

## **Socio-cultural capacities and capabilities: Facilitating community response, recovery, regeneration and capacity building**

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### **1. Introduction**

This chapter discusses how socio-cultural capacities and capabilities, the strengths, attributes, and resources (e.g., coping abilities, knowledge, relationships, leadership etc.) collectively available from community, societal and organizational sources (UNISDR, 2015), influence people's disaster experience and outcomes. This process starts by identifying capacities and capabilities, their characteristics, and their distribution within a population.

There exists an extensive literature identifying capacities and capabilities and their contribution to community resilience. For example, in a meta-analysis of 106 studies across 23 countries, van Valkengoed and Steg (2019) identified descriptive norms, negative affect, self-efficacy and outcome efficacy as key capabilities. The studies upon which this work is based typically focus on important areas such as hazard preparedness, and do so by accessing data from participants who possess relevant capabilities. However, it is apposite to appreciate that not all capacities and capabilities are present in all people or all communities, and the importance of some variables may not be evident until people experience a disaster (Baxter, 2019; Monteil, Simmons & Hicks, 2020; Paton, Johnston, Mamula-Seadon & Kenney, 2014). Consequently, when disaster strikes, response settings will be populated with some people with well-developed capacities and capabilities, some for whom they are absent, and those in-between. Accommodating the potential for capabilities to be evident only when people experience adversity and the implications of low or no capacities and capabilities makes it important to explore both how capabilities emerge in situ and what influences how they develop and are applied.

To advance understanding of these issues, this chapter first draws on disaster survivors accounts of their disaster experience and what helped or hindered how they coped, adapted and changed over time. The chapter next discuss factors that influence the development of capabilities in situ and how government and NGO agencies can support capability development. Finally, the chapter discusses how process and outcome evaluation approaches can inform understanding of recovery, regeneration and learning experiences.

First, it should be noted that the title and introductory comments refer to *regeneration* rather than *rebuilding* or *reconstruction*. This was done to distinguish social experiences from their physical (built environment, infrastructure etc.) counterparts. While the goal in social and physical “rebuilding” is the same, regaining functional capability, the time, resources and strategies required for each differ qualitatively and substantially (e.g., Nakagawa & Shaw, 2004). Consequently, coining a term to differentiate social and physical domains may help appreciate the unique aspects of social processes and functions and the need for their being examined and developed as such. The term tentatively proposed here for this is regeneration.

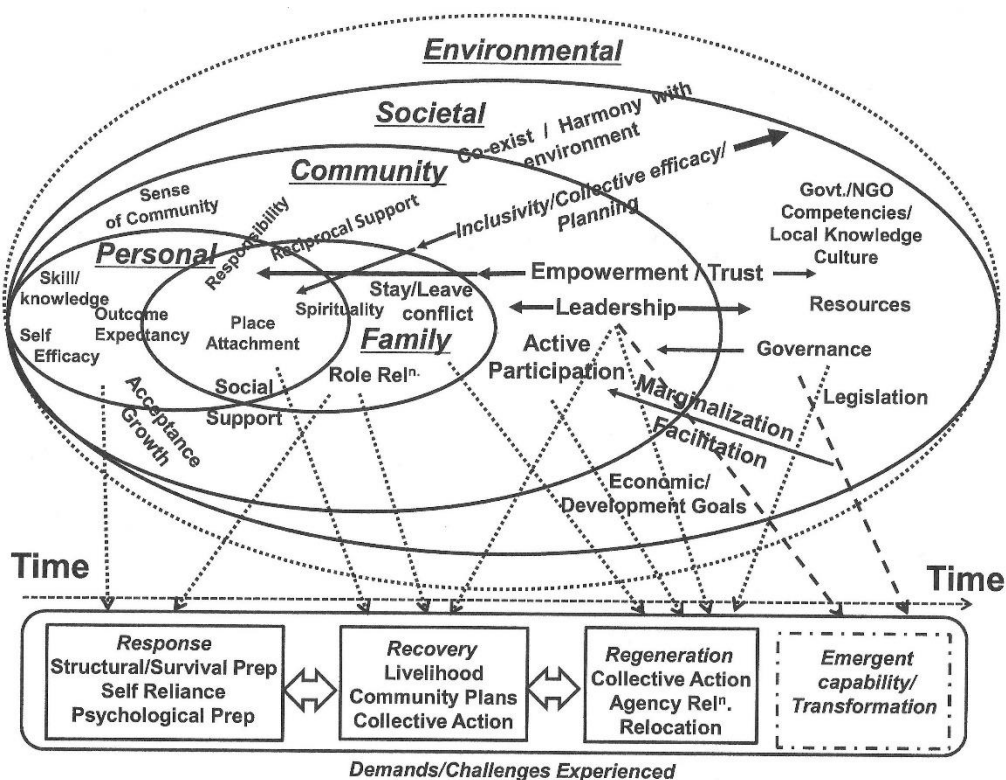
The *Oxford English Dictionary* defines regeneration as a process of *bringing or coming into renewed existence, to generate again or to impart new and more vigorous life to (a person or institution)* (Thane, 2018). Its applicability can be demonstrated by analogy to its use in ecology. For example, flora affected by wildfire often regenerates itself following the fire; it is not rebuilt. Extending this idea to the social context, this chapter describes how regeneration through “generate again” or “impart new” processes culminates in survivors experiencing new or greater vigor. Discussion starts with people’s disaster experiences and its implications.

## **2. Disaster: The lived experience**

This section summarizes people’s accounts of their disaster experiences. Except for the Taiwan ‘921 earthquake’ data (sourced three years post event), data were collected during the recovery phases of their respective disasters. This provides insights into people’s lived disaster experiences and the capacities and capabilities that influenced the outcomes encountered. The findings are summarized in Figure 1.

Figure 1 illustrates how personal, family, community, societal and environmental resources play interdependent roles in social response, recovery, regeneration (and transformation – see below). Key findings from the analyses populate their respective levels of analysis. Construct labels and arrows linking core constructs (e.g., leadership, empowerment) illustrate how they function across levels of analysis and depict potential bridging and linking social capital resources that facilitate social cohesion in recovery settings (Monteil, Simmons & Hicks, 2020). The dotted arrows between levels of analysis and the response, recovery and regeneration boxes illustrate people’s generalized descriptions of the relative contributions of their capabilities to how they dealt with diverse demands and challenges over time. This provides a community-based perspective on capacities and capabilities (UNISDR, 2015) and their respective roles throughout people’s disaster experience.

In New Zealand (Paton et al., 2014), data were sourced from thematic analysis of life course focus group interviews with residents from five affected suburbs and 21 individual interviews. Life course interviews, because they involve people plotting the temporal sequencing of their experiences, afford opportunities to depict how the relative contributions of person, family, community, and societal capabilities shift over time as people transition through response, recovery, and regeneration phases (Figure 1).



**Figure 1:** The interdependent contributions of person, family, community, societal and environmental resources to response, recovery, and regeneration (Sources – Irons and Paton, 2017; Paton et al., 2014; Paton et al., 2015).

Respondents described how their lack of personal and household preparedness magnified the adverse consequences experienced, with this prompting their acknowledging their need for better preparedness. Regarding capacities and capabilities, having relevant knowledge and skills, a ‘mind-set’ of getting the job done (cf. self-efficacy), feeling emotionally attached to where they lived (cf. place attachment), and having a sense of social responsibility for and feeling connected to neighbours (cf. sense of community) were identified as important (see Figure 1). Family dynamics (e.g., level of agreement about maintaining family safety), stress management, and social relationship dynamics were identified as emergent (“imparting new” regeneration) capabilities.

As people transitioned into recovery, neighbourhood self-help groups emerged in situ to confront local issues (e.g., repairing homes) (Paton et al., 2014). The greater access to social support that emerged as a result helped sustain well-being during numerous aftershocks. Actively engaging with neighbors fostered the development of a sense of belonging and (local) social identity (cf. sense of community and place attachment), particularly from collaborating with them to resolve local issues (cf. collective efficacy). A need for better neighborhood preparedness was acknowledged.

The effectiveness of neighborhood self-help activities was bolstered by emergent community leaders who empowered community action by encouraging inclusivity and active participation and who engaged with external agencies and businesses. The effectiveness of agency engagement was a function of three factors: community member's ability to identify and represent their needs to agencies; agencies being responsiveness to community needs (cf. collective efficacy and empowerment); and agencies operating through community leaders (see also McAllan et al., 2011).

However, some survivors felt marginalized by agency actions. They attributed this to inadequate agency staff training and coordination and agency personnel lacking knowledge of local conditions. Community-agency relationships that disempowered or marginalized people reduced trust in agencies and people's willingness to engage with them (Monteil et al., 2020; Paton et al., 2014) (Figure 1). The analysis of experiences in Taiwan reinforced the relevance of these issues.

Thematic analysis of interviews with Taiwanese survivors of the '921' earthquake (Paton, Jang & Irons, 2015) reiterated the importance of self-reliance, being able to access resources to meet community needs, and community leaders who enabled local recovery. Taiwanese respondents both acknowledged that the losses experienced enhanced their appreciation of a need for better preparedness and introduced capabilities not evident in New Zealand (Paton et al., 2015).

One concerned outcome expectancy beliefs (belief that their actions would be effective). Residents also added how spiritual beliefs sustained people's sense of purpose and perseverance (cf. self-efficacy) and how a history of reciprocal support and belongingness in everyday life (cf. collective efficacy, sense of community) sustained recovery efforts over several years (Paton et al., 2015). Spirituality strengthened people's social support networks, helped manage psychological issues, sustained people's sense of social responsibility to family and community, and helped them focus on positive outcomes for their future. Taiwanese respondents also identified learning to *accept disasters as part of life experience* and *co-existing harmoniously with nature* and governance practices that established reconstruction centers to support recovery and development as capabilities (Paton, Jang & Liu, 2016) (Figure 1).

The final example of people's lived disaster experience comes from a wildfire (bushfire) event in Australia in 2013. Data were collected from social media posts sourced from a specifically developed Facebook page (Irons & Paton, 2017). This provided "real time" insights into people's experiences and responses in situ and over time.

Information represents a vital link between stakeholders whose lives become intertwined in community recovery settings (Arneson et al., 2017). Online emergent groups are highly functional in this regard, enabling the timely availability of relevant, robust, redundant, and useable information (Norris et al., 2008). The emergent interconnectedness afforded by social media enhances social support opportunities, fosters a sense of community, and sustains place attachment in ways that support locally meaningful self-help activities (Irons & Paton, 2017;

Norris et al., 2008; Spialek & Houston, 2019). These capacities were further facilitated by story-telling.

Story telling helps people appreciate the shared nature of their experience, enhances their sense of community, and mobilizes collective action (Irons & Paton, 2017; Norris et al., 2008; Spialek & Houston, 2019). Story sharing supports stress management both directly (e.g., providing emotional, informational and belongingness social support) and indirectly (e.g., helping people impose meaning on events) (Irons & Paton, 2017).

Social media can empower recovery by integrating top down and bottom up communication in ways that help counter the social disengagement problems that often impede top-down communication (Arneson et al., 2017). The enhanced perception of agency information as accurate, relevant and trustworthy creates an emergent “collective intelligence” that sustains community-led recovery (Irons & Paton, 2017). Online community leaders support this empowering process by facilitating using information to create novel solutions to emergent problems (Irons & Paton, 2017; Spialek & Houston, 2019). The latter demonstrates the regenerative potential of social media as a vehicle to support transformative and capacity development.

### **3. Community Capacity Development: From recovery to regeneration**

In New Zealand and Taiwan, people’s disaster experiences prompted their acknowledgment of a need for better preparedness. This supports the UNISDR (2015) position regarding the potential for disaster experience to motivate changes in DRR beliefs and actions. In Taiwan, lessons were learnt; community regeneration was supported by the development of structural mitigation, resource preparedness, and community organization (Paton et al., 2016). However, the fact that this was less evident in New Zealand (e.g., Paton et al., 2014), identifies a more general need to explore emergent behaviors and the determinants of their transition into enduring beliefs and actions. Before doing so, the chapter first considers the implications of people entering into disastrous circumstances ill-prepared for this eventuality.

When disaster strikes, some people and groups will have well-developed capabilities, some will have limited capacities, and some will have none (Baxter, 2019; Monteil et al., 2020). In circumstances where some capacities exist, strengths-based approaches (see below) can be mobilized to support self-help recovery practices. For example, in their study of recovery following the 2015 Nepal earthquake, Adhikari et al. (2018) demonstrated how preparedness theories (Community Engagement Theory and Protection Motivation Theory) support planning to help people regenerate (“generate again” - see Introduction) existing personal and community strengths into self-help strategies. A second issue is where fundamental capabilities are absent (Baxter, 2019) or where the existing beliefs and actions of societies and citizens contribute to people’s risk (Paton et al., 2014). Here, regeneration focuses less on “generating again” and more on “imparting new” opportunities through *transformation* in people’s DRR beliefs, relationships and capabilities.

Transformative learning occurs when people make fundamental shifts in how they perceive themselves and their world, how they relate to each other, and how they think about and acting towards environmental hazards (Mezirow, 2008; Pelling 2011). In this section, examples of transformation from Japan, Indonesia and Taiwan are contrasted with examples from New Zealand and Australia (see above) where social processes emerged but were *not* sustained beyond the recovery period are presented. First, examples of sustained transformation are discussed.

The Taisho eruption of Sakurajima volcano (1914) acted as a catalyst for transformation in Kagoshima (Kitagawa, 2015). The Mayor's recognition of how his underestimating the value of local hazard knowledge contributed to the death toll from the eruption prompted him and a local seismologist to inspire the social transformation of local DRR. First, they encouraged citizens to take and exercise responsibility for their own safety (personal *agency*). Second, people were encouraged to become *knowledgeable* about volcanic hazards and how to respond to them. This regeneration ("imparting new") culminated in citizens learning to co-exist with volcanic hazards (kyozon) by applying kyojo (helping each other through cooperative commitment) DRR processes. The principles of "agency" and "knowledge" remain cornerstones of Kagoshima's DRR to the present day (Kitagawa, 2015). Another example of enduring transformation occurred on Simeulue (Indonesia).

Following a devastating tsunami in 1907, Simeulue islanders' reflection on their experience prompted a transformation in their relationship with tsunamis (Sutton et al., 2020). This example of regeneration ("imparting new") took the form of "smong." This uniquely Simeulue construct encompasses people's knowledge of tsunami precursors and acceptance of their responsibility to act should these signs be detected. The value of smong being transmitted from generation to generation by community elders through stories and song emerged following the 2004 Indian Ocean tsunami. The very small death toll on Simeulue compared with other Indonesian locations, was attributed to smong triggering people's recognition that a tsunami was imminent and their responding immediately and appropriately (Sutton et al., 2020). The final example of transformation originated in Taiwan.

When their township became isolated following the '921' earthquake, the citizens of Ho-Ping had to develop new ways of organizing their recovery to compensate for their then lack of community DRR plans (Paton et al., 2016). The ensuing transformation culminated in their developing strategies based on organizing inclusive community DRR activities and growing their capability through community development and forging networks with NGOs and government agencies (Paton et al., 2016). This culminated in another example of "imparting new" regeneration via creating an enduring "community DRR consciousness."

In each of the above examples, present-day DRR processes emerged from the shared experience of a disaster and culminated in citizens transforming how they thought about, related to and acted towards environmental hazards. However, this need not always be the case. Emergent change occurred in New Zealand and Australia (see above), but in neither case did this lead to systemic, enduring transformation in beliefs and actions. Comparing cases where transformation occurred with those where it did not can inform understanding how capacity development from disaster experience can be enabled (UNISDR, 2015).

While a disaster was the catalyst for change in all cases, the fact that transformation occurred in some but not others means it was not the disaster per se that stimulated transformation. Another line of inquiry concerns whether differences in the characteristics of affected populations can provide clues. Finding comparable leadership and community capabilities (see above) negates this possibility, and calls for the explanatory net to be cast wider.

One line of inquiry worth pursuing concerns the durability of leadership (Baxter, 2019; Thaler & Seebauer, 2019). Support for this view came from McAllan et al.'s (2011) finding that leader exhaustion and a lack of leadership succession planning undermined community ability to sustain emergent changes over time. Another possibility concerns emergent governance.

In Kagoshima, Simeulue and Ho-Ping, leaders were the local mayor or highly respected community elders with responsibilities for managing community affairs before and after disaster. Hence, they held positions with enduring (see above) responsibility for developing and enacting governance mechanisms capable of transforming emergent processes into enduring DRR beliefs and practices.

In contrast, in New Zealand and Australia, emergent community leaders did not hold official positions and were often in conflict with civic leaders (Irons & Paton, 2017; Mamula-Seadon, 2018). This limited their capacity to influence governance processes in ways required to transform emergent social processes into enduring DRR beliefs and practices. This position is consistent with that advocated by Pelling (2011). However, governance processes themselves may benefit from transformative attention.

Thaler and Seebauer (2019) discussed how predominantly top-down governance practices that limit civic involvement to playing support roles rather than affording citizens leadership and development roles in their own recovery contribute to inadequacies in DRR governance. They advocate shifting to citizen-driven initiatives to support capacity development. One approach to doing so is through sociocracy.

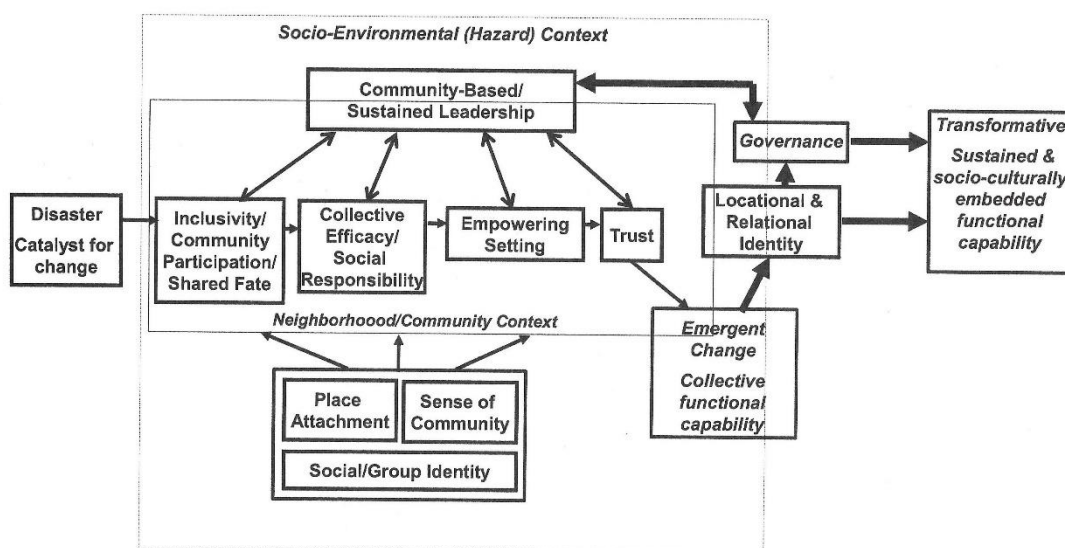
Sociocracy offers dynamic governance systems and processes that facilitate the distribution of power among all group members to enable them to govern themselves collaboratively by sharing knowledges, solving problems and seeking consent in ways that create mutually beneficial futures (Buck & Villines, 2017; Buergelt et al., 2020). Sociocracy enables the full potential of all stakeholders by ensuring that all voices at all levels are respected, heard and considered. This results in higher quality decisions based on collective intelligence (see also LRRD below). Sociocracy can be implemented in parallel with existing governance structures, enabling smooth transitions towards governance mechanisms that facilitate both individual and collective transformations in intentional and gradual ways (Buck & Villines, 2017; Buergelt et al., 2020). Another line of inquiry derives from cultural differences.

Kagoshima, Simeulue and Ho-Ping exist in collectivistic cultures. Here, "community" tends to be locational (defined geographically). In locations where social identity maps onto geographically distributed hazard phenomena, people are more motivated to develop collective solutions to shared local problems (Paton, Bajek, Okada & McIvor, 2010). The synergy that exists between locational social identity (which existed before the event and

continued after it) and emergent processes derived from disaster experience could have facilitated the transformation evident in these locations. This view is supported by the Chonaikai example below.

In contrast, in more culturally individualistic New Zealand and Australia, prevailing relational community life (Paton et al., 2015) means that prior to the disaster, relationships derived more from shared interests and social affiliation than from people's geographic location. However, people's shared disaster experience triggered the emergence of a superordinate locational identity (see also Spialek & Houston, 2019). While this supported collective action during recovery, as the environment stabilized, the motivational influence of the "shared fate" ties that bound people within (geographical) neighborhood networks weakened, creating a socio-environmental context in which people reverted to their normal relational social identification. Hence, the social context in which emergent change occurred did not persist after the event, and emergent change linked to a geographically situated hazard event dissipated. If this contention is supported, the development and maintenance of superordinate locational (e.g., neighborhood) identities that complement existing relational social identities will be needed. Research into transdisciplinary team building and functioning and strategies for enhancing place attachment offers ideas for doing so (Lang et al., 2012).

Transformative strategies are important in circumstances in which communities and their members lack key capabilities, where socio-cultural practices increase risk, or where new ways of thinking and action are required. The process of facilitating transformation discussed above is summarized in Figure 2. This depicts disaster as the catalyst for change (UNISDR, 2015), leadership as a driver of regenerating community capability, and the role of governance and relational-locational identities as mediating the relationship with transformative outcomes.



**Figure 2:** Hypothetical relationships between disaster experience, community capabilities, community leadership, governance and locational identity and transformative outcomes.



In the examples above, in all locations except Kagoshima, change emerged from within communities. In Kagoshima, local government officials facilitated change and transformation. The latter makes it pertinent to how government and NGO agency practices (cf. governance) influence can complement community-based capacity development.

#### **4. Government and NGO Roles in Capacity Building**

Regarding the role of government practices, several examples exist. The Kagoshima example above illustrates how local government action can facilitate capacity development. The governance practice in Taiwan (see above) of establishing social and livelihood reconstruction centers for a three-year period provides another example. In Japan, Chonaikai (a form of community governance) and Jishubo (autonomous neighbourhood-based organization for disaster prevention) interact to foster citizen participation and empowerment in recovery settings (e.g., allocating response roles, supporting evacuation etc.) (Paton et al., 2010).

Examples of processes that facilitate the co-creation of recovery capability also exist. In Japan, machizukuri (*community led place-making with care*) groups were mobilized during the Kobe earthquake recovery to assist local governments to engage communities in ways that regained people's trust and provided a mechanism that urban planners used to develop participatory approaches to local recovery (Mamula-Seadon, 2018). Comparable processes have emerged in other contexts.

For example, Baxter (2019) describes how Local Resilience Planning Groups (LRPG) in the UK engage and empower community members to collaborate and co-produce ecologically-based community resilience frameworks in ways that accommodate cultural and attitudinal diversity (see also Walker-Springett, Butler & Adger, 2017). Sellberg et al. (2018) discuss how Resilience Planning frameworks in Australia develop collective social-ecological systems approaches to supporting collaborative DRR planning. However, in the absence of such systemic mechanisms, and given their inevitable post-disaster involvement with communities, it becomes pertinent to explore other avenues that agencies can use to mobilize stakeholder engagement and coordination (Arneson et al., 2017; McAllan et al., 2011). One such approach is the Linking Relief, Rehabilitation and Development (LRRD) concept (Mosel & Levine, 2014).

The LRRD concept emerged to reconcile the ever-growing incidence of disasters with ways of containing the spiralling costs of relief and reconstruction (Mosel & Levine, 2014; Kapucu & Liou, 2014). The LRRD approach seeks to hasten recovery and facilitate transformation (physical, social, cultural, institutional) rather than a return to a prior state through enabling and supporting initiatives that foster locally meaningful, sustainable and equitable resource development and distribution (Kapucu & Liou, 2014; Matin, Forrester & Ensor, 2018; Mosel & Levine, 2014). This is supported by facilitating dialogue across stakeholder groups in ways that prioritise joint analysis and planning (Kapucu & Liou, 2014; Matin et al., 2018; Mosel &

Levine, 2014). Because the LRRD model embeds development initiatives within community settings, it becomes germane to accommodate the historical, social, economic, and cultural characteristics that influence how communities engage with external agencies, their recovery trajectories, and how change and learning occur (Baxter, 2019; Buergelt & Paton, 2014). Adopting strengths-based approaches to post-disaster intervention can support this goal in ways that resonate with the regeneration concept.

The strengths in a community derive from, for example, knowledge, experience, social networks, cultural and spiritual beliefs and practices (see Taiwan analysis). Strengths-based approaches mobilize these intrinsic capabilities rather than imposing solutions on communities. By mobilizing and regenerating the existing socio-cultural and spiritual resources in a community, this approach reduces physical and social recovery costs and enhances the effectiveness and sustainability of local recovery initiatives (Kapucu & Liou, 2014). How NGOs can support this process is illustrated in the following case study.

### Case Study

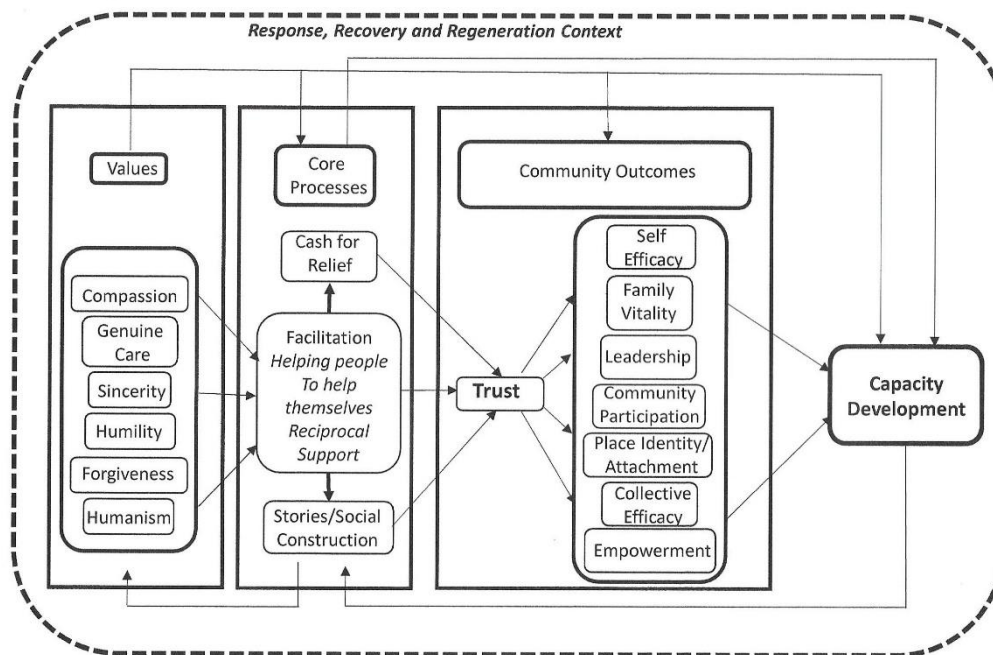
The Tzu Chi Foundation is a multi-national humanitarian aid charity. Drawing on thematic analysis of interviews with Tzu Chi recovery professionals, links between NGO philosophy and practice and capability development are illustrated by mapping themes onto two theories, Community Engagement Theory (CET – e.g., Paton et al., 2013) and Norris' theory of Resilience (Norris et al., 2008).

Tzu Chi's humanitarian work builds on a cultural philosophy of relating to people based on the core principles of, for example, humility, sincerity, caring and reciprocal support (Figure 3). These beliefs translate into operational practices governed by fostering and maintaining trust; "without trust, there is no local involvement." The emphasis on trust resonates with core resilience indicators in the CET and Norris et al.'s model. Trust develops through a helping philosophy of "helping people to help themselves." This emphasises creating empowering settings (cf. CET, Norris) that accommodate the social, cultural, spiritual, circumstance, needs and goal diversity in affected populations (Figure 3). These characteristics enable the strengths-based enactment of LRRD principles.

The strengths-based "helping people to help themselves" operating principle translates into engagement processes via, for example, "cash for relief" and "neighborhood clean-up" strategies. Programs such as "cash for relief" meet the *resource rapidity* and *resource robustness* criteria for community resilience (Norris et al., 2008) and create reciprocal support settings (between agency and community *and* between community members). Reciprocal support relationships are further developed by role modelling helping activities in ways that assist local volunteers to learn, develop and apply helping skills within their communities. The latter map onto social structural processes in the CET and onto the *social capital* and *community competence* components described by Norris et al. (2008). Reciprocal

support was sustained through story-sharing (Norris et al. 2008: Spialek & Houston, 2019).

Story-sharing represents a medium for sharing and learning from experiences and for socially constructing novel and locally meaningful ways of thinking and action (Figure 3). This process affords opportunities agency beliefs and practices to create settings in which the seeds of transformation can be sown and cultivated into new and enduring ways of responding to future challenges and adversity.



**Figure 3:** Summary of between NGO values, helping processes, and community outcomes (Source: Paton, D., & Jang, L-j (unpublished). Tzu Chi disaster response framework: Facilitating transformative change in disaster affected communities. Hualian, Taiwan: Tzu Chi Foundation)

This case study illustrates how NGO philosophy and operational beliefs and practices can afford ways to facilitate capability development. Irrespective of the goal of intervention geared towards the latter, it is always important to determine how effective such recovery initiatives are.

## 5. Assessing Social Recovery

In parallel with the development of recovery, regeneration and transformative strategies and practices, it is important to co-construct ways to assess their effectiveness. This section discusses this from process and outcome evaluation perspectives. Process evaluation assesses the extent to which capacities and capabilities are developed (cf., independent variables in

studies of adaption and transformation). Outcome evaluation assesses the extent to which the application of these processes creates meaningful outcomes for citizens (cf. dependent variable in studies of adaption and transformation).

Regarding process evaluation, the Norris et al. (2008) model has demonstrated its applicability (Irons & Paton, 2017). Other recent initiatives include frameworks developed by Cutter (2016), the 100 Resilient Cities' City Resilience Index (ARUP and The Rockefeller Foundation, 2014), and the Flood Resilience Measurement for Communities measurement tool (Keating, 2020). Frameworks also exist to support process evaluation of government and NGO agency activities (Scheinert & Comfort, 2014). It is equally important to develop outcome evaluation methods. Here, Quality of Life (QoL) is discussed as a candidate.

Quality of Life (e.g., WHOQOL-BREF) has been used to assess meaningful changes in well-being (Papanikolaou, Dimitrios & Kyriopoulos, 2012; Skevington & Epton, 2018; Valenti et al., 2013), inter-group differences, and equality in recovery resource distribution (Sullivan & Sagala, 2020). Notwithstanding, a need for more research on QoL assessment has been identified (Krägeloh et al., 2013; Sullivan & Sagala, 2020; Valenti et al., 2013; Walker-Springett, Butler & Adger, 2017), particularly regarding its psychometric qualities and its antecedents. Using recent unpublished research (Leishman et al. unpublished), this section responds to these calls. It does so by exploring the application of QoL (WHOQOL-BREF) as a "superordinate" social outcome assessment measure that can assess the quality of people's recovery over time and at different scales (e.g., person, neighborhood, region etc.).

Data were collected in 2018 from people permanently relocated from their traditional homelands following Typhoon Morakot (August 2009) in Taiwan. Following the typhoon, housing and infrastructure construction occurred quickly. However, social recovery occurred much more slowly (Paton et al., 2016). This work was undertaken to provide NGO policy makers, recovery planners and community leaders with an evidence-informed framework for intervention planning and well-being assessment. First, the psychometric assessment of the WHOQOL-BREF is discussed.

Confirmatory Factor Analysis	$\chi^2 = 219.61$ , $df = 90$ , Number of parameters = 46; CFI = .96, TLI = .94, SRMR = .04, RMSEA = .07, RMSEA C.I. [0.07, 0.09]
Structural Equation Modelling. Goodness of fit indices	$\chi^2 = 91.119$ , $df = 36$ , Number of parameters = 30; CFI = .98, TLI = .96, SRMR = .04, RMSEA = .07, RMSEA C.I. [.05, .09]

**Table 1:** Summary of the Confirmatory Factor Analysis and Structural Equation Modelling analysis of QoL model. (Source: Leishman et al. Cross-validation of quality of life in Taiwanese communities after natural disaster relocation: Community engagement theory and social identity perspectives. Unpublished Research Report. Hualian, Taiwan: Tzu Chi Foundation).

Following data screening and assessing the suitability of the data for analysis, in its original format, psychometric analysis of the WHOQOL-BREF indicated a poor fit. A subsequent

second-order CFA with a latent QoL with four sub-factors was conducted and culminated in a Model that demonstrated adequate goodness of fit using CFA (Table 1). The Cronbach alpha reliabilities for the Adapted WHOQOL-BREF were acceptable or excellent (Table 2). These physical, psychological, social relations and environmental domains served as the dependent variable in researching a predictor model.

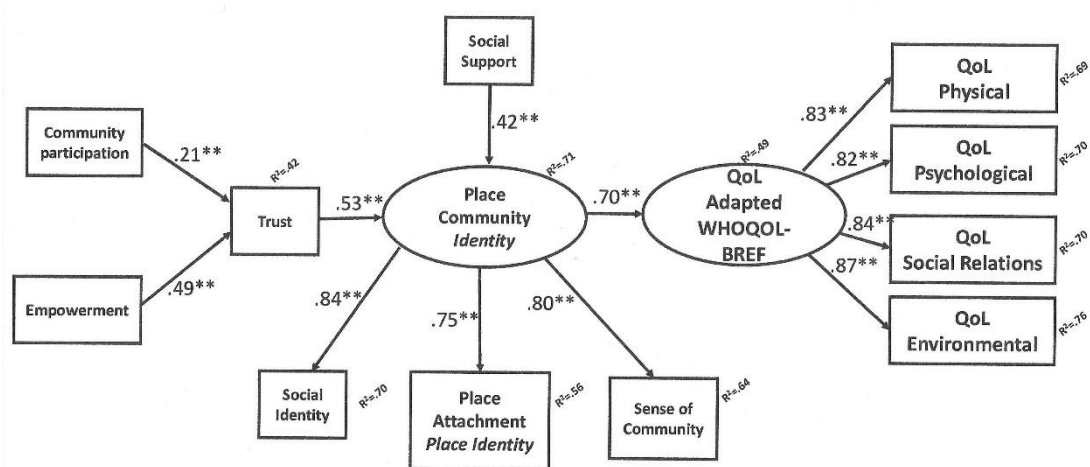
Variable	Source	Cronbach alpha
Sub-scale: Physical	Adapted WHOQOL-BREF	.82
Sub-scale: Psychological	Adapted WHOQOL-BREF	.67
Sub-scale: Social Relations	Adapted WHOQOL-BREF	.75
Sub-scale: Environment	Adapted WHOQOL-BREF	.91
Overall QoL	Adapted WHOQOL-BREF	.94
Social Support (SS)	Eng & Parker,1994	.94
Sense of Community (SOC)	Eng & Parker,1994	.71
Community Participation (CP)	Eng & Parker,1994	.89
Empowerment	Speer & Peterson, 2000	.85
Trust	Dillon & Phillips, 2001	.90
Social Identity	Ashforth & Mael, 1989; Mael & Ashforth, 1992; Tajfel, 1978	.94
Place Attachment Place Identity	Williams & Vaske, 2003	.95
Place Attachment Place Dependence	Williams & Vaske, 2003	.94

**Table 2:** Scales, scale sources and Cronbach alpha scores for QoL analysis (Source: Leishman et al. Cross-validation of quality of life in Taiwanese communities after natural disaster relocation: Community engagement theory and social identity perspectives. Unpublished Research Report. Hualian, Taiwan: Tzu Chi Foundation).

For this exploratory analysis, the hypothetical model derived from integrating theories with a demonstrated capacity to predict DRR outcomes. Community Engagement Theory (CET), because it has demonstrated predictive utility across hazards and cultures and in both preparedness and recovery settings provided a foundation (Adhikari et al., 2018; Paton et al., 2013,). Evidence of its efficacy also comes from qualitative analyses of social recovery (Paton et al., 2015). The latter identified considerable merit in including social support, sense of community and place attachment variables (Figure X1 – see also Sullivan and Sagala, 2020). The inclusion of place attachment was supported by evidence of how interdependencies between people, social processes, and place influence well-being (Smith, 2018) and by evidence that reconstructing sense of place is important for peoples permanently relocated to novel environments (Silver & Grek-Martin, 2015; Smith, 2018; Walker-Springett, Butler & Adger, 2017). This work also responded to calls for more

research into the relationship between social identity, collective action and QoL in collectivistic cultures (Sullivan & Sagala, 2020; Walker-Springett et al., 2017).

The inclusion of Social Identity Theory (SI) derived from research identifying how a social identity model of “collective resilience” was linked to empowering collective action to confront disaster response tasks (Drury, 2012; Farida, 2014). This is supported by research identifying how social support mediates the relationship between well-being and people’s appraisal of experiences, with this promoting a “social cure” rather than a “social curse” from disaster experience (Kellezi & Reicher, 2012). The scales and their reliabilities are summarized in Table X2. Following assessment of face validity through discussions with local researchers and community members, the integrated CET/SI/Place/Social Cure theory model was tested.



**Figure 4:** A model of QoL (Adapted WHOQOL-BREF) (Source: Leishman et al. Cross-validation of quality of life in Taiwanese communities after natural disaster relocation: Community engagement theory and social identity perspectives. Unpublished Research Report. Hualian, Taiwan: Tzu Chi Foundation).

Structural equation analysis demonstrated satisfactory Goodness of fit indices (Figure 4 and Table 1). These findings support the ability of this model to provide a starting point for developing understanding of QoL and its antecedents. It also opens opportunities for its functioning as an outcome evaluation measure.

## 6. Conclusion

The capabilities people identified from their disaster experience provide insights into the complex and multifaceted nature of social recovery (Figure 1) and the benefits of it being differentiated from its physical counterpart. Most of the capabilities identified (Figure 1) existed prior to disaster, with their application illustrating how community strengths are (and can be) mobilized (through community initiative and via being facilitated by agency actions) to confront extraordinary circumstances. Emergent outcomes such as the development of preparedness in the Taiwanese example, and the examples from Kagoshima, Simuelue and

Ho-Ping illustrate the proposed “generate again” and “impart new” facets of *regeneration* and provide tentative support for using *regeneration* as a label to differentiate social processes from their physical rebuilding/reconstruction counterparts.

The chapter covered lived experience, regeneration and transformation, agency facilitation of change and transformation, and process and outcome evaluation topics. These are generally researched independently. However, several constructs, notably outcome expectancy, community participation, sense of community, place attachment and identity, social identity, collective efficacy, empowerment, and trust were implicated across as predictors across all topics, including as antecedents of QoL. The parallels that thus exist offer scope to develop a conceptual framework that encompasses diverse recovery, regeneration, transformation and well-being processes and outcomes. Notwithstanding, several issues merit future work.

Despite its ubiquitous presence, additional research into trust and its implications is warranted (Seebauer & Babicky, 2017). For example, Seebauer & Babicky found that while trust in volunteers translated into volunteers having high perceived competence, with communicating with volunteers enhancing people’s risk perception and reducing levels of denial. Trust in local government, however, manifest as increased citizen reliance on external help (cf. risk compensation bias). In addition to exploring the origins of such relationships, future work on the recovery implications of these findings would be beneficial. It could explore, for example, using volunteer-led communication (with appropriate training) to influence risk beliefs and people’s commitment to act. These findings suggest that where trust in local government is present, this should be complemented with advising citizens of the need for shared responsibility through their making complementary contributions to their own recovery. To this, Sullivan and Sagala (2020) added a need for research into relationships between trust in authorities and community leaders and levels of environmental QoL. The importance of the latter has emerged from other quarters.

In their comparative study of pre- and post-event scores across all QoL domains, Papanikolaou, Dimitrios and Kyriopoulos (2012) discussed how domains recover (or regenerate) at different rates, with environmental QoL being the slowest to recover. This reinforces the value of assessing QoL domains separately (e.g., see Figure 4) rather than as a combined score. The fact that QoL domains are separate, but related, calls for research into whether the respective antecedents and processes are correspondingly different, how they develop at different rates, and whether QoL domains interact with one another to determine overall well-being.

The discussion of capabilities (Figure 1) identified several constructs as playing bridging and linking roles. Future work exploring the relative contributions of different social capital processes is warranted. For example, when researching the dynamics of disaster recovery, Monteil et al., (2020) found that bonding social capital could impede recovery, while bridging and linking social capital can facilitate social cohesion in recovery settings (Monteil et al., 2020). This prompted their calling for more research into the relative contributions of different types of social capital to recovery processes and experiences. This is a particularly important from the perspective of understanding how government and NGO agencies influence recovery and regeneration outcomes.

Building on community recognition of the need for agency involvement to complement community action, the benefits of adopting a strengths-based approach to applying LRRD principles identifies the value in future work exploring agency roles in co-creating community capability. This could include agency roles as change facilitators or mentors where regeneration involves existing strengths or advocacy and community development where existing capabilities are limited or absent.

The fact that recovery environments comprise multiple agencies, with their different and essential philosophies, goals and roles, makes it pertinent for future work to examine how interoperability and collaborative operations develop in ways which function to complement and support community recovery, regeneration and well-being over time and in response to changing local needs. A failure to do so, as was evident in Christchurch (see above) can disempower and marginalize communities. Consequently, several benefits can accrue from agencies being reflective about how they develop and sustain collaborative relationships with all stakeholders through joint analysis and planning and from learning from experience develop capacity to respond in complex, evolving and uncertain recovery settings (see also LRRD) (Scheinert & Comfort, 2014; Sellberg et al., 2018). From a community stakeholder perspective, complementing these activities with strengths-based strategies that develop preexisting capabilities (“generate again”) or, if absent or inappropriate, to “impart new” capabilities can be facilitated by including community development principles and strategies in regeneration and transformative processes (Baxter, 2019; Buergelt & Paton, 2014; Paton et al., 2014).

The final issue canvassed in the chapter concerned the need for process and outcome evaluation. Several resilience assessment frameworks were proposed for the former and QoL for the latter. Regarding the latter, the chapter discussed the benefit of conducting psychometric analyses of existing measures when applying them in novel circumstances. The QoL model discussed can support the development of research hypotheses and questions and provide an intervention development framework for civic and community use in developing their well-being.

In conclusion, the message of this chapter is that developing the capacities and capabilities of citizens and societies to be able to respond, cope, adapt, learn from and regenerate sustainable beliefs and practices that can facilitate well-being and community vitality represent increasingly important DRR goals in environments in which disasters are and will continue to be all too frequent facets of the lives of peoples around the world.

### References

- Adhikari, M., Paton, D., Johnston, D., Prasanna, R., & McColl, S. T. (2018). Modelling predictors of earthquake preparedness in Nepal. *Procedia Engineering*, 212, 910-917.
- Arneson, E., Deniz, D., Javernick-Will, A., Liel, A., & Dashti, S. (2017). Information deficits and community disaster resilience. *Natural Hazards Review*, 18(4), 04017010. DOI: 10.1061/(ASCE)NH.1527-6996.0000251



- ARUP and The Rockefeller Foundation (2014). City resilience framework. Ove Arup & Partners International Limited. Retrieved from:  
[file:///C:/Users/s439299/Downloads/CWRA\\_City\\_Water\\_Resilience\\_Approach%20\(1\).pdf](file:///C:/Users/s439299/Downloads/CWRA_City_Water_Resilience_Approach%20(1).pdf)
- Baxter, H. (2019). Creating the conditions for community Resilience: Aberdeen, Scotland— An example of the role of community planning groups. *International Journal of Disaster Risk Science*, 10, 244-260. <https://doi.org/10.1007/s13753-019-0216-y>
- Buck, J., & Villines, S. (2017). *We the people: Consenting to a deeper democracy* (2nd ed). Washington: Sociocracy.
- Buergelt, P. T., Nicolaides, A., Buck, J., Welch, M., Kokkos, A., Owen, R., ... Wilson, M. (2020, June). *Governance in complex and dynamic global contexts: Importance and characteristics that facilitate transformation through adult education*. Panel paper. Education in Global Times International Research Conference, University of British Columbia, Vancouver, Canada.
- Buergelt, P. T., & Paton, D. (2014). An ecological risk management and capacity building model. *Human Ecology*, 42, 591-603. DOI 10.1007/s10745-014-9676-2
- Cutter, S. L. (2016). The landscape of disaster resilience indicators in the USA. *Natural Hazards*, 80(2), 741–758. <http://doi.org/10.1007/s11069-015-1993-2>
- Dillon, J., & Phillips, M. (2001). Social capital discussion paper. *Unpublished manuscript, Curtin University, Perth, Australia*.
- Drury, J. (2012). Collective resilience in mass emergencies and disasters: A social identity model. In J. Jetten, C. Haslam, & S. H. Alexander (Eds.), *The social cure: Identity, health and well-being* (pp. 137-150). Hove, England: Psychology Press.
- Eng, E., & Parker, E. (1994). Measuring community competence in the Mississippi Delta: The interface between program evaluation and empowerment. *Health Education Quarterly*, 21(2), 199-220.
- Farida, A. (2014). Reconstructing social identity for sustainable future of Lumpur Lapindo victims. *Procedia Environmental Sciences*, 20, 468-476.
- Irons, M., & Paton, D. (2017). Social media and emergent groups: The impact of high functionality on community resilience. In D. Paton, & D. M. Johnston (Eds). *Disaster Resilience: An integrated approach* (2<sup>nd</sup> ed). (pp. 194-211). Springfield, Ill: Charles C. Thomas.
- Kapucu, N., & Liou, K. T. (2014). *Disaster and development: Examining global issues and cases*. New York, NY: Springer.
- Keating, A. (2020). Measuring and building community disaster resilience: Essential for achieving Sendai. In M. Yokomatsu & S. Hochrainer-Stigler (Eds.), *Disaster risk reduction and resilience* (pp. 169-190). Singapore: Springer.
- Kellezi, B., & Reicher, S. D. (2012). Social cure or social curse? The psychological impact of extreme events during the Kosovo conflict. In J. Jetten, C. Haslam & S. H. Alexander (Eds.), *The social cure: Identity, health and well-being* (pp. 151-161). Hove, England: Psychology Press.
- Kitagawa, K. (2015). Living with an active volcano: informal and community learning for preparedness in south of Japan. *Advances in Volcanology*, 12, 1-17.
- Krägeloh, C. U., Kersten, P., Rex Billington, D., Hsu, P. H.-C., Shepherd, D., Landon, J., & Feng, X. J. (2013). Validation of the WHOQOL-BREF quality of life questionnaire for

- general use in New Zealand: Confirmatory factor analysis and Rasch analysis. *Quality of Life Research*, 22(6), 1451-1457. doi: 10.1007/s11136-012-0265-9
- Lang, D. J., Wiek, A., Bergmann, M., Stauffacher, M., Martens, P., Moll, P., Swilling, M., & Thomas, C.J. (2012). Transdisciplinary research in sustainability science: Practice, principles, and challenges. *Sustainability Science*, 7, 25-43.
- Leishman, V., Paton, D., Lee, E., Jang, L.-j., Tseng, Y., & Liu, C-W. (2020). Cross-validation of quality of life in Taiwanese communities after natural disaster relocation: Community engagement theory and social identity perspectives. Unpublished Research Report. Hualian, Taiwan: Tzu Chi Foundation.
- Mamula-Seadon, L. (2018). Building community resilience through empowerment: Place-making in different cultural contexts. In D. Paton, R. Sheng-Her & L-j. Jang (Eds.), *Community-based disaster risk reduction and recovery: Integrating community development and risk management*. Taipei, Taiwan: Tzu Chi Foundation.
- Mosel, I., & Levine, S. (2014). Remaking the case for linking relief, rehabilitation and development. London: Overseas Development Institute.
- Matin, N., Forrester, J., & Ensor, J. (2018). What is equitable resilience? *World Development*, 109, 197–205. <https://doi.org/10.1016/j.worlddev.2018.04.020>
- McAllan, C., McAllan, V., McEntee, K., Gale, W., Taylor, D., Wood, J., ... Whittlesea, L. C. (2011). *Lessons learned by community recovery committees of the 2009 Victorian Bushfires*. Victoria, Australia: Cube Management Solutions.
- Mezirow, J. (2008). An overview on transformative learning. In P. Sutherland & J. Crowther (Eds.), *Lifelong learning concepts and contexts* (2<sup>nd</sup> ed) (pp. 24–38). New York: Routledge.
- Monteil, C., Simmons, P., & Hicks, A. (2020). Post-disaster recovery and sociocultural change: Rethinking social capital development for the new social fabric. *International Journal of Disaster Risk Reduction*, 42, 101356. <https://doi.org/10.1016/j.ijdr.2019.101356>
- Nakagawa, Y., & Shaw, R. (2004). Social capital: A missing link to disaster recovery. *International Journal of Mass Emergencies and Disasters*, 22, 5-34.
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41, 127-150.
- Papanikolaou, V., Adamis, D., & Kyriopoulos, J. (2012). Long term quality of life after a wildfire disaster in a rural part of Greece. *Open Journal of Psychiatry*, 2, 164-170. <http://dx.doi.org/10.4236/ojpsych.2012.22022>
- Paton, D., Bajek, R., Okada, N. & McIvor, D. (2010) Predicting Community Earthquake Preparedness: A cross-cultural comparison of Japan and New Zealand. *Natural Hazards*, 54: 765–781
- Paton, D., & James, H. (2016). Future Directions in Integrating Recovery and Development: Theoretical and policy perspective. In H. James & D. Paton (Eds.), *The Consequences of Disasters: Demographic, Planning, and Policy Implications* (pp. 357-368). Springfield, Illinois: Charles C Thomas.
- Paton, D., Jang, L.-j., & Irons, M. (2015). Building capacity to adapt to the consequences of disaster: Linking disaster recovery and disaster risk reduction. In D. Brown (Ed.), *Capacity building: Planning, programs and prospects* (pp. 85-114). New York, NY: Nova Scientific Publishers.

- Paton, D., Jang, L.-j., & Liu, L.-W. (2016). Long-term community recovery: Lessons from earthquake and typhoon experiences in Taiwan. In H. James & D. Paton (Eds.), *The consequences of disasters: Demographic, planning, and policy implications* (pp. 65-85). Springfield, Illinois: Charles C. Thomas.
- Paton, D., Johnston, D., Mamula-Seadon, L., & Kenney, C. M. (2014). Recovery and development: Perspectives from New Zealand and Australia. In Kapucu, N. & Liou, K. T. (Eds.), *Disaster & development: Examining global issues and cases*. (pp. 255-272) New York, NY: Springer.
- Paton, D., Okada, N., & Sagala, S. (2013). Understanding preparedness for natural hazards: Cross cultural comparison. *Journal of Integrated Disaster Risk Management*, 3(1), 18-35. DOI 10.5595/idrim.2013.0051
- Pelling, M. (2011). *Adaptation to Climate Change: From resilience to transformation*. Abingdon, Oxon: Routledge.
- Scheinert, S., & Comfort, L. K. (2014). Finding resilient networks: Measuring resilience in post-extreme event reconstruction missions. In N. Kapucu & K. Liou (Eds.), *Disasters and development: Examining global issues and cases* (pp. 181-199). New York, NY: Springer.
- Seebauer, S., & Babicky, P. (2017). Trust and the communication of flood risks: Comparing the roles of local governments, volunteers in emergency services and neighbors. *Journal of Flood Risk Management*, 11(3), 305-316. DOI: 10.1111/jfr3.12313
- Sellberg, M. M., Ryan, P. Borgstrom, S. T., Norstrom, A. V., & Peterson, G. D. (2018). From resilience thinking to resilience planning: Lessons from practice. *Journal of Environmental Management* 217, 906-918. <https://doi.org/10.1016/j.jenvman.2018.04.012>
- Silver, A., & Grek-Martin, J. (2015). Now we understand what community really means: Reconceptualizing the role of sense of place in the disaster recovery process. *Journal of Environmental Psychology*, 42, 32-41. doi: <https://doi.org/10.1016/j.jenvp.2015.01.004>
- Skevington, S. M., & Epton, T. (2018). How will the sustainable development goals deliver changes in well-being? A systematic review and meta-analysis to investigate whether WHOQOL-BREF scores respond to change. *BMJ Global Health*, 3. doi:10.1136/bmjgh-2017-000609
- Smith, J. S. (2018). Putting place back in place attachment research. In J. S. Smith (Ed.), *Explorations in place attachment* (pp. 15-32). Abingdon, England: Routledge.
- Speer, P. W., & Peterson, N. A. (2000). Psychometric properties of an empowerment scale: Testing cognitive, emotional, and behavioral domains. *Social Work Research*, 24(2), 109-118.
- Spialek, M. L., & Houston, J. B. (2019). The influence of citizen disaster communication on perceptions of neighborhood belonging and community resilience. *Journal of Applied Communication Research*, 47(1), 1-23. <https://doi.org/10.1080/00909882.2018.1544718>
- Sullivan, G. B., & Sagala, S. (2020). Quality of life and subjective social status after five years of Mount Sinabung eruptions: Disaster management and current sources of inequality in displaced, remaining and relocated communities. *International Journal of Disaster Risk Reduction*, 49, 101629. <https://doi.org/10.1016/j.ijdrr.2020.101629>
- Sutton, S., Paton, D., Buergelt, P. T., Meilianda, E., & Sagala, S. (2020). What's in a name? "Smong" and the sustaining of risk communication and DRR behaviours as evocation

- fades. *International Journal of Disaster Risk Reduction*, 44, 101408.  
<https://doi.org/10.1016/j.ijdrr.2019.101408>
- Thane, P. (2018). What is 'regeneration' and who needs it? *Palgrave Communications*, 4, 58.  
DOI: 10.1057/s41599-018-0114-8
- Thaler, T., & Seebauer, S. (2019). Bottom-up citizen initiatives in natural hazard management: Why they appear and what they can do? *Environmental Science and Policy*, 94, 101-111. <https://doi.org/10.1016/j.envsci.2018.12.012>
- UNISDR (2015). Sendai framework for disaster risk reduction 2015-2030. Geneva, Switzerland: UNISDR.
- Valenti, M., Masedu, F., Mazza, M., Tiberti, S., Di Giovanni, C., Calvarese, A., Pirro, R. & Sconci, V. (2013). A longitudinal study of quality of life of earthquake survivors in L'Aquila, Italy. *BMC Public Health*, 13, 1143. <http://www.biomedcentral.com/1471-2458/13/1143>
- van Valkengoed, A. M., & Steg, L. (2019). Meta-analyses of factors motivating climate change adaptation behaviour. *Nature Climate Change*, 9, 158–163
- Walker-Springett, K., Butler, C., & Adger, W. N. (2017). Wellbeing in the aftermath of floods. *Health & Place*, 43, 66–74. <http://dx.doi.org/10.1016/j.healthplace.2016.11.005>
- Williams, D. R., & Vaske, J. J. (2003). The measurement of place attachment: Validity and generalizability of a psychometric approach. *Forest science*, 49(6), 830-840.