Ho Chi Minh City as case studies to begin to operationalize transformative adaptation. It seeks to dissect and imagine how cities may address root causes of vulnerability to flood risks experienced by inhabitants of informal settlements. Section 2 summarizes the case studies in Jakarta and Ho Chi Minh City, based on the findings of Simarmata and Surtiari (2019) and Huynh and Nguyen (2019). Section 3 provides a comparative analysis of the cases before Section 4 closes the paper with policy implications based on these findings. The annex comprises a more detailed overview of the context of climate change and flooding in coastal cities as well as an introduction to the relevant literature on transformative adaptation and existing approaches to addressing vulnerability in informal settlements.

¹ <https://vietnamnet.vn/vn/bat-dong-san/du-an/can-canhh-cac-khu-o-chuot-hoi-thoi-o-nhiem-nang-o-sai-gon-569826.html>.

2. Findings

2.1. Jakarta

2.1.1. The city, flooding and *kampung*

Greater Jakarta, also known as Jabodetabekpunjur, is a metropolitan region consisting of three provinces, nine districts and cities, a total population of approximately 30 million people and an area of 6,600 km² (BPS Provinsi DKI Jakarta 2016). From 2010 to 2016, population density grew 1 percent per year (JICA 2012). As the primary city of Indonesia, Jakarta contributes 3,440 trillion Indonesian Rupiah (IDR),² approximating 26 percent, to the national GDP.

Jakarta has been experiencing an increase in both flooding frequency and intensity due to its geographical conditions and spatial composition. Jakarta is located on coastal and deltaic land with an estuary of 13 major rivers and two canals. Extreme flooding and inundation result from the concurrence of heavy rainfall and tidal flooding. Over the past two decades, the frequency of rainfall and the uncertainty of rainy seasons have grown. Northern Jakarta is also especially prone to land subsidence due to its young soil characteristics. A land subsidence rate of 15 to 25 centimeters per year has worsened the impacts of sea level rise and increased tidal floods (Lin and Hidayat 2018). Furthermore, the lack of green open space and blue open space, constituting only 10 percent and 3 percent of the total area of the city respectively, translates to low water absorption capacity and high sensitivity to water problems (Dinas Kehutanan Provinsi DKI Jakarta 2018; BPS Provinsi DKI Jakarta 2014). As a consequence, for example, the years 2007 and 2013 were marked with two devastating flooding events, paralyzing over 60 percent of Jakarta.

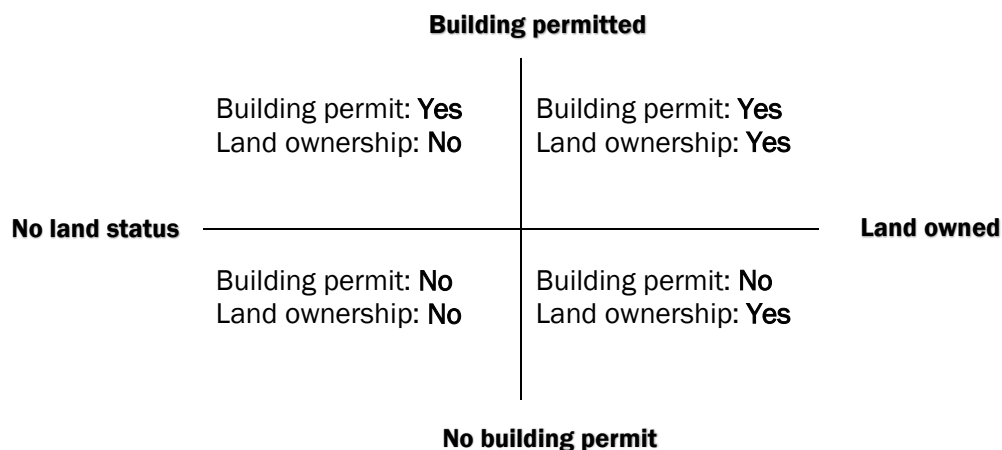
The urban poor experience the most severe impacts of flooding. Jakarta has over 600 *kampungs*, spontaneous informal settlements inhabited by the urban poor, who mostly work in the informal sector.³ Many *kampungs* are located in frequently flooded areas, which experience flooding every three to five years. The experience of and response to flooding events by *kampung* residents are at the lowest adaptation level – survival. From 2009 to 2018, flooding resulted in 76 fatalities, 241 injuries, and 813,678 flood refugees in *kampungs* (BNPB DIBI, 2019). *Kampung* residents remained in shelter camps longer than other Jakarta residents—over 14 days—during and after such events.

There are four types of urban *kampung* residents: (i) those that have a clear legal status for both land and building; (ii) those that have a legal building permit, but no legal land status; (iii) those that have legal land status, but no building permit; and (iv) those that have neither legal land status nor a building permit.

² USD1 = IDR 14,134 (Oct. 2019).

³ Historically, *kampung* refers to a residential unit that has continually evolved under changing political, social and economic conditions of the city, beginning from Dutch colonization until today. For the purpose of this paper, the term *kampung* is used to describe urban informal settlements in contemporary Jakarta.

Figure 1. Four types of urban *kampung* residents



Source: Own draft

As *kampungs* are often located in flood-prone, undesirable areas and along water bodies, much of Jakarta’s flood adaptation effort has resulted in the relocation of *kampung* dwellers. In 2015, relocation affected 30 communities for the purposes of river normalization (12 sites), retention pond development (1 site), city park development (1 site), and others (16 sites) (LBH Jakarta, 2015). As Jakarta seeks to improve drainage capacity of the city’s water bodies and reduce hydrometeorological disasters, relocations are increasing in number.

The typology above, however, implies that different interventions are needed for the different *kampungs* and their dwellers. For type (i) residents, the provision of additional infrastructure can reduce flood impacts. For type (ii), an administrative investigation is necessary to examine the issuance of building permits despite unclear land ownership. For type (iii), zoning regulations should outline development preconditions in flood plain areas zoned for development. For type (iv) residents, relocation is the only solution because they lack legal status. Future scenarios of flood impacts need to be estimated for all 4 categories in any case.

2.1.2. Jakarta vision

The 2017-2022 mid-term development planning of DKI Jakarta province emphasizes the vision for Jakarta as a progressive, sustainable and cultural city, where citizens are engaged in ensuring civilization, justice and welfare for all. It articulates a commitment to balancing environmental protection and social development. Compared to the previous five-year programme, it takes a different, more human-centered, participatory and inclusive approach to flood management (Table 1). Flood mitigation and community development are integrated, and citizens have access to the development agenda.

Table 1. Flood management in Jakarta before and after 2017

No.	Flood management strategies	Before 2017	After 2017
1	Approach to improving the capacity of rivers	The term used was normalization : the construction of embankments or walls along the Kali Ciliwung and other rivers	The term now used is naturalization : efforts to reduce the flow of water from upstream to downstream by developing a number of infiltration wells and greening flood-plain zones
2	Response to settlements affected by flooding	Relocation, followed by building <i>rumah susun</i> or cheap apartments for relocated flood-affected residents	Land consolidation, keeping residents in flood-affected areas but with major improvements, involving local residents in preparing a local Community Action Plan
3	Flood emergency response	Using water pumps (especially in flood gates) to pump water out and distribute it to the canals, reducing water inundation Creating a rainbow team: The blue team deals with inundation; the orange team deals with cleanliness, including clogged drains; and the green team focuses on gardening (greening) the city.	Using vertical drainage, putting water into the soil through infiltration wells The rainbow team still exists, but participation of local community is encouraged to handle local inundation.

Source: Own draft

To a certain extent, *kampung* residents confirmed the changes in the state's approach to flood management. Talking about a coastal fishing market revitalization plan, one resident in Kamal Muara said: "Nowadays, the (government) programme... is discussed with the residents. I was invited to the Mayor's Office several times." In Muara Baru, *kampung* residents also agreed that there was better communication between the government and the citizens. One resident of Muara Baru shared how, upon finding a crack in a recently constructed sea wall, residents had reported to the neighborhood leaders who then coordinated with the *kelurahan* office.⁴ However, besides the improved communication channel, residents still experience slow responses from the technical departments in addressing issues.

The Jakarta government's attitude towards *kampungs* also manifests in its various planning concepts for Jakarta Bay, a waterfront area exposed to sea-level rise and land subsidence. Visions for the bay range from a world-class waterfront city, luxurious development on reclamation land with a giant sea wall, to restoration of the bay's ecosystem. These planning concepts recognize the presence of surrounding and nearby *kampungs* and include the revitalization of those alongside the coast, yet rarely incorporate *kampungs* into the development plans.

⁴ *Kelurahan* is the lowest level of government in Indonesia, the equivalent of an administrative village or subdistrict.

2.1.3. Case study

Following a severe flood that paralyzed 60 percent of Jakarta in 2013, one of the city government's adaptation strategies was "normalizing" Waduk Pluit. Waduk Pluit is a reservoir established in the 1960s, increasingly narrowed due to sedimentation and development onto the water body. In order to dredge the reservoir and make more space for water, the government relocated informal dwellers in nearby *kampung*s to vertical housing. Affected communities had three options: (i) vertical social housing in Marunda, 20 km away from Waduk Pluit, with better facilities and more services including microfinance, training, transportation and urban farming; (ii) vertical social housing in Muara Baru, closer to Waduk Pluit, with services limited to microfinance and urban farming; and (iii) self-resettlement. In options (i) and (ii), residents received six months of free rent. Those with a Jakarta ID card received priority in housing.

In the planning and implementation of Waduk Pluit relocation, a lack of transparency and participation led to perceived unfairness among affected families. While the local neighbourhood board stated that they had organized meetings to disseminate information to the people, residents insisted that information did not reach the entire community. Residents reported having attended meetings with a non-profit organization on slum upgrading, but relocation had not been discussed. Rumours were widespread regarding the amount of compensation, the waiting list for vertical housing, and other relevant information. Perception of unfairness also arose from the lottery-based housing assignment. With the exception of families with special needs, such as those with an elderly family member, other needs associated with work and employment, such as storage space for fishing equipment or street vending wagons, were not taken into consideration.

While affected families had the choice between two on-site and off-site vertical housing options, only a few respondents in the study mentioned voluntary relocation. Most respondents had no choice but to move unwillingly. Whereas respondents agreed that relocation should provide access to better housing, from non-permanent to permanent housing, in practice the housing provided was not in line with *kampung* dwellers' expectations and needs. Indeed, several households moved back to the informal settlement after the first six months of free rent in vertical housing.

According to the affected families, relocation has adverse impacts on their lives. First, relocation disrupts the social network that was the foundation of *kampung* lives. Kinship networks and community bonding, major coping mechanisms during times of difficulties and shocks, are broken as people move away. Second, the disruption in social networks also affects people's economic opportunities. After moving, a food vendor loses her income as she no longer has access to her frequent customers, and also has to limit what she sells in order to reduce negative competition in the new market. Third, the rental system in vertical housing proves challenging for the dwellers, many of whom have unstable incomes and are not used to a monthly rental system. Finally, access to water remains a problem. In vertical housing, due to incomplete water infrastructure, people still have to buy clean water from private vendors like they used to in the *kampung*. The price, however, has increased because of the extension required to deliver water to higher floors. Some indicate that access to clean water is even worse than in the informal settlement.

Not only did Waduk Pluit residents have varied access to information about the relocation process, the outcomes of relocation also differ based on existing socio-economic and power relations within the affected communities. Residents who have rented a home in the *kampung* for over three decades are likely to accept relocation. One woman expressed her happiness to have the key to her own home in the Marunda vertical housing. She went on to explain that while the rental system was stricter at Marunda, her rent was halved compared to the informal settlement. Moreover, she was lucky enough to leave her job as a street food vendor in Waduk Pluit and get a cleaning job near Marunda.

In contrast to the positive response in the aforementioned case, residents who have owned a home with rooms for rent for over three decades in the *kampung* are more likely to experience worsened socio-economic conditions. A former Waduk Pluit dweller stated: “I had more than ten rooms for rent when I was in an informal settlement in Waduk Pluit, and I got money from that. But now I have to pay for myself.” People like this, often having power in the informal settlement, lost their income and often experienced difficulty adjusting to the new routine of paying monthly rent for themselves. Many residents in this typology thus return to the informal settlement after a while.

A third type of experience is that of renters having lived in the *kampung* for less than two decades and not entitled to vertical housing. Their post-relocation conditions are more precarious. A worker in a fishery business was able to sublet a room in a relative’s vertical apartment, yet always had to be ready to move in case of an inspection from the government as the sublease was not legal.

2.1.4. Conclusion

In the context of climate change, with impacts of sea level rise in the coastal region and land subsidence, Jakarta nevertheless envisions itself as a city free from the threat of flooding and drowning. The government sees the scattered *kampungs* taking up green and water spaces as one of the causes to be managed; relocation is seen as the easiest solution. The case study of Waduk Pluit reflects serious injustice issues behind *kampung* relocation in the face of climate change, suggesting path-dependency rather than a transformative pathway. While the government of Jakarta tries to formalize *kampungs* by providing formal housing, it fails to reduce long-term vulnerability to uncertainties and the risks that generates; many relocated families get trapped in new risks by returning to the original hazard-prone areas, or remain socio-economically vulnerable.

2.2. Ho Chi Minh City

2.2.1. The city, flooding, and *khu o chuot*

Situated on the west bank of Sai Gon river, Ho Chi Minh City is the key economic zone of Viet Nam, contributing 20 percent of the national GDP. It is composed of 22 districts, including 12 urban districts, four rapidly urbanizing inner districts, and six rural outer districts, with a total population of almost 9 million people. The city is faced with complex challenges resulting from overpopulation and ineffective spatial planning, including but not limited to human-induced environmental degradation, inundation due to flood plain development, loss of open space, as well as social stratification. By the end of the 1990s, Ho Chi Minh City had 67,000 households living in informal settlements, known as *khu o chuot* in the local language, the majority of which are on undesirable land along canals and other water bodies. Rivers and canals in the city are heavily polluted due to ineffective domestic and industrial wastewater management.

Urban flooding is one of the city’s top concerns. Ho Chi Minh City is exposed to both pluvial floods due to heavy rainfall and fluvial floods from the rivers. Climate change adaptation has integrated fluvial flood adaptation, while pluvial floods are more difficult to manage, especially given the low capacity of the drainage system. Urban development further exacerbates the challenge as it reduces permeable surface and water retention space.

To deal with flood and water pollution, current strategies mainly focus on hard infrastructural measures. The city has spent approximately VND 10,000 billion⁵ to build six tidal control sluice gates and eight kilometers of dykes. There have been more investments in large-scale infrastructural projects than in “soft” measures, such as increasing green and blue spaces to address pluvial floods (Nguyen et al. 2019). Another focus of the city’s adaptation effort goes under the slogan “Rescue the

⁵ 1 US dollar is approximately 23,208 Vietnamese dong.

Canal". Urban upgrading by restoring canals and eliminating nearby *khu o chuot* has been on the agenda since the 1990s (Coit 1998). In 2002, over 93,000 of the city's housing units were in poor condition and the target of urban upgrading, 25,000 of which encroached on the city's canals.

2.2.2. Ho Chi Minh City vision

With the aim of creating a modern and livable city, in 2015 the government of Ho Chi Minh City approved and implemented Seven Breakthrough Programmes, including (i) Quality of human resources; (ii) Improvement of administrative reform; (iii) Economic growth and competitiveness; (iv) Transportation and traffic jams; (v) Flood reduction; (vi) Water pollution; and (vii) Urban improvement. Urban improvement is one of the key programmes, aimed at reorganizing informal communities along rivers and canals and revitalizing degraded apartments. The programme also seeks to improve access to and quality of water, reduce flooding, and create livable spaces. According to official statistics, by 2018, 36,000 households have resettled as part of the programme (Department of Construction, 2018).

Decision making in Ho Chi Minh City is top-down in nature, and as such the central government is the main driver of public sector adaptation efforts (Gravert and Wiechmann 2016). The 2017 New Planning Law requires an integrated approach to planning and improves public consultation procedures and planning transparency. Yet complicated bureaucratic procedures and tight control by the state continue to hinder public participation and transparency. Participation takes the form of public consultation in which state cadres provide opinions on behalf of the people, albeit with an unknown impact on the actual decisions made (Nguyen and Tung 2007).

2.2.3. Case studies

Tan Hoa – Lo Gom

Tan Hoa – Lo Gom was once a major navigation channel connecting Ho Chi Minh City to the Mekong River Delta, but is currently heavily polluted, encroached and populated. Along and on the canal are dwellings with little access to water, sanitation and electricity. Many residents are migrants without residence permits, while others have no title to the land (BTC 2014). Two canal upgrading projects have targeted this *khu o chuot*: (i) Tan Hoa – Lo Gom (I) by the Belgian Development Agency (BTC) between 1998 and 2006 with extended support until 2010 affecting 242 households; and (ii) Tan Hoa – Lo Gom (II) by the local government between 2013 and 2015.

Tan Hoa – Lo Gom (I)

Tan Hoa – Lo Gom (I), under BTC's guidelines and leadership, involved intensive social support and a high level of transparency and participation during land acquisition, compensation and resettlement. First and foremost, leaders of the project worked with the local government to ensure that houses meeting certain conditions would not have to relocate, thus minimizing livelihood disturbances. For those for whom staying was not an option, experienced social workers served as a bridge between the project management and the affected households. Individual household meetings provided residents with clear, transparent information about housing options, compensation and other processes.

Most houses on the canal banks received compensation proportional to the living area, while stilt houses on the water received a flat rate of compensation. Affected households had a choice of three housing options: (i) an apartment in Lo Gom building near their old settlement (in situ resettlement); (ii) a land plot in Binh Hung Hoa B, ten kilometers away; and (iii) compensation money for housing of their own choice (self-resettlement). A group of representatives consisting of trusted locals presented to the project team the opinions of those opting for in situ resettlement regarding the design of the apartment building. Lo Gom apartments and Binh Hung Hoa B land plots came with varying prices to ensure affordability for all. Moving support, poverty alleviation programmes and savings groups were among the services that affected households benefited from.

After the relocation of Tan Hoa – Lo Gom (I), outcomes have varied among households, depending on their existing assets, mindsets and coping mechanisms. At Lo Gom, the apartments on the ground floor are more expensive, but those who can afford them have benefited from better business opportunities. For some people resettling in Binh Hung Hoa B, income has decreased due to the difficulty of adjusting to a completely new market. Others, on the other hand, decided to sell their land, the price of which had increased by 2019, in order to find another home and use the remaining money to start a business.

Finally, there are also cases in which support from the project has become one of the main drivers motivating adaptation to change. Mrs. Y is an example: Mrs. Y's family got a land plot in Binh Hung Hoa B. Mrs. Y's family received VND 25 million for their stilt house and the option to buy a plot of land in Binh Hung Hoa B. After spending all VND 25 million on the plot, they still had VND 60 million to pay in 10 years. They also received a loan of 40 million from CEP to build a simple house. After moving, Mrs. Y tried different businesses. She sold bread, then switched to rice porridge, then joined the cleaning staff at an elementary school. She said: "It was fine to sustain day by day, thus I stay".

Tan Hoa – Lo Gom (II)

In 2013, the remaining parts of Tan Hoa – Lo Gom canal continued to be upgraded under the implementation of the local government's project. This phase was characterized by rigid, top-down and non-transparent practices of land clearance and resettlement. During the process, there was one joint meeting with all households for public consultation followed by individual meetings with each household for resettlement compensation. The format of the meetings restricted people's ability to voice their opinions. Rumours and uncertainty were widespread, as people did not have access to clear, transparent information regarding compensation rates or housing options. Residents resettled in Vinh Loc B resettlement area, 11 kilometres away from Tan Hoa – Lo Gom, their original settlement. While sites and services at Vinh Loc B represent improved living conditions, there are fewer opportunities for relocated households to make a living compared to the original *khu o chuot*. Many affected households commute the long distance back to work near Tan Hoa – Lo Gom every day, while others sold their new house to move back.

Hang Bang Canal

In the 1990s, Bai Say Road was created when Ho Chi Minh City filled up a canal to make space for residential development. It was followed by years of inundation and ultimately an attempt in 2016 to undo the decision. Known as Hang Bang Canal Upgrading, the project involved relocating 160 families living along the canal. It took the same approach as the second phase of Tan Hoa – Lo Gom, with a low level of communication and transparency. Public consultation took place as a formality, and opinions raised by the people were not taken into consideration.

Similarly to the previous relocation examples, outcomes of the resettlement project vary among households. Those with better financial assets can afford to buy a new house nearby and continue their businesses, while others move further away and commute back for work opportunities. Many individuals become poorer after the project, some at the verge of homelessness, and are now paying rents rather than living in their own property as before. In addition, the relocation has had adverse impacts on the mental well-being of the affected residents. The elderly, for example, find the process psychologically and socially challenging, and the new living conditions a big shock.

Figure 2. Hang Bang project



Left - Mrs. A and her mother got agreement from her sibling to keep all the money to be able to buy a new, smaller house next to the old place. She came back to the same location along the canal to sell drinks, with the support of an old neighbour who let her using the space in front of their house. "Life is fine, yet stable".

Right - Mr. B's vehicle for rent to transport material in the area. He comes to the area every day, doing business with the same group of people along the canal, and then returns to his new home in Binh Tan district, 13 kilometres away. The money was shared among his six brothers and sisters, and the amount was not enough to buy something close by. "Life is not better, but continues."

2.2.4. Conclusion

The cases of urban upgrading in Ho Chi Minh City exemplify the city's desire to transform itself by restoring water bodies and improving the life of urban dwellers. Yet, while flooding and pollution issues improve, lives of many affected households experienced disruption.

3. Discussion

3.1. Vulnerability of informal settlements in coastal cities

In both Jakarta and Ho Chi Minh City, informal settlements situated near the reservoir and canals are subject to multiple layers of vulnerability. The populations living in *kampung* Muara Baru and *khu o chuot* Tan Hoa – Lo Gom and Hang Bang are resource-deprived and socio-economically marginalized. In response to a lack of adequate and affordable housing in the cities, such populations resort to settling in undesirable areas, including spaces that are heavily polluted, lacking in services and infrastructure, and highly exposed to floods. They suffer disproportionately from floods due to their low adaptive capacity, as portrayed in the recent devastating floods in Jakarta. As both cities implement adaptation measures such as reservoir normalization and canal restoration, these same communities are subject to livelihood shocks and displacement.

In both cities, residents' legal status is an important determinant of the level of vulnerability to adverse impacts of adaptation measures. In Ho Chi Minh City, many dwellers in informal settlements are migrants. They arrive in the city in search of a better life but end up in precarious living conditions on untitled land, which makes them the most vulnerable to relocation and even homelessness. In Jakarta, having land ownership, a building permit and legal resident status ensures entitlement to resettlement housing and priority status.. Tan Hoa – Lo Gom (I) was an exception in which affected households received equal compensation rates regardless of status.

3.2. Adaptation from the top down

3.2.1. Distributive justice in integrating slum interventions in climate change adaptation and mainstreaming adaptation

There is an increasing trend in both Jakarta and Ho Chi Minh City of informal settlement interventions, such as urban upgrading or *kampung* improvement, being integrated into flooding adaptation, as well as climate change adaptation being mainstreamed into sectoral planning and overall socio-economic development. Critical examination of the design and implementation of this policy trend, and perhaps its adjustment, are necessary if it is to facilitate transformative adaptation.

In Jakarta and Ho Chi Minh City, *khu o chuot* and *kampung* are often located in undesirable flood-prone areas, and both governments integrate slum upgrading in their adaptation efforts. In Jakarta, relocation is intended to increase water absorption and create a healthier environment, through mechanisms such as river normalization and retention pond development, among others. Similarly, Ho Chi Minh City's urban upgrading programme, besides improving the lives of people living near canals, also aims to enhance water quality, reduce floods, increase green spaces, and incentivize development. In both cases, the state perceives informal settlements as a loss of blue and green spaces, a cause of urban flooding, an impediment to adaptation, and a hindrance to development. Whether known as *kampung improvement*, *kampung revitalization*, or *urban upgrading*, interventions in informal settlements are often the stepping stone to other adaptation measures, rather than being an end in themselves. The planning concepts for Jakarta Bay clearly demonstrate the integration of *kampung* improvement efforts into megaproject development, while Ho Chi Minh City's realization of its motto "Rescue the Canals" by clearing *khu o chuot* suggests that the canals can only be protected by eliminating slums.

As a result, urban upgrading and adaptation in both cities involve a great deal of relocation of residents. Both case studies find few attempts at in situ upgrading. Rather, affected dwellers had no choice but to leave their homes and relocate to new housing. In the first two years of the Seven Breakthrough Programmes (2015 - 2017), Ho Chi Minh City has had 36,000 cases of relocation, while in 2018 alone Jakarta saw the relocation of approximately 300 families and 900 business units. This indicates that displacement of the urban poor has been a by-product of adaptation in both cities.

It brings forward the question of distributive justice, as the cities benefit from these measures at the expense of the suffering of the affected households.

While the relocation of informal settlements has become a part of adaptation, adaptation planning is also becoming increasingly comprehensive and integrated in both cities. Seeking to balance socio-economic development with environmental protection efforts through its 2017-2022 development plan, Jakarta has adopted both soft and hard measures for flood mitigation and water resource management. On the one hand there are engineering solutions and flood control infrastructures that have traditionally been the major adaptation measures, and on the other a new commitment to improving institutional and human capital. In the same vein, Ho Chi Minh City via the Seven Breakthrough Programmes also takes an integrated approach to addressing economic growth, environmental and climate change concerns. The National Target Programme to Respond to Climate Change, approved by the Viet Nam central government, requires streamlining climate change adaptation into local and sectoral plans and strategies.

Such an approach to mainstreaming climate change adaptation into existing development planning discourses, however, bears potential hazards. On one hand, it implies the recognition that climate change and climate change adaptation are complex, intersectoral issues. Mainstreaming and integrating climate change adaptation have the potential to enhance its and other sectors' efficiency and effectiveness while reducing conflicts. On the other hand, the pre-existing discourses on planning and development, into which climate change adaptation is being integrated, favour (and prioritize) the kind of rapid economic growth that produces vulnerability and inequality in the first place. Research on mainstreamed climate change adaptation in international development and foreign aid has suggested that uncritical adoption of mainstreaming risks obscuring the politics of adaptation and perpetuating injustices (Scoville-Simonds et al. 2020). In Jakarta and Ho Chi Minh City, if the integration of climate change adaptation in urban planning and development manifests in the construction of a giant sea wall, the development of a world-class waterfront city, or the integration of climate change adaptation measures into already rigid, ineffective procedures, then it risks following development-as-usual rather than transformative adaptation. Furthermore, in similar cases elsewhere, mainstreaming has also been used to justify the uncritical relocation of marginalized populations (Anguelovski et al. 2016).

There is thus a great need to take a critical approach to mainstreaming and integration that fails to place justice as the core value. As integration and mainstreaming have already started in both cities, they nonetheless open up an avenue for transformative adaptation through transforming the ideology and practice of urban upgrading.

3.2.2. Procedural justice and public participation

Transformative adaptation – adaptation grounded in a human rights-based approach, driven by a quest for justice and addressing root causes of vulnerability – requires inclusion of diverse voices and perspectives. Codifying a participatory approach to climate change adaptation into policies and laws, while necessary, may have limited substantive impacts on transformation due to path-dependencies and tokenism. Alternative forms of inclusion and procedural justice, via embracing adaptation in shadow spaces, are thus also crucial.

Formal public participation

Governments in both cities have sought to increase public participation and inclusiveness in decision making. Jakarta's current leadership adopts a people-centered approach to adaptation planning, claiming to minimize resettlement and engage local stakeholders. Of particular significance is the Community Action Plan, in which *kampung* dwellers identify their own priorities and action steps to adapt to climate change. In Ho Chi Minh City, there are fewer channels for community-led planning. Decision making has historically been top-down, imbued in hierarchical government structures and

procedures. The law requires public consultation in all projects, but in most cases, consultation remains a formality with little, and limited consideration of, public input. Nonetheless, the 2017 New Planning Law offers new avenues for change, as it incorporates improvements in transparency and public engagement.

While it is too early to evaluate the impacts of these newly enacted policies, the case studies, predating policy changes, show that public participation in decision making already exists—albeit in tokenistic form, with the exception of Tan Hoa – Lo Gom (I). In Muara Baru, Tan Hoa – Lo Gom (II) and Hang Bang alike, participation had a superficial character, mostly taking the form of informing and or consulting. Local officers met with the residents to communicate plans predetermined by the state. Muara Baru residents denied local officers’ assertion that they had disseminated information in advance to *all* affected households, while several Tan Hoa – Lo Gom (II) and Hang Bang residents were unable to attend public meetings scheduled during work hours. In Ho Chi Minh City, despite the requirement by law of public consultation, informants suggested that the project did not take their opinions into account.

Such procedural injustice not only denies the agency of those directly impacted by the projects, but also turns them into passive victims of adaptation measures. The absence of participation and inclusion of voices of affected residents results in vulnerability to livelihood disruption. Tokenistic forms of participation imply that the barriers lie in state officials’ lack of capacity to engage with and guarantee citizen power. Thus, policy improvements without stringent reinforcement and capacity development will not be effective due to locked-in tokenistic ways of “doing” participation.

Participation in shadow spaces

In both first- and second-order adaptation,⁶ resettlement outcomes are the result of processes of negotiation and resistance outside formal structures of governance, also referred to as activities in shadow spaces (Pelling et al. 2008). The difference observed in Tan Hoa – Lo Gom (I) is correlated with the engagement and leadership of a third-party agency – BTC. This involvement meant that the project circumvented the traditionally rigid bureaucratic top-down approach to resettlement, instead engaging in informal negotiation with the state. This resulted in multiple exceptions that made the resettlement process more participatory and inclusive, including the compensation scheme, and the intermediary role of a group of community representatives and social workers. Nonetheless, it is also important to acknowledge that, due to the project-bounded nature of the intervention, this informal tactic resulted in differential experiences of communities along the same canal (Tan Hoa – Lo Gom (I) and (II)) and thus, to some extent, undermined structures and institutions that were put in place by the government.

Furthermore, in Muara Baru, in the first year of the resettlement process, residents refused to resettle on the grounds that the resettlement housing (11 kilometres distant) was too far away. This led the state to respond by providing other (short-term) incentives as well as an in situ resettlement housing option (the following year). The resistance of the affected community was an important element shaping the resettlement procedures and outcomes in this case.

Second-order adaptation also involves informal institutions with norms and values specific to residents of *kampung* and *khu o chuot*. As a result, the resettlement as planned and implemented by the state was followed by the reselling of resettlement land, illegal subleasing of resettlement apartments, and moving back to an informal settlement nearby.

These tactics and strategies take place outside of the formal structures and institutions and were built upon the foundation of various social capital and local norms. They suggest the importance, as Pelling

⁶ See 2.2.1 in the Annex to this paper for an explanation of these terms.

et al. (2008) argue, of recognizing and embracing shadow spaces without compromising their “informal nature”.

3.3. Spatial justice in urban upgrading

While the literature suggests that resettlement should be a last resort and voluntary, most of the cases studied approach resettlement as part of the adaptation solution. Yet relocating the urban poor living in precarious conditions to locations further away from their social network and economic opportunities amounts to the perpetuation of spatial injustice. Transformative adaptation calls for interventions that build adaptive capacity without negatively affecting lives in informal settlements. This requires recognizing the characteristics of lives and livelihoods in *kampung* and *khu o chuot*.

“Relying on resettlement forecloses on all other adaptation options [...] people have such strong attachments [...] that being forced to move to avoid climate impacts would itself be the worst imaginable impact of climate change” (Barnett and O’Neill 2012).

Across the cases examined, where resettlement failed to account for the role of social capital and place dependence of affected residents, impoverishment risks increased (Cernea 1997). A common impact of resettlement was loss of income. It results from the inability of residents to open a home-based business as they used to do prior to relocation (for those who chose to resettle in vertical housing), from having to adjust their business to a new market environment (for those who moved further away), and from losing income from renting rooms (for those who used to lease out rooms in their own home). Many report increasing expenditures after moving, due to water charges, transportation costs and rental fees. Of equal significance is the loss of social network, the risk of homelessness, and the mental burden of resettlement. Even following Tan Hoa – Lo Gom (I), an exceptional relatively more transformative project, relocated residents still experience adverse impacts.

In particular, failure to recognize informal livelihood activities results in an unequal burden of relocation on affected households. Within each affected community, those who have more access to assets and capital tend to do better in second-order adaptation. For affected households with few assets and capital, second-order adaptation can put a strain on their already limited resources. In Tan Hoa – Lo Gom (I), the varying price options gave affected households choices but still risked magnifying existing inequalities. Apartments on the ground floor, which are more expensive, allow people to open a shop or run a business and thus earn an income. Those with less capital, thus have to resort to upper-floor apartments with restricted opportunities for business. In Muara Baru, residents without an ID card became worse off as it was more difficult to benefit from resettlement housing. People who relocate a distance away from their original settlement and become unable to sustain their livelihood tend to find their way back into precarious living conditions near the canals, where their vulnerability remains.

The cases provide insights into two major factors in resettlement: proximity to original settlement and variety of resettlement options. Among the resettlement options available to Tan Hoa – Lo Gom (I) and Muara Baru, an in situ apartment appeared to be the most preferred one, chosen by the highest number of people compared to the other options, namely resettlement at a distance and self-resettlement. In the case of Muara Baru in particular, more incentives and services were available to those resettling in an apartment building further away that were not available to those resettling in situ or self-resettling. Yet, the proximity to their original settlement was the determining factor leading to the popularity of in situ resettlement. One explanation is the importance of livelihood, social network and social capital that were based in the informal settlement.

The resettlement projects gave residents varying options of resettlement housing. The availability of different options indicate recognition of differing socio-economic statuses within the affected communities and attention to distributive justice. It allows households to make a choice that best meets their specific needs and means. It also gives households agency in choosing their housing,

albeit to a limited extent. Yet the study found that the extent to which this approach can be transformative is limited by its perpetuating of economic differences. This results from a failure to include all voices and perspectives in decision making, and failure to recognize the nature of the informal economy that is the livelihood basis for most affected households.

Table 2. Overview of relocation processes in the different case study areas

City	Affected area	Impact on affected area	Resettlement options	Compensation	Social support and services	Community voice	Communication
Jakarta	Muara Baru	Total relocation	<ol style="list-style-type: none"> 1. Off-site apartment, 20 km away, lottery system 2. In situ furnished apartment, available 1 year later, lottery system 3. Self-resettlement 		<p>Resettlement option 1: six months of free rent; microfinance; job training; transportation to Muara Baru; urban farming</p> <p>Resettlement option 2: six months of free rent; microfinance, urban farming</p>	No communication	Some households were surprised by relocation due to poor communication
Ho Chi Minh City	Tan Hoa - Lo Gom (I)	Partial relocation, retaining houses in good condition	<ol style="list-style-type: none"> 1. In situ apartment, diverse price options 2. Off-site land, 10 km away, diverse price options 3. Financial compensation for self-resettlement 	<p>VND 2.8 million/sqm, regardless of land title for all houses on canal banks.</p> <p>VND 25 million for each house built on the water.</p>	<p>All households: individual meetings; credit programme; low-interest loan; poverty alleviation;</p> <p>Resettlement option 1: a kiosk in the market; forming saving groups</p> <p>Resettlement option 2: microfinance</p> <p>Resettlement option 3: job training</p>	All households: individual meetings with social workers Resettlement option 1: Design feedback through a group of community representatives, incorporated into actual design and construction	All households had individual meetings with social workers
	Tan Hoa - Lo Gom (II)	Total relocation	Off-site apartment, 11 km away		None	None	Joint community meetings
	Hang Bang	Total relocation	<ol style="list-style-type: none"> 1. Off-site apartment, 4 km away 2. Self-resettlement 	<p>VND 37 million/sqm for houses in an alley</p> <p>VND 40 million/sqm for houses on main road</p>	None	Affected households requested increased compensation rates, which were not taken into account	Joint community meetings, some households were unable to attend

Source: Own compilation based on Simarmata and Surtiari (2019) and Huynh and Nguyen (2019)

4. Policy implications/recommendations

As transformative adaptation involves non-linear shifts that address root causes of vulnerability to climate change, it entails transformation in the relationships within and among stakeholders, across the global, national and local scales. This means transforming the linkages between slum upgrading and climate change adaptation policies and practices across all levels of governance. In Jakarta, Indonesia, and Ho Chi Minh City, Viet Nam, this means recognizing the triple burden of vulnerability on the urban poor in informal settlements; critically examining the integration of urban upgrading, climate change adaptation and socio-economic development; and adopting alternative ways to achieve justice in urban upgrading and adaptation. To this end, the paper proposes three major action areas towards transformative adaptation:

- Building transformative capacity through co-production⁷: The people, the state, civil society organizations and international agencies need to work collaboratively on the co-production of knowledge and urban housing and services and foster deliberate social learning. The differences between the state's approach to flood adaptation and affected households' livelihood needs and responses demonstrate the importance of a co-production approach. Co-production offers an entry point to transformative adaptation by disrupting the dominant power relationships in climate change adaptation and urban upgrading. Both require reimagining the contemporary discourse and going beyond established governance structures.
- Building transformative capacity through (applying co-production in) urban upgrading: Urban upgrading, via ensuring adequate housing and accessible services and infrastructure, can reduce vulnerability and increase the adaptive capacity of the urban poor. Transforming existing practices entails prioritizing in situ upgrading with built-in adaptation measures through participatory and co-production processes. Transformative attempts at urban upgrading address the immediate needs of local communities while developing long-term capacity for transformative adaptation.
- Scaling up transformation through critically integrated adaptation: Integrating climate change adaptation in urban upgrading, sectoral planning and broader socio-economic development can benefit from transformative capacity and adaptive capacity developed through co-production. A critical approach to integrating and mainstreaming serves to both multiply transformation and sustain the focus on root causes of vulnerability.

4.1. For international institutions

International institutions play a central role in mitigating the burden of adaptation measures on the urban poor. All funds and policies mandated in response to climate change and flooding impacts should address socio-economic vulnerability to climate variability. Donors and funders should also research new avenues to mandate community participation that gives citizens power and avoids tokenistic participation, as well as experiment with innovative channels to facilitate co-production of housing, urban services and adaptive capacity. Shifting away from project-based urban upgrading and climate adaptation, international institutions should provide city-level technical assistance to ensure justice and rights-based adaptation.

4.2. For national governments

National governments need to foster the consideration and implementation of international protocols and regulations pertinent to displacement and relocation, including the 1986 Declaration on the Right to Development by UNGA, the UN Guiding Principles on Internal Displacement in 1998, and the World Bank's Resettlement Policy Framework in 2004. Efforts should be made to map out action

⁷ See 2.2.3 in the Annex for more explanation of this term.

plans and monitoring schemes with respect to resettlement activities at the national level, and to work with subnational governments to carry out these plans. Stringent relocation and resettlement guidelines grounded in a human rights-based approach should be required in all sectors' activities.

National governments should work with subnational governments to design policies that protect the rights of dwellers of informal settlements and recognize the importance of the informal economy. The informal sector is a significant component of urban economies and societies. Legal recognition and support are the first step towards livelihood security and improved adaptive capacity.

There is a need to review existing legal frameworks pertinent to issues of climate change adaptation, urban upgrading and resettlement. In mainstreaming climate adaptation in sectoral planning, relevant agencies should design approaches in ways that (i) promote local autonomy to come up with context-specific solutions; (ii) prevent the uncritical adoption of resettlement as preparation for climate change adaptation; and (iii) require consideration of in situ upgrading and in situ resettlement in land acquisition and clearance for adaptation.

Legislative catalysts to foster co-production of knowledge as well as housing and urban services are needed in order to open up new pathways to transformative adaptation. This may take the form of an institution mandated by the state to facilitate deliberate social learning among all stakeholders, and create channels for formal and informal linkages between state officials, local residents and civil society organizations.

4.3. For local governments

Local governments should seek innovative solutions to support the building of adaptive capacities of the urban poor. This starts with providing adequate housing and employment to meet the increasing demands of growing urban populations. Ensuring the affordability and accessibility of housing, as well as adequate urban infrastructure and public services will help limit informal construction activities in flood-prone areas in the first place. Providing appropriate policy and institutional frameworks for education, training and decent work will reduce socio-economic vulnerability for the urban poor.

With regard to existing informal settlements in flood-prone areas, building institutional and technical capacity is central to rights-based and justice-driven slum upgrading efforts. Local governments must lead inclusive processes to create and maintain comprehensive urban upgrading plans at the city level and ensure coordination across the city's districts. Such plans should acknowledge everyday lived experiences of the urban poor and slum dwellers, and act on development priorities of these vulnerable populations. They should also recognize the heterogeneity of slum dwellers, and allow space for autonomy and flexibility at the implementation level to ensure justice for all.

Development priorities must be aligned with climate change adaptation needs. Transformative capacity developed through slum upgrading can be sustained and scaled up through climate change adaptation measures. Efforts to assess vulnerability through co-production, facilitate voluntary resettlement, and provide basic urban services and infrastructure reduce risks and increase adaptive capacity in informal settlements.

4.4. For the people

Community organizing can play a central role in empowerment and transformative adaptation. Trusted neighbourhood representatives can serve as an important intermediary between the residents of informal settlements and the state, ensuring that the people's voices are heard and acted on. Civil society organizations can help in the process of organizing communities and providing training and education with an end goal of creating self-sustaining community institutions as a crucial pillar of co-production.

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ANNEX

1. Climate change and flooding in coastal cities

1.1. Exposure

Coastal areas are an attractive location for cities due to their potential for trade and transportation. They play a key role in many countries as hubs for economic growth. Over the past 18 years, seaborne trade has more than doubled with the highest annual growth rate of 4 percent, making port cities a key element in national and global economies (UNCTAD 2018). Coastal cities are therefore places with a high concentration of human, financial and physical assets. This very attractive geographical setting, however, also makes coastal cities vulnerable to natural hazards such as floods.

Situated on low-lying coastlines, coastal cities and their populations are highly exposed to floods. Coastal cities often consist of large areas of land that lie below 10-meter elevation and are hydrologically connected to the ocean. These areas make up the low-elevation coastal zones (LECZs). LECZs are highly prone to extreme water-level events associated with sea level rise, including floods (McGranahan et al. 2007) and are expected to be home to more than one billion people by 2050 (Merkens et al. 2016). Over 80 percent of the world's LECZ population lives in developing countries with particularly high levels of exposure in Asia (Neumann et al. 2015). Population projections show that Asia will both experience the highest increase in the number of people living in LECZs and account for the biggest proportion of the world's LECZ population (Wong et al. 2014; Neumann et al. 2015). Today, Asia is already home to the highest concentration of population living in coastal cities exposed to a 1-in-100 year coastal flood (Hanson et al. 2011). A recent study using new elevation data finds that the impacts of sea level rise will be much more severe than anticipated and estimates that it will leave three times more people exposed to flooding than previously estimated (Kulp and Strauss 2019).

Asian cities like Ho Chi Minh City and Jakarta exemplify the concentration of assets and hence exposure to hazard risks. Viet Nam and Indonesia are among five countries with the largest share of the total global population living in low elevated coastal zones (Neumann et al. 2015). Among the top 20 cities ranked by population exposed to coastal flooding by 2070, Ho Chi Minh City ranks 5th and Jakarta 20th. When ranking in terms of assets exposed to coastal flooding, Ho Chi Minh City ranks 16th (Hanson et al. 2011).

1.2. Vulnerability and informality

Rapid and unequal economic growth makes coastal cities home to a large number of vulnerable people. Over the past 15 years, the number of urban slum dwellers has continued to grow (Dodman et al. 2019a).

Inequalities faced by slum dwellers manifest in overcrowded housing with little tenure security, poor water and sanitation, and poor access to social services; and their voices are often unheard (Dodman et al. 2019b). These elements trap them in a vicious circle of poverty and marginalization, with adverse impacts on livelihoods and well-being.

Slum dwellers in coastal cities are highly vulnerable to floods while having low coping capacity. As a result of marginalization and inequality, urban poor people often settle in precarious areas, such as low-lying land or riverbanks, where exposure to flooding is high. The unplanned, unregulated and unserved nature of informal settlements makes them further susceptible. Poor drainage and waste disposal systems worsen flooding; overcrowding and poor sanitation threaten public health concerns; low-quality housing increases the likelihood of houses collapsing; and political marginalization

reduces access to information and support (Baker 2012; Dodman et al. 2019b). Thus, the very nature of urban informality and inequality becomes a driver and multiplier of risks and vulnerability. Despite contributing little to the causes of environmental changes, dwellers of informal settlements bear the double burden of flooding and inequality.

Moreover, adaptation measures in numerous cases have negative impacts on vulnerable populations, including those living in informal settlements. Hard infrastructural measures against flooding such as dykes and land elevation, while protecting some areas, worsen the conditions of others, often marginalized and vulnerable neighbourhoods (Birkmann 2011; Jain et al. 2017). Uneven adoption and enforcement of adaptation measures and planning strategies have often denied resources to informal communities and favored elite populations at the expense of urban poor people, whose livelihoods are disrupted when they are subject to eviction, relocation and resettlement to make space for infrastructure (Anguelovski et al. 2016).

1.3. Risks

Disaster risks, especially risks of urban flooding, are particularly high in southeast Asian coastal cities and are projected to further increase alongside population growth and economic developments that concentrate more and more assets in highly exposed coastal areas. Predisposition to and aggravation of land subsidence due to human activities will further compound climate-related challenges (Hanson et al. 2011; Delinom 2008; Wong et al. 2014).

Viet Nam and Indonesia are among the countries most at risk from the urban impacts of 1 meter of sea level rise (Dasgupta et al. 2015; Nitivattananon et al. 2009). Cities like Jakarta and Ho Chi Minh City are subject to high risks of both tidal and river flooding, compounded by rapid urbanization and economic development as well as sprawling morphology and flat, low-land topography.

Responses to climate change risks are further complicated as the nature of development in coastal cities makes them a breeding ground for so-called “wicked problems” (Brown et al. 2014; Moser et al. 2012). Coastal cities are home to a multiplicity of stakeholders; land usage, development and human-ecological interactions are highly complex. Its land-water interface results in increasing population influx, leading to economic growth and development via sea trade, which can increase both risks and adaptive capacity (Brown et al. 2014). Impacts of climate change further compound coastal ecosystems that are already at risk and vulnerable due to human activities (Moser et al. 2012). Extremely complex and challenging, wicked problems in coastal cities require an in-depth understanding of decision making and related processes to identify solutions.

2. Literature review

2.1. Transformative adaptation

Transformative adaptation has recently emerged as an important concept in the context of climate change and its impacts. This development takes place against the backdrop of an eco-social turn in development thinking and policies, recognizing that climate change is a social and political issue (UNRISD 2016). It is a response to a) the recognition of the limitations of resilience as a concept, which often underplays power relations (Krause 2018); b) the socio-political nature of the processes driving vulnerability and adaptation (Eriksen et al. 2015); and c) the inadequacy of incremental adaptation in the context of increasing climatic uncertainties (Kates et al. 2012). Situating adaptation in the development field, transformative adaptation involves non-linear changes, either intentional or unexpected, to alternative development pathways that address structural causes of risks rather than proximate ones (O'Brien 2012; Pelling et al. 2015).

The adoption of transformative adaptation, however, involves varying interpretations and understandings of the concept (Bartlett and Satterthwaite 2016; O'Brien 2012). Analytical interpretations of transformation take a systems-approach to analyze a given system's capacity to transform and distinguish transformation from other less fundamental types of climate responses. This paper takes a normative approach to understanding transformative adaptation. It takes vulnerability as a starting point rather than an end point, and human rights and justice as a driver of the adaptation process (see Krause 2018, based on O'Brien et al. 2004). Transformative adaptation then requires changes that address root causes of poverty, inequality and environmental destruction, forged through inclusive institutions, an enabling environment for social innovation, and participatory processes (see UNRISD 2016).

The global policy discourse on climate change adaptation has increasingly recognized the importance of transformative adaptation in the urban context. Highlighting the distinction between incremental and transformative adaptation, the Fifth Assessment Report of the IPCC stresses the need for urban transformative adaptation that takes into account both mitigation and development. It calls for "a change in the fundamental attributes of natural and human systems (that) reflects strengthened, altered, or aligned paradigms, goals, or values towards promoting adaptation that supports sustainable development, including poverty reduction" (IPCC 2014). The definition of transformation within the IPCC has evolved over time to align itself with the Sustainable Development Goals, to recognize multiple systems of interlinked solutions, and to include elements of poverty reduction (Tàbara et al. 2019). Similarly, the Global Commission on Adaptation's 2019 flagship report (GCA) underscores the need to move from incremental urban adaptation solutions to long-term transformative changes. It identifies three priorities to achieve transformative adaptation: 1) spatial planning and infrastructure delivery, 2) people-centric and inclusive approaches, and 3) nature-based solutions. Both the AR5 and GCA reports bring to the fore the role of cities and the urban context in accentuating systemic changes that address entrenched equity and justice issues. Yet, in-depth understanding of the challenges specific to coastal cities is still lacking.

While transformative adaptation has been adopted at the political level, its definition has remained mostly conceptual. Synthesizing literature related to transformation, O'Brien and Sygna (2013) propose three interacting spheres in which transformation takes place: personal, political, and practical spheres. They argue that transformation in the personal sphere is the most powerful yet cannot be forced, and that most leverage points for transformation lie in the interaction of the three spheres. Examining governance and capacity, Hölscher et al. (2019) put forward an analytical framework for transformative climate governance surrounding the four pillars of stewarding capacity, unlocking capacity, transformative capacity, and orchestrating capacity. Fedele et al. (2019)

summarize conceptualizations of transformative adaptation into a common set of characteristics: restructuring, path-shifting, innovative, multiscale, systemwide, and persistent. Based on empirical evidence from a set of cities in the global North and South, the GCA report underlines the enabling conditions for transformative adaptation, which include strong leadership, inclusion and equity, finance and local capacity, synergies across scales, knowledge-data-partnership, evaluating and learning, accountable institutions and governance.

Literature on transformation has also established several cautions that cities should anticipate as they undertake transformative adaptation. First, not all transformation is positive. There are dangers associated with transformation when its processes of design and implementation are divorced from values of justice and rights (O'Brien 2012). Second, transformation may lead to instability. Compared to other adaptive responses such as resistance or incremental adaptation, by its nature transformative adaptation has the potential to create volatility in economic, ecological and social systems (Pelling et al. 2015). Thus even positive transformation towards equity can result in contestation and resistance (O'Brien 2012). Third, transformation has transaction costs that may place the burden on the poorest (Pelling et al. 2015). Finally, transformative adaptation would require transformative assessment methodology. The IPCC's approach and definition of transformation have been critiqued for its reliance on conventional cost-benefit analyses, undertaken in a top-down, linear manner that diverges from the very nature of transformation (Tàbara et al. 2019).

Existing literature on transformative adaptation to climate change, thus, has provided numerous perspectives to understand the motivations and characteristics of transformative adaptation as well as its enablers and roadblocks from diverse contexts. Little is known, however, about transformative adaptation in the context of southeast Asian coastal cities, and how these cities can move towards transformative adaptation given their current state of affairs. Given that transformative adaptation seeks to address root causes of vulnerability, it is important to contextualize the specificities of those causes and on-going responses, successes and/or failures.

2.2. Urban upgrading and resettlement

2.2.1. Climate change – induced resettlement

Movement of people in the context of climate change and natural disasters receives much attention from the media, general public, researchers and policy makers. A global estimate of climate-induced resettlement projects indicates that by 2050, around 1 billion people will experience displacement due to climate change (Christian Aid 2007). Different frameworks have emerged around the role of resettlement in adaptation to climate change (McNamara et al. 2018). On the one hand, resettlement has been framed as part of loss and damage, resulting from impacts of climate change; and on the other, it is seen as a component of managed retreat, which is an adaptation strategy (Hino et al. 2017). Resettlement helps reduce exposure to impacts of climate change (Birkmann et al. 2013). Yet, focusing on justice implications of climate-induced resettlement, critics have challenged the perception of resettlement as an impact of climate change, advocating instead for positioning resettlement as a response, one that is especially rooted in a technocratic, Western mode of thinking and ignores the agency of the affected (Farbotko 2018; Barnett and O'Neill 2012).

Resettlement, and climate change-induced resettlement in particular, have negative consequences. Reflecting the complexity of adaptation as a process, the concepts of first- and second-order adaptation help understand how resettlement may aggravate adaptation challenges (Birkmann 2011). First-order adaptation refers to measures taken to respond and/or adapt to climate events, such as physical relocation of households and communities. Second-order adaptation involves processes to adapt to the changes that result from first-order adaptation, such as adjustment to the relocation site (Birkmann 2011). In the case of involuntary resettlement, the Risks and Reconstruction Model has

identified six risks to communities as a result of involuntary resettlement: landlessness, joblessness, homelessness, marginalization, health decline, food insecurity, loss of shared income and loss of social network (Cernea 1997). These represent difficulties faced by resettlement communities in second-order adaptation.

Good policies for resettlement are those that take a human rights-based approach. Resettlement scholars argue for resettlement communities' rights to cultural identity, land use, environmental resources and protection, participation and rehabilitation, among others (Mortreux and Adams 2015). International protocols and regulations follow a rights-based approach, as demonstrated by the 1986 Declaration on the Right to Development by UNGA, the UN Guiding Principles on Internal Displacement in 1998, or the World Bank's Resettlement Policy Framework in 2004 (Mortreux and Adams 2015).

Frameworks and best practices in resettlement emphasize questions of agency, process and benefits. Proactivity, communication and participation, permanence, compensation and incentive, and livelihood protection are the main pillars of a well-crafted resettlement initiative (Tadgell et al. 2018). When evaluating resettlement, development outcome plays an important role, ensuring that resettled households benefit from better conditions after relocation (Arnall 2019).

2.2.2. In situ urban upgrading and adaptation

In situ urban upgrading offers a pathway to justice-driven adaptation strategies. International institutions and frameworks emphasize in situ adaptation as a priority. The UN Refugee Agency (UNHCR) stresses, "all reasonable in situ alternatives and solutions should be explored first, unless communities themselves have identified planned relocation as their preferred option" (UNHCR 2014). Usually urban infrastructure and services contribute to reducing risk, but in informal settlements, there is a lack of high-quality, accessible and affordable infrastructure and services which increases vulnerability and hinders adaptive capacity (Satterthwaite et al. 2018). In-situ upgrading work that fills these service gaps not only minimizes the risks of impoverishment after resettlement but also increases adaptive capacity and can thereby contribute to urban climate resilience and accelerate the transition to low-carbon development (Dodman et al. 2019b). Examples include urban upgrading efforts that also aim to reduce greenhouse gas emissions through higher density residences, pedestrian and biking friendliness, and public transit. There is evidence that dependence on resettlement as a go-to adaptation strategy precludes other adaptation options that are low-cost and low-regret, bringing positive benefits regardless of how the climate changes (Barnett and O'Neill 2012).

2.2.3. Justice and co-production

Taking a normative approach to transformative adaptation, this paper analyses the processes of adaptation involving resettlement in two case study cities around three major pillars of justice: distributive justice, procedural justice and spatial justice. While the notion of justice as fair distribution of resources, power and outcomes is contested, the concepts provide important frameworks to begin to understand climate change adaptation as a process. Distributive justice concerns the distribution the outcomes of adaptation plans and strategies, while procedural justice centres on decision-making processes (Paavola and Adger 2002; Shi et al. 2016). The question of justice is also spatial: not only does the distribution of urban resources across space matter but urban space also has power over the reproduction of marginalization (Dikeç 2001). The notion of just adaptation begs the question of procedural, distributive and spatial justice (Shi et al. 2016), particularly as marginalized communities tend to informally occupy vulnerable spaces yet have little power over decision-making processes.

The discussion of justice in climate change adaptation and informal settlement intervention has recently embraced co-production as a potential pathway to transformation. In recent literature on climate change adaptation, researchers have emphasized ontological plurality and advocated for

knowledge production that centres around normative commitments and multiple truths, meanings and values (Nightingale et al. 2019). In urban development and particularly in urban poverty and state-citizen dynamics, co-production is part of a political strategy to secure immediate basic urban services as well as long-term power improvements (Mitlin 2008). In both, co-production offers an entry point to transformative adaptation by disrupting the dominant power relationships in climate change adaptation and urban upgrading. Both require reimagining the contemporary discourse and going beyond established governance structures.