



# Sustainable resilience? Disaster recovery and the marginalization of sociocultural needs and concerns

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**Abstract:** Resilience has become the dominant and normative ideology of sustainability more generally, and disaster recovery more specifically. Most studies focus on how to achieve resilient recovery. This is premised on an assumption that resilience meets the needs and concerns of disaster-affected populations and is thereby sustainable. However, this article critically explores to what extent the recovery needs and concerns of disaster-affected households fit neatly within resilience vernacular and analytical frameworks. The research shows that resilience is informed by a reductive understanding of human needs as many socio-cultural needs of disaster-affected people are marginalized from resilience-based recovery. The article suggests that if disaster recovery is to be a normative and sustainable agenda, then resilience alone may be insufficient, and that needs and concerns that do not directly adapt to, reduce or avoid the impacts of hazards, ought to be prioritized in recovery programmes. The article explores these issues by investigating self-build housing processes in a post-disaster setting in Cochabamba city in Bolivia.

**Key words:** Resilience, disaster recovery, sustainability, Bolivia, self-build housing, anthropocentric house, disaster risk

## I Introduction

Resilience has now become a priority for disaster recovery programmes (Manyena *et al.*, 2011). For instance, the UNISDR (2017) now defines recovery as ‘The medium and longer-term rebuilding and sustainable restoration of resilient critical infrastructure, services, housing, facilities and livelihoods required for full functioning of a household, community or a society affected by a disaster’. The Sendai Framework for Disaster Risk Reduction (2015) now includes as Priority 4 a focus on ‘build back better’ in recovery, rehabilitation and

reconstruction. The intention is to adopt a holistic approach towards recovery where the physical, social and economic conditions of disaster-affected societies are collectively addressed to create overall improved resilience (UNISDR, 2015). Also, the third international ‘World Reconstruction Conference’ was titled ‘Promoting resilience through post-crisis recovery’ and aimed to ‘Strengthen the discourse on recovery by focusing on demand for better recovery systems *ex ante*, and promote practices leading to resilient recovery and enhance global knowledge resources’

(GFDRR, 2017). Resilience has therefore become the dominant ideology within disaster recovery and now represents the referent or norm that recovery organizations aspire to in the aftermath of a disaster (IFRC, 2014).

Most studies on resilient recovery, focus on how to best achieve resilience, without stopping to question the suitability of this ideology to meet the recovery needs of disaster-affected people. In other words, do the recovery needs and concerns of disaster-affected people fit neatly within resilience vernacular and analytical frameworks? Are there other needs and concerns that are being overlooked and marginalized in the pursuit of 'resilient recovery'? These are the questions this article sets out to theoretically and empirically explore. They are important questions because recovery programmes must meet local needs and concerns if they are to be locally appropriate and thereby sustainable (Tierney and Oliver-Smith, 2012). If disaster recovery is to remain a normative and sustainable agenda, it is important to recognize and begin conversations about how to operationalize the myriad needs and concerns of disaster-affected people into recovery policies. Relatedly, resilience-focused recovery may be unsustainable and/or rejected by local populations if policies do not incorporate such 'peripheral' sociocultural needs and concerns. Slippage between policy rhetoric and the actual lived experiences and aspirations of people is a constant challenge for policymakers because as Brunner (1991) and Clark and Clark (2002) warned, policies which misconstrue some vital part of the context or overlook the context altogether risk making policies ineffective.

This research does not engage in a deeper analysis of the 'objective' attributes of resilience, but instead, using Cochabamba city in Bolivia as a case study, it moves towards a more complex understanding of the needs and concerns of recovering households. This is achieved by investigating how the needs and concerns of disaster-affected households shape

the design and construction of self-build houses in post-disaster contexts. Here, I consider to what extent household needs and concerns are reflected in resilience-focused disaster recovery. In doing so, this research reveals a slippage between the aims and objectives of resilience-based recovery programmes and the recovery needs and concerns of disaster-affected people. This slippage risks resilient recovery policies being locally inappropriate and thereby unsustainable for affected populations. In the light of this, I suggest that resilient recovery cannot be understood as a sustainable endeavour/socioecological status, unless broader needs and concerns that fall outside dominant conceptualizations of resilience are incorporated. As such, this article makes the argument that resilience must be re-conceptualized as a state that is not simply about living with, adapting to, or reducing the impacts of a hazard. Rather, resilience must be understood as a state that is sustainable because it not only reduces/adapts to hazards but is also a state that is appropriate to local sociocultural needs. Through a focus on self-build housing as the site of analysis, the article also suggests that researchers and policymakers working on housing recovery are not able to recognize the wide array of household needs and concerns if housing is narrowly conceptualized as a physical shelter from hazards and an asset to accumulate assets to reduce disaster risk. Rather, it is necessary to adopt an anthropocentric understanding of housing if the wide array of physical, economic, social and cultural needs and concerns of households are to be identified.

## II Resilient household recovery

Discussions of recovery have referred to it as the long-term process that sets in after the 'short-term' relief and the medium-term 'reconstruction' have been achieved (Berke *et al.*, 1993).<sup>1</sup> Manyena (2006) suggested that certain notions of disaster recovery have stressed the idea of 'bouncing back' and returning to a pre-shock state. According to

this notion, a disaster is an abnormal event, and appropriate measures can be instituted to restore normalcy, which implies restoring a certain set of social, economic and political relations commensurate with the social order prior to an event (Bankoff and Hillhorst, 2009). However, 'bouncing back' is an inherently conservative approach that does not see anything amiss with original social structures. This critique suggests that recovery should be more progressive because simply returning a community to a state of 'normalcy' is an insufficient goal if pre-disaster conditions involved women's oppression, racial segregation and endemic poverty, which increase people's levels of disaster risk prior to hazard impacts (Kelman *et al.*, 2015; Schipper, 2009; Schipper and Pelling, 2006). As such, there has been a normative shift to longer-term developmental perspectives aimed at building resilient societies after disasters.

Resilience now underpins many frameworks for integrating climate change adaptation, as well as natural disasters, political fragility, or urban inequity, with development planning and programming (Bené *et al.*, 2018). Individuals, households, communities, or even societies are often expected to strive for resilience, in particular in relation to climate change and disasters (Chelleri, 2012; Gasper *et al.*, 2011; Leichenko, 2011; Romero-Lankao and Dodman, 2011 cited in Bené *et al.*, 2018). In this area of research, the definition of resilience is contested. Yet, one of the most widely adopted definitions views resilience as a system's capacity to absorb disturbance and reorganize into a fully functioning system. Therefore, exposed to the same disasters, socioecological systems with high resilience can suffer less damage than those with low resilience (Rose, 2004). As such, resilience is related to coping capacity to natural hazards (Greiving, 2006), which refers to the level of resources and ability to use these resources to deal with adverse consequences of a disaster (Billing and Madengruber, 2006). Political ecology and global environmental change

research also incorporate the idea of adaptive capacity with resilience. Adaptiveness is the

capacity to adjust to changing circumstances during a disruption by developing new plans, taking new actions or modifying behaviours so you are better able to withstand and recover from the disruption, particularly when it is not possible or wise to go back to the way things were before' (ODI, 2017: 43).

Therefore, resilience also includes the ability of a socioecological system to learn and adapt to the impacts of hazards (Adger *et al.*, 2005; Folke, 2006).

However, this line of argument has been critiqued. Liao (2012) for example, argues that resilience is not simply about reaching equilibrium and stability in order to avoid the impacts of hazards. Rather, resilience should be understood as the ability of a socioecological system to live with hazards. In this way, resilience is more dynamic and allows a socioecological system to adapt and adjust to changing external processes. A further line of critique, by Campanella (2006) in particular, suggests that resilience is much more than simply rebuilding the built environment and restoring income and health levels for instance. Resilience incorporates 'thick concatenations of social and cultural matter, and it is often this that endows a place with its defining essence and identity. (...) To enable total recovery, familial, social, and religious networks of survivors and evacuees must be reconnected' (Campanella, 2006: 142). In this way, Campanella makes an important conceptual shift, recognizing how intangible resources like sociocultural networks must be incorporated into resilience definitions.

Several attempts have been made to develop the means of measuring and monitoring disaster resilience. Although no single model can qualify resilience, the growing consensus is that resilience is a multifaceted concept, with social, economic, institutional, infrastructural, ecological and community dimensions (Stokols *et al.*, 2013). Several sets

of resilience indicators or attributes can serve as baselines for measuring recovery progress and outcomes after a disaster event (Bruneau *et al.*, 2003; Cutter *et al.*, 2008; Miles and Chang, 2006; Norris *et al.*, 2008; Twigg, 2009). Therefore, achieving household resilience is therefore not simply about reducing the physical vulnerability of infrastructure and the built environment. For instance, Blaikie *et al.* (2004: 359) argued that in order to have ‘recovered’, a household, should have not only re-established its livelihood, physical assets and patterns of access, but also should be in a position to reduce, respond and recover from the impacts of future hazards.

Resilience-based recovery is therefore not only about upgrading infrastructure with disaster-resilient construction technologies but also about diversified livelihoods for people and, public transfers and credit (Briguglio *et al.*, 2009; Davies *et al.*, 2013). Household resilience is also about improved basic services, better social protection mechanisms for poor and vulnerable families (Shaw and IEDM Team, 2009), the networked capacities of household members (Norris *et al.*, 2008; Sherrieb *et al.*, 2012), levels and diversity of economic, human, social and community capital (Aldrich, 2012; Cueto *et al.*, 2017; Mayunga, 2007), community cohesion (Adger *et al.*, 2013), embedding households within stronger governance systems (Tierney, 2012), and there is a small but very important literature on psychological resilience (Lowe *et al.*, 2015). The resilience of households is also about the development and implementation of disaster plans, the purchase of insurance and the sharing of information to aid in the recovery process (Cutter *et al.*, 2008) as well as access to risk communication and levels of risk awareness (Paton and Johnston, 2017). However, these factors are not distributed evenly within and across households because many elements of resilience are a function of the demographic characteristics of the household and its access to resources (Cutter *et al.*, 2008). Discourses on recovery also

increasingly recognize the importance of recovering the culture of disaster-affected communities, and of harnessing this culture to support resilient recovery (Hazeleger, 2013).

In the light of this, research and policy on household recovery typically focuses on how to recover households to establish these elements of resilience. In particular, basic services, levels and diversity of economic capital, health, social capital, governance systems and reducing physical vulnerability to hazards. Certainly, these are important factors to consider when recovering households. However, this research article sets out to theoretically and empirically question the idea that resilience is *only* something that enables a socioecological system to live with or avoid a hazard. More specifically, I set out to investigate whether resilience should only be instrumentalized as something that allows a socioecological system to live with, adapt to or reduce impacts of hazards. If, as Tierney and Oliver-Smith (2012), and UNISDR (2017) argue, resilience must be sustainable, then meeting the needs and concerns of a socioecological system ought to be considered a fundamental part of resilience—even if some needs and concerns cannot be instrumentalized as enabling a household to reduce the impacts of a hazard. I argue, that without sustainability, resilience cannot exist; or at least not in the long-term. Therefore, this article tests the normativity of the resilience-focused recovery agenda by exploring to what extent resilience—as currently conceptualized—meets the needs and concerns of disaster-affected people. In this way, the article sets out to build on Liao’s (2012) argument that resilience is a state that allows a socioecological system to live *with* hazards. However, I seek to extend this argument by uncovering needs and concerns that are not instrumental to reducing, adapting to or avoiding a hazard, but which are important to sustain a resilient state within a socioecological system.

In order to investigate this, I focus on self-building housing in a post-disaster context.

In particular, I explore to what extent people pursue resilience through this process. Self-build housing is a typical practice in cities of the Global South (Kellest, 2005; Mitlin and Satterthwaite, 2013; Wakely and Riley, 2011); however, self-build does not necessarily mean that urban dwellers construct the entire building. Rather, what is most important is that people decide where, how and when they want to build (Greene and Rojas, 2008). This is a particularly insightful site of analysis because the dweller is an effective interpreter and articulator of his/her own needs and priorities (Turner, 1976). As such, disaster-affected people are the protagonists and decision makers of how the house is (re)constructed. Through this approach, the research will reveal the suitability of resilience to meet the recovery needs and concerns of disasters affected households, as well as any recovery needs and concerns that do not fall neatly within resilience vernacular and frameworks.

### III Methodology

#### *Methods*

The study area is comprised three adjacent neighbourhoods in Cochabamba city in Bolivia. Data were collected between 2012 and 2017, drawing on mixed methods and ethnographic research. This includes 9 months of field research from September 2012 to June 2013, during which time I lived in the case site, and two return visits that took place in 2015 and 2017. Data were gathered through three methods: a quantitative household survey, semi-structured interviews and participatory methods. Survey respondents ( $n = 392$ , or 33% of households) were identified using a randomized sample. These data were useful to create a profile of the case site, including demographic information, incidence of disasters, severity of physical impacts and the vulnerability levels of households. The questionnaire was structured and allowed responses to be quantified, as most questions were multiple choice and closed-ended;

however, some questions allowed respondents to rank answers.

Individual semi-structured interviews were carried out with neighbourhood residents ( $n = 58$ ) that had experienced adverse impacts of local hazards on their houses. Local construction workers ( $n = 7$ ) and local government officials ( $n = 4$ ) were also interviewed. Each lasted approximately 60–75 minutes on average. Questions with residents focused, in particular, on the impacts of hazards, the nature of external support from the local government during the disaster recovery phase, how people view the social functions of the house and the concerns and needs of people when recovering their houses after a disaster. Interviews with construction workers were principally used to corroborate local people's needs when reconstructing houses. Local government officials were interviewed to identify any assistance given to residents during disaster recovery.

Participatory methods were also used, whereby household members were asked to draw the house that they aspire to build. These drawings act as social maps that uncover people's deep tacit knowledge about how they understand and relate to the physical form of the house (refer to Kumar, 2002; Stevenson, 2008) and to what extent residents consider reducing disaster risk when reconstructing their house. Therefore, participatory methods were particularly useful for revealing people's latent and unconscious priorities for disaster recovery that they may not automatically articulate in the interviews and surveys. Although some interviewees did not have the resources to construct their 'dream house', these drawings reveal the logic of what is important to people. This methodological approach allows this research to understand how disaster-affected people imagine their recovered house.

#### *Self-build housing in Cochabamba, Bolivia*

The neighbourhoods are located in 'Cerro Lourdes', a hill located 4 km from the city

centre and within district 6 of Cochabamba city. The Cerro has become densely populated since migration began in the 1950s. In 1999, the municipality of Cochabamba expanded the urban area of the city to include the Cerro, which brought the legal and political recognition of the neighbourhoods (Landaeta, 2004). All three neighbourhoods are prone to small-scale landslides.<sup>2</sup> This includes a landslide that affected 85 households in 2008 (e.g., Nava, 2011). However, the landslide in 2008 is somewhat of an exception because survey and interview data reveal that it is more common that a landslide simultaneously affects one or two adjacent houses. In particular, rainfall exacerbates ground instability, which has led to 29 per cent of houses experiencing small-scale landslips. Additionally, over time, light damage such as cracks in walls can graduate into more serious damage because of the persistent impacts of rainwater on walls. Household survey data show that 53 per cent of houses had experienced adverse impacts from rainwater in this way. However, physical damage is not only determined by rainfall patterns but also exposure to rainwater and the materials used to build the house. Finally, disasters are not isolated to one particular area of the neighbourhoods as they are highly geographically spread across the Cerro. They are also sporadic over time occurring throughout the year; however, most physical damage occurs during the rainy season between December and March. Therefore, there is widespread knowledge of local disaster risk within and across households.<sup>3</sup>

Despite the prevalence of adverse hazards impacts, the local government plays a negligible role in post-disaster housing recovery (Vallejo, 2011). Following the landslide in 2008, the local government provided immediate disaster relief assistance to affected residents, which reflects a conventional and reactive disaster management approach (Blaikie *et al.*, 2004). However, only blankets, mattresses and food were provided to households that had suffered the most severe physical damage to their house.

Therefore, households that experienced less severe physical impacts, but significant indirect impacts on levels of social, human and economic capitals were marginalized from immediate support, which exacerbated vulnerability levels. Additionally, and equally as problematic, the local government provided no disaster relief or recovery support to households that experienced small-scale landslides, which impact one or two houses, and which are more common across the Cerro.

Self-building housing construction is legally circumscribed by prescriptive building codes and regulations that are produced by the Local government. However, they are inadequately enforced, and residents are largely left to govern the construction of their house in isolation from regulation by external authorities. Furthermore, many households do not comply because of the increased cost that compliance incurs (Green, 2008). As such, households are left to construct their houses in isolation from coordinated state support and guidance. This makes Cerro Lourdes a particularly revelatory case for this research because it allows investigation of household needs and concerns, when households are the primary decision-makers, and when external organizations do not impose a particular vision, referent or norm of housing recovery.

The population began to construct vernacular architecture known as *Medias aguas*,<sup>4</sup> which is typical in rural areas of Bolivia, when settling in the area. *Medias aguas* are arranged as multiple single adobe<sup>5</sup> structures that are spread out linearly across a plot. These structures are typically one storey in height because adobe cannot support multiple storey structures. *Medias aguas* typically have an outdoor patio, which is a communal space for activities such as, cooking, cleaning clothes, eating, socializing and storing water. These houses are often built without a contention wall and/or foundation, which increases their vulnerability to landslides. Residents construct *medias aguas* when arriving to the Cerro because materials are cheap, and households

were knowledgeable and accustomed to this design and construction type. However, households now consider *medias aguas* an undesirable architecture. Residents living in adobe houses receive negative assessments and judgements from those who lives in houses made of brick and concrete. Relatedly, *medias aguas* are also widely criticized for their aesthetic appearance. They often have cramped and uncomfortable living conditions because a single room is often occupied by several household members—as many as seven—and used for multiple activities such as cooking, eating, dressing, resting, socializing and sleeping. For these reasons, *medias aguas* are locally associated with reduced levels of privacy, as well as a sense of deprivation, disorder, being unprogressive and lower levels of social status.

Adobe also attracts the *vinchuca* insect that lives in unrendered adobe walls. *Vinchuca* transmit the protozoal parasite through their bite, which can lead to the fatal disease known as Chagas (Boven and Morohasi, 2002). Adobe also absorbs and retains the heat and moisture from the day, which can make internal living conditions uncomfortable, particularly during the rainy season. Women in particular complain that it is difficult to carry out their gendered domestic duties like maintaining the cleanliness and order of the house when there are dirt floors and minimal space to store household items. Also, outdoors patios are typically semi-public as it is common for a waist high fence to demarcate the plot from public space. However, many interviewees state that this leads to feelings of insecurity from local thieves. Finally, research has identified how communal outdoors patios act as semi-public space for household activities, which maintain and strengthen the social bonds within households and with neighbouring households (Al-Thahab *et al.*, 2014). However, many women interviewees confessed their annoyance about having to prepare food and clean outdoors in uncomfortable and often in cold and rainy conditions.

There is little nostalgia associated with *medias aguas* because of the diverse ways that *medias aguas* architecture negatively affects people's daily lives and lifestyles. However, *medias aguas* are the beginning of an incremental process of housing construction, which fulfils the initial requirements and objectives of residents when settling in the Cerro—shelter. As a result, and reflecting Turner's (1976) seminal research, 94 per cent of households have subsequently reconstructed or plan to reconstruct the house in order to satisfy needs and concerns that *medias aguas* cannot. Section IV describes the architectural transformation across the case site, and in doing so reveals the housing needs and concerns of households.

#### **IV Findings and discussion**

##### *Self-build housing and the (re)construction of resilience*

Local people expressed different interpretations about how the physical form of the house can fulfil the needs and concerns of household members, and these differences display the personal tastes of people. However, the style and construction materials of houses draw them together. In particular, households are increasingly (re)constructing houses made of brick and concrete, which reflects self-build housing patterns across Latin America (Forty, 2005) and urban Bolivia (INE, 2012).<sup>6</sup> These 'new' houses are often two, three or sometimes even four storeys in height, which creates a dramatic visual contrast to *medias aguas*. Local people refer to these 'new' houses as '*casas bonitas*' (pretty houses), and they are now the architectural referent that people aspire to across the neighbourhoods.

Interviewees indicated that brick and concrete satisfy more of their housing needs and concerns than adobe, and several of these concerns fit neatly within resilience frameworks. For instance, people perceive that the use of brick/concrete, a contention wall and a deep foundation are their most important

resources for reducing the impacts of landslides and rainwater.<sup>7</sup> Illustrating this, 97 per cent of survey respondents felt safer against the impacts of climatic hazards after constructing brick and/or concrete rooms, a retaining wall, or a deep foundation. Other resilience-related needs and concerns include the importance of the house as an economically productive asset. In particular, larger houses allow households to construct shops, workspaces, bars (locally known as a 'chicherias') and extra rooms that can be rented out to tenants. This is particularly important to many women who are unable to engage in paid labour outside of the house because of a gendered domestic division of labour. Supporting Moser's (2010) work in Ecuador, women have been able to increase their household bargaining power because they are now earning personal income. Many other residents stress that brick and concrete have health benefits. In particular, brick and concrete do not attract the *vinchuca* parasite. Furthermore, brick and concrete buffer against the heat and humidity, whereas adobe absorbs and retains the heat and moisture from the day. As such, disaster-affected households are concerned with multiple and interrelated factors, which include reducing the physical impacts of hazards, economic security, the empowerment of women through house-based businesses and health—all key indicators used to measure household resilience.

*(Re)Constructing lives: Needs and concerns beyond resilience*

The physical form of the house has a wide range of functions and meanings for household members. The design and construction of the house allows households to consolidate and transform sociocultural relations within and beyond the house, and a sense of self and cultural identity—elements that do not fit neatly within current conceptualizations of household resilience.<sup>8</sup> More specifically, household needs and concerns also include beauty, individuality, public social status, competition to impress others, comfort,

privacy and private property, cleanliness and order, domestic efficiency as well as the expression of life histories and beliefs.

For instance, a larger house with additional bedrooms changes the layout, and ultimately the privacy and comfort of household members. For household members, a private dwelling unit not only signifies a place to sleep but also denotes the ability of individuals to physically demarcate their lives as independent from other household members (Kellett, 2005). This is particularly important in the Cerro where multiple generations reside in the same house. A larger house also allows households to incorporate the kitchen and bathroom inside the unitary structure of the house. Women often remarked that this improves their comfort and privacy, as they no longer have to carry out household duties outdoors, where they are publically visible to passers-by. Relatedly, many interviewees aspire to build large fences and install opaque windows, which obscure passer-by vision of household activities, which further illustrates people's concern with privacy.

Again, many women remarked that 'casas bonitas' also ease the maintenance and cleanliness of the house. This is first because brick, concrete and ceramic are easier to clean than adobe. Second because a large house also increases storage space, which allows household members to maintain the order and tidiness of the house, which contrasts to the 'clutter' and 'disorder' created by the cramped conditions in *medias aguas*.

'We lived in an adobe house for many years. Have you seen them? They are fine at first, but they really are so dirty and all I would do is clean. Everyday the same; you cannot get rid of the dirt. So I said I want a beautiful brick one. You know with the ceramics too. Now I can spend longer working in my shop—making a little money you see, rather than cleaning, cleaning, cleaning' (Interviewee, June 2013).

This was particularly important for women because it saves them time and labour,

allowing them to become more efficient domestic workers and spend time on other activities, including income-earning activities.

Other benefits of 'casas bonitas' highlight how people view the house as a medium to establish and reproduce their sense of self- and cultural identity. For instance, a large house also allows households to display ornaments, souvenirs and photographs of family events, religious paraphernalia and items bought or sent when a household member was living and working overseas.<sup>9</sup> Many of these items were previously hidden away in boxes; however, increased space allows people to express their life histories, tastes and beliefs, which helps to construct a sense of 'homeliness' (Blunt and Dowling, 2006). Relatedly, the house is also a key constituent of consumption that allows people to confirm and display their status. Klaufus (2006, 2012) showed how brick and concrete houses often represent a form of 'conspicuous consumption' in self-build contexts in the global south. This is because these materials are associated with higher levels of economic income, and which ultimately visually express the socio-economic status of the household. Therefore, in line with Kellett (2005, 2012), the use of these materials is a way to claim higher public social status and impress others within the neighbourhoods. This notion of higher social status is further exacerbated by the size of houses, which as previously stated, may be three or four storeys. The importance of public social status is also apparent when entering houses as it is often only then that one can observe material poverty, which is hidden from public view. Therefore, the design and materials of houses is a way of communicating how household members want to be seen and to avoid negative assessments and judgements.

Reflecting Inclan-Valadez (2013), there is also a desire to give houses a status of beauty and express people's individuality and personal tastes. This is achieved through aesthetic finishing and the design and layout of the house, which is often reflective of

Spanish-colonial architecture. This includes low-pitched clay tile, or flat roofs; walls and floors that are covered in ceramic tiles; small porches or balconies; fenestration; wood casement or tall, double-hung windows; canvas awnings and opaque windows. People also cite the importance of elaborately decorated smooth plaster (stucco) walls, terracotta or cast concrete ornaments and painting houses in multiple and bright colours. A corollary of this is again to develop public social status. It also creates a sharp contrast to the 'modesty' of single-storey rectangular *medias aguas* that are typically brown.

#### *Bringing sociocultural needs and concerns into disaster recovery*

Although recovering household value socio-cultural processes such as public social status and expressing life histories, these processes are typically absent from research and policy discourses, which focus on how 'to do' effective disaster recovery.<sup>10</sup> Critics may object that needs such as public social status, privacy, beauty and domestic efficiency are unessential and should remain peripheral to recovery because the ultimate objective of household disaster recovery is to ensure a socioecological 'system's capacity to absorb disturbance and reorganize into a fully functioning system' (Janssen *et al.*, 2006). However, these findings are in line with research that explores self-build housing in the global south, and which highlights how households view the house as more than a physical shelter. In particular, Kellett (2005) and Klaufus (2000, 2006, 2012) provide empirical evidence from the Latin American context, of how households design and construct houses in order to facilitate multiple social processes—many of which are observed in Cochabamba. Therefore, if disaster recovery is to remain a normative and sustainable agenda, it is important to recognize and begin conversations about how to operationalize the myriad needs and concerns of households into recovery policies. Resilience-focused household recovery may be unsustainable

and/or rejected by local populations if policies do not incorporate such 'peripheral' sociocultural needs and concerns. Slippage between policy rhetoric and the actual lived experiences and aspirations of people is a constant challenge for policymakers because as Brunner (1991) and Clark and Clark (2002) warned, policies which misconstrue some vital part of the context or overlook the context altogether risk making policies unsustainable.

In many settings, however, key institutional structures continue to discount or dismiss social and cultural dimensions of recovery needs, which is based on paternalistic presumptions about what is 'best' for minority groups (Howitt *et al.*, 2012). Such approaches reinforce discourses of superiority and power and are mobilized to justify institutionalized decision-making processes that both exclude and ignore local people's views (Howitt *et al.*, 2012). This approach privileges the developmentalist notion that 'management' as universally possible and appropriate—a proposition that Howitt and Suchet-Pearson (2006) identify as Eurocentric and in need of challenge. Therefore, if recovery is to remain a normative process, which not only improves resilience but also recovers society in a way that is desirable for local people, it is important to consider and operationalize such social and cultural dimensions that appear peripheral to environmental management. In this way, this research echoes foundational ideas by seminal thinkers, including Margaret Mead (1928), Paulo Freire (1973) and Robert Chambers (1994)—who, at the time, were radical in their arguing for the legitimacy of local knowledges in order to subvert dominant narratives. Broadening an understanding of recovery beyond resilience, would acknowledge explicitly, that resilience cuts across cultural and aspirational processes, and that resilience can and should be applied to support, rather than detract from these. Doing so also acknowledges and operationalizes discourses about the importance of recognizing and recovering the culture of disaster-affected communities, and

of harnessing this culture to support resilient recovery, which speaks to research on the role of cultures within disaster-affected areas (Douglas and Wildavsky, 1983; Krüger *et al.*, 2015; Polymenopoulou, 2017).

However, findings must be interpreted with caution, as they cannot be extrapolated to all contexts. That is, it would be foolish and reductive to assume that all disaster-affected households across space and time have precisely the same needs and concerns. Nevertheless, the Cochabamba case suggests that organizations must be cautious of instrumentalizing recovery for resilience-building *only*, doing so sets the boundaries for recovery. In other words, notions about 'appropriate' recovery as well as 'valid' needs and concerns have already been formulated, even before consultation with disaster-affected people has taken place. That is, the future of recovered households is a preset condition in which resilience is the ultimate priority and objective. Therefore, despite debate moving beyond simple notions of 'bouncing back', the aims of disaster recovery arguably remain conservative because the vision of recovery has already been largely predefined. This is even before disaster-affected people have the opportunity to engage in participatory debate about the recovery process. As such, vulnerable people are, to some extent, constrained from imprinting their particular vision for their lives beyond the vernacular and analytical frameworks of resilience.

The intention of this article is not to promote specific disaster recovery programmes or suggest that resilience-based disaster recovery programmes should be discontinued. Nor am I suggesting that recovery programmes should facilitate policies and programmes that may increase people's disaster risk. Rather, my purpose has been to critically explore the limitations of resilience-focused disaster recovery, with the ultimate suggestion that disaster recovery should be a normative agenda ('what ought to be done') that recovers society in a way that meets the myriad needs

of people. Moreover, the article has shown that dominant conceptualizations of resilience are based on reductive understandings of human needs and aspirations. Recovery organizations ought to recognize that resilience alone may be inadequate for the needs and concerns of local disaster-affected populations, and disaster recovery should be liberated from an exclusive focus on resilience. To ensure the sustainability of recovery programmes, resilience must connect to, and incorporate local aspirations, cultural processes and social contexts. That is, if disaster recovery is to be a normative and sustainable agenda, then resilience alone may be insufficient, and that there must be needs and concerns that do not directly shape hazard impacts, ought to be prioritized in recovery programmes. As such, this article builds on Liao's (2012) suggestion that resilience is not only the ability to adapt to, avoid or reduce the impacts of a hazard but also the capacity to live *with* a hazard. However, this article goes further and demonstrates that if resilience is to be maintained and sustained by a socioecological system, wider sociocultural processes that do not directly shape the impacts of hazards must also be operationalized. In this way, resilience needs to be understood as a state that not *only* exists in relation to a hazard but *also* a state that exists within a particular sociocultural context.

#### *Towards anthropocentric conceptualizations of housing*

Housing as a productive asset has a long-standing story, rooted first in the scholarship researching the dynamics of poverty and vulnerability from the mid-eighties onward (Moser, 1998). Following this, researchers and policymakers working on household recovery have taken on board this approach, conceptualizing the house as a shelter to reduce the physical impacts of hazards or a resource to accumulate assets in order to increase resilience (see Blaikie *et al.*, 2004; Dodman *et al.*, 2012; Hardoy and Pandiella, 2009; Moser, 2010). However, results in Cochabamba

suggest that this view misrepresents the multiple and overlapping social functions that housing has for households living in disaster-affected contexts. It also diverts attention away from the important social aspirations and cultural processes of households that fall outside of current conceptualizations of resilience. In the light of this, I propose that an anthropocentric understanding of the house ought to become standardized as the best practice for organizations that are working in the field of household disaster recovery. Analytically speaking, the house is viewed as more than a physical resource made of bricks and mortar but is instead a resource that is able to transform and facilitate a diversity of social, economic and cultural processes (Blunt and Dowling, 2006; Kellett, 2005; Klaufus, 2012).

This approach reveals the materiality of the house, whereby the focus is on the social driving forces of the material world and concern with the 'notion that humans engage with the things of the world as conscious agents and are themselves shaped by those experiences' (Renfrew and DeMarras, 2004: 2). This shifts discussion away from superficial interpretations of the house, towards exploration of the underlying processes of how dwellers perceive the social functions of their house and how they interact with the materials it is made of. This approach clarifies how houses are socially and culturally enacted and reveals how design and construction materials facilitate the consolidation and transformation of economic and social processes and relations, as well as cultural identity when self-building houses—many of which are not related to resilience building (Kellett, 2005).

An anthropocentric understanding of the social functions of houses is well established in other research fields. For instance, studies on self-build housing in the global south discuss the use of certain construction materials, such as brick and ceramic, as facilitating domestic efficiency as they are easier to clean (Blunt, 2005; Sou, 2015, 2017). However, through the vernacular of disaster studies, brick is narrowly understood as a durable material for

reducing physical vulnerability (Bosher, 2008). Other research analyses the incorporation of elaborately decorated facades and the originality of the shape of houses. This form of construction and design has been termed ‘conspicuous consumption’ to describe houses that are constructed to increase the public social standing and individuality of inhabitants (Klaufus, 2000, 2006, 2012).

If policymakers and researchers working on disaster recovery conceptualize houses anthropocentrically, it challenges the idea that houses in the global south essentially respond to basic material need for shelter, safety and economic security. It also ensures that the analytical approach adopted to explore household needs is not bound by resilience as its frame of reference. In this way, it will allow researchers and policymakers to sufficiently unpack the housing needs and concerns of recovering households, which fall outside of resilience vernacular and analytical frameworks.

## V Conclusion

The overall objective of this research was to investigate to what extent resilience meets the needs and concerns of disaster-affected populations, and thereby consider how sustainable current dominant notions of resilience are. This research suggests that the checklist type framework of disaster recovery, which outlines principles for resilience, can be criticized for being too descriptive and focusing narrowly on instrumentalizing recovery to resilience. The Cochabamba case suggests that there is a need to reconceptualize disaster recovery futures, in social and cultural terms, in order to respond to the needs and values of disaster-affected groups. Rather than assume that existing ways of seeing and recovering from disasters are adequate. Furthermore, progressive recovery discourses argue that we should not return (or ‘bounce back’) to a vulnerable pre-disaster state but move ‘forward’ (Bankoff and Hilhorst, 2009; Manyena, 2011; Schipper, 2009; Schipper and Pelling, 2006). However, these discussions remain largely framed in relation to protection against hazards

and having the resources to recover from hazard impacts. In contrast, the Cochabamba case suggests that incorporation of social and cultural processes should be considered integral components of ‘moving forward’ and therefore be integrated into recovery programmes if they are to be sustainable. Recovery cannot be simply reduced to a universal or predefined strategy as if resilience will satisfy all groups across space and time. Successful post-disaster recovery ought to be more than simply rebuilding resilient housing and other assets to reduce disaster risk, it should also be measured by whether it facilitates the establishment of the lives that vulnerable people want to have and aspire to have. Taking such an approach, which listens to, and integrates local needs that may fall outside dominant conceptualizations of resilience, takes a step towards a normative recovery agenda that recovers and improves the lives of disaster-affected people, and in ways that are locally appropriate. It is also fundamentally important to ensure the sustainability of recovery and resilience policies more broadly.

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## Notes

1. This article does not engage in discussions of resettlement as disaster recovery. This article focuses on recovery that takes place when disaster-affected populations *remain in place*. For further reading on the linkages between resettlement and recovery please, see Alainz (2017), Guo and Kapucu (2018), Santiago *et al.* (2018).
2. Desinventar (n.d.) define small-scale as between one and one hundred households that are affected at any one time.

3. See Sou (2017) for an in depth analysis of local risk perceptions across the particular case site.
4. Eighty five per cent of households constructed a media aguas house when they settled in the Cerro.
5. Sun dried bricks made of mud, water and straw.
6. Survey data reveal that 11 per cent of houses are entirely constructed with adobe, 58 per cent are a mixture of adobe and brick/concrete, and 31 per cent are made only of brick and concrete.
7. Survey data show that 50 per cent of houses have a deep foundation and 43 per cent are constructed with a retaining wall.
8. For further reading on current conceptualizations of household resilience, see Arbon *et al.* (2016).
9. Survey data show that 33 per cent of households had one or more members that previously or currently lived and worked outside of the neighbourhood. Principal destinations are Spain (51% of migrants), Argentina (27%), Brazil (9%), other provinces of Bolivia (7%), followed by Italy, Chile and the USA (equal 1.2%).
10. There is a small, yet very important set of work on culture and disasters, which focuses on the need for more culturally appropriate disaster recovery policies and processes. This includes Kruger *et al.* (2015), IFRC World Disaster Report (2014), Oliver-Smith (2013), and Oliver-Smith *et al.* (1999).

## References

- Adger, W. N., Hughes, T. P., Folke, C., Carpenter, S. R. and Rockström, J.** 2005: Social-ecological resilience to coastal disasters. *Science* 309(5737), 1036–39.
- Adger, W. N., Barnett, J., Brown, K., Marshall, N., and O'Brien, K.** 2013: Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change* 3(2), 112.
- Al-Thahab, A., Mushatat, S., and Abdelmonem, M. G.** 2014: Between tradition and modernity: Determining spatial systems of privacy in the domestic architecture of contemporary Iraq. *ArchNet-IJAR* 8(3), 238–50.
- Alaniz, R.** 2017: *From strangers to neighbors: Post-disaster resettlement and community building in Honduras*. University of Texas Press.
- Aldrich, D. P.** 2012: *Building resilience: Social capital in post-disaster recovery*. University of Chicago Press.
- Arbon, P., Steenkamp, M., Cornell, V., Cusack, L., and Gebbie, K.** 2016: Measuring disaster resilience in communities and households: Pragmatic tools developed in Australia. *International Journal of Disaster Resilience in the Built Environment* 7(2), 201–15.
- Bankoff, G., and Hilhorst, D.** 2009: The politics of risk in the Philippines: Comparing state and NGO perceptions of disaster management. *Disasters* 33(4), 686–704.
- Béné, C., Mehta, L., McGranahan, G., Cannon, T., Gupte, J., and Tanner, T.** 2018: Resilience as a policy narrative: potentials and limits in the context of urban planning. *Climate and Development* 10(2), 116–33.
- Berke, P. R., Kartz, J., and Wenger, D.** 1993: Recovery after disaster: Achieving sustainable development, mitigation and equity. *Disasters* 17(2), 93–109.
- Billing, P., and Madengruber, U.** 2006: Overcoming the black hole: Outline for a quantitative model to compare coping capacities across countries. In Birkmann, J., editor, *Measuring vulnerability to natural hazards*. United Nations University Press, 403–14.
- Blaikie, P., Cannon, T., Davis, I., and Wisner, B.** 2004: *At risk: Natural hazards, people's vulnerability and disasters*. Routledge.
- Blunt, A., and Dowling, R.** 2006. *Home*. Routledge.
- Bosher, L.** 2008: *Hazards and the built environment: Attaining built-in resilience*. Routledge.
- Boven, K., and Morohashi, J.** 2002. *Best practices using Indigenous knowledge*. UNESCO/MOST. <http://www.unesco.org/most/Bpikpub2.pdf>, last accessed on 21 October 2018.
- Briguglio, L., Cordina, G., Farrugia, N., and Vella, S.** 2009: Economic vulnerability and resilience: Concepts and measurements. *Oxford Development Studies* 37(3), 229–47.
- Bruneau, M., Chang, S. E., Eguchi, R. T., Lee, G. C., O'Rourke, T. D., Reinhorn, A. M., et al.** 2003: A framework to quantitatively assess and enhance the seismic resilience of communities. *Earthquake Spectra* 19(4), 733–52.
- Brunner, R. D.** 1991: The policy movement as a policy problem. *Policy Sciences* 24(1), 65–98.
- Campanella, T. J.** 2006: Urban resilience and the recovery of New Orleans. *Journal of the American Planning association*, 72(2), 141–46.
- Chambers, R.** 1994: The origins and practice of participatory rural appraisal. *World Development* 22(7), 953–69.
- Chelleri, L.** 2012: From the 'Resilient City' to urban resilience. A review essay on understanding and integrating the resilience perspective for urban systems. *Documents d'anàlisi geogràfica* 58(2), 287–306.
- Clark, T. W., and Clark, S. G.** 2002: *The policy process: A practical guide for natural resources professionals*. Yale University Press.
- Cueto, D. N., Villalta, I. V., and Bernal, M. N.** 2017: Resilience to disasters and social capital. Analysis of social networks in peripheral neighborhoods of the city of Cusco, Peru. *Boletín de la Asociación de Geógrafos Españoles* 74, 17–25.
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., et al.** 2008: A place-based model for understanding community resilience to

- natural disasters. *Global Environmental Change* 18(4), 598–606.
- Davies, M., Béné, C., Arnall, A., Tanner, T., Newsham, A., and Coirolo, C.** 2013: Promoting resilient livelihoods through adaptive social protection: Lessons from 124 programmes in South Asia. *Development Policy Review* 31(1), 27–58.
- Desinventar.** n.d.: Desinventar databases, disaster inventory system. <https://www.desinventar.org/>, last accessed on 28 October 2018.
- Dodman, D., Bicknell, J., and Satterthwaite, D. eds.** 2012: *Adapting cities to climate change: Understanding and addressing the development challenges*. Routledge.
- Douglas, M., and Wildavsky, A.** 1983: *Risk and culture: an essay on the selection of technological and environmental dangers*. University of California Press.
- Folke, C.** 2006: Resilience: The emergence of a perspective for social–ecological systems analyses. *Global Environmental Change* 16(3), 253–67.
- Forty, A.** 2005: Cement and multiculturalism. *Critical Studies* 27(1), 144–54.
- Freire, P.** 1973: *Education for critical consciousness*. Translated by M. B. Ramos. Seabury.
- Gasper, R., Blohm, A., and Ruth, M.** 2011: Social and economic impacts of climate change on the urban environment. *Current Opinion in Environmental Sustainability* 3(3), 150–57.
- GFDRR.** 2017: *World reconstruction conference 2017*. Global Facility for Disaster Reduction and Recovery. <https://www.gfdr.org/wrc3>, last accessed on 21 October 2018.
- Green, R.** 2008: Unauthorised development and seismic hazard vulnerability: A study of squatters and engineers in Istanbul, Turkey. *Disasters* 32(3), 358–76.
- Greene, M., and Rojas, E.** 2008: Incremental construction: A strategy to facilitate access to housing. *Environment and Urbanization* 20(1), 89–108.
- Greiving, S.** 2006: Multi-risk assessment of Europe's regions. In Joern, B., editor, *Measuring vulnerability to natural hazards: towards disaster resilient societies*. United Nations University Press, 210–26.
- Guo, X., and Kapucu, N.** 2018: Examining the impacts of disaster resettlement from a livelihood perspective: A case study of Qinling Mountains, China. *Disasters* 42(2), 251–74.
- Hardoy, J., and Pandiella, G.** 2009: Urban poverty and vulnerability to climate change in Latin America. *Environment and Urbanization* 21(1), 203–24.
- Hazeleger, T.** 2013: Gender and disaster recovery: strategic issues and action in Australia. *The Australian Journal of Emergency Management* 28(2), 40.
- Howitt, R., and Suchet-Pearson, S.** 2006: Rethinking the building blocks: Ontological pluralism and the idea of 'management'. *Geografiska Annaler: Series B, Human Geography* 88(3), 323–35.
- Howitt, R., Havnen, O., and Veland, S.** 2012: Natural and unnatural disasters: responding with respect for indigenous rights and knowledges. *Geographical Research* 50(1), 47–59.
- IFRC.** 2014: *World disasters report focus on culture and risk*. World Disasters Report. Internal Federation of the Red Cross and Red Crescent Societies.
- Inclan Valadez, M. C.** 2013: The 'casas GEO' movement: An ethnography of a new housing experience in Cuernavaca, Mexico. PhD Thesis, Department of Geography and Environment. London School of Economics, London.
- INE.** 2012: *Bolivia características de población y vivienda: Censo Nacional de población y vivienda 2012* [Population and housing characteristics of Bolivia: National census of population and housing]. Instituto Nacional de Estadística.
- Janssen, M. A., Schoon, M. L., Ke, W., and Börner, K.** 2006: Scholarly networks on resilience, vulnerability and adaptation within the human dimensions of global environmental change. *Global Environmental Change* 16(3), 240–52.
- Kellett, P.** 2005: The construction of home in the informal city. *Critical Studies* 27(1), 22–42.
- Kelman, I., Gaillard, J. C., and Mercer, J.** 2015: Climate change's role in disaster risk reduction's future: beyond vulnerability and resilience. *International Journal of Disaster Risk Science* 6(1), 21–27.
- Klaufus, C.** 2000: Dwelling as representation: values of architecture in an Ecuadorian squatter settlement. *Journal of Housing and the Built Environment* 15(4), 341–65.
- . 2006: Globalization in residential architecture in Cuenca, Ecuador: social and cultural diversification of architects and their clients. *Environment and Planning D* 24(1), 69–89.
- . 2012: The symbolic dimension of mobility: Architecture and social status in Ecuadorian informal settlements. *International Journal of Urban and Regional Research* 36(4), 689–705.
- Krüger, F., Bankoff, G., Cannon, T., Orłowski, B., and Schipper, E. L. F. eds.** 2015: *Cultures and disasters: Understanding cultural framings in disaster risk reduction*. Routledge.
- Kumar, S.** 2002: *Methods for community participation: A complete guide for practitioners*. ITDG Publishing.
- Landaeta, G.** 2004: *Living in unauthorized settlements-housing improvement and social participation in Bolivia*. *Housing, Development and Management*. Lund University.
- Leichenko, R.** 2011: Climate change and urban resilience. *Current Opinion in Environmental Sustainability* 3(3), 164–68.
- Liao, K.-H.** 2012: A theory on urban resilience to floods – A basis for alternative planning practices. *Ecology & Society* 17(4), 48.

- Lowe, S. R., Sampson, L., Gruebner, O., and Galea, S.** 2015: Psychological resilience after Hurricane Sandy: The influence of individual- and community-level factors on mental health after a large-scale natural disaster. *PLoS One* 10(5), e0125761.
- Manyena, S. B.** 2006: The concept of resilience revisited. *Disasters* 30(4), 434–50.
- Manyena, B., O'Brien, G., O'Keefe, P., and Rose, J.** 2011: Disaster resilience: A bounce back or bounce forward ability? *Local Environment: The International Journal of Justice and Sustainability* 16(5), 417–24.
- Mayunga, J. S.** 2007: Understanding and applying the concept of community disaster resilience: A capital-based approach. *Summer Academy for Social Vulnerability and Resilience Building* 1, 16.
- Mead, M.** 1928: *Coming of age in Samoa: a psychological study of primitive youth for Western civilization.* William Morrow.
- Miles, S. B., and Chang, S. E.** 2006: Modeling community recovery from earthquakes. *Earthquake Spectra* 22(2), 439–58.
- Mitlin, D., and Satterthwaite, D.** 2013: *Urban poverty in the global south: Scale and nature.* Routledge.
- Moser, C. O.** 1998: The asset vulnerability framework: Reassessing urban poverty reduction strategies. *World Development* 26(1), 1–19.
- . 2010: *Ordinary families, extraordinary lives: assets and poverty reduction in Guayaquil, 1978–2004.* Brookings Institution Press.
- Nava, J. B.** 2011: *Zona de Alto Cochabamba tiene riesgos geológicos* [Alto Cochabamba zone has geological risks]. <http://www.opinion.com.bo/opinion/articulos/2011/0320/noticias.php?id=5386>, last accessed on 17 October 2018.
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., and Pfefferbaum, R. L.** 2008: Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology* 41(1–2), 127–50.
- ODI.** 2017: *Resilience Scan January–March 2017 a review of literature, debates and social media on resilience.* Overseas Development Institute. <https://www.odi.org/sites/odi.org.uk/files/resource-documents/11630.pdf>, last accessed on 28 October 2018.
- Oliver-Smith, A.** 2013: Disaster risk reduction and climate change adaptation: The view from applied anthropology. *Human Organization* 72(4), 275–82.
- Oliver-Smith, A., Hoffman, S. M., and Hoffman, S. eds.** 1999: *The angry earth: Disaster in anthropological perspective.* Psychology Press.
- Paton, D., and Johnston, D.** 2017: *Disaster resilience: An integrated approach.* Charles C Thomas Publisher.
- Polymenopoulou, E.** 2017: *The role of 'culture' and 'cultural rights' in the prevention and management of disasters.* Routledge.
- Renfrew, C., and DeMarrais, E. eds.** 2004: *Rethinking materiality: the engagement of mind with the material world.* McDonald Institute for archaeological research.
- Romero-Lankao, P., and Dodman, D.** 2011: Cities in transition: Transforming urban centers from hotbeds of GHG emissions and vulnerability to seedbeds of sustainability and resilience: introduction and Editorial overview. *Current Opinion in Environmental Sustainability* 3(3), 113–20.
- Rose, A.** 2004: Defining and measuring economic resilience to disasters. *Disaster Prevention and Management: An International Journal* 13(4), 307–14.
- Santiago, J. S. S., Manuela Jr, W. S., Tan, M. L. L., Sañez, S. K. B., and Tong, A. Z. U.** 2018: Agency-driven post-disaster recovery: a comparative study of three Typhoon Washi resettlement communities in the Philippines. *International Journal of Disaster Risk Reduction* 27, 480–89.
- Schipper, E. L. F.** 2009: Meeting at the crossroads? Exploring the linkages between climate change adaptation and disaster risk reduction. *Climate and Development* 1(1), 16–30.
- Schipper, L., and Pelling, M.** 2006: Disaster risk, climate change and international development: Scope for, and challenges to, integration. *Disasters* 30(1), 19–38.
- Shaw, R., and IEDM Team.** 2009: Climate disaster resilience: Focus on coastal urban cities in Asia. *Asian Journal of Environment and Disaster Management* 1, 101–16.
- Sherrieb, K., Louis, C. A., Pfefferbaum, R. L., Pfefferbaum, J. B., Diab, E., and Norris, F. H.** 2012: Assessing community resilience on the US coast using school principals as key informants. *International Journal of Disaster Risk Reduction* 2, 6–15.
- Sou, G.** 2015: *The relationship between risk perceptions and responses in disaster-prone cities of the Global South.* School of Environment and Development University of Manchester.
- . 2017: Mainstreaming risk reduction into self-build housing: The negligible role of perceptions. *Climate and Development* 4, 1–12.
- Stevenson, F.** 2008: *Post occupancy evaluation of housing.* Corporate social responsibility conference. Oxford Brookes University, 15.
- Stokols, D., Lejano, R. P., and Hipp, J.** 2013: Enhancing the resilience of human–environment systems: A social ecological perspective. *Ecology and Society* 18(1).
- Tierney, K.** 2012: Disaster governance: social, political, and economic dimensions. *Annual Review of Environment and Resources* 37(1), 341–63.
- Tierney, K., and Oliver-Smith, A.** 2012: Social dimensions of disaster recovery. *International Journal of Mass Emergencies & Disasters* 30(2), 123–46.
- Turner, J.** 1976: *Housing by people: towards autonomy in building environments.* Marion Boyars Publishers Ltd.

- Twigg, J.** 2009: *Characteristics of a disaster-resilient community: A guidance note (version 2)*.
- UNISDR.** 2015: *Sendai framework for disaster risk reduction 2015–2030*. United Nations International Strategy for Disaster Reduction.
- . 2017: *UNISDR terminology on disaster risk reduction*. United Nations International Strategy for Disaster Reduction.
- Vallejo, H. B.** 2011: *Suelo urbano, vulnerabilidad y riesgo de desastres: caso de estudio: región metropolitana de Cochabamba-Bolivia*. Univ. Mayor de San Simon.
- Wakely, P.,** and **Riley, E.** 2011: *The case for incremental housing*, Cities without Slums policy research and working paper series, W. Cobbett. Cities Alliance.