

**Development and divergent post-disaster trajectories in a mountain village:
Temporal dynamics of differentiation after the 2008 Wenchuan Earthquake**

First Author:

Mahmood FAYAZI

Associate Professor

The Institute for Disaster Management and Reconstruction

Sichuan University - The Hong Kong Polytechnic University

mahmood.fayazi@scu.edu.ca

Second/Corresponding Author:

Emily T. YEH

Department of Geography,

University of Colorado Boulder

emily.yeh@colorado.edu

001-720-352-0326

Third Author

LI Fan

PhD Candidate at the Institute for Disaster Management and Reconstruction

Sichuan University - The Hong Kong Polytechnic University

lifan_scu@163.com

**Development and divergent post-disaster trajectories in a mountain village:
Temporal dynamics of differentiation after the 2008 Wenchuan Earthquake**

“Earthquake reconstruction has sped up development by ten years.”

“The earthquake has set development backwards by twenty years.”

- two residents of Mountain Town, Pengzhou

Introduction

On May 12, 2008, a magnitude 8.0 earthquake struck Wenchuan, less than 100 kilometers from Chengdu, the capital of Sichuan Province, China leaving 87,000 people dead or missing, nearly eight million homeless, and injuring over 370,000 people (Dunford & Li, 2011). The state’s rapid emergency response, its openness to civil society participation, and media access in the immediate aftermath of the disaster were widely praised, as was the magnitude and rapidity of the subsequent reconstruction effort. Within three months of the quake, China’s State Council ratified the Overall Plan for Post-Wenchuan Earthquake Restoration and Reconstruction (hereafter, “Overall Plan”) (Dunford & Li, 2011). These guidelines called for major reconstruction to be completed within three years, at a cost of one trillion yuan. Spending was subsequently accelerated to complete reconstruction within two years (Abramson & Qi, 2011).

Despite debates during the planning process about the extent to which earthquake recovery should be conflated with longer-term development goals, the “basic principles” in the final version of the Overall Plan specified that reconstruction should be integrated into ongoing development strategies, including the New Socialist Countryside and especially Urban-Rural Integration (Abramson & Qi, 2011). This approach of combining reconstruction with development seems to dovetail with recent advances in the field of disaster management, which

emphasize improved development during post-disaster reconstruction, often referred to as “building back better” (Kennedy, Ashmore, Babister, & Kelman, 2008; Lloyd-Jones, 2007).

Indeed, international organizations and provincial authorities have hailed post-Wenchuan earthquake recovery efforts as an example of “building back better” (Smikop, 2010; UNDP-China, 2018; UNICEF-Hong-Kong, 2010; World-Bank, 2018). The World Bank, for example, states that the Sichuan recovery process “serves as an example of the large-scale reconstruction that aims...[to] use the reconstruction to improve local economies and living standards of the affected population” (2018). However, few assessments have been undertaken of long-term trajectories of household recovery following the earthquake (but see He, Aitchison, Hussey, & Chen, 2019). The bulk of research on the Wenchuan earthquake, whether regarding the role of civil society (Teets, 2009; Xu, 2017), state power and Party-state legitimacy (Sorace, 2017), the ways in which the earthquake became a catalyst for rural planning and urban-rural integration (Abramson & Qi, 2011; Wilczak, 2017a, 2017b), reconstruction planning and implementation (Dunford & Li, 2011; Peng, 2015), or household recovery (Lin, Wang, & Liu 2017; Park & Wang, 2017) was conducted in the immediate aftermath of the quake. The important yet often neglected medium to long-term phase of post-disaster reconstruction and recovery must be examined for a more accurate understanding of recovery, or lack thereof (Dunford & Li, 2011; He et al. 2019). Our study contributes to this understanding.

Long-Term Disaster Recovery Trajectories and Differentiation

The emphasis in the field of disaster management on opportunities for development after disasters came with changes in the interpretation of resilience. Whereas earlier understandings pointed to a speedy return to a pre-event situation, with a focus on preserving what exists, critiques subsequently raised the question of why people would want to bounce back to a pre-

event situation if it was characterized by poverty, vulnerability, and a lack of sustainability (Davoudi, Brooks, & Mehmood, 2013; White & O’Hare, 2014). This paradigm shift from bounce-back to bounce-forward (or “building back better”) in the concept of resilience resulted from studies of the requirements for effective recovery after multiple forms of disasters around the world (Davis & Alexander, 2015; Ingram, Franco, Rumbaitis-del Rio, & Khazai, 2006; Joakim, 2011; Olshansky, Hopkins & Johnson, 2012). As a result, the disaster management field now generally sees the recovery period as an opportunity to improve development policies, infrastructure, and institutions, and address pre-disaster social challenges such as inequality, poverty, social gaps, and lack of entitlements (Joakim 2011) .

Evaluating various models of disaster recovery, Davis and Alexander (2015) argue that hasty decision-making processes; emphasis on product rather than process; lack of public participation, transparency, and accountability; and cynical exploitation of disaster situations have often led to failures of recovery. In an effort to develop a comprehensive framework for key elements of recovery, they draw on a human rights framework to advocate that “each citizen of the world [...] should enjoy the right to live in relative safety” (Davis & Alexander, 2015, p. 140). However, studies of recovery from earthquakes, hurricanes, and other quick-onset natural hazards have found that top-down, technocratic reconstruction policies have resulted in homogenous strategies that do not work equally well for highly disparate households and differentiated communities (Aldrich 2012; Barenstein 2006; Davidson, Johnson, Lizarralde, Dikmen & Sliwinski, 2007). Previous studies have also demonstrated a strong correlation between various forms of privilege along lines of race, class, ethnicity, religion, gender, and age, with both vulnerability to disaster impacts and access to recovery aid (Elliott & Pais, 2006; Fletcher, Stover & Weinstein 2005; Tierney 2005).

Despite the call for bounce-forward resilience, investigations of experiences around the globe reveal that many reconstruction programs not only fail to address pre-disaster social problems, but also exacerbate them. Post-disaster reconstruction programs frequently pay inadequate attention to the social-cultural conditions of the local population (Quzai, 2010), exclude certain populations from resource distribution (Oliver-Smith, 1990; Wisner, Blaikie, Cannon, & Davis 1994), relocate families to segregated neighborhoods (Oliver-Smith, 1991), and provide cookie-cutter housing that ignores different family sizes, incomes, priorities, and expectations (Fallahi, 2005; Lizarralde, Fayazi, Kikano, & Thomas, 2017).

A growing body of research demonstrates that marginalized residents are vulnerable not only to natural hazards, but also to recovery efforts (Gotham 2014; Gotham and Greenberg 2014). Recent research on the effects of natural hazards on wealth inequality in the United States has found that white and more highly educated households have tended to gain wealth after disasters, whereas minority households and renters lost wealth. Importantly, the more Federal Emergency Management Agency (FEMA) aid that counties receive, the more exacerbated wealth disparities become, particularly by race (Howell & Elliot 2019). In the United States, wealth differentiation as a result of recovery policies has unfolded at least in part due to differential ability to take advantage of assistance. After Hurricane Katrina, for example, assistance policies were designed to restore wealth or were based on insurance, leading to situations where property owners gained access to new resources or opportunities to transfer wealth to adult children through property restoration, whereas less privileged residents were more likely to have to pay higher rents or suffer from suspended legal protections for low income workers (Fussell, 2011; Gotham, 2014; Vigdor 2008). In a different context, Fayazi and Lizarralde (2018), find that despite the adoption of owner-driven housing, generally accepted as an inclusive policy, housing

reconstruction after the 2003 Bam earthquake in Iran exacerbated pre-disaster poverty, social exclusion, and marginalization. Financial and technical assistance benefited some groups of households while having the opposite effect on others.

What these studies in varied contexts demonstrate is that equality in aid policies does not produce equity in recovery. In Iran, Fayazi and Lizarralde (2018) argue that post-disaster housing recovery must be integrated into broader housing policies, to avoid exacerbating inequality. For the US, Howell and Elliott (2019) suggest the need to reform the current system of recovery aid, which is centered on the restoration of private property and wealth. Similar research has not been conducted in China, where property rights and patterns of homeownership, racialization, and education levels are radically different from the United States and other contexts where these questions have been studied. Lin et al. (2017) examined divergent perceptions of household recovery after the Wenchuan earthquake based on research in 2012 and 2014, finding that “family recovery power” has the biggest impact on perception of recovery, followed by house recovery condition and reconstruction investment. What remains unexplained, however, is *why* different households have different levels of “recovery power,” or recovery conditions and investment. Also unaddressed are the consequences of merging reconstruction programs into broader development policies.

To address these issues, we examined long-term trajectories of household recovery and experiences of development in one severely affected, mountain village. Our in-depth, qualitative study reveals how, even within a single village, post-disaster recovery trajectories and experiences of development diverge significantly, based on the type of reconstruction that the household experienced, pre-disaster socioeconomic status, secondary hazards, and shifting development policies. Given both the lack of availability of accurate household-level income

data and the deliberately qualitative nature of our study, we focus more generally on livelihood trajectory rather than on income per se; this also allows us to focus on the often-ignored dimensions of subjective experience and social wellbeing (Howell & Elliot 2019).

Development Strategies and Earthquake Reconstruction

China's National Development Strategies

Concern about growing rural-urban disparities and the “three rural problems” grew in China throughout the 1990s and early 2000s, resulting in several major policy shifts after the 16th Party Congress in 2002 and the arrival of the Hu-Wen administration in 2003. Agricultural taxes were completely eliminated in 2006, the same year as the launching of the New Socialist Countryside campaign, which enrolled rural residents in pension and healthcare insurance schemes, eliminated school fees, and provided other forms of public services and infrastructure to rural villages (Ahlers, 2015; Ahlers & Schubert, 2010). Also in 2003, the central government launched a new policy requiring “coordinated planning of rural and urban development,” which recognized the need to overcome the “dual structure” legacy of the differential governance of urban and rural land and citizens, and posited the urban as the key site of economic growth and development (Bray, 2013; Wilczak, 2017a, 2017b).

In practice, the 2003 strategy of coordinated development focused on the “Three Concentrations,” a phrase in official use since 1995 to refer to the concentration of rural settlements, the concentration of farmland to realize economies of scale, and the concentration of factories in industrial zones (Bray, 2013; Chen & Gao, 2011). The concentration of rural settlements, which also characterized the New Socialist Countryside, is motivated by several rationales. First, it is seen as a way to make it easier and more cost effective to provide transportation and other infrastructure and public services to rural residents, particularly in

mountainous areas (Gao, 2009; Peng et al 2018b). Bringing urban-type living with its associated amenities and services is in turn seen as a way to stem the tide of migration to China's large cities and the ongoing emptying out of the countryside. Second, it responds to the government's concerns with farmland preservation, given farmland loss through urban conversion in the 1980s and 1990s viewed as highly threatening to China's policy of food self-sufficiency (Zhang & Wu, 2017). With the country's remaining farmland very close to its "red line" of 120 million hectares, all farmland lost to urban construction must be offset with the creation of farmland elsewhere under a 'no net loss' principle. By consolidating houses, the housing construction land on which dispersed houses previously stood can be consolidated and converted to farmland, and this amount is allowed to offset farmland lost to urban construction.

The logic of housing concentration is thus seen as a key to achieving rural development, and more generally, "scientific development." However, the campaign-style implementation of the New Socialist Countryside, and the tendency for newly required village plans to be drawn by planners based on their largely urban experience led to the building of villages that "resembled 'concrete forests' of homogenous housing blocks lined up like 'barracks'" (Ahlers, 2015; Ahlers & Schubert, 2010; Perry, 2011; Wilczak, 2017a, p. 111). Responding to these critiques, by the late 2000s, "new-type rural neighborhood construction" schemes were "oriented towards achieving more sustainable and socially acceptable modes of urbanization and relocation," (Ahlers, 2015, p. 135) though various forms of what Ahlers (2015, p. 125) calls "soft manipulation" are still sometimes used. The 2014 National New-Type Urbanization Plan and the 2017 Rural Revitalization strategy continue to focus on bringing urban types of living to rural areas to discourage migration to China's largest mega-cities, and adopting house concentration as a key way to achieve development.

Regional Development and Earthquake Reconstruction

The prefectural-level municipality of Chengdu, best thought of as a ‘city-region,’ became a pilot for urban-rural integration in 2003, and an “experimental zone” for further comprehensive reform in June 2007. Reconstruction following the May 2008 earthquake quickly became subsumed under these pre-quake strategies (Abramson & Qi, 2011; Smikop, 2010). Indeed, planners and officials began to see the earthquake as an “opportunity” to deepen urban-rural integration, and officials widely stated that the reconstruction had “sped up development by twenty years” (Wilczak, 2017b). Thus, from the start, earthquake reconstruction focused on accelerated development. The intensification of urban-rural integration was enabled in part by a Ministry of Land and Resources decision that allowed the municipality leeway to exchange and convert land without limit for three years. This resulted in 400,000 mu¹ (26,667 ha) of farmland converted to urban uses in the three years following the earthquake (Zhang & Wu, 2017). For villagers, this meant reconstructed houses were generally more concentrated and higher density than pre-earthquake housing. In addition, resettlement housing was provided on the condition that villagers gave up their property rights to their original house lots (Abramson & Qi, 2011).

Earthquake reconstruction in Chengdu city-region’s two designated ecological “belts” of the Longmen and Longquan mountains emphasized ecological protection, environmental amenities, and *nongjiale* tourism. The latter refers to a type of rural tourism across China, first pioneered around Chengdu in the late 1980s, in which rural families host urban guests to stay in farm guesthouses for weekends and vacations, during which urban residents can consume rustic food, relax, enjoy the agrarian surroundings, and engage in other activities such as buying flowers. Government promotion of *nongjiale* tourism was a central theme of post-earthquake reconstruction in our study site, which is located in the Longmen “ecological belt.”

Research Site

Our case study was conducted in Summit Village (*cun*), in Mountain Town (*zhen*), located roughly 70 kilometers northwest of Chengdu's urban core.² The town is administered by Pengzhou, a county-level city that is in turn administered by the prefectural-level municipality of Chengdu. It was chosen because village households experienced a range of different options for housing reconstruction, and because it was very severely affected by the earthquake. The 2008 earthquake killed 455 residents out of 14,066, as well as a number of tourists, and destroyed 95 percent of the houses in Mountain Town. In Summit Village alone, the earthquake claimed the lives of 68 out of 2680 residents. However, because of its remoteness, it was designated as 'severely affected' relatively late after the quake, and remains understudied in comparison to the other severely affected areas of Wenchuan and Beichuan.

Encompassing 368 km², Mountain Town consists of five administrative villages and one urban neighborhood. Summit Village, comprising seventeen hamlets/production teams (*sheng chan dui*), is located along an altitude gradient along both sides of a small river. Summit Village has less farmland than other villages in Mountain Town. After the implementation of the Sloping Land Conversion Program in the early 2000s, more than 90% of village cropland, much of it opened for cultivation during the 1950s-1970s, was reforested. Villagers' primary crops are potatoes and corn, but productivity is low and these now have little market value and are used primarily for self-consumption. Instead, as villagers explain using a popular Chinese saying, "*kao shan, chi shan*" ("relying on the mountains to eat") – they relied on the mountains for their livelihoods, including using hilly, higher-elevation land to grow medicinal plants for market sale. Until the development of the Summit Scenic Area in 1986 (later expanded into the national-level Mountain Scenic Area) villagers primarily relied on timber for their livelihoods. However, with

the development of the scenic area, villagers decided to restrict and monitor their own illegal logging, in order to focus on having a better landscape to attract tourists. Thus, *nongjiale* guesthouses became the primary source of household income in Summit Village and across Mountain Town more generally. Indeed by 2005, there were roughly 800 registered *nongjiales* in the town,³ and according to town government statistics, there were 430 *nongjiales* in Summit Village alone just before the earthquake. These *nongjiales* are generally in the same physical building as the household. They gradually evolved from simple and small houses to more elaborate, two to three floor concrete buildings, built in many cases through loans. In addition to lodging, *nongjiale* hosts provide meals as part of daily or monthly-rate stays.

Research methods

This article draws primarily on semi-structured interviews conducted in Summit Village between November 2018 and May 2019. We conducted semi-structured interviews with 55 villagers, three village leaders, and one leader from the town. Our preliminary interviews illuminated the full range of post-earthquake house reconstruction situations in the village. Based on these, we then chose interviewees who could represent each of the categories discussed below (permanent concentrated settlement, “settle first, development later,” and in-situ, self-reconstruction). Given its importance as a distinct recovery trajectory, 15 of our 55 villager interviewees were from the concentrated settlement. In addition, six out of the 55 were from Hamlet Sixteen, which has been most severely affected by both recent flooding and the closure of the scenic area. Beyond this, because of the importance of place-specific secondary earthquake hazards, we deliberately interviewed villagers from all hamlets that are sites of self-reconstruction (we refer to the hamlets by number, following village naming practices). We conducted convenience sampling in the sense that we asked villagers whom we found in the

hamlets and housing situations of interest if they would be willing to be interviewed. These methods are common in qualitative research in contemporary China, including on earthquake recovery (e.g. Peng et al., 2018a; He et al., 2019).

Our initial interviews, which averaged about one hour each and were conducted in or around villagers' homes, consisted of questions about basic demographic information; housing reconstruction decisions, experiences, and timelines; income sources, including tourism and farmland before and after the earthquake; level of satisfaction (or dissatisfaction) with reconstruction; involvement or participation in village governance; and perceptions of safety. We also asked questions about how residents understood "development," and their future aspirations for themselves and their children regarding housing type and location, and occupation. We also conducted follow-up interviews by phone and in person with the three village leaders and others for whom we had questions of clarification. Two of the authors and four research assistants conducted the interviews in Chinese. Interviews were then transcribed and translated into English. To triangulate information, we also consulted relevant policy documents and news articles about the establishment of scenic areas, and regulations about building construction. Unless otherwise noted, the data presented below is based on our interviews.

Long-term housing recovery in Summit Village

Immediately following the earthquake, Summit villagers made their way out of the valley on foot, some with help from the army, as the road had collapsed. Residents were sent to various locations around Pengzhou City designated as emergency shelters. After several weeks, they were settled in temporary shelters built on the fields of Hamlets Three/Seventeen (formerly one production team that was later split into two). Residents received 10 CNY and ½ kilogram of

grain per day for the first three months. According to village leaders, reconstruction policies were only finalized and implementation begun toward the end of 2008.

The 2008 Overall Plan called for tourism to be a “pioneer industry” (*xian dao chan ye*) in the quake zone. In the Longmen Mountains this dovetailed with prior efforts to develop tourism, and also aligned with multiple Chengdu city-region plans that zoned the Longmen Mountains as an ecological belt with a primary function of conservation and ecotourism. However, this broad emphasis on tourism has not translated into consistent policies on the reconstruction of household *nongjiales*. Shifting regulations and inconsistent implementation have created uncertainty, as has a series of secondary earthquake hazards, specifically debris flows and floods. Three major debris flows in the summers of 2012, 2013, and 2017, and flooding in 2018, washed away or covered houses, fields, and road infrastructure in parts of Summit Village.

In the initial months after the earthquake, the 780 households (2658 residents) of Summit Village were provided with several different options:

1. One-time payment for exit from the village. Those who wished to move away permanently and give up their use rights to farmland and housing lots received a one-time payment of 30,000 CNY. Because the 18 households (41 people) who chose this option no longer reside in the village, we do not discuss them further.
2. Move to the concentrated housing settlement (upon completion of construction in 2010).
 - A. 248 households (883 residents) moved permanently to the concentrated settlement.
 - B. 91 households (278 residents) chose the “settle first, develop later” option in which they purchased small apartments in the concentrated settlement, with the intention of returning to rebuild later on their original house locations.

3. In-situ self-reconstruction. Out of 780 households, 337 households (1182 residents) chose to rebuild houses on their original house lots, in their farming hamlets. An additional 86 households (274 residents) whose houses were not badly damaged opted to repair rather than rebuild their houses. A small number of households who chose in-situ self-reconstruction moved to 11m², one-room “low-rent” units that were constructed in 2010, while waiting to accumulate the financial means to reconstruct their houses. Others lived in temporary shacks on their own land while waiting to rebuild.

Both the initial socioeconomic status and the physical location of villagers’ pre-earthquake houses determined whether villagers were able to choose in-situ self-reconstruction, which we found to be the preferred choice among all of our interviewees. However, the subsequent livelihood trajectories of households who did choose self-reconstruction have diverged significantly as a result of both location vis-à-vis secondary earthquake hazards, as well as the timing of household attempts to rebuild, with respect to changing policies and staffing in the town and city. Below, we explore the different long-term trajectories that have resulted, beginning with concentrated settlement.

Concentrated Settlement

Permanent Settlement

Also known as unified planning-unified reconstruction or concentrated rural settlement, this option refers to the consolidation of modularly designed houses. These were built on farmland of Hamlets Three/Seventeen, deemed an area particularly safe from secondary hazards. These concentrated apartments became permanent homes for three different groups of

households (See Table One). In all three cases, each household member was allocated 35m² of housing at a cost of 90 CNY/m².

In the first group are Hamlets One and Five, whose residents lost their housing lots but not their farmland use rights before the earthquake (Table One, top row). Shortly before the earthquake, the town and city governments sold the housing lots of Hamlet One to a real estate company. As compensation, they were promised new houses with an area of 50 m² per person, as well as several hundred yuan per square meter for their dismantled houses. However, the earthquake struck before the new houses were built. Instead, they received apartments in the concentrated settlement. In exchange for the “missing” 15 m² relative to the original agreements, they received 36,000 CNY per person (calculated at 2400 CNY/m²). Hamlet One residents maintained their use rights to their farmland until March 2018, when the town government expropriated their farmland in order to build a new concentrated settlement for other villagers who have been affected by subsequent debris flows and flooding. As compensation, Hamlet One households received a pension (generally called “social insurance”) for women over 50 and men over 60. They maintain use rights to their forestland, which some use to cultivate medicinal plants.

Before the earthquake, Hamlet Five had also sold its house lot rights to a developer to build concentrated apartments in the hamlet, and used the remaining “saved” housing land to develop tourism facilities. However, the quake struck before the villagers could move. Because they had already sold the rights to their house lots and because the main bridge to the hamlet was not rebuilt, all Hamlet Five households were moved to the concentrated settlement. They maintain their rights to farmland and a number of households cultivate medicinal plants such as goldthread (*Coptis chinensis*), which can bring in substantial income.

In the second group are households from Hamlets Three/Seventeen (Table One, middle row). Temporary shelters for all earthquake victims of Summit Village occupied a significant portion of their farmland. In 2012, after the concentrated settlement was built and other villagers returned to their former village locations or low-rent housing, the government returned villagers' farmland. But in 2013, the government formally expropriated it to build additional concentrated houses, for families affected by the major debris flow of 2012. Residents of Hamlets Three/Seventeen initially sought to refuse the government expropriation, but eventually agreed under the conditions of compensation of 50,000 CNY/mu and an additional 30m² of land per person for building purposes.

Villagers were initially told that they could develop this land however they wanted, but subsequent town leaders declared that it could only be developed collectively. More importantly, the land was legally designated "industrial use land." Thus, villagers are forbidden from using it to build additional housing for themselves to live in, a significant hardship given that inadequate housing due to household demographic shifts is a key burden. Furthermore, because of its legal categorization, villagers would have to invest a very large sum of money and complete complex administrative procedures before construction could begin. Consequently, as of 2019, there appears to be no way for Hamlets Three/Seventeen households to use the land that was allocated to them for either income generation or personal dwelling.

Notably, the concentration of Hamlets Three/Seventeen's former household lots enabled the government to sell quotas to a land bank at the time of the settlement's construction shortly after the earthquake. In other words, the city government was able to profit from the concentration. Seeing that Hamlet One villagers received pensions for their expropriated farmland in 2018, Hamlets Three/Seventeen villagers also agitated to receive pensions to

compensate for the expropriation of their land, but were told they are ineligible. The exception was the expropriation of a portion of Hamlet Three farmland by a water treatment plant, which resulted in seventeen pension quotas, which the hamlet allocated by drawing straws.

The last, smaller group consists of households relocated from other hamlets (Table One, last row). These include households from one part of Hamlet Seven, where the earthquake completely destroyed farmland and house lots. Other than these, only households who felt they did not have the financial means to reconstruct their houses in-situ chose concentrated housing. They retained rights to farmland (if not buried) and forestland, but received no compensation.

Although the new urban-style living of the concentrated settlement fits into the state's vision of development (Abramson & Qi, 2011; Ahlers, 2015; Bray, 2013; Wilczak, 2017a, 2017b), living in the concentrated settlement has also posed significant challenges to its residents. In a study of the "risks" of concentrated settlement, Peng et al (2018a, p. 9) discuss the importance of "economic risks" -- "difficulty of income growth, low level of employment skills, mismatch between living and production ways, insufficient public budget, and difficulty of land adjustment." In Summit Village, economic problems arose not from "low level of skills," an issue seemingly addressable via training (though see He et al. 2019 on the ineffectiveness of training), but rather loss of the ability to operate *nongjiales* and a lack of other options in a region that the state has zoned for tourism and ecological protection.

The pensions provided to Hamlet One after 2018, and the ability of Hamlet Five households to use their land for medicinal plants, provide some alternative income. By contrast, residents of Hamlets Three/Seventeen have neither the ability to run *nongjiales* nor to grow crops for consumption or cash. They have agitated unsuccessfully both for pensions as compensation for land expropriation, and for permission to develop their 30m²/person "industrial use." They

express great dissatisfaction about the frequent changes in town leadership, which have made it particularly difficult for them to resolve their situation.

Given the lack of alternative income sources, concentrated housing residents are heavily dependent on labor migration. Most adults undertake seasonal or permanent labor migration to the nearby urban centers of Pengzhou and Chengdu, or to more distant cities, returning only for the Chinese New Year. Those in their fifties, however, complained that employers are unwilling to hire them, an issue also reported by He et al. (2019). Despite labor migration, most households remain tied to the village, because their wages are insufficient to enable them to move wholesale. As one middle-aged labor migrant from Hamlet Three explained, “my job is insecure and a large apartment for all my family members to live together is unaffordable in the city.” The economic burden imposed by the loss of income generation options is exacerbated by the need to pay for services that were previously not commodified.

Because the apartments in the concentrated area are modularly designed in units of 35m², 70m², and a maximum size of 105m², large households were given two or more units. Some of these households have sought to earn income by renting out one unit during the summer tourism season, or even by selling these to urban residents looking for a second home. These apartments only have so-called “small property rights” (*xiao chan quan*), which make the sales technically illegal and risky, but there are nevertheless willing buyers (R. Liu, Wang, & Liu 2012; Sun & Liu, 2015).

However, the rental or sale of these concentrated houses is relatively uncommon given that their inadequate size is the other major difficulty facing these residents. “Our apartment is too small. If I could choose, I would surely return to my old house,” said a woman in her fifties. Another interviewee reported, “There are nine family members living in my four-person house. I

have two sons, two daughters-in-law and three grandchildren. They plan to have a second child. There will be ten people in total. There are three bedrooms and my sons and daughters-in-law have occupied two of them with two grandchildren. That leaves my oldest grandson, a twelve-year-old boy, living with me in the remaining bedroom.”

Pre-earthquake rural houses were flexible and could be easily expanded over time in line with changes in household size and financial means. In contrast, the concentrated settlement apartments are significantly smaller, and cannot accommodate their dwellers’ changing needs. What particularly offends these households is that there are still empty apartments available, but no measures have been taken to allocate these to them when their adult children want to get married, or have children. Thus, many express the sentiments that “life is worse in the concentrated settlement than before,” and “the [local] government does not care about us.”

<Table 1 Around Here>

“Settle first, develop later” (xian an zhi, hou fa zhan)

In addition to the 248 households who moved permanently to the concentrated settlement, 91 households chose to live temporarily in smaller units in the concentrated settlement while retaining their rights to rebuild in-situ. Households with one to three members could purchase 35 m² apartments, and those with four or more members were eligible for 50 m² apartments, both at 90 CNY/m².

By 2018, almost all of the original 91 households had returned to rebuild houses in-situ, by taking out loans or cooperating with outside investors, as discussed below. Although they were expected to return their small apartments upon rebuilding, none have, and the town government has not taken them back. Instead, they have sold or rented them out. These small units lack even the “small property rights” of the larger apartments, but nevertheless find renters

and buyers at a market rate of 100,000 CNY for a 35m² apartment and 170,000 CNY for a 50m² apartment. As a result, a number of households who chose in-situ, self-reconstruction but who have subsequently either been unable to rebuild due to financial constraints or who have lost rebuilt houses to debris flows, regretted not having chosen the “settle first, develop later” option.

In-situ self-reconstruction

The majority of households who did not lose their land to expropriation or the earthquake, chose to return to their hamlets to re-build their houses and *nongjiales*. In line with the Overall Plan’s slogan of “rebuilding in three years,” households were encouraged to reconstruct their houses after the earthquake. Even at that time, though, there appears to have been some contradictory policy implementation. On the one hand, the city and town government held a meeting to explicitly encourage villagers to return to rebuild their livelihoods. Indeed, some villagers who had chosen this option but then undertook extended labor migration following the earthquake recalled receiving notification in 2011 from the party secretary of Mountain Town, encouraging them to return lest their rights to rebuild in-situ expire. On the other hand, the city government did not reconstruct the road through the village until after villagers raised over three million yuan of their own money in 2011 to pay for compensation of farmland lost to the repaired road. Villagers today interpret the lack of road reconstruction as a sign that the government has always desired to move all of the villages into concentrated settlements, even though broader reconstruction policies were explicitly promoting in-situ development.

Those whose houses were not severely damaged received 5,000 CNY to repair and reinforce their houses. For reconstruction, residents were eligible to receive 16,000 CNY for one to three member households; 19,000 CNY for four to five household members, and 21,000 CNY

for six or more people. Affected households were also eligible to receive 60,000 CNY bank loans. Finally, Party members were eligible for an additional 3,000 CNY subsidy.

However, the reconstruction of *nongjiales* cost several hundred thousand yuan – much more than the available subsidies and loans. The reconstruction of *nongjiales* thus became directly associated with households' prior financial status, and the social capital to borrow money privately. Households with the financial capacity or who raised money from a combination of bank loans and loans from long-term customers (who are commonly repaid through discounted or free stays) reconstructed their *nongjiales* on the footprint of their original houses during the initial reconstruction period. Given the degree to which households' incomes in the village had become tied to tourism, households' financial capacity to rebuild depended in large part on the extent to which they had been able to pay off debts for the construction and expansion of their *nongjiales* prior to the earthquake. Those who had cleared or had only moderate debts were more able to seek assistance again from their lenders to reconstruct their *nongjiales* sooner after the quake. A number of interviewees also stated that one of the key reasons they chose to reconstruct in-situ was to generate income to repay past loans. Households in Hamlets Three/Seventeen, many of whom were also engaged in *nongjiale* income generation prior to the earthquake, had the least ability to settle past debts.

Some households with less financial capacity adopted the “joint construction” (*lian jian*) approach (see also Wilczak, 2017b). Though specific arrangements vary, the most common transaction is one of leasing part of their construction use rights on their housing lots to outside investors, who build the *nongjiale* and leave some rooms for the household to live in. Typically, investors keep 70% of the rooms, while the households occupy the remaining rooms and rely on labor migration for income. The tourism potential of the village attracted significant investment,

leading to the construction of some very large *nongjiales* mostly by external investors, though also by a few wealthy villagers.

Not all families with less financial capability decided to collaborate with investors. For many, reconstruction was an incremental process that spanned years. Those with large unpaid debts and a lack of labor power to save money through remittances used their reconstruction grants to construct temporary timber shacks adjacent to their former house lots (Photo 1), with the intention of gradually saving money to rebuild. Others became labor migrants for years. A handful moved into “low-rent apartments,” 11m², single-room structures built in 2010 in Hamlets Ten, Twelve, and Fourteen (Photo 2). These were provided to affected households for 10 CNY/month/room, with up to three rooms allocated per household. However, they remained mostly unoccupied until 2012, when residents affected by subsequent debris flow and flooding were allocated the remaining units for free.

The recovery and development trajectory of households who opted for self-reconstruction depended significantly not only on their financial status, but also on how their financial status determined the timing of their attempts to rebuild. This in turn was a result of changing regulations on the building of *nongjiale* in the decade following the quake. During the initial reconstruction period, Chengdu Municipality adopted a policy whereby households who adopted in-situ reconstruction could rebuild to any size not larger than their pre-earthquake home.⁴ Thus, some households were able to rebuild very large 1000-2000 m² *nongjiales*. Permitting for construction appears to have been loosely regulated, if at all; thus, some households with small *nongjiales* were able to build back with larger ones. Households with the means to rebuild during this period have done quite well, with many building spacious three-floor *nongjiales* that

resemble hotels, and can house a hundred guests (Photo 3). Indeed, some have invested additionally in building long-term rental units with kitchen facilities (Photo 4).

<Photos 1, 2, 3 4 around here>

According to a town official, Chengdu Municipality issued a rule in 2012 that *nongjiales* could be built to a maximum area of 800m² as long as a blueprint was drawn up. Though the town government began to inspect permits for construction materials brought into the village, the size restrictions were loose enough that households who built during this period were not strongly affected. Indeed, at the time Mountain Town officials saw these loose regulations as a way to further encourage Summit Villagers to hurry up and rebuild their *nongjiales* to fulfill the objective of earthquake recovery. In 2016, however, Chengdu Municipality reverted to Sichuan Provincial rules, which require that construction over 300 m² and three floors in size undergo a permitting process at the Pengzhou City government level, with work undertaken by approved, professional contractors, and geological surveys.⁵ However, villagers found these permits for larger buildings difficult to apply for and receive. At the same time, villagers found 300 m² too small for an effective guesthouse, saying for example: “it is simply unreasonable. After excluding rooms for a kitchen and rooms for the family, there would not be much room left to host guests.”

For those who had yet to finish reconstructing their *nongjiales*, this 2016 rule began to pose difficulties. Some households willingly paid fines for building more than 300m². Others complained that they were “not allowed to build,” due to the stricter enforcement of a ban on bringing construction material into the village without permits. They also expressed the perception that only those with good *guanxi* (particularistic social relations) or who gave “red envelopes” to town officials could obtain building permits or bring in construction materials.

One woman who started running a *nongjiale* more than a decade before the earthquake stated angrily but matter-of-factly that it took an 80,000 CNY bribe to town officials for her to be able to build a kitchen for her 90-guest *nongjiale*.

Following a national-level environmental inspection in Mountain Scenic Area in August 2017, 30-some *nongjiales* in Summit Village, which is located in the scenic area, were identified as having violated building regulations. Villagers and village leaders alike claim that the selection of the households seemed arbitrary; some households who had exceeded building limits were forced to demolish part of their *nongjiales*, but others were not. In January 2018, the town completely banned villagers from bringing in new construction materials, leaving households with partially completed *nongjiales* and non-guesthouse homes unable to complete construction. This restriction was partially lifted in January 2019, allowing completion of half-built structures. However, new permits were discontinued, and the ban remained on Hamlet Sixteen, which was affected by flooding in 2018, as discussed below.

The town government's changing rules for *nongjiale* and other house construction appear to stem from two major factors. First, the town government is increasingly concerned with addressing debris flow and flooding. Second, simultaneously, the vision of development now being promoted is one of "high-end tourism," which is interpreted to mean uniformly constructed units, with identical architectural style, in contrast to the current situation in which each household can choose its own color, style, and material. Thus, the town government's goal is now to resettle all villagers who have not already rebuilt in-situ, or who have lost rebuilt houses to secondary hazards, to a new settlement area on farmland expropriated from Hamlet One. However, villagers are uninterested in moving, because *nongjiales* in the new settlement would

be significantly smaller than current *nongjiales*, no subsidies are being provided to resettle, and because Hamlet One is at a significant distance from the farm and forestlands of most hamlets.

A related concern of both government officials and planners is that the village already has 291 *nongjiales*. While fewer than the pre-earthquake number, town leaders believe this is too many, especially given the push for “high-end” tourism. Furthermore, a number of households have indeed built very elaborate, large *nongjiales* far exceeding what is allowed by current regulation. The efforts to stop these, however, have resulted in opportunities for corruption, as well as significant difficulties for households who have not yet rebuilt and who do not have the means to bribe their way to a permit. One household in Hamlet Four, for example, had rebuilt a small *nongjiale*, but decided that they needed to upgrade it, because guests were no longer satisfied without indoor plumbing. After demolishing it in 2017, however, they were unable to obtain a permit to rebuild, leaving them with only a flimsily built, tiny structure for the family dwelling. A few impoverished households remain in low-rent housing, with no means to rebuild. One interlocutor spoke passionately about a household that had rebuilt a small house (not *nongjiale*) but did not have a kitchen. When the adult son planned to marry, the bride to be asked for a kitchen. Because the household was unable to obtain a permit to construct the kitchen, the marriage ultimately did not take place.

The process of in-situ self-reconstruction thus both amplified pre-earthquake inequalities, and created new ones. Photos 1-4 visually illustrate the high level of differentiation that has resulted from divergent post-earthquake trajectories. Not including those whose house lots or rebuilt *nongjiales* were subsequently affected by debris flows, four distinct post-earthquake livelihood trajectories for in-situ self-reconstruction (including those who chose “settle first, develop later”) are summarized in Table 2. Changes in government attitudes toward and

regulations on *nongjiale* construction over the decade following the earthquake exacerbated existing inequalities for households who chose to reconstruct in-situ, as those with the means to reconstruct sooner were able to take advantage of lax policies whereas those who built later faced increasing restrictions.

< Table 2 Around Here >

Households affected by secondary earthquake hazards

Changing government regulations are not the only processes that have created differentiation. A series of four major summer debris flows and flooding events led to dislocation and further economic losses for households in six hamlets. A few households lost farmland, and roughly sixty lost re-built houses, many of them *nongjiales*. The town government initially hoped to resettle these households on the remaining expropriated farmland of Hamlets Three/Seventeen, as discussed above, but they were unwilling to move because of its distant location from their fields and forests. With no bus service on the single road that connects the village's hamlets, it would take too long (by foot) or be too costly (by taxi) to travel back and forth. Instead, the government allocated still-empty small and regular apartments in the concentrated settlement to villagers nearby (from Hamlets Four, Six, Seven). Those further up were allocated the 11m² "low-rent houses" in Hamlets Ten, Twelve, and Fourteen.

Households affected by secondary hazards have been unable to recover their livelihoods and wait in limbo in temporary housing, uncertain of their future. As of 2019, the town government's new hope was to move all of these households to a new settlement at Hamlet One, in the lowest lying area of the village. However, like those who have not been able to rebuild at all, these villagers are unwilling to move given the even greater distance from their farm and forestland to this settlement, the lack of subsidies, and the small size of the houses that would be

built, which would not allow for income generation to pay off their now substantial debts, let alone to meet future needs.

This impasse is particularly acute at the upper end of the village, in Hamlet Sixteen. Because houses there were only mildly damaged by the 2008 earthquake, most residents chose to repair rather than rebuild their houses. However debris flows and flooding have been particularly severe, affecting houses as well as road infrastructure. As a result, the town ceased approving any new reconstruction in 2017. One woman from Hamlet Sixteen explained that her family had spent hundreds of thousands of yuan to rebuild a *nongjiale* after the earthquake. Since this was destroyed by debris flow in 2012, the seven household members have lived in three 11m² “low-rent” units. They would like to reconstruct their *nongjiale* in Hamlet Sixteen once again, but have neither the financial resources nor permission to do so. As she explained their situation, “How can we live like this? We need a place to cook; we need a place to sleep. The oldest is over seventy. The youngest is over twenty and can’t find a wife...it is well known to everyone that men can’t get married without a car and a house. How can my son get married when he has nothing to offer?”

Rather than live in these 11m² units with no income-earning possibilities, most Hamlet Sixteen households have instead left for labor migration. Those who remain feel “abandoned in a forgotten corner” by the government’s refusal to issue permits for new reconstruction, to provide compensation for houses lost to debris flows, and the fact that roads and bridges have also not been restored. Comparing those who reconstructed their *nongjiales* in other hamlets, villagers in Hamlet Sixteen thus express the sentiment that rather than accelerating development, the post-earthquake process has caused developmental time to run backwards by a decade or more.

Discussion

Several key themes stand out in this examination of the divergent trajectories of post-earthquake recovery and development in Summit Village: the effects of concentrated settlement, the importance of housing, experiences of development, and the exacerbation of existing inequality and the production of new inequality. First, in contrast to H. Liu et al. (2017), we found that satisfaction with post-earthquake reconstruction was lower, not higher, in concentrated settlements as compared to in-situ self-reconstruction. Notably, our study was of similar households within one village, in contrast to their study which compared demographically similar households across two large counties that adopted different re-housing strategies (Beichuan, with concentrated settlement, and Wenchuan, with in-situ reconstruction). They found greater overall satisfaction in Beichuan, which adopted concentrated settlements, despite the fact that in-situ construction had higher satisfaction ratings for twelve subjective indicators, including income, family harmony, and health of families, as compared to concentrated settlement, which did better on only nine indicators (H. Liu et al. 2017).

Peng (2015) finds that concentrated settlement works best in suburban areas where non-farming income is easily available, conditions that do not hold in a mountain village where farm-based tourism is the primary source of income. Instead, in Summit Village, in-situ, self-reconstructed housing was perceived favorably compared to concentrated settlement. Even those villagers who were unable to rebuild in-situ due to changing *nongjiale* policies, or who lost rebuilt houses from secondary earthquake hazards did not regret having not chosen permanent concentrated settlement. In our interviews with residents of the concentrated settlement we heard no positive expressions of satisfaction, due to lack of income opportunities, distance from fields and allocated forestland, and the problem of crowding in inflexible housing. These

findings on the problems of concentrated housing reinforce those of Peng et al. (2018 a, 2018b) and especially He et al. (2019, p. 135, p. 143) who find a “pervasive lack of recovery” despite the fact that the “newly-built apartments given the impression that recovery has already been achieved.” Thus, regardless of planners’ intentions, the use of post-disaster reconstruction to push concentrated rural settlement as a favored form of development did not actually make for “building back better.” Instead, for these households, the majority of whom were forced either by locational circumstance (farmland and house lot expropriation) or pre-existing wealth inequality into concentrated housing, the political drive for leaders to produce the visual appearance of “building back better” through neat rows of urban-style housing actually impeded long-term recovery.

Peng et al. (2018b) list “suitable size” as one of two “lowest satisfaction” factors across four villages with concentrated settlement. However, this barely begins to capture the affective significance of inadequate space for social wellbeing, which we found important for both residents of the concentrated settlement and those who chose in-situ self-reconstruction but had not been able to rebuild. In addition to those who are simply overcrowded, some households find the lack of a new house has become a barrier to their adult sons’ ability to marry at all. While the norm of a nuclear family living in its own dwelling is somewhat recent, particularly for rural areas, the provision of a house is now considered by villagers as a key requirement for marriage, and thus starting a family and the achievement of full adulthood. As a result, the inability to provide a separate or adequate house is experienced as far more profound than a question of the amount of areal space available per person; it is seen as preventing social reproduction. Thus, in these residents’ experience, concentrated housing, which unlike traditional

house lots cannot be flexibly changed to accommodate demographic change, is the opposite of the “accelerated development” envisioned by the state.

An extensive body of literature in geography and anthropology has emphasized the importance of understanding how development is experienced, rather than treating it only as a technical question of income or GDP (e.g. Moore, 1999; Perrault 2003; Sivaramakrishnan & Agrawal, 2003; Yeh 2007). The literature on “building back better” by using disaster reconstruction as an opportunity to accelerate development has, however, not focused on critically examining the experience of development from the perspective of disaster survivors. Yet as we have found, their interpretations of development are powerful, and divergent.

Some households find government discourse about the acceleration of development meaningful and appropriate. Households who managed to reconstruct their *nongjiales* on their original housing lots and begin generating income again soon after the earthquake stated that the level of development in the village was better than before the earthquake. One woman from a village directly adjacent to Summit stated, “I think the earthquake accelerated development. If there had been no earthquake, many of our old houses would not have been rebuilt. People here usually go out to work and return to operate *nongjiale* during the busy season. Even if they had thought about rebuilding, they did not want to tear down their houses. But after the earthquake, they had to rebuild, and built better ones. So the earthquake has pushed us forward.” The contrast is significant for the more than eighty households in Summit who have not been able to rebuild their own houses on their own land. One resident of Hamlet Sixteen described the situation as one in which “the earthquake set development back to where it was 20 years ago.” Another stated, “the national policy is very good and poverty alleviation is advocated. But in our hamlet

poverty alleviation won't be achieved even in twenty years." The arrow of developmental time runs forward for some, and backwards for others.

One villager pithily summarized about the post-earthquake reconstruction process, "The poor got poorer. The rich got richer." Wealth disparities within Summit Village prior to the earthquake were modest compared to inequality in other post-disaster contexts that have been extensively studied, such as Hurricane Katrina. This is due in part to the legacy of China's rural land reform, but also to the scale of analysis. China now has among the world's highest income inequality, but rural-urban differences are the most important determinant of that inequality, and regional/provincial differences continue to play an important (though declining) role (Jain-Chandra et al, 2018). All residents of Summit Village are of the same (Han) ethnicity, and had similar access to education and income sources prior to the earthquake. Yet even in this relatively homogenous population, reconstruction practices, particularly the shifting policies and regulations vis-à-vis *nongjiale* construction, exacerbated differences over time.

Some villagers who lacked the social capital to borrow additional money, whether from relatives with access to cash or previous *nongjiale* clients, chose the concentrated settlement, which provided no option for income generation and has in some cases created problems for family reproduction. Others chose in-situ self-construction, but high previous debts and lack of access to private loans prevented them from rebuilding right away under advantageous conditions. By contrast, those who had greater prior wealth and thus fewer or no debts, cash reserves, and access to loans from kin or previous customers, or who were able to find external investors to cooperate with, were able to rebuild. Those who rebuilt early had less competition from other *nongjiales* and were able to profit significantly. However, government priorities soon moved away from encouraging villagers to rebuild quickly. The new statist vision of what

“developed” and “high-end” tourism should look like, in combination with a growing concern about secondary earthquake hazards, has curtailed new permits for rebuilding. This in turn has created opportunities for rent-seeking, which further exacerbates socioeconomic gaps, as the least wealthy and least socially connected are also the least able to pay bribes or otherwise find their way around regulations. At the same time, the Chengdu city-region’s broader zoning of the area for tourism and ecological conservation provides few alternatives.

In addition to the exacerbation of existing inequalities, the case of Summit Village also shows how disasters and post-disaster recovery can create new inequalities that are more random and place-based, rather than along lines of prior social difference. Unlike those from other hamlets, residents of Hamlets One, Five, and Three/Seventeen had no choice but to move to the concentrated settlement given that their house lots and (except for Hamlet Five) farmland, were expropriated by the government for profit from real estate development, and to build concentrated housing for earthquake victims. These processes created new barriers to income generation for these households, regardless of their previous wealth status. Similarly, debris flows and flooding that affected some hamlets and not others, further induced differentiation in a context where there was neither insurance, nor provisions made for assistance for such secondary earthquake hazards.

Conclusion

The tenth anniversary of the 2008 Wenchuan earthquake prompted a spate of renewed media and academic attention to the disaster. Because of the government’s significant post-earthquake attention to better building standards, as well as the accelerated recovery period in which reconstruction became synonymous with ongoing economic development, the

reconstruction has been held up as an example of ‘building back better.’ Yet such analyses view recovery as something that has already been completed.

In this article we have taken a different approach, showing that an earthquake is not a discrete event that can be adequately addressed with a single set of policies and provisions. Rather, the earthquake, recovery efforts, and the effects of both are ongoing processes that have both created novel forms of inequality and intensified existing disparities over a period of more than a decade. While life for some is indeed better, other households find themselves in a more precarious and uncertain economic condition than in the past. Rather than being propelled forward in time along the temporal horizon of development, they have experienced a step ‘backwards’ in their living conditions, income opportunities, and their inability to fulfill social and cultural expectations of housing and home.

Our findings contribute to the literature on disaster reconstruction in general, and recovery after the Wenchuan earthquake in China specifically, in several ways. First, most published studies to date were conducted in the immediate aftermath of the earthquake. Our study reinforces the need to examine long-term trajectories, given the ways in which multiple temporal and spatial processes alter recovery paths. These range from place-based secondary earthquake hazards, to the terms that villagers are able to negotiate for the expropriation of their houses and farmland, to the developmental priorities of different local leaders.

Second, it reinforces recent findings on problems of post-earthquake concentrated rural housing (He, 2019; Peng 2018a, 2018b), while demonstrating the perceived importance of housing for social reproduction. Third, as in other parts of the world, we show how disasters *and* disaster recovery can lead to wealth differentiation and divergent trajectories of subjective well-being. Moreover, through a fine-grained, intensive case study, we show how both disasters and

reconstruction efforts can not only exacerbate existing inequalities but also create new ones even in relatively small, homogenous communities. Fourth, we show that when development policies change rapidly, such as the shift from encouraging rapid in-situ re-construction of *nongjiales*, to new permitting practices with no grandfather clause, and new visions of “high-end tourism,” recovery is delayed for those households with fewer resources to begin with. The integration of reconstruction with broader developmental policies means that disaster reconstruction must confront all of the difficulties and contradictions of governance that inhere in development itself.

Finally, our approach differs from much of the disaster management literature that adopts a technocratic and apolitical framework, which precludes a consideration of the politics of local governance (e.g. Liu, Zhang, Wei, & Guo 2017; Park & Wang, 2017). Our in-depth, qualitative case study reveals the nuanced processes through which actual, on-the-ground implementation and experiences of recovery and development occur. Without such insights, it is difficult, for example, to formulate meaningful and relevant surveys for statistical analysis. Future research on the post-Wenchuan earthquake and other disasters, particularly in the Chinese context, should pay greater attention to the relationship between (in)stability in local government policy implementation and wealth differentiation over time, the effects of secondary earthquake hazards, as well as comparisons of concentrated settlements and in-situ self-reconstruction in similar settings. Finally, the effects of land expropriation and rent-seeking on post-earthquake development paths are also crucial, though such processes likely remain best studied through case studies.

References

Abramson, D., & Qi, Y. (2011). “Urban-rural integration” in the earthquake zone: Sichuan’s post-disaster reconstruction and the expansion of the Chengdu metropole. *Pacific Affairs*, 84(3), 495-523.

- Ahlers, A. L. (2015). Weaving the Chinese dream on the ground? Local government approaches to “new-typed” rural urbanization. *Journal of Chinese Political Science*, 20(2), 121-142.
- Ahlers, A. L., & Schubert, G. (2010). “Building a new socialist countryside”—only a political slogan? *Journal of Current Chinese Affairs*, 38(4), 35-62.
- Aldrich, D. (2012). *Social capital in post-disaster recovery*. Chicago, IL: University of Chicago Press.
- Barenstein, JD. (2006). Challenges and risks in post-tsunami housing reconstruction in Tamil Nadu. *Humanitarian Exchange Magazine*, 33. London: ODI.
- Bray, D. (2013). Urban planning goes rural: Conceptualising the “New Village.” *China Perspectives*, 3, 53-62.
- Chen, A., & Gao, J. (2011). Urbanization in China and the coordinated development model—The case of Chengdu. *The Social Science Journal*, 48(3), 500-513.
- Davidson, C., Johnson, C., Lizarralde, G., Dikmen, N. & Sliwinski, A. (2007). Truths and myths about community participation in post-disaster housing projects. *Habitat International*, 31, 100-115.
- Davis, I., & Alexander, D. (2015). *Recovery from disaster*. New York: Routledge.
- Davoudi, S., Brooks, E., & Mehmood, A. (2013). Evolutionary resilience and strategies for climate adaptation. *Planning Practice & Research*, 28(3), 307-322.
- Dunford, M., & Li, L. (2011). Earthquake reconstruction in Wenchuan: Assessing the state overall plan and addressing the ‘forgotten phase’. *Applied Geography*, 31(3), 998-1009.
- Elliot, J. & Pais, J. (2006). Race, class and Hurricane Katrina: Social differences in human responses to disaster. *Social Science Research*, 35(2), 295-321.

- Fayazi, M., & Lizarralde, G. (2018). The impact of post-disaster housing reconstruction policies on different beneficiary groups: The case of Bam, Iran. In A. Asgary (Ed.), *Resettlement challenges for displaced populations and refugees* (pp. 123-140). Cham, Switzerland: Springer International Publishing.
- Fletcher, L. E., Stover, E., & Weinstein, H. M. (2005). *After the tsunami: Human rights of vulnerable populations*. Berkeley, California: Human Rights Center and East-West Center.
- Fussell, E. (2011). The deportation threat dynamic and victimization of Latino migrants: Wage theft and street robbery. *The Sociological Quarterly* 52(4), 593-615.
- Gao, Y. (2009). Road construction patterns based on rural settlements spatial reconstruction of mountainous regions in western Sichuan, China. In Peng, Q., Wang, K., Qiu, Y, Pu, Y., Luo, X, & Shuai, B (Eds.), *International conference on transportation engineering 2009* (pp. 1438-1443). Reston, VA: American Society of Civil Engineers.
- Gotham, K.F. (2014). Racialization and rescaling: Post-Katrina rebuilding ad the Louisiana Road home program. *International Journal of Urban and Regional Research* 38(3), 773-790.
- Gotham, K.F. & M. Greenberg. (2014). *Crisis cities: Disaster and redevelopment in New York and New Orleans*. New York: Oxford University Press.
- He, L., Aitchison, J. C., Hussey, K., & Chen, Y. (2019). Building new houses or long-term recovery?: A combination of quantitative and qualitative evidence from earthquake-displaced households in Sichuan, China. *Habitat International*, 83, 135-145.
- Howell, J. & J. Elliott. 2019. Damages done: The longitudinal impacts of natural hazards on wealth inequality in the United States. *Social Problems*, 66(3), 448-467.

- Ingram, J. C., Franco, G., Rumbaitis-del Rio, C., & Khazai, B. (2006). Post-disaster recovery dilemmas: Challenges in balancing short-term and long-term needs for vulnerability reduction. *Environmental Science & Policy*, 9(7), 607-613.
- Jain-Chandra, S., Khor, N., Mano, R., Schauer, J., Wingeder, P., & Zhuang, J. (2018). *Inequality in China - Trends, drivers, and policy remedies*. International Monetary Fund Working Paper, WP/18/127.
- Joakim, E. (2011). Post-disaster recovery and vulnerability. In Etkin, D. & Murphy, B.L. (Eds.) *Disaster and emergency management in Canada*, (pp. 1-26). CHRNET.
- Kennedy, J., Ashmore, J., Babister, E., & Kelman, I. (2008). The meaning of ‘build back better’: Evidence from post-tsunami Aceh and Sri Lanka. *Journal of Contingencies and Crisis Management*, 16(1), 24-36.
- Lin, L., Wang, Y., & Liu, T. (2017). Perception of recovery of households affected by 2008 Wenchuan earthquake: A structural equation model. *PLOS One*, 12(8), e0183631.
- Liu, H., Zhang, D., Wei, Q., & Guo, Z. (2017). Comparison study on two post-earthquake rehabilitation and reconstruction modes in China. *International Journal of Disaster Risk Reduction*, 23, 109-118.
- Liu, R., Wong, T.C., & Liu, S. (2012). Peasants’ counterplots against the state monopoly of the rural urbanization process: Urban villages and ‘small property housing’ in Beijing, China. *Environment and Planning A*, 44(5), 1219-1240.
- Lizarralde, G., Fayazi, M., Kikano, F., & Thomas, I. (2017). Meta-patterns in post-disaster housing reconstruction and recovery. In A. Sapat & A. Esnard (Eds.), *Coming home after disaster: Multiple dimensions of housing recovery* (pp. 229-243). New York: Routledge.

- Lloyd-Jones, T. (2007). Building back better: How action research and professional networking can make a difference to disaster reconstruction and risk reduction. Paper presented at the RIBA Research Symposium, London, UK, 19 September 2007.
- Moore, D. S. (1999). The crucible of cultural politics: reworking “development” in Zimbabwe’s eastern highlands. *American Ethnologist*, 26(3), 654-689.
- Oliver-Smith, A. (1990). Post-disaster housing reconstruction and social inequality: A challenge to policy and practice. *Disasters*, 14(1), 7-19.
- Oliver-Smith, A. (1991). Successes and failures in post-disaster resettlement. *Disasters*, 15(1), 12-23.
- Olshansky, R. B., Hopkins, L. D., & Johnson, L. A. (2012). Disaster and recovery: Processes compressed in time. *Natural Hazards Review*, 13(3), 173-178.
- Park, A., & Wang, S. (2017). Benefiting from disaster? Public and private responses to the Wenchuan earthquake. *World Development*, 94, 38-50.
- Peng, Y. (2015). A comparison of two approaches to develop concentrated rural settlements after the 5.12 Sichuan Earthquake in China. *Habitat International*, 49, 230-242.
- Peng, Y., Li, X., Huang, L., Jiang, S., Xu, Y., & Lai, Y. (2018a). Risks of developing concentrated rural settlement after the Wenchuan earthquake in China. *Sustainability*, 10, 1569; doi:10.3390/su10051569.
- Peng, Y., Zhang, F., Jiang, S., Huang, L., Wang, Z., & Xu, Y. (2018b). Analysis of farmers’ satisfaction towards concentrated rural settlement development after the Wenchuan earthquake. *International Journal of Disaster Risk Reduction*, 31, 160-169.

- Perreault, T. (2003). A people with our own identity: Toward a cultural politics of development in Ecuadorian Amazonia. *Environment and Planning D: Society and Space*, 21(5), 583-606.
- Perry, E. J. (2011). From mass campaigns to managed campaigns: 'Constructing a new socialist countryside.' In Perry, E., & Heillman, S. (Eds.) *Mao's invisible hand: The political foundations of adaptive governance in China* (pp. 30-61). Cambridge, MA: Harvard University Press.
- Quzai, U. (2010). Pakistan: Implementing people-centred reconstruction in urban and rural areas. In Lyons, M., Schilderman T., & Boano, C. (Eds.), *Building back better: Delivering people-centred housing reconstruction at scale* (pp 113-134). Warwickshire, UK: Practical Action Publications.
- Sivaramakrishnan, K., & Agrawal, A. (Eds.) (2003). *Regional modernities: The cultural politics of development in India*. Palo Alto: Stanford University Press.
- Smikop, C. (2010). *Treating disaster as a development opportunity: A study of earthquake recovery in Sichuan*. (Masters thesis). University of Oslo.
- Sorace, C. P. (2017). *Shaken authority: China's Communist Party and the 2008 Sichuan earthquake*. Ithaca, NY: Cornell University Press.
- Sun, L., & Liu, Z. (2015). Illegal but rational: Why small property rights housing is big in China. *Land Lines*, 27(3), 14-19.
- Teets, J. C. (2009). Post-earthquake relief and reconstruction efforts: The emergence of civil society in China? *The China Quarterly*, 198, 330-347.

- Tierney, K.J. (2005). Social inequality, hazards and disasters. In Daniels, R.J., Kettl, D., Krunreuther, H., & Gutmann, A. (Eds). *On risk and disaster: Lessons from Hurricane Katrina* (pp. 109-128) Philadelphia, PA: University of Pennsylvania Press.
- UNDP-China. (2018). Building back better - Ten years after the Wenchuan earthquake. Retrieved from <http://www.cn.undp.org/content/china/en/home/presscenter/articles/2018/building-back-better---ten-years-after-the-wenchuan-earthquake.html>. 23 March 2019
- UNICEF-Hong-Kong. (2010). “Build back better” Sichuan earthquake two year report - UNICEF’s Recovery Work on progress. Retrieved from <https://www.unicef.org.hk/en/build-back-better-sichuan-earthquake-2-year-report-unicefs-recovery-work-progress/> 23 March 2019
- Vigdor, J. (2008). The economic aftermath of Hurricane Katrina. *Journal of Economic Perspectives*, 22(4), 134-145.
- White, I., & O’Hare, P. (2014). From rhetoric to reality: Which resilience, why resilience, and whose resilience in spatial planning? *Environment and Planning C: Government and Policy*, 32 (5), 934-950.
- Wilczak, J. (2017a). Making the countryside more like the countryside? Rural planning and metropolitan visions in post-quake Chengdu. *Geoforum*, 78, 110-118.
- Wilczak, J. (2017b). *Reconstructing rural Chengdu: Urbanization as development in the post-quake context*. (Doctoral Dissertation). University of Toronto.
- Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (1994). *At risk: Natural hazards, people’s vulnerability, and disasters*. New York: Routledge.

- World-Bank. (2018). “China: Building Back Stronger” Retrieved from <https://www.worldbank.org/en/results/2018/05/11/building-back-better-plus> 23 March 2019.
- Xu, B. (2017). *The politics of compassion: The Sichuan earthquake and civic engagement in China*. Palo Alto: Stanford University Press.
- Yeh, E.T. (2007). Tropes of indolence and the cultural politics of development in Lhasa, Tibet. *Annals of the Association of American Geographers*, 97(3), 593-612.
- Zhang, Q. F., & Wu, J. (2017). Political dynamics in land commodification: Commodifying rural land development rights in Chengdu, China. *Geoforum*, 78, 98-109.

Endnotes

¹ Mu is a Chinese unit of measurement, approximately 0.066 hectares.

² For anonymity, we use pseudonyms for the village and town.

³ Wilczak 2017b

⁴ <http://gk.chengdu.gov.cn/govInfoPub/detail.action?id=17091&tn=6>

⁵ From 《四川省农村住房建设管理办法》 “Sichuan province rural housing construction management measures.” For the full text, see:

http://jiuban.moa.gov.cn/zwillm/zcfg/dffg/201702/t20170214_5475097.htm

Table One: Recovery trajectories of households who moved into concentrated settlement

Household category	Conditions	Outcomes
House lots expropriated before earthquake and moved to concentrated settlement after the earthquake (Hamlets One and Five)	<ul style="list-style-type: none"> •House lots of Hamlets One and Five sold to a developer shortly before the earthquake. •Hamlet Five has retained rights to farmland. •Hamlet One retained rights to farmland until expropriation in March 2018. They retain rights to use their contracted forestland. •Every family member received a house with area of 35 m²/person, at a cost of 90 CNY/m². •Hamlet One households additionally received 36,000 CNY/person in compensation. 	<ul style="list-style-type: none"> •Loss of income source through <i>nongjiale</i>. •New expenses for food and services. •Income from medicinal plant cultivation still available •Extended families were split in separate apartments (maximum apt size 105 m²). •Younger household members work as labor migrants. •Older residents of Hamlet One have receive pensions (social insurance) since 2018.
Settled in concentrated houses, which were built on their own lands after the earthquake (Hamlets Three and Seventeen)	<ul style="list-style-type: none"> •No farmland remaining •Compensated 50,000 CNY/mu for their farmland •Promise of the equivalent of 30m²/person to build a collective enterprise, but this has not been realized •Every family member received a house with area of 35 m² per person, at a cost of 90 CNY/m² •About 10 households from Hamlet Three received pensions. Remaining villagers from Hamlets Three and Seventeen do not have pensions 	<ul style="list-style-type: none"> •Families have no way to make a living in the village because they have neither the opportunity to run <i>nongjiale</i> nor farmland •Their houses are too small to keep up with demographic changes, and because of living in apartments, their children have a hard time getting married •Most households undertake labor migration •A few households rent or “sell” apartments if they received more than one •Little to no ability to pay back past debts incurred for construction and expansion of <i>nongjiale</i> prior to the earthquake •Most constrained in terms of their livelihood options
Relocated to concentrated settlement after the earthquake	<ul style="list-style-type: none"> •Villagers from Hamlet Seven lost farmland as a result of the earthquake and their original locations remain uninhabitable. •Some households from other hamlets – mostly those who are relatively poor – moved to the concentrated houses. •Households received no compensation for their losses other than concentrated housing. •Unless farmland was destroyed, households kept their rights to their farmland 	<ul style="list-style-type: none"> •Families received apartments in the same way as households from Hamlets One, Five, and Three/Seventeen •The elderly experience income insecurity and rely on younger family members’ earning from labor migration •Though households have rights to their farmland, distance limits access. •Limited income generation opportunities mean little ability to pay back any past debts owed for construction or expansion of <i>nongjiale</i> prior to the earthquake

Table Two: Recovery trajectories of households who chose in-situ self-reconstruction

Household category	Conditions	Outcomes
Reconstruction (or repair) of <i>nongjiales</i> or houses on the footprint of original houses between 2009 and 2012	<ul style="list-style-type: none"> •No to moderate debts before the earthquake •Reconstruction grants and bank loans •Access to capital (personal savings, loans from relatives, friends, or previous customers) 	<ul style="list-style-type: none"> •Quick recovery of their pre-earthquake livelihood activities (60K - 100K CNY per year) •Reconstruction of <i>nongjiales</i> as large as (or even larger than) original ones •Diverse sources of income from <i>nongjiale</i>, labor migration, and farming
Built together with outside investors between 2009-2016	<ul style="list-style-type: none"> •Reconstruction grants and bank loans •Lacked access to capital to build <i>nongjiales</i> on their own 	<ul style="list-style-type: none"> •70% of rooms for investors, 30% of rooms for households to occupy or rent out to tourists •Families kept their rights to their housing and farmland •No relocation or debt •Income from labor migration, and in some cases, <i>nongjiale</i>
Reconstruction after 2012, before 2018	<ul style="list-style-type: none"> •Reconstruction grants and loans from banks or subsidies for repair and reinforcement •Relatively high debts before the earthquake •Less access to capital (personal savings, borrowing money from relatives, friends, or previous customers) •Subject to increasing restrictions on house size 	<ul style="list-style-type: none"> •Some houses and <i>nongjiales</i> remained unfinished for several years •Smaller <i>nongjiales</i> than in the past, or paid fines for exceeding allowed size, or in some cases bribes to be allowed to build •Labor migration as the main source of income, with some subsistence farming or medicinal plant cultivation
Unable to rebuild through 2018	<ul style="list-style-type: none"> •Received reconstruction grants and bank loans •Lacked capacity and access to capital (personal savings, or ability to borrow money from relative, friends, or previous customers) •Some households finally had the capital to build, but were unable to secure permission. 	<ul style="list-style-type: none"> •Loss of income from <i>nongjiales</i> •Living with uncertainty about the future, including possible requirement to relocate to Hamlet One •Rights to farmland use remain. •Labor migration as the main source of income, with some subsistence farming or medicinal plant cultivation •Some households continue to live in makeshift houses near their house lots. A handful lives in low rent houses.





云阁

聚贤

A栋

聚贤云阁
长租房



