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# Adaptability of Low-Income Communities in Postdisaster Relocation

A Long-Term Study Following Typhoon Haiyan

Kanako luchi

### ABSTRACT

**Problem, research strategy, and findings:** Although community relocation is increasingly a policy option following disasters, research has shown that it often fails to achieve its goals. Few studies of community relocation following disasters, however, have taken a long-term interdisciplinary view of the realities of multiple actors involved in these processes. In this study I qualitatively tracked 6 years of the government-led relocation of Typhoon Haiyan/Yolanda–affected communities in Tacloban City (Philippines) and recommend dimensions of a planning-centered model of community relocation following disasters. A central finding was that residents' life concerns transformed over time, from hazard risk reduction to life re-establishment and finally to adaptation. Most relocating residents, whatever their temporary location, continued to embed themselves in their pre-typhoon economic and social networks, which gradually changed over the 6 years. The status of new site development and residents' livelihood outlook in the relocation sites were the key drivers influencing residents' perception, which evolved as these conditions changed. Residents strategized to improve life and eventually adapted to the new environment.

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**Takeaway for practice:** Five dimensions are important for policymakers and planners. First, as a premise, relocating residents change their minds over time. Simply moving residents away from hazard risks is not enough; their concern is also re-establishing their daily lives. Second, proactively strengthening and using residents' capacity throughout the relocation process helps them better adapt to new environments. Third, applying some transitional strategy for the community to access socioeconomic networks will reduce relocation stress. Fourth, providing information and support helps residents view relocation positively. Last, planning needs to be an iterative, co-designing process to achieve a satisfactory outcome.

**Keywords:** community adaptation, disaster-induced relocation, long-term research, low-income communities, Typhoon Haiyan/Yolanda

ommunity relocation is increasingly a policy option to reduce future vulnerability from environmental change (Arnall, 2014; Balachandran et al., 2022; luchi & Mutter, 2020; Nalau & Handmer, 2018; Oliver-Smith, 2018; United Nations High Commissioner for Refugees, 2014). Relocation can proactively anticipate future disastrous events (Correa, 2011; Ferris, 2011; International Organization for Migration, 2017). During slow-onset environmental change such as sea-level rise or drought, the decision to relocate is an adaptive measure to reduce further losses (Birkmann et al., 2013; Campbell et al., 2005; Ferris, 2011; International Organization for Migration, 2017). In practice,

large-scale community relocation increasingly occurs in response to sudden-onset environmental change—such as the geophysical or hydrological phenomena of earthquakes, tsunamis, volcanic eruptions, flooding, storm surges, and torrential rain—because communities are disrupted all at once by such events (Bower & Weerasinghe, 2021; Ferris, 2011; luchi & Mutter, 2020; Palagi & Javernick-Will, 2020). To support affected communities, governments, together with planners and policymakers, step in to help them re-establish in safer locations. This can be a complicated and extended process, but the long-term aspects of planning and implementing relocation after disasters have been underexplored.

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In this study I focused on coastal communities targeted for relocation in Tacloban City of Leyte Province (Philippines), affected by 2013 Typhoon Haiyan. The 6year study explored the evolving narrative of community relocation by examining planning policies and plans, site development status, and residents' changing mindsets and lives. In this study I aimed to a) document the effects of evolving implementation of planning policies on relocating residents, b) understand the role of time in changing the lives and attitudes of residents, c) identify key factors affecting residents' perception of relocation, and d) recommend dimensions of a planning-centered model of community relocation.

First, I review the community relocation literature, including historic involuntary resettlement, relocation in the field of planning, and classic models of population resettlement. Next, I describe research settings, methods, and case information. Then, I share findings from observations of relocation policy decisions and trajectories of coastal residents, including the changing perceptions of residents. Next, I discuss the evolution of community relocation after disasters and its implications for policymakers and planners to improve postdisaster community relocation. I then conclude with comments on transferability and introduce a concept of postdisaster relocation from the perspective of planning.

### Community Relocation in International and Planning Contexts

Involuntary community relocation has a historically unfavorable reputation (Ferris, 2011). In the 1960s, massive urban renewal took place in U.S. cities to upgrade from Great Depression-era housing and infrastructure. This resulted in displacement of approximately a quarter of a million persons annually, many of them poor, old, and politically vulnerable (Cernea, 1993; Rohe & Mouw, 1991). In the international development community in the 1980s, projects such as large-scale infrastructure construction and slum upgrading moved existing populations into worse conditions (Guggenheim & Cernea, 1993). This development approach was criticized for overlooking humanitarian aspects (Koenig, 2001; Oliver-Smith, 1991), resulting in agencies like the World Bank establishing mechanisms to reduce population displacement in development projects (Koch-Weser & Guggenheim, 2021; World Bank, 1990). However, various studies have continued to show negative consequences even after 4 decades of experience (Koenig, 2001; Muggah, 2008). The needs of relocated populations are often overlooked, and they end in poverty in remote locations where they lose access to their socioeconomic networks (Cernea, 2003; Choi, 2015; Claudianos, 2014;

Nikuze et al., 2019; Oliver-Smith, 2009; Patel et al., 2015; Terminski, 2013; Vanclay, 2017). Such findings have caused policymakers to shy away from developmentinduced relocation.

### **Community Relocation After Disasters**

Disaster-induced relocations, however, typically occur in different contexts than these development-induced cases. In recent relocations, the majority of targeted populations were already living in degraded structures, usually in unfavorable, high-risk areas, sometimes informally. They often can ride out small-scale disasters, but a large-scale one can be catastrophic (Tierney, 2014, 2019; Wisner et al., 2004). Thus, many governments attempt to relocate populations at risk from potential hazards into safer locations proactively before disasters (Oliver-Smith, 2018; Sphere Association, 2018).

If done well, relocation can create a physically and socially safe environment that can help reduce residents' poverty (Correa, 2011; Esnard & Sapat, 2014; Hallegatte et al., 2011). But it is difficult to do so. Most recent studies have reconfirmed the ongoing challenges of successfully relocating communities. Despite the intentions of disaster-induced relocations, they often exhibit the same shortcomings as development-induced ones: disrupting existing social networks and overlooking residents' needs for livelihoods and access to services. Studies have suggested that established governance and institutions inherently limit residents' participation (Bronen & Chapin, 2013; McNamara et al., 2018); success requires a coordinated effort that incorporates socioeconomic, health, and cultural aspects (Maldonado, 2014); and policy and program designs are often too simple to encompass the complicated realities of relocating entire communities (Nelson et al., 2022). All of these studies have suggested the need for more comprehensive, holistic, and flexible planning designs to ease relocation.

### Relocation Studies in Planning Scholarship

Recent planning scholarship has sought to understand practical aspects of implementing disaster-induced relocation. Topics have included efficacy and impacts of planning tools on affected communities and residents (e.g., home buyouts, relocation programs, and land use applications; Binder et al., 2019, 2020; luchi & Olshansky, 2018; Koslov et al., 2021; McGhee Devon et al., 2020), decision making by stakeholders (Binder et al., 2015; Koslov, 2016; McNamara & Des Combes, 2015), impacts of planning procedures on resulting outcomes (Balachandran et al., 2022; McNamara & Des Combes, 2015), and governance for community betterment and justice (luchi & Mutter, 2020; Robin & Stuart, 2013).

Few studies of community relocation following disasters, however, have taken a long-term interdisciplinary view of the realities of multiple actors involved in these processes. One reason for the lack of such studies is the extended time required to conduct relocation research that can comprehensively understand the interaction and evolution of various issues, including infrastructure, housing, livelihoods, social networks, and politics (Esnard & Sapat, 2014; luchi & Maly, 2017). Furthermore, communicating with policymakers and planners, as well as populations in the disaster-affected areas, needs a careful approach (Tierney, 2019), and it often requires considerable time to develop a trusting relationship (Ganapati & Ganapati, 2008; luchi, 2014b). To date, most in-depth relocation studies in the field of planning have only had the opportunity to conduct one or two field research visits for short timeframes even though recovery takes a long time (see, for example, Badri et al., 2006; Hooper, 2021; luchi, 2014a; Koslov, 2016; Nikuze et al., 2019; Palagi & Javernick-Will, 2020). As a result, the broader long-term picture of postdisaster relocation is not well understood. In particular, little has been done to understand the attitudes of the involved population and how these affect our ability to evaluate the planning processes and outcomes.

Classic models on postdisaster displacement, resettlement, and relocation have described adjustments by communities over time. The Haas et al. (1977) model described recovery through emergency, restoration, and replacement reconstruction, followed by commemorative, betterment, and developmental reconstruction. The Quarantelli model (1982) described housing reconstruction in recovery as emergency sheltering, temporary sheltering, temporary housing, and permanent housing. The Scudder model (1985) of new settlements described planning and recruitment, transition, economic and social development, and handing over and incorporation as phases to advance resettlement processes. These classic models reflect anthropological and sociological perspectives; using planning perspectives—complex connections among policies, planning, and impacts on residents-to examine relocation could add another layer of understanding and identify valuable insights for policy and planning practice.

### **Research Setting**

This research presents the planning and implementation of a large-scale coastal community relocation in Tacloban City, located in the Leyte Province of the Philippines, a region severely affected by the November 2013 Typhoon Haiyan (local name Yolanda). Although the Philippines has a history of government-led collective community relocation, the scale of such a project after Haiyan was a new experience. The Urban Development Housing Act of 1992 (Republic Act 7279; The Republic of the Philippines, 1992) mandated the National Housing Authority (NHA) to lead and work with local governments to relocate underprivileged populations and provide housing in safe areas. With this scheme, NHA has five housing programs, including resettlement, slum upgrading, sites and services, core housing, and medium-rise housing (Environmental Science for Social Change [ESSC], 2014). The Act further states that the national government is responsible for making "decent housing at affordable cost ... " for "the underprivileged and homeless citizens in urban areas and in resettlement areas" (The Republic of the Philippines, 1992, p. 1). In addition, government and private sector actors are to provide "... sites and services development, long-term financing, liberal terms of interest payments, and such other benefits" (The Republic of the Philippines, 1992, p. c6).

Most of the past relocation cases with the NHA's resettlement program targeted informal residents affected by developmental projects and were conducted top-down, simply providing housing and limited infrastructure services without much resident involvement. This resulted in many relocated residents abandoning their new places to return to the city where more financial opportunities existed (see, for example, ESSC, 2014; luchi & Maly, 2017). Furthermore, the NHA provides no specific guidelines on land tenure and housing ownership. Local governments thus have devised their own land tenure rules.

### Methods

I conducted this study to understand the relocating residents' overall lives and their changing mindsets over the course of relocation planning and implementation. I used case study methods (Yin, 2014) that encompass phenomenological (e.g., Groenewald, 2004) and ethnographic (e.g., Punch, 2014) features. Technical methods included participatory/nonparticipatory observation, formal/informal interviews, and casual conversations with government officials and relocation stakeholders. Extended time spent over multiple field visits also led to developing friendships and engagement with local people for nonscholarly activities, which contributed to understanding their social structure, culture, and philosophy affecting everyday decisions. This understanding has contributed to an iterative reflection and development of a community relocation narrative. I conducted fieldwork from March 2014, 4 months after the typhoon, to March 2020, 6 years after the initial visit, for a total of 16 field visits. During each visit, I worked in both the Tacloban City area to follow the on-the-ground recovery progress and the Metro Manila region to gather

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Table 1. Interview year, number of interviews and interviewers, and location breakdown.							
Interview year	Coastal residents (date interviewed)	No. of interviews	No. of interviewers <sup>a</sup>	Relocating residents (date interviewed)	No. of interviews	No. of staff for interviews <sup>a</sup>	
1	February 2015	40	9	October 2015	40	7	
2	June 2016	41	7	January 2017	44	7	
3	August 2017	40	6	December 2017	40	7	
4	June 2018	44	8	November 2018	41	6	
5	August 2019	40	6	January 2020	40	7	

Note: a. Including staff who were solely responsible for interpretations.

national-level government information to understand the rationales behind recovery policies and overall progress.

### OVERALL APPROACH TO RECOVERY INFORMATION

Interviews targeted multiple stakeholders at different levels of government, nongovernmental actors, and relocating residents. Interviews with government officials included national department staff in Metro Manila and the Leyte region who handled recovery and relocation programs and Tacloban officials to understand the city's recovery decisions, information on the relocation program, and development progress. Interviews also targeted officers of national and international nongovernmental organizations (NGOs) that provided housing on site. Information from governments and NGOs was particularly useful in developing the narratives on relocation related to planning policies and plans, as well as site development status. Although my study significantly used data gathered from systematic interviews with the relocating residents, findings from phenomenological and ethnographic views have further helped to understand the individual experiences and decision contexts of those engaged in relocation.

### TACLOBAN CITY RESIDENT INTERVIEWS

To understand the decisions and perceptions of relocating residents over time, I organized a team of interviewers to conduct semistructured, open-ended interviews during 10 of the field visits between 2015 and 2020. Two waves of interviews were conducted each year, with one set in the coastal areas and one in the relocating areas. Interviews were held in both sending and receiving areas because, although some affected residents temporarily resided in the government-planned relocation areas, limited housing capacity during the transition period caused most eligible residents to wait in their original coastal neighborhoods along Cancabato Bay (e.g., 86% in October 2015; luchi & Maly, 2017). The interviewees were asked about a) resettlement process and outlook, b) livelihood and housing changes before and after Haiyan, and c) level of residential satisfaction at the time. Their level of

satisfaction with relocation was noted by their perceptions on income, expenditure, and access to services. I also recorded residents' living status and the state of the surrounding environment through field reconnaissance, direct observations, and informal conversations and interactions (Table 1).

Interviews targeted residents from selected barangays (the smallest administrative unit in the Philippines, often referred to as a representative of a community) on repeated occasions to track changes in relocation perceptions. To explore the coastal residents' perceptions, I selected Barangays 68, 31, 56-A, 61, and 88 (see Figure 1). To understand the perspectives of residents who opted to use transitional housing (a locally used term for government-provided temporary housing in the relocation process) under Tacloban City's planned two-step relocation system, I selected Barangay 88 residents who were in both temporary shelters and permanent housing units. This barangay had experienced the most significant population loss in the disaster and, as a result, collective relocation to new sites was prioritized. Prior to each field visit I made a courtesy call to the barangay leader for permission.

I organized at least six interviewers when conducting each set of interviews. They were mainly local university students who were typhoon victims themselves; their attitude and use of the local language, Warai, enabled respondents to share honest feelings and thoughts on their relocation experience. All team members were trained for interviews through collectively reviewing the questions and practice interviewing. At least 40 residents were interviewed on each field visit for about 45 min each, adding up to 80 residents each year and totaling more than 400 residents for the entire study duration. When conducting interviews, the team divided into subgroups and recruited respondents around their residences ad hoc through opportunistic sampling. Interviews sought to balance gender and age, though it was difficult to continue recruiting the same people in subsequent visits. For each interviewing area, the team collected at least eight responses. Because I prioritized safety—crimes in low-income communities



Figure 1. Study location (the Philippines, Tacloban City, and barangays).

were common after the typhoon—the interviewers did not carry equipment such as voice recorders.

Interview notes were transcribed in English after each session and then coded. Next, subgroups of student interviewers worked together to develop summaries for each interviewed area. Finally, all team members gathered to cross-compare site information and to reflect upon and summarize findings. This transcribing, summary making, and cross-comparing knowledge process helped create a longitudinal narrative of residents' relocation views. In the detailed analysis stage after the fieldwork, I used an inductive coding approach to identify themes within each semistructured question. I also discussed the findings with the city government officials and local and international researchers interested in this research.

### **RESEARCH LIMITATIONS**

To reduce research bias, I took notes on findings and ideas during the fieldwork to reflect on when analyzing, interpreting, and writing. I also put effort into increasing interviewer and coding reliability. However, limitations exist. First, the number of interviews in the barangays was not large enough to draw statistically significant results. Second, selecting respondents ad hoc from the selected barangays may have been biased and not reflecting everyone's perspectives. Third, although local university students were trained equally and were bilingual, there was likely loss of nuanced information in translation. Last, chaos in recovery and political interventions created a constantly shifting narrative. All of these factors may have affected our understanding of communities' perceptions.

### The Case

The 2013 Typhoon Haiyan was the most destructive and expensive typhoon in the history of the Philippines. Such devastation prompted then-President Aquino III to establish the Office of Presidential Assistant for Rehabilitation and Recovery, a recovery institution to coordinate national departments and agencies to support affected local governments (luchi et al., 2019; National Economic and Development Authority, 2013; President of the Philippines, 2013). The Office of Presidential Assistant for Rehabilitation and Recovery consisted of five clusters for rebuilding, one of which was housing and resettlement (luchi et al., 2020).



Figure 2. Two-step relocation planned by the city.

Although the typhoon's trajectory destroyed thousands of houses in the central Philippines, the highest death tolls were concentrated in the Leyte region (luchi & Maly, 2017; National Disaster Risk Reduction and Management Council, 2013; Roeber & Bricker, 2015). In particular, Tacloban City was hit the hardest in the region; the number of dead reached more than 2,600 and loss of residential structures totaled about 29,000 units, 90% of which had been built informally (Tacloban City, 2014b).

Tacloban City, like many other cities with strong population growth, had limited land area for development (luchi, 2019); thus, informal development was spread along the hazardous low-lying coastal areas before the typhoon, within easy access of downtown Tacloban. The informal settlements had existed for guite some time, with some residents tracing their connections back as far as the 1950s. Most recalled that their pre-Haiyan residences were built with lightweight and recycled materials or with wood from a local coconut palm tree (coco-lumber). They made a living by fishing, selling fish and foods, and providing transportation services with motorbikes, locally called pedicabs. Some worked in offices. For them, typhoons were historically simply seasonal events that frequently visited the region, interrupting their lives for only a few days.

Devastation from Typhoon Haiyan involved years of rebuilding. Initially, the Tacloban City government passed a no-dwelling zone ordinance within 4 months after the typhoon to prohibit residential construction in the 40-m zone along the Cancabato Bay shoreline (see Tacloban City, 2014a). Aligning with the national reconstruction strategy (National Economic and Development Authority, 2013), the city decided to make 14,400 households that had been informally settled before the typhoon eligible to relocate from the no-dwelling zone to safer lands owned by the city. The new area, locally called the North or Tacloban North, was located approximately 10 miles to the north of downtown in a rural area. The decision seemed appropriate because the area was designated as an economic zone in the national strategy and the city's master plan had already designated this area to accommodate population spillover from the downtown's growth (luchi, 2014). Furthermore, the location was safe from future storm surge and inexpensive in land value.

The city's relocation plan involved two steps (Tacloban City, 2014a). First, the city planned residents to move out of tents and evacuation centers into temporary shelters, prepared in the downtown area and in the North (Figure 2). Downtown temporary shelters were prepared for populations needing assistance



Figure 3. Timeline of events and planning decisions.

(aged, disabled, and impoverished), and the northern shelters were arranged for larger households. In the second step, all families already in the temporary shelters were planned to relocate into the northern permanent housing units. In the process, the city had hoped that relocating residents would develop a sense of mutual support and belonging with the new and old neighbors to create a smooth transition.

Site development was a joint effort by various actors. For example, the NHA, NGOs, and other donors collaborated in funding and constructing most of the housing units developed in the North (see luchi & Maly, 2017). Relocating residents had an opportunity to be involved in construction by participating in a new program called sweat equity, which offset a portion of the prospected housing cost via contributed hours. The level of resident involvement varied, however, depending on the provider: the NHA's approach was more topdown but had a guicker turnaround, whereas privatesector nonprofits required more participation and time. Infrastructure, utilities, and facilities were then installed in coordination with national departments and regional agencies. Involving such varied stakeholders required time due to myriad negotiations and arrangements for implementation.

### Findings

This 6-year study revealed an interwoven process mutually influenced by decisions of multiple levels of government, nongovernmental actors, and residents. In particular, macro-level planning decisions, site development status, and residents' living status were three factors that helped explain how community relocation developed. The study also showed that the city government and residents were highly interested in completing relocation, despite the time required. For instance, although the limited supply of transitional housing forced most residents to improvise while waiting, only 2 to 3 out of 40 eligible respondents in each set of interviews claimed they would not relocate.

### Deciding Community Relocation and Its Consequences

Over the 6 years after Haiyan, a few critical macro-level planning decisions affected relocation speed and related procedures, as shown in Figure 3. The first important decision was the passing of a coastal nodwelling zone ordinance by the city, which came into effect in March 2014 (Tacloban City, 2014a). This ordinance initiated the coastal relocation program. The city also crafted the Tacloban North Development Plan, modifying an earlier development plan to accommodate the relocating population. For the first 3 years, the city coordinated the promotion of the plan with international agencies, national and regional governments, NGOs, and philanthropic organizations, while also involving multiple stakeholders in the planning process to maintain some aspects of the former social fabric. Under these efforts, the first permanent housing units were completed a little less than a year after the typhoon (luchi & Maly, 2017).

The actual relocation progress was less smooth, however. The roles and responsibilities of the housing providers (the NHA and the NGOs), infrastructure and service providers (quasi-government and private sector), and land provider (the city) had not been discussed or articulated through any laws and regulations. The result was that housing construction did not coordinate with infrastructure, services, or employment opportunities, which delayed relocation progress. Toward the end of the 3-year development effort, in 2016 the city decided to temporarily halt residential relocation to the North, because those who had already relocated continued facing hardships. Impoverished to start with, residents had to purchase expensive bottled water and pay for transportation to travel downtown for commodities but lacked ways to generate income.

Another important macro-level decision was made in November 2016 when President Duterte visited Tacloban City for the third-year commemoration. Shocked by the lack of progress, he blamed the delay on government negligence and ordered the NHA and the city government to accelerate the process (Ballesteros & Desacada, 2016). This decision to fast-track relocation transferred power from the local to the national government, particularly to the NHA, which hastened housing construction and residents' transfer but eventually diminished housing quality. It also disrupted both local governance and plans to maintain the original community fabric. The sweat equity program also was terminated around this time.

The most recent influential decision was made in August 2019 by the city. Between 2016 and 2019, more housing units were completed, and the new relocation sites began to take shape. Although there were some initial issues surrounding water sources, they were resolved and construction began in early 2019, easing residents' concerns (see Table 2 for examples of quotes touching on these issues). In August the same year, the city began demolishing coastal structures that remained in the no-dwelling zone as the North began to look more inhabitable. Theoretically, the former coastal residents now had new units, and thus it was time to let go of informal occupancy along the Cancabato Bay.

# Relocation Trajectories and Living Environment

Although the city designed its two-step relocation to be a linear process, the actual relocation trajectory was not. According to the city's unofficial calculations in 2016, only 30% of all eligible households were living in government-provided temporary shelters following the two-step relocation plan (hereinafter called *planned relocation path*). They were living in two different types of temporary shelters, locally referred to as *prefabricated*  wooden bunkhouses and traditional *nipa* (palm tree) transitional shelters (luchi & Maly, 2017; see Figure 4). The remaining 70% were presumed to have returned to their original coastal neighborhoods and in fact improvised their housing by building barracks themselves while waiting for the permanent units to be finished (hereinafter called *improvised relocation path*; see Table 3). The improvised relocation path emerged because the amount of transitional housing provided by the government was much less than what was needed for those eligible to relocate.

Although displaced residents in both relocation paths faced difficulties, interviews with relocating residents revealed different combinations of issues depending on where they were living (see Table 2). For example, those in the downtown bunkhouses on the planned relocation path faced inadequate sanitary conditions and a slight decline in economic opportunities, but they were able to keep their former lifestyles because they had better access to the downtown, urban services, and their former social networks. Households in the transitional shelters on the planned relocation path in the North faced a significant decrease in economic opportunities and access to infrastructure, and they continued relying on their former social networks in their original neighborhoods, despite the distance. In comparison, residents in the coastal areas on the improvised relocation path had better economic opportunities, utility restoration, and access to former social networks and urban services. They were, however, constantly concerned about their safety, and the long wait to relocate created anxiety and stress. Nevertheless, coastal residents initially restored their lifestyle faster compared with those in the bunkhouses and transitional shelters in the North.

### Adaptive and Transformative Perceptions of Relocating Residents

In-depth interviews over time revealed differences and time lags on perceptions between the residents on the two different relocation paths (see Table 4 for a summary). In addition, interviews suggested that residents' perceptions on relocation changed with the development status of their particular situation. Nevertheless, the study found that all relocating residents exhibited adaptability regardless of their situation.

### RESIDENTS ON PLANNED RELOCATION PATH

In the second year after Typhoon Haiyan, residents on the planned relocation path were living in either bunkhouses downtown or transitional shelters in the North. Ninety percent of residents interviewed in October 2015 indicated difficulties in accessing water, electricity, and transportation services, in addition to their challenging

### Table 2. Representative quotes explaining residential status.

	Planned rel	Improvised relocation paths	
	Residents in downtown bunkhouses	Residents in the northern transitional shelters	Residents in barracks
On financial status and opportunities	We have free water and electricity, so our expense compared to before is lesser [however] back in [Barangay] 88, my wife had a sari-sari store, but now, everyone has a sari-sari store so we decided not to have a sari-sari store. Financial opportunities here are fewer than before. (Male, 40s, October 2015)	Before Yolanda, we can easily access the basic goods, because mini-markets were there, more goods were sold. Here we have more expenses because we have to pay for the transportation fee for basic goods. (Female, 30s, October 2015)	Our main means of income is the store. I also drive around town on a jeepney to collect passengers but only as a part time. Nothing really changed after the typhoon. (Male, 50s, June 2016)
On access to infrastructure and transportation	There is no problem with water and electricity because both are free, but transportation is harder now [due to the unavailable service] compared before. (Male, 60s, October 2015)	Living here has [been] a big change in our life. Now, hospitals are very far, whenever my child is sick, we have to pay more than before [to travel downtown] for it to be checked. And also, we lack water supply. (Female, 20s, October 2015)	Our access to public services such as water, electricity, transportation is still the same [before and after Haiyan]. We are now back to normal. (Female, 20s, August 2017)
On living status	<ul> <li> in terms of health services, our place is lacking. Many residents caught pneumonia, heat stroke and some even died. (Female, 40s, October 2015)</li> <li>I am having a difficult time due to dysfunctional comfort rooms, rats and cockroaches around the area. (Female, 40s, October 2015)</li> </ul>	It's difficult living here, I can't sell cooked food because I can't leave the house. There is no livelihood here. (Female, 30s, October 2015) Livelihood here is hard compared to Costa Brava. There, we can put up livestock [that is prohibited in the current site] as our source of income. (Female, 60s, October 2015)	We were given a bunkhouse but we refused to accept it because it will be very hard for us to live there, it was very far from our livelihood and also from the school where my children were studying. (Male, 50s, June 2016)
Relation to former neighborhoods	I provide laundry services but not as often as when I was still in Costa Brava. My regular customers before live far apart now so I have to spare some coins for the transportation expenses. (Female, 40s, October 2015) Kids ride (public transportation) to get downtown and walk to school from there. (Female 20s, October 2015)	Before, my husband was a fisherman, he earned 3,000 [[pesos] in 3 days. Now he's still a fisherman there [in the old neighborhood] but he doesn't earn that much now plus we spend a lot for his fare. (Female, 40s, October 2015) I work as a VSP volunteer under the city government. At the same time, I have a part-time job at Republic Bar [both located downtown]. (Male 20s, October 2015)	Yes, we are just waiting for it [housing units in the north] to be finished constructing and we will immediately transfer but we will still return here because of our livelihood. (Female, 50s, June 2016) For me, it [relocation to the north] is a very good project of the government. Very safe unlike our current house which is situated just above the sea which is very dangerous. (Female 30s, June 2016)

financial status. They also revealed exhaustion over residing in transitional housing; without much information on when they would relocate permanently, they felt the wait was too long. Most residents interviewed had a negative perception of relocation. In the third year after Haiyan, in January 2017, displaced residents from Barangay 88 were occupying permanent units. By this time, the city had stopped transferring residents to the North, but relocation was quickly restarted per President Duterte's order. Of those



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Figure 4. Types of transitional housing and locations.

interviewed, about 90% of those relocated and about 65% of those still in transitional housing were at least thankful for the support and were still motivated by the idea of owning a concrete masonry unit, which had been beyond their reach before Haiyan.

At around the fourth year after Haiyan, in December 2017, about 40% of the interviewed residents in permanent housing had two houses: one in the North and the other in their original neighborhood. Living conditions in the North were improving but not yet sufficient. Though they accepted the fact that they needed to live in the North, maintaining and constructing another house back in the coastal area was a survival strategy that allowed them to earn an income using their original social and economic networks. Due to this arrangement, not all residents were pessimistic about relocation.

Gradually, the North's living conditions improved. New schools and a health care center were added, construction began on a water distribution system, and residents began establishing *sari-sari* (privately owned convenience) stores and other businesses, including transportation services. In November 2018, 5 years after Haiyan, relocated residents were adjusting to the North and, of those interviewed, 75% were content enough to give up their coastal structures. Durable housing, access to schools and a health care center, and access to water were the three major reasons for increased satisfaction. Although income generation continued to be difficult, residents began exploring new ways to sustain their income such as establishing their own businesses while working other jobs.

Most recently, in January 2020, more than 80% of residents interviewed from the North no longer owned coastal structures, and there were other signs of change. For instance, although almost all relocated residents were still looking for modest ways to generate income, some residents had become financially affluent and owned an automobile. Differences in community characteristics also emerged. Residents who had relocated earlier had higher satisfaction levels because they lived with their former community members in structurally sound units, where on-site living was eased by the emergence of informal markets and a transportation hub. Meanwhile, residents living in sites developed after the 3-year anniversary were less content; they were separated from former neighbors and the units provided were of lower quality.

Table 3. Relocation trajectories and types of housing.						
<b>Relocation trajectory</b>	Housing assistance	Housing type	Site location			
Planned relocation path	Government provided	Bunkhouses	Downtown			
	(transitional housing)	Transitional shelters	The North			
Improvised relocation path	Self-provided informal housing	Barracks	Coastal area			

### RESIDENTS ON IMPROVISED RELOCATION PATH

Residents on the improvised relocation path exhibited different perceptions about relocation than residents on the planned relocation path. Based on interview responses collected between 2015 and 2019, around 85%—much more than the estimate provided by the city—were back in the coastal areas within a year after the typhoon. By the February 2015 interviews in the second year after the typhoon, residents living in the coastal area had to deal with the inflated cost of commodities, just as those in the planned relocation path. However, their living conditions were much better, and they had better access to jobs and urban services. Like residents in transitional housing, their future was uncertain because they had no information on their permanent units. Yet, they continued to fear a future storm surge and hoped to relocate soon.

In the third year after Haiyan, in June 2016, most coastal residents interviewed explained they had reestablished their life back in their old neighborhood. Though the price of commodities never dropped, all respondents had at least one family member who was working and about half reported their income and financial status to be the same as before the typhoon. With the exception of those who claimed to have a second home in the North (about 17%), residents explained their life was "getting back to normal" because urban facilities and services in the downtown area were back in operation. Although a couple of respondents refused the opportunity to relocate, others continued to waitlist themselves for housing because owning a unit was still appealing.

By the fourth year after the typhoon, coastal residents felt stuck. According to interviews in August 2017, more than 90% planned to move to the North but remained attached to their old neighborhood. They were reluctant to move due to the miserable environment in the North. Almost all interviewees claimed to have already re-established their livelihoods in the old neighborhood, with similar occupations as before. However, though many continued to have mixed feelings about relocating, living in a sturdy building was still attractive to those who continued to suffer psychologically from the traumatic experience.

Midway into the fifth year after the typhoon in June 2018, relocation sites in the North had improved. Although more had begun to receive units in the North that required full-time residence, many still kept their coastal houses. Prior issues about living conditions in the North continued to cause anxiety, and commuting downtown was essential for living there, but it was expensive to do so. Thus, many residents simply decided to visit the North once or twice a week to satisfy the city's rule on housing occupancy.

In the August 2019 interviews, in the sixth year after the typhoon, life in the North had improved, and residents were open to giving up their downtown houses. The city had also recently declared their plan to demolish any structure standing in the no-dwelling zone. Because this had always been the official plan, and because the North was functional and most residents now had permanent units, almost no resistance was discernible via interviews. Though there were still issues with living solely in the North, almost all felt fortunate to have new housing units and that it was time to accept the finality and reality of relocation.

Despite the relocation process being ad hoc and political decisions and limited resources often setting back progress, 70% of the housing units constructed in the relocation sites were occupied 7 years later in 2020 (Tacloban City, 2020), revealing a high participation rate of the Haiyan-affected households.

### Discussion

A central finding for planners and policymakers involved in community relocation was that residents' life concerns transformed over time, from hazard risk reduction to life re-establishment and finally to adaptation. Observation suggested that this transformation was strongly associated with the changing physical and social environment of the new relocation sites.

# Transforming Life Concerns of Communities in Relocation

This evolution can be explained by Scudder's (1985) model of development stages of new settlements, which he termed "a dynamic model of settlement process" (p. 159; see Figure 5). In the initial stage of relocation, most eligible residents were in temporary shelters, in transitional shelters built on sites away from the coast, or in barracks assembled in their original neighborhoods. During this time, residents and their surrounding environment were recovering from Haiyan's devastation and many eligible residents opted to live in

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Table 4. Residents' changing thoughts and perceptions on relocation.							
		Planned relocation				Improvised relocation	1
Wave	Years after typhoon	Interview date	General thoughts on relocation	Perceptions and responses on relocation	Interview date	General thoughts on relocation	Perceptions and responses on relocation
1	Year 2	October 2015	Waiting to be in the permanent units in transitional housing is too long	Negative	February 2015	Eager to leave the coastal area to safer locations	Positive
2	Year 3	January 2017	Lost jobs but acquired durable and safe houses to live in	Not too pessimistic	June 2016	Living in the North is attractive for safe housing, yet the living outlook seems difficult	Both positive and negative
3	Year 4	December 2017	Time to move in to settle in the permanent units	Not too pessimistic	August 2017	Having the permanent housing units in the North continues to be attractive, yet the living outlook is not easy	Both positive and negative
4	Year 5	November 2018	Adjusting to new places—public and utility services are getting better	Feeling content	June 2018	Owning two places to live is critical because we still rely on job opportunities in the coastal communities	Negative
5	Year 6	January 2020	Local economy and community characters are emerging	Varies, depending on communities	August 2019	Time to give up coastal structure is coming	Accepting

temporary shelters while they waited to relocate to safer areas with permanent housing. The destruction from Haiyan was still affecting residents psychologically, so they were eager to take any measures to reduce future hazard risk. For them, the city's relocation plan to the North was attractive because of the distance from the coast and the durable and safe housing structures.

However, residents' concerns on both relocation paths gradually shifted to life re-establishment. As the first batch of residents began relocating—the transition phase in the Scudder (1985) model—residents' perceptions on relocation became mixed. Relocated residents were facing difficulties living in the North, and their stories influenced coastal residents still waiting to relocate. As residents gradually relocated to the permanent sites, they built another house in their former communities or continued owning their coastal house, both informally. They relied on former social and economic networks to survive. Thus, keeping a house in the former accessible location was important regardless of future hazard risk. At this point, residents' concerns surrounded daily living rather than reducing risk from storms.

Residents gradually gave up their informal houses as the relocation sites began accommodating economic and social activities like informal markets, new businesses, and schools. The original neighborhoods' surrounding environment also degraded as people began leaving. Although the residents on each path experienced different time frames to develop optimism about their situation, all established strategies to improve their situation. At this stage, most residents were primarily concerned about making life better in the new settlement.

Regardless of their changing perceptions over time, the central concern of residents throughout the process was sustaining daily life. Most relocating residents whether temporarily living in the North, the downtown area, or back in the coastal areas—persisted to embed themselves into their pre-typhoon economic and social networks. In the old neighborhoods, residents continued working and schooling because such opportunities were not yet ready in the new sites. This strategy was most evident when residents began owning houses in both the new and former locations, an arrangement that persisted until they gradually adapted to the new environment.

The study also found that site development status and residents' livelihood outlook in the relocation sites were the key drivers influencing residents' perception. Residents were demotivated when observing the new sites' low building quality and lack of utilities. Anxiety was also linked to limited livelihood opportunities,

Scudder model of settlement process*	Phase 1: Planning and recruitment		Phase 2: Transition	Phase 3: Economic and social dev't/ Phase 4: Handling over and incorporat	
Relocation Status	TRANSITORY	1	<b>FRANSITORY</b> and <b>PERMANENT</b>		PERMANENT
Physical environment					
Place of residence(s)	<transitional housing=""></transitional>	<tr< td=""><td>ansitional and permanent hous</td><td>ing&gt;</td><td><permanent housing=""></permanent></td></tr<>	ansitional and permanent hous	ing>	<permanent housing=""></permanent>
	In either the: 1. Transitional-shelter sites 2. Barracks (original neighborhoods)	→ 2.	Living in both: 1. Permanent housing sites Barracks (original neighborhoods	→ 5)	<i>Living solely in:</i> 1. Permanent housing sites
Permanent site status	Relocation plan is shared; Site construction begins	<b>→</b>	Permanent housing sites and community infrastructure develop	-	Permanent housing sites complete; Informal markets and transportation networks expand
Social environment Life recovery status	<transitory recovering<br="" while="">from the shock&gt;Waiting for the residence to develop and the region to recover</transitory>	<b>→</b>	<facing reality=""> Relying on former social and financial networks to survive everyday</facing>	<b>→</b>	<looking adapt="" ahead="" to=""> Exploring ways to live in new location as more livelihood opportunities grow</looking>
Residents' life and concerns					
Feelings toward relocation	<excited></excited>		<mixed></mixed>		<optimistic></optimistic>
Major life concern	Securing life from future hazard risk	<b>→</b>	Surviving everyday and reestablishing life	<b>→</b>	Adapting to new living environment towards improved life
Conceptualized community evolution in	Central concer	n of i	relocating residents: S	Susta	ining daily life
relocation	Hazard risk reduction		Life reestablishment		New living-environment adaptation

Figure 5. Evolution of community relocation after disasters. \*This paper refers to Scudder's model of the settlement process (**1985**) as time framing of community to adapt.

expensive commodities, and underdeveloped services. In terms of managing relocation, the study revealed that the political decision to fast-track relocation disrupted the established governance and the plan to maintain community ties. Such procedural interruption terminated local participatory efforts (e.g., the sweat equity program) and increased residents' anxiety. A stable governance system with transparent information throughout the relocation process is essential.

### Conclusions

In this study I explored how multiple levels of relocation actors responded, interacted, and evolved to adapt to changing environments over an extended time. Taking a planning perspective, this study revealed that the relocation process was much more complex than the classic linear recovery models and encompassed at least several relocation trajectories. Unanticipated events triggered by political decisions, limited government capacity, and residents' responses—modified the initial linear plan of community relocation. In timecompressed postdisaster situations, planners and policymakers should expect the need to improvise and adapt.

### Planning-Centered Model of Community Relocation: Five Dimensions

What do the findings of this planning-centered model of community relocation imply for policymakers and planners? First, relocating residents change their minds over time. Because residents' concerns are to sustain their lives throughout the relocation, it is not enough to simply move residents away from risks; they also need support to re-establish their daily lives. Though policymakers and planners are aware of the need to secure socioeconomic, health, and cultural aspects in relocation (e.g., ESSC, 2014; Ferris, 2011; United Nations High Commissioner for Refugees, 2014), physical development of sites always becomes a priority because it is more visible. It is time to change this and officially recognize that supporting life re-establishment is equally important as housing supports.

Second, proactively strengthening and using residents' capacity throughout the relocation process is critical because low-income residents are more resourceful and strategic than previously perceived. In the case of Tacloban, relocating residents used their former socioeconomic and cultural networks to continue generating income despite their displaced locations. They strategically established temporary places to stay in addition to their official residences. As residents began moving into permanent units, they further explored new business opportunities. Such movement revealed that even in challenging environments, residents sought opportunities to improve their lives and adapt to new environments.

Third, developing new sites near original neighborhoods or temporarily securing access to them is essential to reduce relocation stress because social and economic ties help residents re-establish their lives. The study showed that relocating residents continued traveling between their displaced locations and temporarily constructed barracks in their original neighborhood until they were forced to give them up. They relied on such ties for survival; proactively securing socioeconomic ties during the relocation process led to better relocation results, including reduced anxiety while relocating.

Fourth, considering the psychological influence of relocating residents, providing information and support to nurture a sense of security was vital for helping residents view relocation positively. This can take the form of securing access to livelihood opportunities or providing hope via reduced hazard risks or durable housing, as opposed to simply providing physical resources. Sharing information on the progress upfront by trusted agencies, such as the city government in Tacloban's case, is important to help residents plan their life after relocation. Negative perceptions on relocation were particularly evident when rumors had spread without official information on the progress.

Last, because the relocation process is nonlinear and each community has unique needs, relocating residents' participation in deliberate, iterative, and inclusive processes would lead to more satisfactory outcomes. To date, relocation policies and programs have tended to overlook the changing mindsets and resourcefulness of relocating residents. Such oversights have led to failures in community relocations, through residents' life disruptions and abandonment of newly built housing. A more adaptive and flexible process will help residents to be better informed and more engaged in planning for their move, increasing the opportunity to make these communities sustainable.

This study only explored a community relocation case in Tacloban City in Leyte, the Philippines. However, the planning-centered model of community relocation with five implications is generally applicable for areas recovering by relocating disaster-affected communities. Policymakers and planners must know that the community relocation process is organic, adaptive, and responsive; co-designing the deliberate, iterative, and inclusive processes with resourceful residents can improve the outcomes in postdisaster settings.

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