Book of Abstracts

i-Rec Conference 2023:

Tensions Between Tradition and Innovation in Disaster Risk Reduction, Climate Action, and Reconstruction:

Reflecting on Tohoku's Recovery Twelve Years Later

June 3, 2023
Sendai, Japan

i-Rec Conference 2023: Tensions Between Tradition and Innovation in Disaster Risk Reduction, Climate Action, and Reconstruction

Special Session: Gender Responsive Resilience and Intersectionality in Policy and Practice (GRRIPP) Roundtable
12:30-14:00, June 4, 2023

Local Convener: Sarah Bradshaw, Middlesex University / GRRIPP

The aim of the 2023 i-Rec conference is to reflect on the value and risks associated with *disruptive transformation*; this is at the heart of what Gender Responsive Resilience and Intersectionality in Policy and Practice (GRRIPP) - Networking Plus Partnering for Resilience project intended to do when it was funded in 2019. Four years on, we are proposing a session that would allow us to reflect on what disruptive transformation means – or should mean - in the context of disaster research and practice.

GRRIPP is a global collaboration and knowledge-exchange project, implemented by a collective of universities in Europe, Latin America and the Caribbean, Southern Africa, and South Asia. It brings together theory, policy, and practice to promote a gender-responsive approach to disaster management and development. From its very start, the project was guided by feminist and decolonial principles and approaches, by which we mean a critical reassessment of power relationships between and within countries, communities, and social relations more generally.

This roundtable will consider some key themes of GRRIPP - resilience, intersectionality, gender, and disasters. Drawing on the voices of project partners it will consider how these concepts are understood and what they mean in practice in different contexts. It will explore how the different cultural and disciplinary backgrounds of GRRIPPers, as well as their identities affected (positively and negatively) the project delivery and in turn were affected by it.

It will use GRRIPP voices to initiate panel discussion and provoke debate around some key questions such as: What does ‘disruptive’ mean in the context of research transformation of knowledge construction? To what extent can University structures accommodate such disruptive practices? How do we know that we helped transformation in research and development initiatives – and that this transformation has indeed been disruptive? How can we evaluate transformation and disruption from a feminist perspective? How do we navigate the diversity of meanings and lived experiences?

The session will invite the audience to become participants rather than attendees, to reflect on their own experience in order to collectively learn lessons around the types of changes – and the pathways to changes – that are required in order to ensure that disaster scholarship and practice becomes more diverse, inclusive and respectful.

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Long-term aspects of recovery of a relocated community in the Maldives

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Purpose
This paper explores long-term aspects of a community in the Maldives displaced by the 2004 Indian Ocean Tsunami and relocated to a new island called Dhuvaafaru.

Design/methodology/approach
The Dhuvaafaru settlement was completed in 2008 and the research was conducted 10 years later, which allowed gaining an understanding of long-term aspects. Semi-structured interviews were conducted of staff at the National Disaster Management Office and the Maldivian Red Cross to understand organizational perspectives on the project, and also, semi-structured interviews of the settlement's residents were undertaken to find about experience of living there, as well as other related aspects. Given the timeframe of the investigation, long-term aspects of the resettled community were an important element.

Findings
Dhuvaafaru was previously an uninhabited island and this new settlement consisting of 676 houses, and community infrastructure and facilities was established there by the IFRC and the Maldivian Government. Disaster risk reduction measures were implemented including a drainage system, location within a protected reef and earthquake-resistant construction. However, coastal erosion is an ongoing process, expected to be exacerbated due to sea level rise, particularly on the eastern and southern sides that despite having some mangrove areas are still exposed. The island is only about a meter above sea level, and as with most of the Maldives, is threatened by sea level rise due to climate change, so the long-term sustainability of the settlement is uncertain. Another long-term issue includes the anomaly of registration related to the housing allocation process, which is likely to result in continuing disputes over the future. Migration of the younger residents to Malé, the capital, and other cities and resorts for better employment and education opportunities may lead to depopulation of the island and the lack of a local labor force for economic development. There is also a waste management problem, which if not addressed may become significant in the future. Finally, there is widespread ongoing informal construction that will transform the original planning of the settlement and may create new pressures and risks.

Originality
The Maldives was impacted by the tsunami, but unlike other affected countries where tsunami recovery has been widely studied, research on recovery here is scanty; this paper addresses this gap.

Decolonizing Disasters in Kashmir

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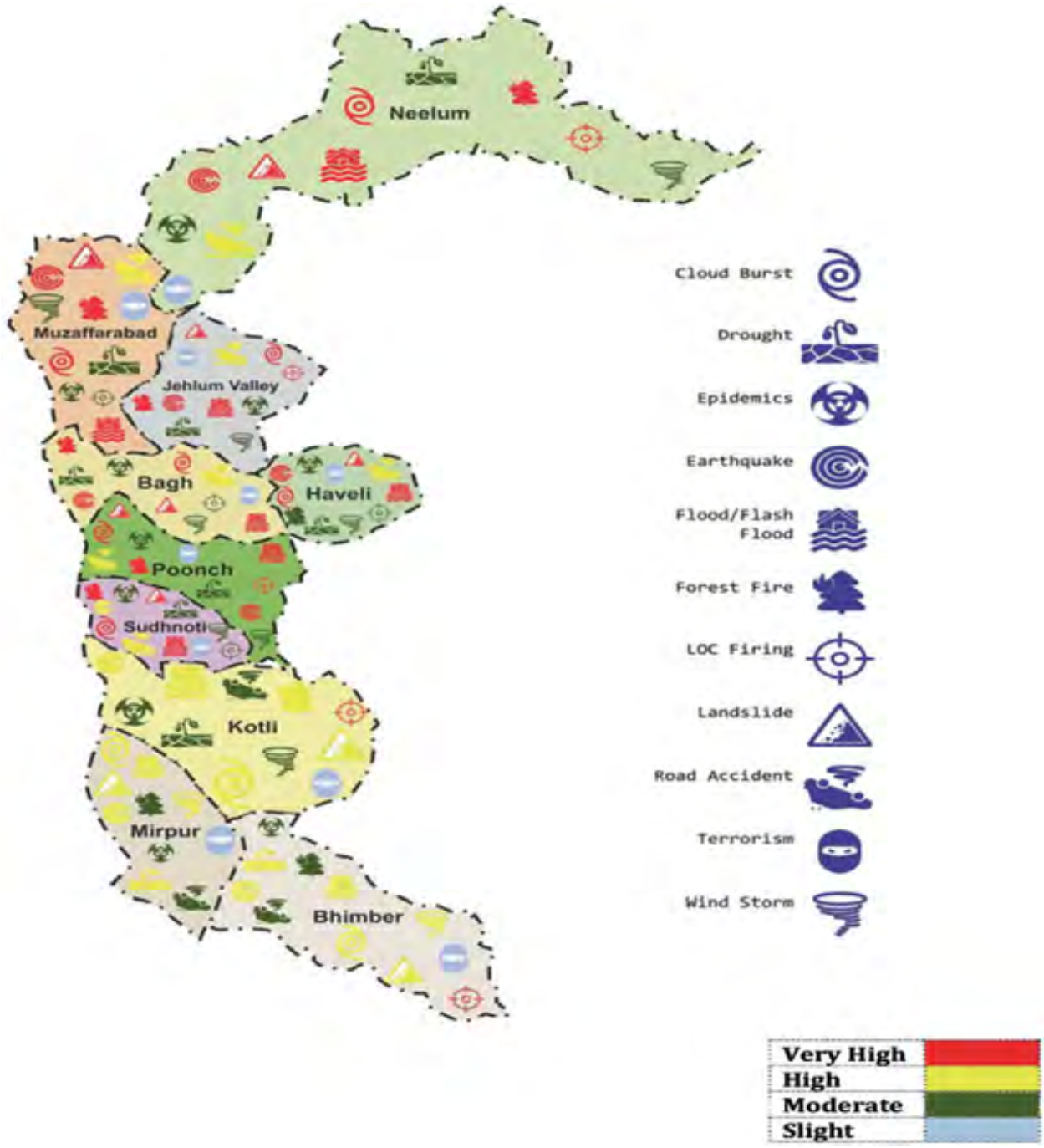
Purpose

I interrogate the knotting of Empire and disaster in Kashmir, a disputed territory currently claimed in its entirety by both India and Pakistan. Drawing on ethnographic research, planning reports, and my experiences as a humanitarian in the region, I explore how technologies of disaster management prop colonial rule. Communities in Kashmir remain highly susceptible to environmental catastrophes or are unable to recover from them, not simply because of poor planning or careless humanitarian intervention, as commonly insisted, but because of the ongoing occupation that structures these domains. I argue that disaster resilience can only be achieved if the structures of colonial occupation are dismantled. And that the concepts and categories put forth by disaster studies must be refreshed in line with local calls for self-determination and freedom. Or, how might foregrounding decolonization, rather than disaster management, help re-envision Kashmir's futurities amidst environmental decline and ruin?

Context

The disputed territory of Kashmir remains embroiled in the toxic nationalisms of neighbouring India and Pakistan, which claim the region in its entirety. At present, the Himalayan territory is divided between the two ruling nations via the highly militarized Line of Control (LoC)— a de-facto border that splits Kashmir into two. At any time, firing can erupt between the militaries stationed on either side of the LoC, putting Kashmiri life at risk. Kashmiris in both sections of Kashmir have long sought self-determination and self-rule. Political positions have ranged from complete territorial sovereignty to increased rights and control over the territory's resources.

It is the section of Kashmir near the LoC that is under Pakistan's jurisdiction where my research takes place. This portion of Kashmir has seen numerous environmental disasters, including the massive 2005 earthquake, which killed and displaced thousands, and severe monsoon flooding in 2010. This is in addition to the unpredictable cross-border firing. Together these disasters have disrupted the lives of over 25 million people throughout Kashmir and Pakistan. Following the earthquake, a range of governance technologies was set up in the region to facilitate disaster management, notably the establishment of a centralized disaster management authority in Pakistan's capital with corresponding administrative arms spread throughout the country. In the latest report by the disaster management authority, Pakistan-administered Kashmir is described as a "hub of a variety of disasters" (SDMA 2017, 16). The following is a hazard map prepared by the disaster management authority:



Interestingly, firing across the LoC (7th icon from the top) is also listed as a type of environmental hazard that neither the disaster management authority, operating UN agencies, or NGOs seem to center in their work. For example, there are rarely official "relief" packages by NGOs for borderland communities living amidst the turmoil of the LoC, nor is the disaster management system activated each time cross-border shelling flares up.

At the same time, paradoxically, the Pakistani state will not invest in major infrastructure projects and service provision in the region (steps arguably needed to make a community resilient to disasters) with the reasoning that since the region is so volatile, the longevity of any mitigating structure or system cannot be guaranteed. At most you will see wire netting to stop modest landslides or flimsy flood protection walls put in place by local NGOs or communities themselves. There is little willingness to recognize that most communities in Kashmir remain at a higher risk of

disaster or cannot satisfactorily recover from them because of the ongoing conflict and that perhaps demilitarization should be the first step in decreasing risk.

Design/methodology/approach
I have been working in Pakistan-administered Kashmir since 2014 and maintain long-term ethnographic commitments in the region. I draw on multiple years of fieldwork with disaster-affected communities along with interviews with disaster management officials in the region and place them alongside disaster planning reports and documents.

Findings
Kathryn Yusoff writes: “The Anthropocene might seem to offer a dystopic future that laments the end of the world, but imperialism and ongoing (settler) colonialism have been ending worlds for as long as they have been in existence” (2018, p. xiii). Technologies of disaster management, when reproduced in the context of colonial occupation, end up replicating those very conditions of coloniality. So much so that they become the apparatus of colonial rule and domination, even if it saves some lives in the meanwhile.

Audra Simpson (2017, 22) reminds us that the colonial present is achieved by selecting one version of the present over others: one that is “revealed as the fiction of the presumed neutrality of time itself, demonstrating the dominance of the present by some over others, and the unequal power to define what matters, who matters, what pasts are alive, and when they die.” In Kashmir, the presentism of environmental decline is prioritized; crisis epistemologies only open the pathway for a depoliticized entry of the state at the expense of other considerations, such as greater service provision, demilitarization, and fuller forms of decolonization. For the people of Kashmir, life under environmental change cannot be disentangled from the presentism of coloniality. Instead, the two are mutually implicated.

Originality
We cannot prepare for, manage, or recover from disasters unless decolonization is placed at the heart of the disaster management endeavor. The context of Kashmir—a politically and ecologically fragile region is used as an example to forward this argument. This is a necessary and timely intervention, given growing calls to decolonize humanitarian and international development frameworks. Similarly, disasters often coincide with political instability, and it is becoming increasingly difficult to disentangle the two.

Keywords
Decolonization, disaster, Kashmir, colonial occupation, disaster management

Acceptance of Help from International NGOs after the Disasters: Sociocultural Norms and Characteristics of Communities in Rural Japan

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As large-scale natural disasters in Japan, such as the 2011 Great East Japan Earthquake or the 2016 Kumamoto Earthquake, have shown, affected communities were hesitant or refused to receive assistance from outside NGOs from Tokyo or overseas. It left many people helpless as public support, especially in 2011, was delayed and did not reach some communities. The Government of Japan has acknowledged this fact and has emphasized the role of “self-help” and “mutual support” over “public support”. In addition, it was also highlighted in the Sendai Framework for Disaster Risk Reduction that Disaster Risk Reduction is a shared responsibility between government and non-state stakeholders such as NGOs, academia, and media.

Purpose

The purpose of this research is to find the correlation between sociocultural norms and traditions of society in Japan with a low acceptance of help from non-state stakeholders, in particular INGOs, during and after disasters. The outcomes of the research can be useful for developing more efficient DRR decision- and policy-making processes, which in practice can lead to a higher resiliency among the population.

As this research looks at the disaster relief stage of the disaster management cycle, it focuses on the role of stakeholders active in disaster response, such as NGOs and, more specifically, INGOs.

NGOs are quick and flexible in their response, can provide innovative and/or improvised decisions to aid assistance and involve less bureaucracy than public agencies in Japan. As they also can provide diverse human resources and have established networks with the private sector, their assistance can be crucial for more effective responses and recovery of the communities. It might be even more critical for rural areas that are highly prone to natural disasters and have vulnerabilities such as a large elderly population and the low financial capacities of municipalities. However, the disadvantages of NGOs, such as dependency on donor requirements, were also considered. This study aims to identify why communities refuse to receive help from International NGOs (INGOs) in Japan, mainly focusing on sociocultural norms and characteristics of traditional Japanese society.

Methodology

The data were collected through semi-structured interviews with INGO workers who have experience providing relief after disasters in Japan and local community members of affected areas, based on the existing literature of interactions between communities and INGOs in Japan.

As the disaster NGOs in Japan emerged only in the early 1970s, and many of them were formed in response to large-scale disasters in 1995 and 2011, the issue of

acceptance of help by communities is relatively new and still needs to be well-researched. Several authors point out an excessive reliance on public help by communities (Shaw, R.), perception of help with reference to “aid and reciprocity” (Slater, D.), overwhelming work for the government, and inability to receive aid (Iizuka, A.).

Originality
However, there is no research, to the best of our knowledge, on the role of sociocultural norms of communities in Japan based on the general and local characteristics of specific areas and a gender/age lens. As an isolated island nation, Japan has developed a society with unique characteristics, values, and traditions, which also differ depending on geographical location. It is essential, especially for international humanitarian actors, to be aware of it while providing assistance.

Findings
The findings show the significant role of cultural and social aspects of Japanese society on the low acceptance of help by communities from INGOs. These include such factors as “kiai” “staying energetic no matter what”), “ki o tsukau” (“understanding that others need help more”), perception of help with reference to an obligation to pay back and later development of “pay it forward” disaster volunteerism, trust issues, lack of knowledge about NGOs not as volunteers but as recognizable organizations, high community ties which lead to outsider positioning of INGOs and a victim-helper dichotomy, excessive reliance on public help, geographical characteristics of local communities, and age and gender factors.
Although some of these factors are difficult to overcome, engaging communities in DRR initiatives by INGOs before disasters might help change perceptions of outsiders, improve trust, and create opportunities to improve social capital, enabling communities to grow less reluctant to receive help. As this study focuses on community characteristics, it can contribute to strengthening community-centered DRR initiatives, reconsidering disaster governance structures of municipalities, and raising DRR knowledge and awareness of communities.

Keywords
Acceptance of help, disasters, communities in Japan, INGOs, DRR

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Digital innovations during the COVID-19 Pandemic: Local e-Governance *via* Facebook

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The full-scale adoption of digital technologies in the Filipino social life became more apparent during the COVID-19 pandemic. However, the abrupt emergence of this global catastrophe challenged many to instantaneously shift to digital infrastructures just like how local government units (LGUs) implemented their e-governance initiatives. This led to digital innovations resorting to available platforms and resources such as social media which offers easily navigable interfaces and cheap maintenance cost. In the case of the Philippines, the pressure for LGUs heightened with the devolved public health system, and the hollowing information crisis in the country. Furthermore, the absence of existing frameworks and research-based guides rendered their novice efforts to be experimental, thus compelling them to follow emulative practices from those with relatively successful cases like of the Province of South Cotabato in southern Philippines. This study determined the local e-governance practices across the different LGU levels specifically including perspectives from the province, city, and municipality. A total of 524 Facebook posts, gathered from the first quarter of 2021, were examined using quantitative content analysis. Findings of this study revealed that LGUs demonstrated prioritization, appropriation, and amplification in fulfilling adjunct roles of being public administrators and content creators at the same time. This paper concludes that, although LGUs did not suggestively mastered yet the craft of media reporting, they nonetheless deserve equally profound appreciation for their commendable efforts and their breakthroughs in digital innovations which may serve as a baseline data for future similar undertakings and perhaps policies.

Keywords
Digital innovations, local e-governance, COVID-19 pandemic, information crisis, devolved public health system

Post-disaster resilient housing reconstruction after repetitive flooding in Japan: Cases of Kurashiki-City and Takeo-city

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Purpose

This study focuses on resilient housing recovery after a serious flood in Kurashiki City (Kurashiki) and repeated floods in Takeo City (Takeo). Kurashiki recorded a maximum inundation of 5.4 m in the 2018 West Japan Torrential Rainstorm, causing extensive house damages. Takeo, on the other hand, experienced two repeated floods in three years, due to the 2019 and the 2021 Heavy Rainfall. The purpose of this paper is to compare the implementation of waterproofing in housing recovery in Kurashiki and Takeo, which have different damage status, and to find out if the extent of damage or experiences of damage affect victims' behaviour in implementation of waterproofing housing recovery.

Design/methodology/approach

By comparing and analysing the resilient housing recovery of Kurashiki and Takeo cities after flood, we aim to identify factors which are related to the promotion of waterproofing housing in post-disaster housing recovery. Questionnaire surveys were conducted targeting at disaster victims who were affected by 2018 Kurashiki flood and affected by 2019 and 2021 floods in Takeo. The number of responses were 820 in Kurashiki and
193 respectively in Takeo. The collected data were aggregated to analyse housing recovery behaviour from the perspective of five factors; housing damages, housing recovery, anxiety to continue to live in the affected area, afraid of being affected by flood again, expectation towards effects of construction projects. Those factors were comparatively analysed between Kurashiki which is a case of serious damages and Takeo which is a case of repeated flood damages.

Findings

Over 90% of the respondents of Kurashiki answered housing damage level was total destruction. In Takeo survey approximately 60% of respondents answered housing damage level was half collapsed or largely collapsed in 2019 and 2021 (Figure 1). In terms of flood level, more than 60% of houses were 3 m or deeply inundated, while in Takeo inundated depth was 3 m or less in both 2019 and 2021. Thus, the extent of damage of Kurashiki was more severe and about 40% of the damaged houses were dismantled and rebuilt, and about 20% had major repairment. In contrast, about 70% of the of the houses were partially repaired their houses after the flood damage in Takeo.
In housing recovery, only about 20% responded that they implemented waterproofing or countermeasures to reduce damages in Kurashiki, while almost 50% of the

respondents in Takeo responded that they had taken such measures after two floods (Figure 2).
Regarding the anxiety to continue to live in the affected area, respondents of Takeo show higher anxiety with 80% answered that they have strong or relatively strong anxiety while 50 % Kurashiki respondents answered so. As for whether or not they believe they will be subject to similar flooding again in the near future, more respondents in Takei thought so (Figure 3). When asked if they expected the risk of flood damage to be reduced after the flood control work, there was no significant differences observed.
This paper found the extent of damages does not facilitate victims' behavior to implement waterproofing in post-disaster housing recovery. Repeated experiences of damages by floods can be considered as a factor to promote resilient housing recovery. Furthermore, Kurashiki has flood history back in 1893 in Kurashiki while there is another flood history in Takeo in1990, and 70% of respondents experienced the flood.

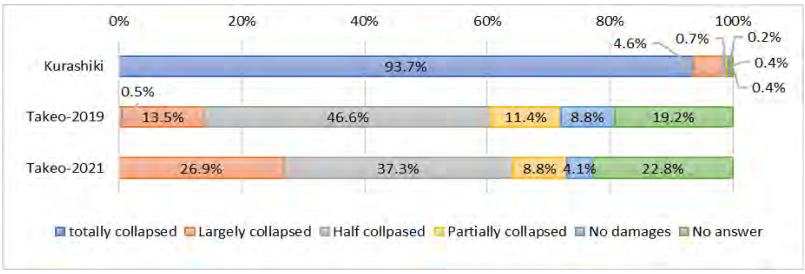

Figure 1 Housing damages

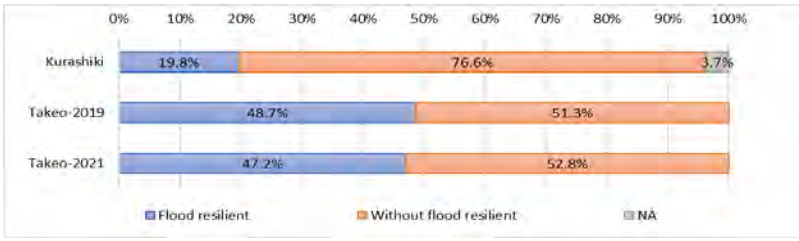

Figure 2 Implementation of waterproofing housing

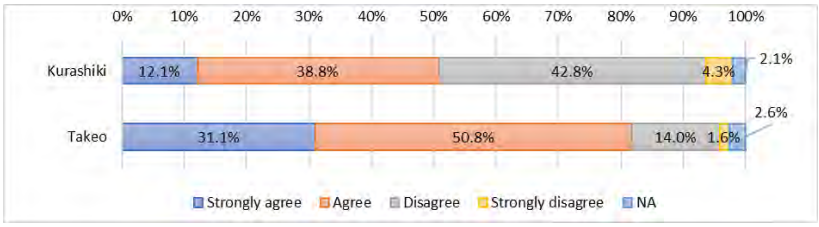

Figure 3 Anxiety to be affected by flood again in the near future

Originality

The hypothesis of this study is that victims' behavior to implement resilient housing recovery can be influenced by past experiences of being affected by flood, which was verified in part. Also, it was hypothesized that victims' attitude towards flood risks influence victims' resilient housing recovery behavior, which were verified in part.

Keywords

Flood risks; Housing recovery; Flood-resilience; repeated floods risks.

Modelling flood risk patterns under climate change in the Philippines

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Purpose

The impacts of natural hazards pose a significant threat to global development under climate change, shifting risk patterns for vulnerable communities. As floods become more frequent and intense, the reliance on historical loss data and actuarial approaches for estimating disaster damage may be inadequate, given the trajectory of climate change. An emerging solution to this problem is simulation-based models, which can consider climate change by mimicking extreme weather scenarios through Representative Concentration Pathways (RCPs) to quantify future scenarios. Focusing on the Municipality of Carigara in the Province of Leyte, Philippines, this research utilizes; (1) downscaled climate change models, (2) new integrated vulnerability assessments, and (3) existing building characteristics data to create new risk maps that examine shifting flood risk patterns.

Current risk mapping practices have a prevailing tendency for a unidimensional vulnerability approach in risk assessments. The Intergovernmental Panel on Climate Change (IPCC) has shifted its position, with recent frameworks beginning to take an integrated vulnerability approach when assessing risk. Serving as a tool in urban planning and disaster risk management to help communities prepare and cope with climate change impacts, our research offers a framework to transform disaster risk

assessments by understanding how climate change will influence localised flood risk at a household level. With an aim to inform strategies to improve the resilience of resource-constrained communities, this research further contributes to advancing knowledge of how local governments can plan for current and future flood risk, focusing on including disaster risk assessments in planning.

Methodology

We draw on photogrammetry drone surveys to generate high-resolution and updated digital elevation models to create new flood maps that incorporate climate change. We next incorporate new residential fragility curves that draw upon fieldwork in the Province of Leyte which evaluated over 390 houses on their physical vulnerability to flooding. Leveraging pre-existing Open Street Map (OSM) building footprints and surveyed building characteristics, this newly acquired physical vulnerability data was integrated with existing social demographic data to assess flood risk for the Municipality of Carigara. The methodology creates a composite vulnerability index that takes account of both physical and social dimensions with equal weighting attributed to each. We then compared new flood risk models, which include climate change with existing historical probabilistic and community-generated flood maps to understand how flood impacts are expected to change.

Findings

The findings of this study highlight the need to take a more comprehensive assessment when evaluating flood risk to capture the nuances of local impact in a changing climate. We present a robust framework which draws on an integrated physical and social data approach. Our physical vulnerability data recognises the relationships between risk and construction material. For example, those households utilising more durable construction materials, such as concrete hollow blocks (CHB), exhibited lower flood impact despite greater exposure. Moreover, coupling social demographics of occupants residing inside these structures and their capacity to respond to shocks challenges reductionist approaches. From a multidisciplinary approach, our findings aim to account for varying dimensions of vulnerability. The insights gleaned from this research can help inform vulnerability-reduction policies by positioning and contextualising risk impacts from both an infrastructure engineering and social science perspective.

Originality

This research aims to address the issues of the shifting patterns of flood risk in the Philippines under climate change. The contribution of the research to existing literature is twofold. First, the study proposes a framework for integrating RCPs scenarios 4.5 and 8.5 into flood models which steps beyond traditional probabilistic flood maps used in flood risk assessments. By shifting to more dynamic and context-specific approaches to flood risk assessments, our framework allows a more reliable estimation of future flood risk, equipping stakeholders with robust information to develop flood management and adaption strategies in disaster risk reduction. Second, our study endeavours to produce tailored flood hazard maps by drawing upon localised physical and social vulnerability data. Given the availability of data, we aim to scale an integrated approach at a household level of vulnerability including physical attributes, such as the materials of housing infrastructure, but also aim to capture social factors, such as household demographics. Overall, this approach highlights the importance of taking a more holistic and multidisciplinary approach to mitigate flood risk.

Acknowledgement
This research was supported through funding by the Asia-Pacific Network for Global Change Research under grant CRRP2021-13MY-Opdyke and Nigel Nutt Scholarship in Humanitarian Engineering. We would like to acknowledge the support of Andrew Siguan and Karl Gabriel Amante for assistance in data collection.

Keywords
flooding, vulnerability, exposure, risk, climate change

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Is Disaster Risk *Creation* more significant than risk reduction?

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Purpose

In disaster research we are now in a situation where it is almost universally accepted that disasters are 'socially constructed'. This means that explanations of disasters related to natural hazards no longer relate to god/s or Nature as causal factors (although much mainstream DRR activity fails to acknowledge that most of the world's population retains religious explanations). The purpose of this paper is to challenge some of the problems that remain despite the widespread acceptance of the social constructivist approach.

Approach

Having reviewed many decades of DRR research and practice, it is clear that the processes of disaster *creation* tend to be forgotten. DRR actions assume that an intervention – often relatively small – can overcome the much more significant processes of how social construction operates under various systems of power. It is assumed that DRR reduces vulnerability and/ or mitigates hazards without discussing the causal processes (which our work can rarely influence). Our research is supposedly 'taken up' by governments and relevant institutions and used to inform DRR policy. Donors, NGOs and other actors supposedly engage in activities that reduce disaster risk.

Findings

How valid are these comforting assumptions? I argue that government and the private sector are much more likely to create disasters than to reduce them. Disaster Risk Creation (DRC) is much more significant than the efforts of academics and organizations to reduce disasters. I argue that a great deal more honesty is needed in how academia relates to the problems of disaster creation. If what is required to achieve safety involves major changes to the systems that create risk, then it is our duty to say that what a DRR project can achieve is of little significance, and may actually make matters worse.

The talk examines the concept of Damage to Cure Ratio (D:C). This assesses the difference between the funding that is supposed to reduce disaster impacts (the 'cure') and compares it with the resources that make vulnerability worse and expose more people to natural hazards (the 'damage'). I argue that this concept deserves much more research and suggest some examples where it appears that the ratio is of the order 1000:1. In other words in some areas a thousand times more resources are spent to make disasters and climate change worse than to make them better. In this context it is obviously vital that disaster research takes stock of what it can and cannot achieve and develops ways to advocate for a more realistic approach that stops pretending that we are making a significant difference.

Even in areas of apparent success (e.g. with cyclone warnings and evacuations in Bangladesh and parts of east India), the impressive reductions in mortality are hiding the appalling consequences for poverty and hardship for the tens of thousands who now survive, who live in systems of power that do little to protect their assets and livelihoods and enable them to recover even to pre-cyclone conditions (let alone some wishful thinking about ‘building back better’). The talk ends with two examples of disaster risks being created as we watch in Dhaka, where exactly the opposite is happening than what is needed to avoid floods and earthquake disasters.

Keywords
Risk creation; systems of power; Damage: Cure ratio; Honesty

Influencing Factors of Pathogen Exposure in Thai University Hospital Environment

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Background

The COVID-19 pandemic has underscored the importance of designing pandemic-resilient healthcare facilities, particularly in non-clinical outpatient departments (OPD) of university hospitals. This study investigates architectural layout and design elements that can mitigate infection spread and address future pandemics and isolation needs.

Objectives

The research objectives include identifying factors impacting pathogen exposure and architectural design, evaluating healthcare design guidelines, exploring factors contributing to COVID-19 spread prevention, assessing the architectural layout of OPD areas in university hospitals, and validating findings with healthcare design professionals and infection control experts.

Methods

A five-stage mixed-methods approach was utilized, comprising a literature review, evaluation of healthcare design guidelines, exploration of COVID-19 spread prevention factors, assessment of the architectural layout of OPD areas in three university hospitals, and expert validation. Content analysis was employed to gather and interpret data.

Results

The study found that adaptable architecture and meticulous planning are crucial for effective pandemic prevention and response. Non-clinical OPD zones can be segregated from the primary structure, enabling conversion into isolation areas during pandemics. Key design elements minimizing pathogen exposure include reducing contact transmission, decreasing surface contamination, and managing waterborne droplet transmission.

Impacts

This research offers valuable insights into the role of architectural layout in developing pandemic-resilient healthcare facilities, emphasizing the need for flexibility and adaptability in design to accommodate future pandemics and isolation needs. The findings can inform planning and construction of hospitals with adaptable and pandemic-resilient architecture, ultimately reducing the burden on healthcare systems and protecting public health during pandemics.

Keywords
Pandemic, Architectural Layout, COVID-19, Outpatient Departments, Infection Control.

Oral History as a Tool for Understanding Women's Resiliency in Ishinomaki after the Great East Japan Earthquake

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The background
This research started in March 2014, out of my interest in women's survivor stories, how they gained the strength for continuing their lives, and how they engaged in recovery.

The city of Ishinomaki in Miyagi is located on the Pacific Ocean and its main industries are related to fishing and agriculture. In February 2011, 162,000 residents lived in Ishinomaki. On March 11, 2011, the Great East Japan Earthquake took 4,000 lives in the city.

Originality
I myself experienced the 3/11 disaster firsthand in Ishinomaki and have continued to live in the same place where I was born and raised, work and have family. This is a considerable distinction from other researchers who only visit the sites for research purposes because I could relate and gain trust from survivors.

Objectives
What values, perspectives, and beliefs toward their living conditions, job, community, and family gave women the strength to continue after 3/11, and how did they cope with challenges socially, economically, physically, mentally, and emotionally?

Purpose
Testimonies of women who experienced the Great East Japan Earthquake could contribute to the empowerment of women in the future, because they can be encouraging and inspiring for others.

Methods used
Women of ages ranging from their 20's to 80's were interviewed in person from the year 2014 to the present.

Design/methodology/approach
Using oral history as a tool for understanding women's resiliency in Ishinomaki, Miyagi after the Great East Japan Earthquake, this research from interviews with more than 100 made clear that women have many ways to cope with their hardship.

Impacts of your study

These women did not lose the strength to survive and move forward even while experiencing great sorrow. That is the spirit with which they integrated and continue to integrate the disaster into their lives. They have not found the strength to continue by overcoming, fighting, ignoring, or forgetting what happened. The disaster is part of their lives. They live as they are. For instance, one woman keeps telling visitors about her deceased daughter as part of her life.

Research results

A common thread throughout the interviews was that the women continued their lives in and through their “hopes and dreams”; such as opening cafes and restarting a flower shop.

Findings

Women are often seen as vulnerable in disaster contexts. However, based on my own experiences as a survivor and local resident of Ishinomaki and based on my interviews with other women, I found that women developed various ways to cope with the tragedy and move forward. Women have continued their lives by drawing strength from various hopes and dreams that they were able to hold on to from before the disaster or developed anew after the tsunami.

Keywords

The Great East Japan Earthquake, Oral history, Women, Resiliency

From heritage preservation to heritage activation: unlocking action on historical urban form to tackle disaster risk (re) production

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Purpose

Urban Public Open Spaces (UPOS) - i.e., the uninterrupted network of publicly accessible streets and squares in a city - play a key role in the city's functioning and in the users' experience of it, with spatial configuration[1] being essential in supporting adequate orientation and navigation in the everyday and emergency scenarios (Giuliani et al., 2020; Lopes et al., 2017; Marin Maureira & Karimi, 2017; Psarra, 2014). Overlooking the network effect of UPOS, and operating as separate tools (Bignami & Menduni, 2021; Quagliarini et al., 2018), the practices of ordinary and emergency planning currently fail to detect and address *spatial* disaster risk factors at the urban scale (Del Pinto, 2021). In Historical Urban Areas (HUAs), the strong presence of heritage preservation instances exacerbates the problem, preventing from any alteration to physical and spatial features of settlements (UNESCO, 2010). In case of disaster, this translates into identical reconstruction restoring both heritage features and the associated disaster risk (Del Pinto,2021) and raising the question of what an effective heritage restoration is at the urban scale. Cultural heritage is a renowned driver for capacity building (Clemente & Salvati, 2017; Gaillard et al., 2019; Garcia, 2021; ICCROM, 2021) yet, on the ground, frictions arise between the currently enforced heritage conservation policies and DRR action, urging to reconsider and re-negotiate values (Borri et al., 2017; Del Pinto et al., 2021). With the purpose to understand the role that UPOS play in urban disaster risk of HUAs, a first study on urban form and disaster risk (S1) was conducted that reconceptualised the notion of Spatial Vulnerability at the urban scale. Proving the functional role of the spatial network in vulnerability of earthquake-prone settlements, the study provided grounding for a configurational approach to urban Disaster Risk Reduction (DRR). Building on these findings, and with a focus on the implications that blind conservation policies have on disaster risk for heritage cities, the research will be furthered within the DAEDALHUSS[2] pilot study (S2). S2 has the twofold aim to i) broaden scope and applicability of SV research to multi-hazard contexts, and in the presence of different categories of users, and ii) provide grounding for a paradigm shift in UNESCO policies for Urban Heritage Management.

Design/methodology/approach

[1] In space syntax, configuration refers to 'relations between spaces which take into account other relations' (Hillier & Vaughan, 2007)

[2] DAEDALHUSS, *Designating All-Embracing Disaster-risk Assessment on the Layouts of Historical Urban Streets and Squares*, is being carried out within a 2-years Doctoral Prize Fellowship in the School of Architecture Building, and Civil Engineering at Loughborough University.

S1 - Spatial Vulnerability research, was conducted to unfold the disaster risk potential of UPOS and investigate if, and in what measure, they play a role in variations of urban vulnerability to earthquakes in HUAs. Rooted in critical realist philosophy, and with the aim to recontextualise existing knowledge in urban morphology to serve disaster risk reduction, the study adopted a mixed-method approach to investigate configuration, planning, and use of UPOS in four locations hit by the 2016 Central Italy Earthquake. A multiple, embedded, case study analysis (Yin, 2004) was designed, integrating qualitative and quantitative methods. Data collection employed desktop research to retrieve digital maps and damage information, and a six-week fieldwork to perform interviews with local policy makers, planners, and civil protection operators while retrieving, where available, planning documents and cartographic material from the municipalities. Data analysis [3] encompassed i) spatial analysis of the urban spatial network, integrating Space Syntax and ArcGIS and developing a methodology and workflow for spatialization, assessment, and visualization of disaster risk variables, and ii) thematic analysis of policy documents and interviews. Data interpretation adopted Wisner's extended risk equation (2011) and Blaikie's (1994) Pressure And Release (PAR) model to build the theoretical framework for interpretation of results, to trace the production and progression of vulnerability associated to the urban spatial network. **S2 - DAEDALHUSS pilot study** will broaden the scope of S1 operating on UNESCO world heritage cities and developing two macro-objectives: *DangeRoutes*, will assess and map disaster risk potential of different layouts, for place-specific hazards, building upon the Spatial Analysis Workflow developed in S1. *ExODUs,* will assess and map disaster risk variations for different user categories of the historical UPOS network.

Findings

Results of S1 confirmed the functional role of UPOS in variations of disaster risk. Among the key findings: i) routes with higher movement potential and attractors[4] concentration are intrinsically predisposed to overcrowding, and, in HUAs, further exposed to an overall vulnerable building stock; ii) visual information and intervisibility of locations in the UPOS network, along with presence of decision-making points, reverberates on pedestrians' capacity of self-protection, essential in evacuation iii) a-spatial and disaster-blind planning practices persist in post-disaster reconstruction reproducing and exacerbating pre-existing risk conditions. Expected results from S2 are global methodology and universal parameters for SV assessment in multi-hazard contexts, and larger evidence of disaster risk potential associated to historical urban layouts.

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[3] Thematic analysis unfolded the systemic *spatial* disaster risk conditions embedded in, and reproduced by, ordinary and emergency planning, and consolidated by practices of use of UPOS. These processes were associated to Root Causes and Dynamic Pressures in the PAR. Spatial analysis expressed Spatial Exposure (SE) and Spatial Capacities (SC) through configurational properties, and generated indicators for their definition, calculation, and visualization on maps. Indicators focused on movement potential, proximity to vulnerable facades, presence of obstructions (SE) and visibility relationships, stability of visual fields, presence and frequency of decision points (SC). Fluctuations in the variables along the street network correspond to variations in *Spatial* Unsafe Conditions within the layout.

[4] Attractors were heritage locations, points of worship, landmarks, shops, and recreational activities.

Originality
Lies in the reconceptualization of Spatial Vulnerability - the vulnerability *of*, and descending *from*, the spatial network, previously absent from disaster literature - and in the elucidation of systemic and contextual processes driving its formation and progression (Del Pinto, 2021)**.** The study enabled establishing a theoretical and methodological link between urban morphology and disaster studies along with practical tools informing planning.

Limitations of S1 are linked to the relatively narrow scope of the initial study - single type of hazard, relatively small historical UPOS, in the Italian context - impacting results' generalization. S2 aims at overcoming this limitation by broadening the scope of S1.

Practical implications and social implications. Beyond the mentioned theoretical and methodological contribution to the involved fields, S1 has i) provided the integrated workflow for SV assessment having practical implications for planning and ii) demonstrated that the deep-rooted neglect of UPOS in planning practice erodes agency in its users, which are treated as passive aid recipients rather than active agents exercising self-protection. S2 is expected to establish the foundations for a paradigm shift in urban heritage management and conservation, while broadening the applicability of SV methodology beyond HUAs to urban buffer zones, as well as expansion, as a tool to inform urban planning practice. Implications will be particularly relevant in pedestrianised HUAs subject to preservation instances, where heritage features are capitalised, driving local tourism and economy. Furthermore, outcomes of S2 will contribute to unlock action *on* heritage in support of urban DRR, considering the complexity and interplay of multiple factors in determining heritage values to safeguard, in response to contemporary threats.

Keywords
spatial vulnerability, spatial configuration, urban heritage, disaster risk management

Reconstruction of housing after the 2010 earthquake in Chile. Challenges and Lessons from the Heritage Reconstruction Programme

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Background

Chilean built heritage is and has been historically at risk due to earthquakes. After the 2010 earthquake in Chile, which had a magnitude of 8.8 Mw scale, the damage and destruction of historical buildings were significant problems (Council of National Monuments, 2010). This study focuses on dwellings in heritage areas, which are usually economical and sustainable responses to local climatic conditions using vernacular building techniques. Despite their heritage value, mitigation strategies still need to be set in place, to tackle issues threatening their physical conservation (Fig. 1).

Figure 1. An adobe house affected by the 2010 earthquake in the heritage area of Chanco. Source: B. Devilat, April 2010.

Purpose

To evaluate the governmental response after the 2010 earthquake for affected heritage areas of Chile, establishing the challenges and lessons learned, in order to develop preparedness for future earthquakes. Within the realm of housing, a Heritage Reconstruction Programme in the Ministry of Housing and Urban Development was created for the first time in the country´s history, as a state answer for repairing and reconstructing dwellings in affected vernacular settlements using the same amount of the housing subsidy as to build a new, increasing the number

the heritage buildings conserved. This work aims to study the extent and impact of this programme.

Research limitations/implications
The Heritage Reconstruction Programme was created in the Regional Ministry Secretariat of the Ministry of Housing and Urban Development of Chile, VI Region (SEREMI MINVU VI) as an answer to housing in affected vernacular settlements. This specific approach is regularly recognised as positive by international literature, e.g. Comerio (2014). At a national governmental level, it was later replicated in all the regions affected by the 2010 earthquake. However, it was not set up as a public policy, thus its impact in following post-earthquake responses is difficult to track, as its influence was not embedded at an institutional level.

Design/methodology/approach
Using maps, 3D-laser-scanning data, photographs and interviews of selected heritage areas in Chile affected by that earthquake, the extent of the Heritage Reconstruction Programme will be analysed 13 years after its start. The Heritage Reconstruction Programme was created after the quake, and its application started almost a year later, generating issues within the emergency period such as indiscriminate demolition of repairable heritage houses and the lack of technical assistance for temporary emergency support. Other issues identified when the programme was implemented will also be identified and potential improvements proposed.

Findings
The most relevant aspect of the 2010 response, a lesson learned from the 2005 earthquake that occurred in the north of Chile, was repairing damaged dwellings — when applicable — using the full amount of the reconstruction subsidy, allowing parts of them to be recovered and not only replaced with new ones. As additional funding was also included,[5] considering the higher costs of intervening in heritage contexts, residences that were repaired recovered between a larger space (70 m^2-100 m^2) than if demolished and built anew (50 m^2). However, dwellings in historical areas are larger on average, so they were — in most cases — not fully recovered. Progressive projects were considered, taking into account that the owners can finish the dwellings gradually over time.[6]

In terms of scalability, the number of dwellings repaired with this scheme was low, considering that most of the houses required intervention according to their level of damage. This is a potential risk in a future earthquake. Two aspects can be identified as the main reason for this. First, the funding scheme was associated with governmental housing subsidies that are not available to all since they are designed to help low-income families. Second, the documentation of the as-built condition of the affected houses and the technical support required to repair them made the process slow and unfeasible in many —less accessible—villages. In response to this latter aspect, one proposal is to insert technological innovation based on the latest

[5] 200 UF (approx. £6,000) in addition to the regular subsidy (350 UF/ approx. £10,300). Thus, the total subsidy was 550 UF (£16,300).

[6] It is difficult to conceive a governmental programme that would be able to assume the entire rebuilding costs of large houses. Whether or not that is appropriate from the perspective of public policies of a seismic country is beyond this study.

documentation technologies such as 3D-laser-scanning, a quick, affordable and comprehensive way of documenting that provides a measurable 3D digital model of the buildings, coloured and with precision to a matter of millimetres. This methodology has been applied before in Chilean case studies (Devilat 2021), as a disaster-risk-reduction (DRR) method to continuously record and assess built heritage, identify potentially dangerous constructions, create mitigation plans, and have a basis for design in case repairs and *re-construction* are needed (Figure 2).

Figure 2. Section of a damaged dwelling in Lolol after the 2010 earthquake, where the deviation of the wall can be perceived. Rendered from the 3D laser scan data obtained in 2013. Source: B. Devilat.

There is a need to develop mitigation and reconstruction plans before earthquakes in order to be prepared and avoid unnecessary destruction. In addition, it is necessary to create specific plans for built heritage, since the aforementioned programme was funded by adapting existing policies –such as economic housing subsidies. Thus, it was not specific enough to target complete heritage areas, but only some buildings in them, and it was not enough funding to cover the specific interventions heritage dwellings require.

The evaluation should be embedded in future reconstruction programmes, taking care of the moment in which it is carried out as it has a direct link to people´s perceptions. This would allow moving forward from the current disaster-response approach — where plans and funding are created after a disaster — to an overall strategy in *between earthquakes* (Feilden 1987), going beyond governments, embedding expertise, learning and experience at a national and local level. This is especially relevant for the preservation of built heritage.

Originality

After an earthquake, the implementation of non-specific and poorly designed emergency housing in heritage areas also threatens the conservation of their characteristics. Architectural responses usually present proposals to tackle that issue, which might never be built, but produce debate regarding how to better tackle

the reconstruction after earthquakes and the need to have heritage-specific responses. Previous evaluation of heritage housing reconstruction in Chile (Schmitt, Neumann & Tannert) base their evaluation on some of these architectural reconstruction proposals. In contrast, the originality of this work is that it provides an overall public policy perspective analysis, as the author of this paper worked at the Heritage Reconstruction Programme from 2010 to 2011. This means not only analysing proposals for new houses in heritage areas but understanding a process that involves different approaches according to the level of damage of each house, which includes retrofitting and repair. In addition, despite the regularity of earthquakes in Chile, there is no governmental institution evaluating previous reconstruction experiences to improve future responses. Thus, the results can be relevant to inform public policies in Chile but also relevant to other seismic countries.

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Keywords
Earthquakes, Chile, reconstruction, heritage perception, evaluation.

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Advanced documentation technologies for a people-centred preparedness and *re-construction* in Bela, India

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Despite the recurrence of earthquakes, responses are usually triggered afterwards, lacking mitigation strategies to diminish risks. Damaged dwellings cannot be immediately reinforced to continue inhabitation, generating disruption. Repairs are usually costly, and large numbers of affected constructions make damage assessment difficult. Post-earthquake reconstruction programmes often lack a culture-sensitive approach.

Purpose
This research seeks to address these issues relating high-end documentation technology and bottom-up community work

Methodology/Approach
The research accounts for and reflects on the methodology developed, which combines different recording tools to capture social and built environment data, such as interviews, mapping, drone capture, photography and 3D-laser-scanning in the pilot case study of Bela, a historical settlement in the seismic region of Kutch in Gujarat, India.

Originality
This project develops a novel approach to the documentation of buildings in heritage settlements prone to earthquakes that uses the digital record as 1) a basis to assess and intervene in the built environment and better understand how it supports local people's ways of living and maintaining buildings, 2) a platform for local engagement and agency in planning and *re-construction*, as a post-disaster mitigation measure.

Findings
The introduction of technology can help to speed up the process of damage assessment; analyse social aspects that are key for a respectful *re-construction*;

and, in the long-term, break the unsustainable cycle of building replacement after earthquakes, shifting towards a culture of reuse and disaster risk mitigation.

Acknowledgements
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Keywords
3D-lidar-scanning, Bela, disaster preparedness, re-construction, digital documentation.

How do residents react to tsunamis

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Purpose
This study aims to (1) identify the behavioural characteristics exhibited by residents residing in a tsunami-prone region during a local tsunami event and (2) understand how well the individual behavioural attributes of residents are incorporated into the decision-making process of emergency management and city council officials.

Design/methodology/approach
A case study methodology was adapted for this research. Key stakeholders were interviewed to understand how local authorities consider the behavioural attributes in their evacuation planning.

Findings
The results indicated that the primary issue in tsunami evacuation procedures is the potential delay in people reaching safety within the necessary timeframe. The crucial behavioural factors in managing evacuations could prolong the evacuation process. Additionally, factors such as evacuation triggers, difficulties in finding the correct routes, and mode selection also play a significant role and should be taken into account when designing evacuation plans. Implementing preparedness measures, such as installing clear evacuation signs, and promoting community resilience, can significantly reduce the impacts of tsunamis.

Originality
Napier City, New Zealand, used a case study and provided an original case study of the evacuation of residents in a vulnerable city. The city has suffered from many disastrous events, including a destructive earthquake in 1931, which destroyed most of the city, and tsunamis of different heights, from near and far earthquakes faults.

Keywords
Tsunami Evacuation, Behavioural Attributes, Emergency Management, Local Authorities

i-Rec Conference 2023: Tensions Between Tradition and Innovation in Disaster Risk Reduction, Climate Action, and Reconstruction

School memorials as “Lieux de Mémoire” in the cultural and collective memory of the Great East Japan Earthquake

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After the Great East Japan Earthquake, tsunami, and nuclear accident of 2011, the Japanese government committed itself to pass on the memory and lessons of this disaster like no other country. Since then hundreds of so-called “disaster memorial facilities” have been newly built or actively preserved. A particular category of such facilities is disaster heritage (shinsai ikō), which describes ruins of buildings that show traces of disaster – in most cases, those of an earthquake or tsunami. The vast majority of such buildings preserved and reopened as museums after the 3.11 disasters are schools. Based on discussions in cultural anthropology, this paper explores the reasons behind the tendency to preserve school buildings in particular and discusses the meaning of these schools before and after the disaster as sites and containers of memory (Lieux de Mémoire), their meaning for those affected by disaster, as well as for local communities and visitors alike.

Tohoku Resilient Schools and Youth engagement in memory after 2011

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Japan has experienced numerous disasters throughout history with thousands of lives lost: earthquakes, tsunamis, volcanic eruptions, fires, typhoons or heavy rains. The last major disaster occurred in 2011 devastated the Tohoku region and left more than 15,000 victims. However, they could have been more. During the emergency, population had to act and school buildings became the center of response and evacuation, playing a central role in each disaster stage, including later reconstruction and memory. How was the tsunami managed from schools in small communities and what lessons can be drawn? Prevention training, rapid evacuation, survival in shelters and transmission of the experience to new generations are the key to disaster management in the archipelago. In Tohoku area, these lessons are also connected with the history of previous tsunamis.

From a local approach and socio-historical methodology, research is based on ethnographic field work in several communities of Tohoku, data collection in archives and oral testimonies. Between November 2020 and March 2023, in-depth interviews were conducted to tsunami survivors, children and community leaders involved in disaster response during the months and years following the tsunami. Through six case studies, the analysis focus in disaster response and survival in elementary schools and youth building capacities during reconstruction. This research determines, on the one hand, the importance of local history in tsunami management in Tohoku. It reveals, on the other, how during the reconstruction process, a young generation embraces memory to reinforce disaster prevention for the future of the region.

Keywords
resilience; disaster prevention; schools tsunami response, children and youth capabilities, memory.

Deriving expert-driven, multi-hazard fragility functions for non-engineered residential typologies

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High-risk countries to natural hazards are also faced by significant infrastructural challenges. While past damage data and computational modelling can be useful in deriving fragility functions to understand structural safety, these are usually lacking in remote communities. We use a heuristic alternative of deriving fragility functions using experts' judgement to compensate for the lack of available data in these settings to otherwise derive empirical and analytical fragility functions. We focused on the case of Itbayat, Batanes in the Philippines where the typical vernacular stone-and-lime houses in the municipality suffered extensive damage during successive earthquakes in 2019. We surveyed the reconstructed building stock three years after the earthquakes and identified the most prominent typologies that households chose to build. A pool of experts was invited to estimate the damage states for the identified typologies against the impacts of earthquakes and typhoons which are the two most prominent hazards in the region. Using the curve derivation method crafted for the Applied Technology Council, we will aggregate the experts' opinions to determine the exceedance probability of damage states for each typology. Our findings contribute to understanding the structural performance of housing typologies in the Philippines to improve building-level risk reduction measures.

Purpose

The stone-and-lime vernacular houses in Itbayat, Batanes, Philippines served as typhoon-responsive dwellings in the storm-battered island, but these crumbled during successive earthquakes in 2019. To assess the structural safety of the emergent housing typologies after the earthquakes, we rely on fragility functions to understand the vulnerability of these typologies against the impacts of typhoons (being the most frequently occurring) and earthquakes (being infrequent but still impactful). The fragility functions can be used as a basis for strengthening interventions for identified at-risk typologies. Better understanding the wind and seismic performance of housing will also enable more informed multi-hazard construction trade-off decisions to improve safety. Current asynergies exist in addressing competing hazard impacts due to the diverging effect of different hazards to structures.

Design/methodology/approach

We conducted rapid visual surveys for 101 houses to identify the most prominent housing typologies built after the 2019 earthquakes in replacement of the stone-and-

lime vernacular houses. We classified housing typology based on the following parameters sensitive to wind and seismic impacts: type of lateral load resisting system (LLRS), material of LLRS, building height, material of building envelope, and roof profile. With the identified typologies, we will use the expert-driven method of deriving fragility functions crafted for the Applied Technology Council (ATC). Two cohorts of civil and structural engineers were invited to estimate the hazard intensities at which each of the typology will experience different damage states. The expert surveys were conducted online using the ATC questionnaire format which allowed the participants to give their estimates of median and lower-bound values of hazard intensities. The first cohort comprised local engineering experts (n = 10) based in the province of Batanes who can give damage estimates based upon on-the-ground observations. The second cohort was composed of specialists (n = 10) or those who have background deriving fragility functions of building stock in the Philippines. The solicited estimates will be aggregated using the ATC approach to derive the fragility functions.

Findings
Six emergent housing typologies were identified: (i) lightweight with timber posts and beams, (ii) lightweight with steel posts and timber beams, (iii) semi-concrete with steel posts and timber beams, (iv) semi-concrete with reinforced concrete (RC) posts and timber beams, (v) RC structure with lightweight roof, and (vi) RC structure with RC slab roof. The most prominent of these is the lightweight typology with steel posts and timber beams which account for 24% of the surveyed building stock. Concrete structures have the least share of 9% and 11% with variations of lightweight roof and slab roof, respectively. With the six typologies identified, the expert-driven solicitation of judgement on what hazard intensities inflict certain damage states will serve as the basis to derive the fragility functions.

Originality
The derivation of fragility functions has been concentrated mostly with “standard” typologies which are indicative of highly archetypical construction techniques (usually patterned from prescriptive construction methods). Here, we accounted for the characteristics of non-engineered houses which are usually the most at-risk due to their peculiar and variable characteristics driven by the unconventional construction practices used by households.

Keywords
fragility functions; non-engineered housing; multi-hazard; expert-driven

Diminish of Traditional Craft Skills and its Impacts on Post-Disaster Recovery: The case of Turkmen women's recovery after the 2019 Northeast floods in Iran

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Purpose
In "gender and disaster" studies and post disaster contexts, women are often classified as vulnerable for reasons such as gender stereotypes. This research aims to challenge this overarching view and explain women's capacities in supporting post-disaster recovery instead. For this purpose, this research addresses the following questions:

1. How have traditional handcrafting capacities of Turkman women in Iran changed through time, and what factors were at play?
2. How have traditional handicrafts assisted women in their recovery after the 2019 Agh-Gala floods in the Northeast of Iran?

Design/methodology/approach
This study is conducted using a reflexive thematic analysis method. Concepts and findings were discovered inductively through a constructivist approach to the research. Also, we used the revised six-step process introduced by Braun and Clarke 2021. In total, 34 semi-structured interviews were conducted with three groups: affected women, rescuers and experts. The data obtained from the interviews were coded in three stages. In the first stage of coding, an open and descriptive approach was used. During the next two stages, the previous stage's codes were interpreted more abstractly.

Findings

Several crafts were traditionally carried out by Turkmen women, including carpet weaving, needlework, rug weaving, felt weaving and straw mat weaving. In addition to the first category, *Qarchin* (making bags and backrests), spinning (making silk thread from silkworms), and silk weaving are arts that predate the first category. Nevertheless, economic, personal-familial, social-cultural, political, and physical factors as well as product characteristics led to the demise of traditional Turkmen handicrafts over time. The ever-increasing economic crisis with impacts on purchase capacities, the presence of dealers, the unfamiliarity of women with e-commerce, marital status, women's high responsibilities at home, health decay caused by handicraft manufacture, and the limited availability of the raw material have demised women's handicrafts. Beyond local factors, international pressures such as the imposed sanctions on the national economy also affected women's handicrafts in the regional micro-scales, limiting the chance of presenting products to foreign markets. Also, the research results identify modernization and its reflection on Turkmen housing patterns over time as another contributing factor to the demise of Turkmen handicraft production in Iran.

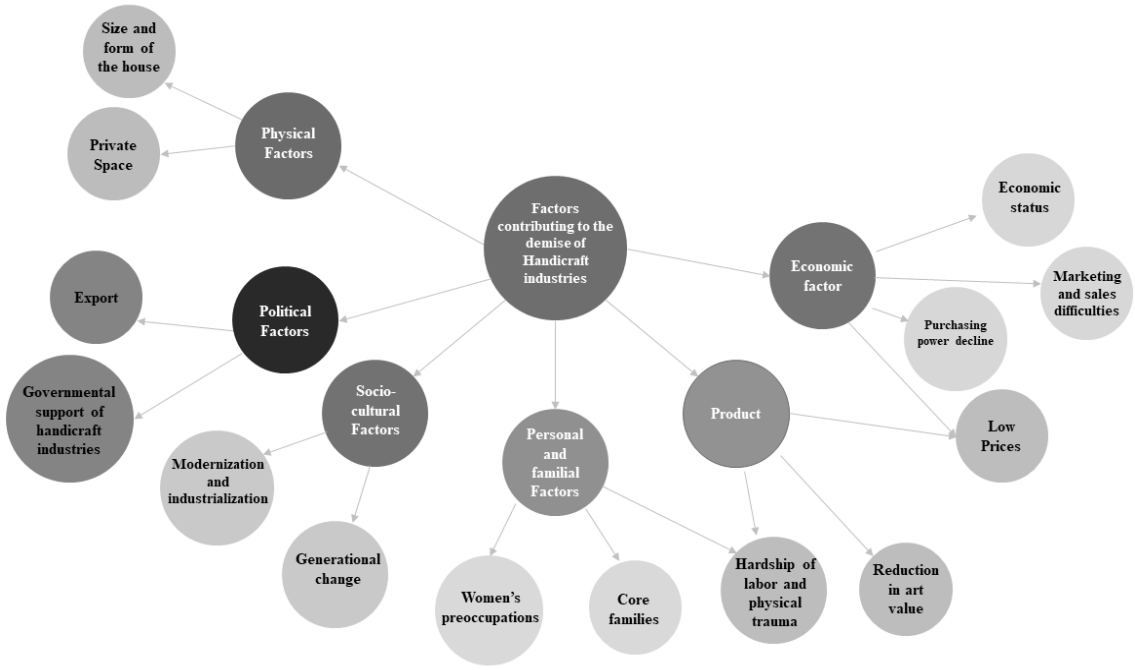

Figure 1.The recovery process of women in Aq-Qala after the flood, with or without handicrafts

Following the floods, women gradually began to recover despite constraints such as adherence to patriarchal principles, literacy, and economic status. Those who have handcrafting skills have contributed significantly to the recovery of themselves and their families. Handcrafting as a support of recovery was initiated by Turkman women during the temporary sheltering phase. Some temporary shelters were derived from "Oy," a traditional dwelling used by Turkman nomads. Despite their formal resemblances to the traditional "Oy," the temporary shelters were made from different materials and, therefore, unable to respond to the harsh climatic conditions in the region. Consequently, several shelters were abandoned, and women spontaneously transformed them to handcraft workshops. In addition, the straw mats left in the shelters were used as raw materials to make bags and backrests, demonstrating women's creativity and perseverance. Besides, corresponding to the

space scarcity in shelters, women devised innovative means and decreased their product size (especially rugs).

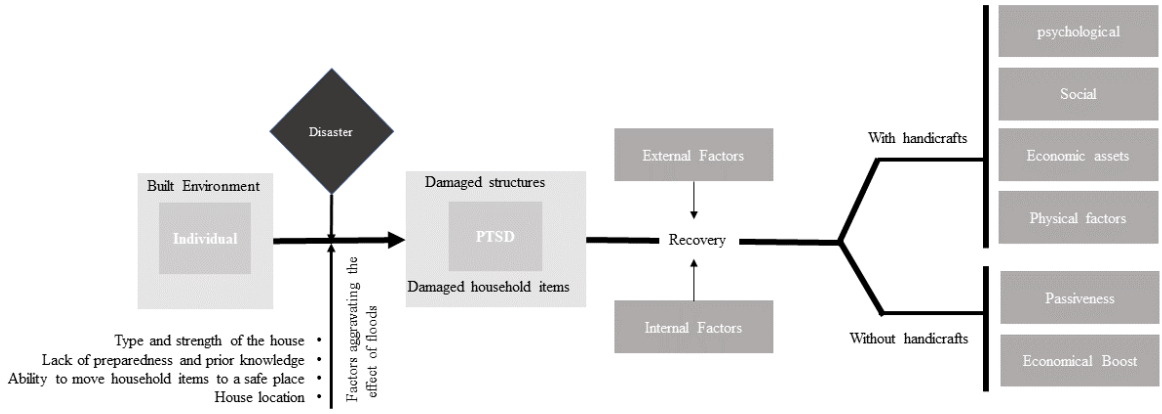

Figure 2. The factors resulting in diminishing handicrafts among Turkmen women over time

To support their household recovery, the skilled women crafted rugs to replace their own ruined and provide their daughters' dowries, avoiding delay in their marriage and associated socio-economic consequences. In parallel, philanthropists established workshops and provided raw materials and access to market vendors for craftswomen. However, unfortunately, those with limited skills or who suffered from post-traumatic stress disorder hardly enjoyed handcrafting as a means of recovery and experienced long and insufficient recovery.

In addition, the research findings suggest that using handcraft skills women not only decorated their temporary shelters to appropriate their space but also responded to climate and cultural exigence such as adding heat isolation and privacy, making their temporary shelters more comfortable.

Originality

Crafting and its benefits have been extensively researched as a means for women to earn a living at home. Sense of identity, contribution to the family economy and welfare, an agent of recreation and privacy, a source of satisfaction and optimism, repression of negative emotions such as anxiety, creation of positive social relationships, sense of recovery and personal healing, improvements in mental and physical health, learning and meaning-making and self-development have been listed in the literature. In contrast, very little attention has been paid to the importance of handicrafts for women in their recovery following a disaster. This research explores how women contribute to post-disaster recovery by relying on their handcrafting skills. The findings shed light on how women's handicrafts give meaning to the place, facilitate communal coping, and promote healing. Therefore, this study findings demonstrate that women are, contrary to serotypes, active participants and innovators in the recovery process, a topic that has yet to receive attention from the media and scientific studies.

Keywords

Women; Post-disaster recovery; Handicraft; Agh-Qala: floods.

i-Rec Conference 2023: Tensions Between Tradition and Innovation in Disaster Risk Reduction, Climate Action, and Reconstruction

Artefacts of disaster risk reduction: Between change and continuity in informal settlements

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Disaster risk reduction in the face of climate change is particularly difficult in informal settings, where residents often secure access to water, sanitation, shelter, and services in parallel with, or in the absence of, government action. Top-down risk reduction policy and programs in informal settlements rarely respond to residents' needs, and often create new vulnerabilities. They typically disregard people's expectations for social and environmental justice, and their own ways of dealing with risk. How to achieve positive change in informal settings while preserving what residents value?

Here we explore what type of change is produced by local agents in low-income settlements in Latin America and the Caribbean. We present the results of a four-year research-action project that supported and followed the actions of 17 local leaders and their disaster-risk reduction initiatives. Findings show how bottom-up initiatives (called here "artefacts") produce incremental transformation in urban space while preserving the conditions that residents value. Artefacts of disaster risk reduction differ from outputs typically framed as "tactical urbanism," "incremental construction," "green infrastructure" and other similar concepts. They are not only physical products, but spaces of interaction rooted on social and cultural practices that are valued by citizens and local leaders. A better understanding of these artefacts is crucial to reduce risk in informal settings in the Global South.

Keywords
Disaster risk reduction, informal settings, climate change policy, bottom-up initiatives, local leaders

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Hierarchical importance in 'Build Back Better': an analysis of four key frameworks

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The 'Sendai Framework' in 2015 promoted 'Build Back Better' in post-disaster recovery, rehabilitation, and reconstruction. The latest in a series of internationally recognised frameworks established to guide the actions and activities of those working in disasters risk reduction. These frameworks have compiled a suite of success indicators which are categorised and subcategorised then themed under respective principles in an effort of increased clarity. However, 'Build Back Better' frameworks rely on a holistic approach and consider all categories as interconnected and reliant on one another for success. To accomplish this requires understanding the relationship between indictors across these organisational divisions. As indictors can number in the hundreds, there are thousands of possible relationships and connections between them for practitioners in the field to consider. This is a fundamental weakness in the frameworks. The 2020 'Humanitarian Development Report' noted that engagement with the wrong indicator will lead to the wrong diagnosis of a situation and therefore the wrong action undertaken. This concern was echoed in the 2022 Global Assessment Report that suggest one of the major roadblocks to success of the Sendai Frameworks goals is suboptimal decision making after a disaster. In 2022 a research paper conducted a hierarchical decomposition analysis (HIDECs) on the success indictors of the 2018 'Build Back Better' framework. It showed that such an approach can unveil the nuanced interactions, dependencies and relationship between each indicator and produces a priority diagram to improve clarity in indicator selection while preserving the holistic foundation of the approach. This paper examines the results of a similar analysis on four globally used 'Build Back Better' frameworks. The finding present priority diagrams which reason that components may hold as much relevance as success indicators and concludes by highlighting the potential of implementing HIDECs.

Keywords
Build Back Better, Frameworks, Hierarchical Decomposition, Post-Disaster Reconstruction

i-Rec Conference 2023: Tensions Between Tradition and Innovation in Disaster Risk Reduction, Climate Action, and Reconstruction

Recognising the impacts of prioritising certain success indicators over others in 'Build Back Better' post-disaster reconstruction Frameworks.

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The '2015-2030 Sendai Framework', adopted at the 'Third United Nation World Conference on Disaster Risk Reduction', will this year pass its midpoint. The frameworks aim was to improve the adverse effects of disasters by reducing the scale of people and infrastructure affected, proposing four priorities for action. However, the 'Global Assessment Report on Disaster Risk Reduction – 2022' has highlighted that despite providing pathways and solutions, the frameworks goals are not on track to being achieved by 2030. The 'Global Assessment Report' identifies one of the reasons for failing as intended is that decision making after a disaster is suboptimal and therefore, human decisions about risk reduction during this phase must be addressed to accelerate effective action. This is a direct reflection of the Sendai Frameworks fourth priority for action in which the focus is on 'Building Back Better' in recovery, rehabilitation, and reconstruction. This paper examines the decisions that cause success indictors in 'Build Back Better' frameworks to be prioritised over others. This is achieved by analysing the post-disaster recovery of three case studies. Each case study has been selected as they present unique disaster events, declared as state of emergency and requested international assistance. Furthermore, each country; Vanuatu, Bangladesh, and the Philippines, ranked in 'The World at Risks' top 15 most vulnerable nation to natural disaster in the year the events occurred respectively. Each event directly impacted many people and infrastructure and required a unique solution. This paper finds that regardless of the Sendai Framework, when faced with a complex multifaceted holistic approach, the priority of indictors selected is weighted towards succeeding in principles of effective implementation and disaster risk reduction over community recovery. This results in those most vulnerable and affected by the disaster from gaining attaining 'betterment' from the actions and activities undertaken.

Keywords
Build Back Better, Frameworks, Indicators, Post-Disaster Reconstruction

i-Rec Conference 2023: Tensions Between Tradition and Innovation in Disaster Risk Reduction, Climate Action, and Reconstruction

From Disaster Recovery Action to Community-based Disaster Prevention - A Case Study of Shishiori district of Kesennuma, Miyagi

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1. Natural Disasters and Neighborhood Communities

There have been a lot of reports and disaster studies about the hazard impacts on neighborhood relations and local citizen organizations. For example, Rebecca Solnit's (2009) A Paradise Built in Hell is a typical example. Ikaputra(2016) studied community reconstruction based on "gotong royong" in Java, Indonesia. UNCRD also proposed CBDM (Community-based disaster management), and Widyasari (2021) reported more than 10 years of CBDM efforts in Java.

In Japanese disaster research, there have been a lot of studies on community-based recovery planning in the aftermath of the 1995 Great Hanshin-Awaji Earthquake, the 2004 Niigata-Chuetsu Earthquake and the 2011 Great East Japan Earthquake. Iuchi (2010) reported on the reconstruction of villages after the Niigata-Chuetsu Earthquake, and Mary (2018) studied on the community response to the Great East Japan Earthquake.

This study focused on the Shishiori(鹿折) Community Development Council in the central area of Kesennuma City, Miyagi which has been active for over ten years after the big Tunami. The council was established by the affected residents with the local government and support specialists. The council's main activity was the coordination of recovery plan and projects.

In spite of the completion of main council missions for the bult-environment reconstruction planning during over ten years, the council continue their activities. The main significance activity was disaster prevention for the next disaster. In other words, efforts to prepare for the next disaster have been citizen-centered and definitely attractive actions for post-disaster neighborhood community.

2. The Shishiori District's Efforts after The Great East Japan Earthquake

2-1Damage of the Great East Japan Earthquake

Kesennuma City is a port city located in the northern part of Miyagi Prefecture. The major industries are fisheries and seafood processing industry. 1,409 people (city population 73,489 in 2010) were died or missing in the 2011 Great East Japan Earthquake, 16,438 houses were completely destroyed (26,601 households in 2010), and up to 20,086 people were forced to make a live in evacuation shelters.
The Shishiori district is located in the center of Kesennuma. The maximum tsunami height was approximately 7.0 meters, 205 people were died or missing, and 3,179

houses were completely destroyed which is 60% of the total number of houses in the Shishiori.

2-2 How Reconstruction Planning was Developed in the Shishiori District

In October 2011, the city of Kesennuma launched an earthquake recovery plan. The plan proposed conceptually housing relocation projects into high-inland area and reconstruction for industry in low-lying damaged coastal area by prohibiting building new houses.

Before announcement of an earthquake recovery plan on October 2011, the people in Shishiori had begun to discuss about housing and commercial reconstruction. In October 2012, the Shishiori Community Development Council was established to response for the local government's reconstruction proposal. In other words, the council was established as a place to discuss and coordinate various urban reconstruction projects with the local government as satisfactory as possible for local residents. The council discussed intensively land use, a shopping street, public park design and so on. In addition to discuss about those issues, they also made proposals to the government with the help of cooperating experts.

In June 2016, five years after the disaster, new housing lots were handed over to those who wanted to rebuild, and in August 2016, public housing for rent began to be occupied. By March 2019, eight years after the disaster, major urban reconstruction projects such as roads, parks and housing had been almost completed. Disaster victims began to live in a town with a new infrastructure landscape.

In January 2022, the Shishiori Community Development Council published a report on its decade activities. In this report, the 10-year from the council establishment in October 2012 to January 2022 was divided into three period. The 1st period is from October 2012 to March 2014. It is the phase of formulating a recovery plan, during which residents discuss the plan with a local government supported by urban planning experts. Some alternative plans to submit the government were drown. The second phase is from April 2014 to March 2017. The council contributed designing specific issues of infrastructures such as park and street-sidewalk. Furthermore, a new sub-council mainly consisted of young generations was established. That new young team initiate from a view of child-care environments and new industries. Besides they started a really exciting summer festival in August 2016. This 2nd phase means to explore the truly community-based activities and begun to carry out. The 3rd phase is from April 2017 to the present. The summer festival has been taking place. Cherry-tree planting activities were initiated by residents' own ideas. The disaster prevention activities were started as a new initiative.

3. Disaster Prevention Activities by the Shishiori council

The first disaster prevention activity was an evacuation center training in March 2020. This training was hosted by the Shishiori district promoting committee. This committee including the Shishiori development council consists of neighborhood organizations to be less damaged area around the council.
In October 2019, a typhoon caused flooding and landslide disasters. In November 2021, the development council not committee held the first "disaster prevention field work" to share the risk of flooding and landslides and consider countermeasures and preparations for their community.

3-1. Program for disaster prevention field work

The disaster prevention field work took for four hours from 8:00 am to 12:00 pm. This work program is composed of five parts. Firstly, an introduction was given by the entirety. Secondary, the participants were divided into seven groups and confirmed the field-trip course. Thirdly, each group conducted fieldtrip to share landslide risk and disaster prevention resources. Fourthly, they returned to the venue and making a map representing the survey results in 40 minutes. Finally, each group presented their findings and shared both risk and assets. General discussion was held.

Approximately 30 people participated. They were classified into three demographics. The first is the group of young people who are the event organizers. About 30% of this young demographic group were women. The second were the elderly leaders of the community organizations, who have deep knowledges about their living environment and hazards history. So, they are dedicated as guides in the field trip. Third is a group of outside experts, such as local government officials and our university members.

3-2. Outcomes of the Disaster Prevention Field Work

The following ideas were pointed out and discussed from the Disaster Prevention Field Work by the participants.

A) Risk of Flooding and Landslide Disasters

・Landslide history and risk perceptions in slopes and forest near their village

・The areas of anxiety for heavy rain.

B) Tsunami Evacuation sites and Tsunami vestiges

・Certify the places and facilities for tsunami evacuation.

・The place to remain tsunami impact and memory

C) Evacuation behaviours

・The intention that we protect our town by ourselves

・Share knowledge about hazard information and emergency broadcasting system

・Methods of evacuation decisions during heavy rain

D) Town resources cultivated by each neighborhood community

・The current status of common squares to be maintained by neighborhood.

・Attractiveness of mountains (rice fields, spring water, forests)

・The current status of abandoned railroad place since the 2011 earthquake and opinions on how to make use.

4. The Significance of Disaster Prevention Activities for Recovery Neighborhood Community

In this case study, it is pointed out that disaster prevention activities for the next disaster make more spontaneous and proactive for members of the Shishiori Community Development Council than previous efforts related to reconstruction projects. The purpose of making the council was to coordinate special planning such as specific design of parks and sidewalks. Such design activities had not been experienced before for the council members. They were just able to understand advice from experts and speak up about what they felt.

Generally, the disaster prevention activities promote people's self-assurance that they can protect their community by themselves. In addition, the council members in Shishiori considered important in addressing landslide risk was that the landslide risk areas were areas that suffered little damage in 2011. These areas were somewhat peripheral to the reconstruction of housing and commercial for about 10 years. But the disaster prevention field work of the landslide disaster was targeted where was not inundated by the tsunami. Through collaborative work, a lot of communication were generated. This work weaved together all the Shishiori community.

The Shishiori community is not only the area where reconstruction projects were carried out, but also to include neghiboorfood on high ground that became an evacuation place for nearby residents. So, the field work led to restore the connections of all the Shishiori from before the Great East Japan Earthquake.

In community-based recovery process, the action for saving lives in the next disaster is the centripetal force. Besides the case of Shishiori suggests that working toward the next disaster during the recovery process has the potential to increase the spontaneity and independence of local residents, and to restore relationships between peoples who have distant due to the presence of damage.

Keywords
CBDM, Great East Japan Earthquake, Recovery process, .

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Study on people's lives at seawall construction sites before the Great East Japan Earthquake

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Purpose

After the Great East Japan Earthquake, large-scale seawalls were constructed throughout the coastal areas. They improved the safety and brought about changes in the lives of residents in the coastal areas where they had been living before the disaster. There were negative reports that the sea was no longer visible in areas where seawalls were built. More consideration should be taken to their lives when constructing seawalls.
The purpose of this study is to clarify the lifestyles of the people who lived near the construction site before the disaster and to take more appropriate consideration of their lives in preparation for the construction of seawalls in the future.

Design/methodology/approach

In this study, we used the memory data of the residents recorded when we carried out the restoration support activities called the "Lost Homes" Project (LH). The LH project is to bring back the memories of the lost city and pass them on to the next generation by holding workshops to create a 1/500-scale model of disaster-stricken cities. We held workshops (Town of Memories Workshop, TMWS) using the models and interviewed many residents about their lives before the disaster. As a result, we were able to obtain much information on their lives before the disaster.

The target areas of this study are the Unosumai district of Kamaishi city and the central urban area of Yamada Town in Iwate Prefecture. (see Fig. 1). These two districts are where embankment-type seawalls have been constructed. There are two main types of seawalls constructed after the Great East Japan Earthquake: embankment type and upright type. Since the embankment type requires a larger area of land, it may have a greater impact on the lives of residents. In our initial analysis, we extracted data within 50m from where seawalls are currently being constructed in the two districts. Next, by organizing and classifying the data extracted for each area, the characteristics of their lives before the disaster in the vicinity of the seawall construction sites were clarified.

Findings

61 memories were recorded in the vicinity of the seawall construction site in the Unosumai district. According to them, before the disaster, these areas were

freshwater marshes, and people enjoyed the activities such as fishing, swimming, and winter skating.

222 memories were recorded in the vicinity of the seawall construction site in the central urban area of Yamada town. According to them, before the disaster, there were many houses and facilities for fisheries and seafood processing, and popular festivals (traditional events) were held.

Originality
Some of the studies and practices on the seawalls of the Great East Japan Earthquake are related to the local industries, tourism, landscapes, and natural environment considerations, in the construction areas. In addition to these, this study indicates the need to take into consideration the 'leisure activities' and 'traditional events' in the construction area.

Research limitations/implications
Further case analyses are needed as this study analyzes only two areas of the many seawalls that have been constructed. Further investigation is required as no post-construction surveys have been conducted.

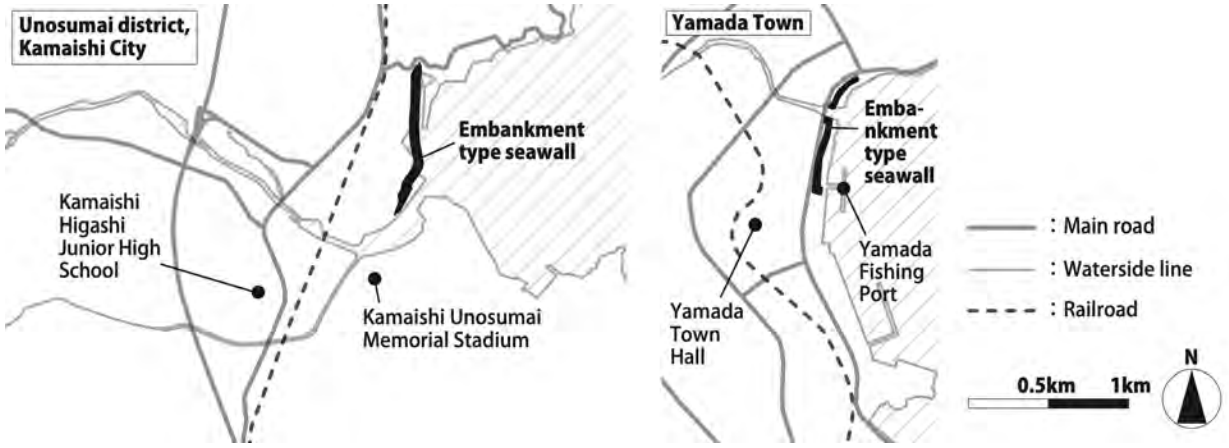

Fig1. Map of the research area

Keywords
The Great East Japan Earthquake; Seawall; Life; Memory.

What do we learn from the earthquake of February 6, 2023 in Türkiye? : Fieldwork in the emergency assembly areas

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The “Post-Disaster Emergency Assembly Areas” play an active role in the safe evacuation of the survivors from the disaster area after a disaster in a settlement and facilitate the access of authorized service groups to the relevant area. The Post-disaster Emergency Assembly Areas are selected according to spatial adequacy, safety, accessibility and recognizability (rememberability) and similar criteria in the national and international context of the region. The main subject of the study is the analysis of the post-disaster feasibility of the emergency assembly areas, which are determined by these criteria and will be used after possible disasters.

In Türkiye, as a result of the 7.7 and 7.6 magnitude earthquakes centred in Pazarcık-Kahramanmaraş and Elbistan-Kahramanmaraş on February 6, 2023, many people lost their lives in the region and eleven cities were seriously affected by this earthquake. The area affected by the earthquake was determined to exceed 100.000 km^2. Given the damage caused by the earthquake, the magnitude of the earthquake demonstrates that this is the largest earthquake in recent years. After the earthquake, the process of staying in a safe area and reaching the authorities took place in the emergency assembly areas. This study aims to measure the utility of the emergency assembly areas determined by the authorities against possible disasters after the earthquake. In this context, Malatya Province in Türkiye was selected as the study area, a total of 55 emergency assembly areas were analysed, and in-person interviews were conducted. In addition, an analysis of the emergency assembly areas determined by the local authorities immediately after the earthquake was carried out. The post-disaster emergency assembly areas were examined by specific spatial criteria, questioning their physical adequacy and the areas that the disaster survivors residing in the examined region considered safe physically and psychologically (which they accepted as emergency assembly areas) were discussed.

In the findings of the study, it was determined that the emergency assembly areas determined before the earthquake by the authorities were not suitable after the

earthquake using. Emergency assembly areas not large enough for disaster victims are unsafe and do not meet basic human needs (electricity, water, infrastructure, etc.). Emergency assembly areas are not accessible and the location of these areas is a problem for seniors and persons with disabilities. In addition, it was determined that 67% of the emergency assembly areas determined in the system were not actively used, and instead, it was determined that the disaster victims preferred other areas. Especially with the urban transformation, it is necessary to redesign the emergency assembly areas within the framework of certain criteria before the disaster. As a result, it is suggested that emergency assembly areas against possible disasters are of vital importance in terms of disaster victims, authorized institutions and organizations and that these areas should be redefined within the city within the scope of certain criteria.

Keywords
Earthquake, Emergency assembly areas, Kahramanmaraş earthquakes.

This paper is a product of a fieldwork study supported within the scope of the "Tübitak 1002-C natural disaster-focused field study emergency support program".

i-Rec Conference 2023: Tensions Between Tradition and Innovation in Disaster Risk Reduction, Climate Action, and Reconstruction

Fukushima Twelve Years after the Nuclear Accident

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This paper analyses the structure of recovery policies in Fukushima, discusses the current situation of the affected areas and the affected people of Fukushima twelve years after the Fukushima nuclear accident occurred, and points out issues concerning revitalization of Fukushima based on the results of field surveys of the affected areas, as well as interviews and questionaries of the affected people, and literature review. The recovery policies in Japan which municipalities restore roads, bridges, and other infrastructure with subsidies from the national government were used for the recovery of Fukushima. As a result, evacuation orders have been lifted in all areas except for the Difficult-to-return Zones, but many residents have not returned to the affected areas and continued to evacuate all over the country. While no comprehensive survey has been conducted on the situation of rebuilding the lives of the evacuees, the number of disaster-related deaths and disaster-related suicides is extremely high in Fukushima Prefecture. Although the national government has set a policy that it would maintain a budget for recovery of Fukushima until FY2030, the comprehensive review of the recovery of Fukushima is necessary to determine the “exit” by the whole nation.

Keyword
Fukushima; Nuclear accident; Recovery policy; Evacuation; Life

Inclusive Disaster Management Planning: Addressing the Needs of LGBTQ+ Communities in Japan

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Background
Recently, stakeholders have increasingly acknowledged the importance of inclusive disaster management planning for mitigating disaster-related damage. The Sendai Framework highlights the active involvement of women, older people, and individuals with disabilities in disaster risk reduction (DRR). However, it has not sufficiently addressed the needs of LGBTQ+ communities.

Purpose
This study investigates the challenges that LGBTQ+ individuals and communities face within the context of DRR to enhance inclusive practices. The research draws from past experiences and identifies potential solutions for addressing these challenges.

Method
Researchers adopted a mixed-methods approach, using a combination of semi-structured interviews and questionnaires to collect qualitative and quantitative data.

Results
The findings reveal that local disaster preparedness planning in Japan has not yet successfully integrated the needs of LGBTQ+ communities during disaster situations. This outcome highlights the need for additional research and targeted interventions to promote more inclusive DRR policies and practices.

Research limitations
This study represents an initial report of an exploratory investigation into the challenges encountered by individuals of diverse sexual orientations in disaster situations. The study offers an overview of the international debate on sexual miscegenation and subsequently presents a description of the current situation in Japan. The findings indicate that the needs of sexual minorities may not be easily comprehended, and interviews with LGBTQ+ individuals underscored the difficulties they faced in such circumstances. Nonetheless, it is essential to acknowledge that

this study is currently in the research phase and needs more statistical evidence for conclusive proof and discussion.

Keywords
LGBTQ+ community, Disaster management, Shelter

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Post-disaster place-making in tsunami reconstruction memorial parks after the 2011 Japan tsunami: Societal adaptation to environmental change and efforts for community recovery

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Background and problem statement

Physical destruction, land use control, relocation of residence following disasters disconnect people and places after the Great East Japan Earthquake (March 11, 2011). Japan has implemented buyouts as the largest scale after the 2011 tsunami, but municipalities still face challenge after a decade: how to manage large amounts of publicly owned buyout land? Construction of disaster memorial parks in the publicly owned land is widely adopted. Land use planning in coastal area remains spatial planning how to convert land use rather than placemaking how to regenerate urban voids as places for people. Also, memorial parks are mainly targeting future and outside population with less attention to local communities.

Objective

This paper explores transformation of place meanings in memorial parks for local communities after the 2011 Japan tsunami. We assume that place governance and citizen-driven placemaking would affect individual's sense of place and local place identity.

Methods

The primary analysis focuses on the sense of place for local communities, planning governance, and citizen-driven placemaking in memorial parks: Takata Matsubara in Iwate Prefecture and Ishinomaki Minamihama in Miyagi Prefecture. We explored these post-disaster recovery process through quantitative and qualitative case study methods, including a questionnaire survey, interviews for place-makers, analysis of government report of memorial parks.

Results and Main findings

1) Place governance by multiple government jurisdictions in memorial parks

Central government decided to establish a national disaster memorial facilities and parks to commemorate victims of the tsunami, to pass lessons of the disaster to future generations, and to express strong will for reconstruction. The design, construction, and management of the memorial park spans over the multiple jurisdictions including national, prefectural, and municipal governments. Municipalities established local committees to discuss planning, design at the early

stage, and continues discussion how to manage and operate memorial parks with local communities. Place governance in two memorial parks encourages civic involvement in management recommended by the advisory committee.

2) Citizen-driven place-making in memorial parks
Civic organization “Protecting TAKATA-MATSUBARA (*pine forest*)” in Takata is conducting pine tree planting activities with the participation of many volunteers, citizens, businesses. One local resident put up a signboard “GANBARO Ishinomaki” (GANBARO means *Hang tough*) on the site of his home washed away by tsunami The main reasons of putting signboard and the meaning for creating the place was "I don't want to be defeated by the tsunami, and I want to encourage the victims", but it gradually changed to "I want to create a place where the bereaved families can pray quietly" ,then, " I want to make the place for disaster learning for the generation ". As a result, it has become not only a stopover for visitors, but also a place of remembrance where bereaved families gather on March 11. Citizen-driven placemaking not only inherits their pre-disaster places and but also give them a new meaning after the disaster. Citizen-driven placemaking, which started out for their own sake, and the sake of the community, has gradually become a trend that involves outside visitors, passing on the traditions to them and nurturing places together.

3) Post-tsunami sense of place in tsunami memorial parks
We conducted questionnaire survey in 2022 to ask transformation of people’s living areas and places after tsunami, in two cities with memorial parks, targeting the households who resettled to the government-developed resettlement zone. Main findings are as follows. First, the ratio of residents who don’t feel memorial park as their place is much higher than residents with sense of their belongings to memorial park. Urban void and space emerged after devastation, land use control and development of parks has not been transformed into people’s place after a decade. Second, we tested and found several statistically significant different relations between place belongings (Do you feel memorial parks as your place?) and place perception (being part of the everyday scenery, feel at ease, restless, feeling of nostalgia, sad feeling, symbol of town, symbol of reconstruction, place for disaster tradition etc).In most locations in memorial parks, the place perception as "being part of the everyday scenery" ingenerates place belongings. The place perception as a "symbol of reconstruction" in miracle pine and pine forests and the entire park in Takata, was a significant factor transforming urban voids to people’s place. "Feeling of nostalgia" also has positive impacts on placeness. In Ishinomaki Minamihama Memorial Park, the perception of being "restless" disturbs transforming space into people’s place.

Originality and impacts/Theoretical implications
Integrating land use "spatial" planning and "place" making is essential to revitalize the sense of place and local place identity which contribute for recovery. We lack post-disaster recovery methodologies to reconnects people and places which is essential for long-term recovery process to achieve sustainable, livable, resilient communities and ensure social equity and justice.

Practical implications
Supporting and encouraging citizen-driven placemaking will contribute for ongoing long-term recovery in coastal communities after the 2011 tsunami.

Keywords
Place-making, Spatial planning, Relocation of residence, Sense of Place, Post-disaster recovery planning

Acknowledgement
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Analysis of the Transformation of the Residential Environment in the long-term recovery

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Purpose

Reconstruction plans that focus on infrastructure restoration, local economic activities, settlement development, and disaster prevention measures affect the recovery of housing for disaster victims after a large-scale disaster. Their relocation, reconstruction, and changing residents led to the spatial transformation around the damaged area. Alexander (2016) showed a variety of arguments on the process of post-disaster community recovery, using reconstruction cases from around the world. The Great East Japan Earthquake, a complex disaster in a developed country, shocked the world. The recovery process can provide new insights for us. More than ten years have passed since the Great East Japan Earthquake, and urban planning and reconstruction projects in the tsunami-affected areas were almost complete. On the other hand, the area affected by the nuclear power plant accident in Fukushima Prefecture still needs to be fully dismantled, and local government plans to return to the site are still underway. This study analysed the spatial transformation of the residential environment in both disaster areas and clarified the characteristics of the post-disaster recovery process.

Methodology

For the tsunami-affected prefectures of Iwate and Miyagi, Koshiyama (2016) used building damage, municipal statistics and urban planning data, and temporary and reconstruction housing supply data to clarify the five-year housing reconstruction process. The national government has published the results of the 2020 census. We have access to a comprehensive and standard data set on population and housing as of 10 years after the disaster. In this study, data on population, households and housing environment from the pre-disaster and post-disaster census were collected and organised by municipality, detail district and 500m mesh. Differences between pre-disaster and post-disaster were determined to identify trends. The geographical characteristics were also analysed using geographical information.

Findings

Data analysis of population change in the municipalities revealed that inland areas that were lightly damaged and urban areas before the disaster were used as temporary settlements and remained populated. The population of some of the worst affected municipalities had not recovered, and we pointed out the difficulty for them to do so in the future. The population decline in the affected areas in Iwate and Fukushima prefectures has accelerated by about 10% compared to pre-disaster levels. The decline in households is more remarkable than the one in Fukushima. The fact indicated that the process of the temporary housing provision and the development of social infrastructure for disaster recovery and disaster prevention measures strongly influenced the delay in population recovery. It showed that

housing recovery was delayed in the areas affected by the nuclear disaster and that the projected housing supply was almost balanced within the same prefecture.
The detailed district data analysis results showed a decrease in the number of detached houses in the affected areas as a whole, a reduction in the percentage of owner-occupiers and an increase in the number of communal housing households in the population recovery locations. The areas with a significant rise in housing-related homes are not only located in the urban planning areas of the affected areas but also scattered in the surrounding areas and the metropolitan areas.

Originality
The results of the analysis of the municipal data and the GIS analysis of the detailed district reveal the geographical characteristics of the actual situation of the housing recovery, which is original. The process of recovery from earthquake, tsunami and nuclear disasters is complicated by the relationship between the amount of damage, following risk measures and livelihood recovery. The reason for this is that the next disaster preparedness and risk perception differ, and these differences affect how people rebuild their lives. The process of restoration of livelihoods in the affected area and the surrounding area as a managed space, concerning the factors involved, shows the limitations of using currently held methodologies for the restoration of spatial functions and planning.

Keywords
The transformation of damaged areas, the housing recovery process, the Great East Japan Disaster, recovery from the nuclear disaster

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Assessing the reconstruction process following a wildland urban interface (WUI) fire in Viña del Mar, Chile

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Wildfires are becoming more frequent and destructive hazards, capable of provoking severe damage in natural and built environments globally. On December 22, 2022, the city of Viña del Mar in Chile was affected by a severe wildland-urban interface (WUI) fire comprising roughly 115 hectares. This wildfire provoked two deaths and damaged or destroyed 340 dwellings in formal and informally developed urban areas. The local and national governments rapidly started the reconstruction process, focusing on rebuilding houses, restoring critical infrastructure systems, improving streets and other public spaces, and relocating dwellers from particularly exposed areas. We critically assessed the reconstruction process's outcomes four months after the disaster. To do this, we used a GIS-based analysis to deliver a spatial-based comparison of (1) the cadastre of damaged dwellings; (2) the Ministry of Housing and Urbanism (MINVU)'s reconstruction plan; and (3) the actual reconstruction that has been carried out by the dwellers themselves, up to mid-April 2023. Our findings show that by this date, 274 dwellings (80.6%) had already been rebuilt, all through the dwellers' self-reconstruction efforts, except for one house delivered by MINVU. Of these, 142 dwellings (51.8%) are comprised by the MINVU's reconstruction plan; 49.3% were rebuilt in areas classified as 'rebuildable' by MINVU, while the remainder 50.7% are in 'rebuildable with risk-reduction measures' zones. Also, other 42 houses were rebuilt by dwellers in areas deemed 'non-rebuildable' due to their high risk levels. These findings pose significant implications for stakeholders and emergency managers, as they underline the importance of reconciling government-led, mid-to-long-term reconstruction efforts to the dwellers' urgent housing needs after a disaster.

Keywords
wildifres; wildland-urban interface; reconstruction; informal development; Chile

The reconstruction of the El Morro Neighbourhood in Talcahuano, Chile, after the 2010 disaster: a missed opportunity for including tsunami vertical-evacuation (TVE)?

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On February 27, 2010, Chile's central-southern area was struck by a destructive tsunami that affected about 400 km of its coasts. In Talcahuano, the tsunami provoked 37 deaths and destroyed 1,956 houses. The El Morro Neighbourhood in Talcahuano is an antique fishing village where no fatalities occurred, although most of the houses were wiped out or damaged by the tsunami. The governmental reconstruction efforts in this neighborhood included the replacement of destroyed dwellings with new homes with risk-reduction features, relocating dwellers to social housing buildings, and improving the urban infrastructure and public spaces. As tsunami vertical-evacuation (TVE) was not included in this plan, we aimed to examine if including a new shelter for vertical evacuation could have delivered noticeable risk-reduction outcomes. Our approach included combining a tsunami flood model and an agent-based evacuation model to examine the potential impact of using a new social housing building as a TVE shelter. Our findings corroborated that a large percentage of the neighbourhood's population (between 75.9% and 99.6%, depending on the average departure time) could safely evacuate to the existing horizontal shelter. Also, we demonstrated that including a new TVE shelter would not reduce the number of 'dead' evacuees, given the location and limited capacity (450 people) of the proposed refuge. We suggest that both factors need careful examination by emergency planners and that a thorough community-based process is required when this kind of risk-reduction infrastructure is delivered.

Keywords
tsunami; vertical evacuation; agent-based modelling; Talcahuano; Chile

Bottlenecks in Civil Construction Material Supply for Post-Disaster Transport Infrastructure Recovery: A study of the 2016 Kaikōura earthquake in New Zealand

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Purpose
Post-disaster transport infrastructure recovery projects are likely to face schedule delays and cost overruns, partly as a result of the complexities inherent in the post-disaster civil construction material supply process.

Design/methodology/approach
To understand these complexities, this study, drawing on a field-based study in New Zealand, examines the post-earthquake transport infrastructure recovery process to identify the material supply bottlenecks that faced transport infrastructure recovery following the 2016 Kaikōura earthquake.

Findings
The research findings show that although the perception of material issues varies across different organisations, aggregates, concrete, stormwater pipes, and some specialised products were recognised as having supply problems during the recovery period. Efficient supplies of these materials were mainly hindered by 1) difficulties in predicting material demand, 2) constrained supply capability, 3) inadequate local freight capacity, 4) legal, cultural, and/or environmental considerations on resource utilisation, 5) impacts of COVID-19, and 6) ineffective communication and coordination.

Originality
The lessons learned and recommendations proposed from this research will inform the development of post-earthquake recovery policies and material supply chain operation strategies in order to expedite the recovery of transport networks if a future earthquake strikes.

Keywords
Post-disaster recovery; Transport infrastructure; Construction materials; Supply chain; 2016 Kaikōura Earthquake

Rehabilitating socially meaningful coastal and marine environments: coastal fisheries in Fukushima since the 2011 nuclear disaster

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Purpose

Some of the greatest impacts from the 2011 Fukushima Dai'ichi nuclear accident have been on the marine environment. Nearly four-fifths of radioactive material ended up in the north-west Pacific. Coastal fishing in Fukushima Prefecture has still not returned to pre-disaster capacity. Now Fukushima's fishers and coastal communities face treated water containing low-level radioactive material being released from the nuclear plant site into the sea, which they fear could reset efforts to revitalise Fukushima's fisheries.

We address two problems. First, what have the social and cultural impacts been on Fukushima's coastal fishing communities from the nuclear accident and subsequent revitalisation efforts? Second, how do coastal communities and fishers in Fukushima feel about the treated water releases, and how can their concerns be incorporated into governance and decision-making? The Fukushima case has wider implications for disaster recovery and climate resilience, in that it illustrates rapid and profound environmental change that has multiple setbacks over time, with significant implications for coastal dwellers' livelihoods and sense of identity.

Design/methodology/approach

Since 2014, we have conducted over 50 qualitative interviews and discussion groups with fishers, fisheries cooperatives, local government officials, NGOs and citizens on the Fukushima coast; involving over 80 respondents in total. Particular attention is given to the most recent round of group interviews from early 2023, which were undertaken with coastal fishers, fish processors, and fisheries cooperative staff in Iwaki in the south of Fukushima prefecture. These later interviews are especially pertinent as they focused on the planned releases of treated water from the Fukushima Dai'ichi nuclear plant, which were scheduled to commence only a few months after the interviews.

Findings

Over time, we find that fishers and coastal dwellers draw close links between the rehabilitation of fisheries and the marine environment, and the recovery of their lived environment more widely. Respondents expressed significant pride not only in the regimes that have been established to monitor marine radioactivity locally, but also in the quality and diversity of Fukushima seafood post-disaster. As such, what is at stake with the releases of treated water from Fukushima Dai'ichi is not simply the

economic value of Fukushima seafood, but also the perception that a marine environment which has taken so long to understand and purify could once again come to be seen as 'tainted'. Moreover, whilst fishers may receive compensation for loss of income from suspension of fishing or decline in prices of Fukushima seafood, this compensation cannot make up for the loss of sense of pride and identity, or the opportunities for interaction and wellbeing, that coastal fishing affords.

Interview responses also indicate that although fisheries stakeholders are basically opposed to the releases of treated water, they do understand the science behind the treated water releases and acknowledge that doing nothing may not be an option. Rather, there remains a strong sense of anger and distrust among fishers and fisheries stakeholders as to how the decision-making process for treated water has proceeded. There is particular concern about the lack of detail from the national government and plant operators TEPCO as to the specific processes through which the release will happen. Moreover, although Fukushima's fishers have received attention from international media, they note there has been limited 'on the ground' engagement with the perspectives of fishers and coastal communities from the international science-policy organisations that aim to support the management of the treated water releases.

Originality
Although there has been much research into the social and cultural aspects of radioactivity in post-disaster Fukushima, radioactivity in the coastal and marine environment has received less explicit attention in English-language scholarship from qualitative and ethnographic perspectives (see, however, Takahashi (forthcoming) and Morimoto (forthcoming)). This absence of marine perspectives is notable, given the global controversy around the releases of treated water from the Fukushima Dai'ichi nuclear plant. We therefore bring a narrative of qualitative research conducted over a number of years, which charts the revitalisation of coastal fishing in Fukushima post-disaster and illustrates the social and cultural significance of fisheries to coastal communities in Fukushima.

Practical and social implications
We recommend greater visibility for Fukushima's coastal communities and fishers from the earliest stage in the governance of the marine environment in Fukushima. This may include establishing an arm's length body to research the marine environment, or delegating decision-making to a committee of coastal stakeholders with the power to commission additional research or propose alternatives. More widely, for disasters that span land and sea, we call for greater attention to and engagement with the marine social sciences and blue humanities, fields of study which have long considered society's relationship with the seas.

Keywords
coastal communities; fisheries; Fukushima Dai'ichi; Fukushima treated water.

Empowering owners and engineers: leveraging seismic instrumentation standards to introduce structural health monitoring in the Philippines

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Purpose

The increase in climate change-related disasters has emphasized the need for monitoring and maintaining structures, leading to the emergence of Structural Health Monitoring (SHM) as an essential component of resilient societies [1]. Despite the Philippines' adherence to a building code [2] that addresses maintenance and monitoring, a specific SHM standard has been absent, with seismic monitoring instrumentation being the closest available provision. Building upon Section 105 of the National Structural Code of the Philippines (NSCP) [3], the objective of this research was to contribute to the advancement of SHM by utilizing existing accelerographs for Operational Modal Analysis (OMA) while involving building owners and structural engineers in a participatory approach to enhance building monitoring and SHM education. Such an approach is based on the Quadruple Helix Model of Innovation [4]. Using this model, the study involved the academia (researchers), the government (code adherence), and the building owners and structural engineers (society and business).

Limitations

This study was limited to Quezon City, Philippines. Additionally, the existing practice of having a maximum of three accelerograms in certain buildings limited the scope of Structural Health Monitoring (SHM) or building monitoring in this context, which primarily focused on using modal frequency to periodically update the structural model. Moreover, the study only obtained and utilized information from one building, highlighting the challenging landscape of the city in terms of introducing SHM.

Methodology

Initial investigations of this study have uncovered that the accelerographs from the locality suffer from significant noise and unwanted peaks. To mitigate this issue, an automated Machine Learning (ML) method was developed to extract modal frequencies. This approach utilizes a clustering technique in conjunction with Stochastic Subspace Identification (SSI). To evaluate the efficacy of this ML method in modal analysis, identified modes were compared with those obtained through modal analysis of a commercial model and SSI without ML. Following the acquisition of modal frequencies, the commercial software's structural model was updated. Inferences were drawn by incorporating information from OMA, as-built drawings, and the software model.

Throughout the process of data acquisition and model updating, it is essential to maintain continuous communication with the building owner, informing them about the methodology and the potential utilization of existing accelerographs for building monitoring purposes beyond seismic monitoring. It is crucial to clearly define the goal of their participation, which involves utilizing the existing accelerograms to determine the modal frequencies and update the structural model. The absence of a clear goal and communication could serve as a barrier to the participatory approach [5].

Findings

Among the available accelerographs, the researchers focused their study on a 20-story regular reinforced concrete structure in Quezon City. Despite concerns raised by the owner and the structural-engineer-on-record regarding their lack of knowledge OMA and SHM, they agreed to fully participate in the study. This consent can be attributed to their understanding of the study's objectives and their prior knowledge of building instrumentation based on NSCP Section 105. Additionally, the recent completion of SHM training conducted by the Association of Structural Engineers of the Philippines (ASEP) played a supportive role in convincing the owners and the structural engineer, even without their direct attendance at the training. This aligns with the recommendation by Schütz et al. [5], that participation improve with dialogue.

The modal analysis of the commercial software model yielded the first orthogonal modes at frequencies of 0.23 Hz and 0.26 Hz, along with a torsional mode at 0.29 Hz. In the case of the ML-based Stochastic Subspace Identification (SSI) method, the first three modes were detected with modal frequencies of 0.25 Hz, 0.29 Hz, and 0.33 Hz, with relative errors of 8.7%, 11.5%, and 13.8%, respectively. Conversely, the SSI without ML only identified the first two orthogonal modes with frequencies of 0.28 Hz and 0.29 Hz, and relative errors of 21.7% and 11.5%, respectively. As anticipated, the SSI with ML achieved better results compared to the standalone SSI, successfully extracting modal frequencies from the noisy data set. After a discussion with the building owner and the structural engineer, it was determined that the errors in the analysis were attributed to the 5% damping ratio assigned to the linear model for all modes. Nevertheless, it was concluded that the building remains structurally sound.

It is evident that bridging research into practice requires a collaborative effort involving academia, government-mandated local agencies, and private owners. This collaborative approach serves as a key factor in effectively translating research into practical applications, aligning with the principles of the Quadruple Helix Model of Innovation. In this study, the researchers played a crucial role by developing a Machine Learning (ML) method to extract modal frequencies from accelerographs, contributing valuable expertise to the project. Government-mandated local agencies were instrumental through their establishment of building codes and regulations related to instrumentation. Private owners, on the other hand, actively participated by granting access to their buildings and engaging in discussions with the researchers, providing practical insights and real-world data. The collaboration among these different stakeholders facilitated the successful implementation of the study and highlighted the importance of collective efforts in translating research into actionable outcomes.

Originality

This research significantly contributes to the advancement of SHM in the Philippines through a participatory approach. The novelty lies in leveraging an existing standard familiar to the participants to introduce OMA and SHM. This approach facilitated their consent to the research goals, namely, the monitoring of their structures, while also enhancing their understanding of SHM and OMA.

Keywords: Structural Health Monitoring; Operational Modal Analysis; Quadruple Helix Model of Innovation

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Who is the target of housing recovery support? -Community base, individual relocation and public housing-

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Purpose

There is a mismatch between the programs of the reconstruction effort and the housing reconstruction choices of people in Japan. The housing reconstruction option would be related to individual characteristics. The research question is which types of disaster victims select which type of housing reconstruction options. Following three things are discussed through statical analysis of questionnaire survey in the GEJE impacted community such as 1) whether the reconstruction projects are lowering the level of recovery, 2) the characteristics of the disaster victims who choose different options for housing reconstruction such as public housing, self-reconstruction the other place, and participation in reconstruction projects, and 3) a description of the profiles of disaster victims who made each choice.

Methodology

A panel data of questionnaire survey which was conducted by Natori City, Miyagi in 2014, 2015, 2016, 2017, and 2020 are used for the analysis. This survey targeted all households who were living in temporary housing in 2014, and questionnaire covered seven elements of life reconstruction, sense of life recovery, and disaster victim attributes.

To evaluate impacts of reconstruction projects, we calculated the sense of life recovery for each group and conducted a "repeated measures ANOVA" to adjust the difference among victim attributes for the analysis of negative impact of the reconstruction projects.

For the analysis of housing reconstruction option and profiles of victims, we performed cluster analysis for analysis of housing reconstruction choice trends and verified a tendency for each cluster to choose certain types of home reconstruction.

Findings

1) The reconstruction effort is not necessarily lowering the sense of life recovery. The sense of life recovery is due to the characteristics of disaster victims, rather than the choices they make for rebuilding their homes. In other words, the vulnerabilities that existed prior to the disaster are now more visible.
2) Five category of disaster victim characteristics were found such as 1) Still thinking, 2) Relay on government support, 3) Good both health and household financial

condition, 4) Elderly but independent from government support, and 5) Young and moving out. The characteristics of disaster victims, such as "health," "economy," and "disaster preparedness," were found to potentially affect their home reconstruction choices.

3) Those who reconstruct their home by themselves at the other place consist of three groups such as rich social ties, good both health and household financial condition, and low social ties.
4) Those who join the government reconstruction projects are as follows; recover project attracted, elderly – health issue group, loving community, and social tie group.
5) Those select public housing are as follows; reasonable option, low social ties, those who lost something in the disaster, and appealing to government supports.
6) One common finding was that disaster victims who made proactive choices for rebuilding their homes tended to have a higher sense of life recovery. On the other hand, those who lacked connections with others tended to have a lower sense of life recovery.

Originality

A longitudinal study using panel data to examine the relationship between housing reconstruction choices and sense of recovery, while taking into account the impact of survivor characteristics. Survivor characteristics can be classified based on the seven elements of post-disaster recovery (detailed below) to analyse housing reconstruction trends.

Practical implications

Public housing has a low sense of recovery regardless of resident characteristics, which is problematic as a supply mechanism. However, it is also an essential element of the system to support housing reconstruction after disasters. It is not necessary to provide support for all people, but it is necessary to continue to provide support according to the characteristics of residents. Support for people with a high sense of loss and those with weak connections is particularly important.

The reconstruction projects themselves do not decrease the sense of recovery, and if implemented well, they can also involve people who would otherwise reconstruct their home the other place. It is necessary to make the reconstruction project not only safe and fair, but also attractive as a project.

Keywords

Housing recovery; The GEJE; Public Housing.

Putting Down Roots: Gardening, Farming, and Forestry as Post-Disaster Placemaking

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Purpose

At different scales in areas across the Tohoku region, community-based placemaking activities include various kinds of planting and growing, from the creation of flower beds, gardens, greenhouses, community farms, fields planted in new types of crops, tree planting and building up of forested land. Literally rooted in place, they are connected to grounded events that bring together former and new community members, and volunteers and visitors, in events such as flowing planting, gardening, workshops, tours, and harvests. In some cases, events and activities are also connected to growing, harvesting, preparing, and consuming foods made from locally grown products. The purpose of this research is to investigate cases of green placemaking—gardening, farming, or forestry—in areas affected by the Great East Japan Earthquake.

Context

On March 11, 2011, the Great East Japan Earthquake, tsunami, and nuclear accident caused unprecedented damage to communities across Japan's northeast Tohoku coast. In the name of disaster risk reduction, after the official government reconstruction prioritized mitigation against future tsunami hazards, and recovery projects focused on relocation of residential areas to higher ground. Communities that had a dense mix of uses--residential, commercial, fishing, and small industry—pre-tsunami, were replaced by towns with commercial and industrial uses still permitted in low-laying area, and new residential areas on higher land formed by piling up land or cutting off mountaintops. Collective Relocation for Disaster Mitigation, the primary reconstruction project for the implementation of residential relocation, included large-scale government acquisition of former residential properties.

New uses and facilities have been introduced in a small part of these land areas, but a large among of vacant land remained more than 10 years after the disaster. In addition, in the case of the nuclear disaster, contaminated farmland and communities where evacuees have not returned have resulted in another kind of vacated land. With varied goals and motivations, placemaking initiatives that focus on (re)activating these emptied places and (re)building community range from small-scale projects of a few local residents, larger networks of non-profit or community organizations, or larger-scale government projects.

Approach

This research represents and initial investigation of these cases of rooted placemaking activities in disaster affected areas of Tohoku, towards future analysis of typologies of planting and growing activities. Drawing on a literature survey of projects, documentation and reports, this research is complemented by representative cases study examples of different types of growing placemaking. Based on analysis of the type of project, activities, and participation, this research explores the varied impacts of rooted placemaking on community well-being post-disaster.

Findings

In disaster-affected places, various types of citizen-driven green placemaking have emerged, at a range of scales. With green placemaking activities opening up opportunities for outsiders or newcomers to enter and visit regularly, activities such as gardening and farming can foster exchange between former residents and new-comers or visitors. Green places can also become a focal point for volunteers and students, who can become repeat visitors, thus building their own connection to the place. Green placemaking can also be connected to local revitalization or supporting local business such as small hotels or local produces.

Originality

Green placemaking is not unique to Japan, or the GEJE, and there is a rich opportunity for future international comparative case study research considering these topics. However, the large amount of disaster-affected area vacated as a result of the post-GEJE reconstruction has created a unique need and opportunity to re-activate spaces to benefit local communities. With the multiple benefits of citizen-driven green placemaking in disaster-affected areas, increasing support for these kinds of activities could also lead to improved long-term sustainability though a positive spiral.

Keywords: Placemaking, Green infrastructure, Post-disaster

Towards an architecture for the crisis, Lisbon and Bhopal informal settings

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Climate change and the Covid-19 pandemic have heavily impacted communities living in informal settings, usually at large cities' urban fringes. This investigation is a case study on urban improvements and disaster risk reduction in a vulnerable community on the outskirts of Lisbon (in the municipality of Seixal) and slums of Bhopal in India. Observations, technical and social surveys and semi-structured dialogues with families about their efforts to deal with natural and biological hazards revealed local creative solutions to improve indoor air quality and upgrade outdoor spaces to deal with the risk of flooding and virus contamination. The conclusions highlight disaster risk community-based strategies and actions to which architects should pay more attention.

Keywords
humanitarian architecture; slum upgrading; incremental housing; climate change; Covid-19 pandemic.

Voices from residents of municipalities near Fukushima Daiichi Nuclear Power Plant ten years after the nuclear accident

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The objective of this research is to understand what has been happening in the affected municipalities near the Fukushima Daiichi Nuclear Power Plant through the words of the people living there ten years after the nuclear accident. Though the government has begun to promote migration policies to revitalize those municipalities, problems related to the prolonged evacuation and efforts to return to the hometown after the nuclear accident are far from being resolved. What are the reasons for those residents to live there, what are they thinking, what kind of activities are they doing, and what is happening as a result? The author used secondary sources of various interview records to the residents in affected municipalities and found that the nuclear disaster had a profound impact on the way of life, thinking, and values of individuals, including those who had experienced the disaster and those who had not. And that these individuals took action, considering the disaster as their own problem, and such activities had restored the connection between the people and places which was once lost due to the disaster and encouraged discussion among people and it is playing a vital role in the reconstruction of the affected municipalities in Fukushima.

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The Importance of Practical Field-Based Experience on the Knowledge and Skills of Teachers and School Staff in Disaster Risk Management: A Case Study of the EARTH Program

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This study examines the importance of practical field-based experience in disaster risk reduction (DRR) in training programs for teachers and school staff. The research was conducted through a case study of the Emergency And Rescue Team by school staff in Hyogo (EARTH), a program created by the Hyogo Board of Education to train teachers capable of performing disaster preventive and response activities. The study uses non-participant observation and a questionnaire to evaluate the program from the perspectives of the teachers and school staff who participated and completed the field experience. The results show that EARTH training is unique in the way it is delivered, with interactive activities used to encourage active participation from the members. The study reveals that practical experience is an essential factor in developing knowledge and skills in disaster risk management, particularly in communication, collaboration, decision-making, and management. While the study is limited to the case study of EARTH in Japan, it provides an example of an in-service training program that fits the latest trends in professional development and could be studied as a unique experience that can develop and train disaster risk reduction leaders in the educational system.

Keywords
disaster risk reduction, teacher training, in-service training, knowledge and skills.

Cultural Integration after Forced Displacements: Tracing housing traditions of the Pakistani displaced population on the outskirts of Tehran

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Purpose

Every year, the wake of disasters forces many people to uproot and resettle in new regions or countries. The forcibly displaced communities often resist assimilating into the new milieu and try to retain their original identity and cultural practices. Yet the host environment enforces different degrees of restriction, limiting displaced households to resume their previous way of life. This study examines how Pakistani immigrants in such a predicament have acculturated into their new settings on the outskirts of Tehran in Iran.

Design/methodology/approach

Having fled floods, religious persecution, and extreme poverty, several Pakistani households resided on the outskirts of Tehran. Majority of the population has come from rural areas of Sindh province that are poverty-stricken, are Balochi or Sindhi in ethnicity, and have crossed the borders illegally. In their country of origin, they were primarily farmers and panhandlers. At present, they reside in an environment in which urban, rural, and industrial spaces collide.

This case study was carried out from March 2021 to May 2023, as a longitudinal, ethnographic investigation to uncover spatial configurations, activity systems, and residents' perspectives on their settlements. While conducting this study, the first author volunteered within a charity responsible for this population and developed a profound understanding of the community by observing their routine daily behaviour. A series of unstructured and semi-structured interviews were also arranged with 20 Pakistani refugees and five Iranian neighbouring community members. The purpose of these interviews was to understand the meaning behind certain behaviours, create a picture of their previous lifestyle and built environment, and to clarify ambiguities that could not be understood through observation alone. Data collected from both the host community and displaced individuals through interviews as well as field observations was documented and triangulated periodically to ensure their validity. The architectural survey of 16 housing clusters were conducted to explain the common spatial configuration of housing clusters in the Pakistani refugees' settlement.

Findings

The results indicate the formation of three types of housing clusters: the self-built, the occupancy of existing buildings, and the mass shelter. (Fig1) The host community prohibits any construction by illegal immigrants, so most of the cluster is occupational. Nevertheless, some residents, primarily those who have lived in this area for more than a decade, have constructed their own adobe dwellings. A brick industrial shed has been converted into a mass shelter. However, due to its poor sanitary conditions, overcrowding, and ineffective weather isolation, it is only occupied by new arrivals and the poorest. In addition, it should be noted that none of these settlers are squatters since they pay rent either with cash or by providing agricultural labor.

Self-built

Occupying existing buildings (previously a cattle ranch)

Mass shelter

Fig1. The three types of housing cluster

The forced immigrant group's activity systems have remained largely unchanged in the new environment. Agriculture is their principal source of income, and they must be in harmony with nature. Therefore, the activities are characterized by a daily and seasonal rhythm that shifts every six months. In the fall and winter, when some fields must rest before the new crop is sown, daily labour is the main addition to men's activities.

Across all three cluster types, the created space categories are analogous to the spatial divisions in rural Pakistan in terms of form and behaviour settings. Every cluster creates a semi-enclosed or enclosed communal environment in which members of an extended family live. There were four distinct spatial divisions, each containing a specific system of behavior settings. Level of privacy is correlated with the spatial depth, which ranges from public to semi-public to semi-private to private. (Fig. 2) As this forcibly displaced community is highly patriarchal, the more public a space is, the less freedom the women have to move about.

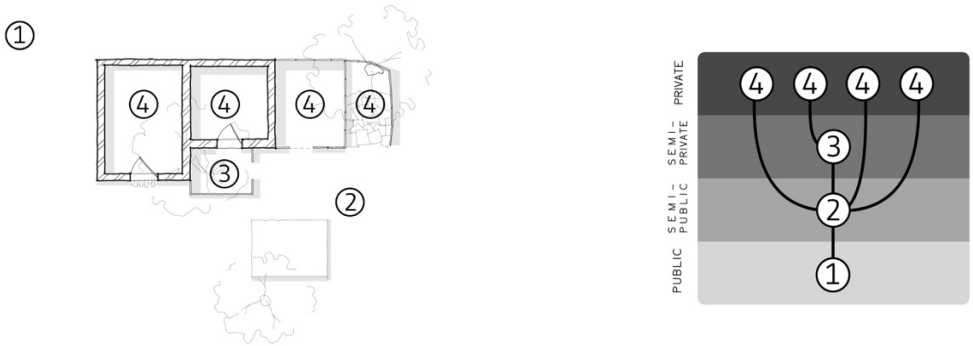

Fig. 2. Level of privacy is correlated with the spatial depth, which ranges from public to semi-public to semi-private to private.

The results reveal that due to physical distance and informality, the host community has put very little conformity pressure on the Pakistani refugee community. So, this community has assimilated and not integrated into the host environment. Among the few barriers created by the host environment and community are limited number of building regulations, climate change, and dissimilar available materials. Accordingly, the Pakistanis have only minimally adapted to the new economic and physical environment while resuming their previous cultural practices, such as their lifestyle, activity systems, and spatially arranged housing clusters.

Originality

Most research on integration have focused on economic, spatial and legal integration. This research reveals that a forcibly displaced can be integrated in the above-mentioned categories and still live in a cultural bubble right next to the host community for almost half a century. Housing culture adaptation and acculturation have been deemed exclusive, as one can occur without the other in the refugee communities. In practice, the findings also demonstrate that cultural practices can be incorporated into the design process of immigrant settlements even within the constraints of the new context.

Keywords

Cross-cultural adaptation, Architectural traditions, Informal settlements, Forced displacement, Pakistani displaced households, Tehran

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Design Process of Ruins of the Great East Japan Earthquake: Nakahama Elementary School

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Purpose

The purpose of this study is to clarify the design process of "Nakahama Elementary School, a Ruin of the Earthquake," which was preserved and maintained by the town of Yamamoto, Miyagi Prefecture, after the Great East Japan Earthquake and opened to the public in September 2020 in a form that allows visitors to view the interior.

Design/methodology/approach

The author served on the initial study committee and continued to be responsible for the basic planning, architectural renovation design, exhibition planning, and actual production of the brochure for the ruin. The process and results are described here as a party involved in the design process.

Findings

Nakahama Elementary School, an earthquake-damaged site, was studied, maintained, and finally opened to the public over about 10 years after the disaster. During this time, the activities of the storytelling group, committee recommendations, master plan, preservation regulations, and renovation design were repeated in a multi-layered and step-by-step process, and the essential meaning of the ruin was explored. In designing the site, it is important to identify the meaning of the objects latent in the site through in-depth discussions with stakeholders, to capture the details of the disaster experience and allow visitors to relive it, and to express the unique disaster culture of the region, rather than simply emphasizing the threat of the earthquake and tsunami or the achievements of the reconstruction efforts.

Originality

This study is original as a case study that comprehensively describes the preservation and use of disaster remains, including administrative procedures and relationships with local communities.

Keywords

Great East Japan Earthquake; Earthquake Ruins; Preservation and Utilization of Damaged Buildings; Design Process; Consistent user experience

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The Role of Local Communities in Chiang Mai Wildfire Management

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Wildfires in every dry season are one of the causes of the smog problem that affects the economy, society and the livelihood of people in the upper north of Thailand, especially in Chiang Mai. It is a problem related to the natural environment and the livelihood of local communities living in the forest. Despite diverse social and spatial contexts, top-down mandates force local communities to follow the same policy, prolonging this problem. This study examines local communities' historical and current role in wildfire management. It compares it to CBDRM concepts to determine whether they play a sufficient role as a core in wildfire management. The research found that the development of the role of local communities is well-established in policy and non-governmental support. However, in practice, they only object to wildfire management led by a single command and top-down management system. However, there is still the possibility that local communities will be increasingly driven to the core of wildfire management. From decentralized policies, bottom-up attempts at wildfire management by local communities from relevant authorities, as well as the attitudes of the city's residents toward the local communities in the forest region. However, I want local communities to manage wildfires in Chiang Mai. They should change their status from “object” to being the main “subject” in wildfire management. Because each forest area has different fire management requirements, and no one knows and wants to protect it as much as those who have lived since their ancestors.

Keywords
Wildfire Management, Local Community, Community Based Disaster Risk Management

Using serious games to advance understanding of climate change impacts

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Purpose
As the impacts of climate change continue to increase, the need for tailored climate adaptation strategies grows. To increase understanding of climate impacts and potential adaptations in localized areas, serious games are an effective tool for communicating such complexities to decision-makers. Serious games are which are played for purposes other than pure entertainment. For disaster risk management and climate change adaptation, serious games allow decision-makers to wrestle with future impacts and trial new strategies in a safe and low stakes environment. To increase the accessibility of gameplay in developing countries and communities, which are known to be on the frontlines of climate change, we have chosen to focus on non-computer based serious games.

Approach
To promote the use of serious games as a tool for communicating climate risk and adaptations, we developed a guide of recommended steps for serious game development. The proposed steps and game elements are specific to games that focus on climate change adaptation in technology limited communities.

Findings
We propose a guide of comprised of three design steps: pre-design, game design, and pilot and revision. Within the game design step, we highlight specific game elements along with considerations for how they can put into practice to develop an effective serious game focused on climate change adaptation. This game elements include Goal Setting, Characterization, Contextualization, Education, Feedback, Aesthetics, and Evaluation.

Originality
While other studies have proposed guidelines for serious games, generally and focused on other aspects of climate change, none have yet proposed guidance for how serious games can be adapted to meet the needs of local decision-makers in developing or technology limited communities.

Keywords
Serious games; climate change adaptation; education; game design

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Attitudes towards the release of ALPS water from Fukushima NPP

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The Japanese government plans to release ALPS treated water from the Fukushima nuclear power plant starting in the summer of 2023. This has appeared to be a controversial topic in Japan and amongst its neighbors in the regions. This paper focuses on the attitudes of Japanese people towards the government policy, placing it within the context of wider issues. An online survey of 2,000 people across Japan found that other issues were seen as equally important, but that there was concern about the policy, the impact the discharge would have, and about produce from the area. It also found that the farther away the participant lived, the less concern they showed. Consultations with both local communities and neighboring countries were seen as important by many participants. This research places the issue of ALPS treated water into a wider context of other global issues and examines the role distance from Fukushima plays in the public's engagement with the issue.

Keywords
Fukushima Daiichi Nuclear Power Plant,ALPS Treated Water; Web Survey, Ordinal Logistic Model

Disaster waste management planning and practices: the case of Türkiye, February 6th, 2023, Kahramanmaraş Earthquake

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On February 6, 2023, there were two major earthquakes of 7.7 and 7.6 magnitude in Türkiye. With the earthquakes, a total area of 1000 km2 was affected in 11 cities in the country. With the completion of the search and rescue operations, the damage-detection and demolition processes started. Although the extent of the damage is not clearly determined now, it is estimated that the total debris in 11 provinces will be 100 million tons, according to experts. Although the use of asbestos was banned in Türkiye in 2013, there is a serious danger of asbestos release in the region as most of the destroyed buildings were built before 2013. Contact with asbestos causes mesothelioma, lung cancer and respiratory failure diseases in humans. In the Turkish Asbestos Strategic Plan published in 2012, the villages where mesothelioma cases reported due to asbestos exposure on a provincial basis are seen are in the cities destroyed by the last earthquake. This means there is a serious asbestos release in the debris found in the area and a strategic plan is needed for its management. Asbestos release plays an active role in post-disaster waste management. Since this gas has serious effects on the people of the region in Türkiye, the main subject of the study is the re-evaluation of waste management in Türkiye to reduce the impact of asbestos gas.

In the study method, first, the post-disaster waste management strategies of the countries that experienced similar disasters were examined. In this context, the destruction caused by the earthquakes in the last twenty years and the management processes of the resulting wastes are discussed. In the light of the information obtained, the management process of the wastes that occurred after the earthquakes in Kahramanmaraş on February 6 was analyzed. Then, the existing waste management after the earthquake in Türkiye was analyzed and the implementation of the management plans in the damage assessment process was supported by the field study.

As a result, post-disaster waste management should be evaluated within the scope of pre-disaster planning strategies. There is a need of developed scenarios according to the magnitude of possible earthquakes, and it is a necessity to develop solutions before the disaster for the debris that will occur. Waste management must be considered as a whole, together with meeting basic needs such as shelter, food and beverage, and health in the disaster process. This process is possible with the participation of all stakeholders responsible for disaster management who are local administration, NGO, society, experts, and government. After the disaster occurs, the removal of the debris from the disaster area requires to be carried out in the

presence of local experts, and it is essential to minimize the exposure of the people of the region to asbestos gas. The removal of debris during the temporary sheltering process is likely to occur in the same period. In this case, these areas should not be preferred for shelter areas before the removal of the debris is completed. During the reconstruction process, separating and recycling of debris is fundamental. For this, it is important to establish recycling facilities in and around the disaster area, and to ensure that materials are available during the construction process.

Keywords
Post-disaster waste management, Asbestos, Earthquake

Identifying Barriers from Relief to Recovery in Humanitarian Shelter and Settlements Programming

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Despite calls under the Grand Bargain in 2016 to advance reform of the humanitarian system – work toward bridging the humanitarian-development nexus has been slow to realise. The aim of this research was to contribute to identifying the barriers faced by humanitarian practitioners and the households they support to the longer-term recovery of shelter and settlements in humanitarian crises. We sought to ask: Which barriers prevent longer-term support to those who have lost their shelter and settlements? Specifically, the key question of concern was which barriers exist to moving from a short term, temporary, emergency approach to more sustainable, longer-term assistance for those who have lost their shelter and settlements. We first synthesise the existing state of knowledge on (1) how recovery after disaster and conflict has been conceptualised and defined; (2) the impact of humanitarian shelter and settlements approaches on recovery and; (3) what the barriers are that humanitarian agencies need to be overcome to better connect emergency relief to longer term recovery. Drawing on interviews with a diverse pool of Shelter Cluster Coordinators across multiple national contexts, we sought to capture perspectives of practitioners who have extensive experience working across natural hazard and conflict settings. Using qualitative analysis, we identify recurrent barriers mentioned by practitioners and opportunities to fill gaps in support of longer-term recovery. This is one of the first studies to capture humanitarian shelter practitioner insights on the barriers that exist to long-term recovery of communities. While other studies have looked at this question from the perspective of communities and other humanitarian sectors, there has been little effort to systematically capture shelter and settlement perspectives from those implementing humanitarian programming. This has the potential to improve the quality of assistance to communities. This builds upon earlier scoping work that identifies the link between relief and recovery as a research priority for the humanitarian shelter and settlements sector by the Global Shelter Cluster and scholars. It further connects to a growing body of work to build stronger evidence under an evolving research agenda for humanitarian shelter and settlements.

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Exploratory Comparative Study on Land Acquisition for Recovery in Italy, the United States, and Japan

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Purpose
Residential mobility through housing relocation and retreat are the options to reduce repetitive disaster loss and damages, while land acquisition in impacted areas or relocation sites for recovery has a lot of challenges. This study aims to qualitatively illustrate the project scheme of land acquisition for recovery in the three target countries, Italy, the United States, and Japan, and to identify the underlying distinctive concept of land acquisition in each country.

Approach
The authors framed the study with three perspectives; legislative scheme for land acquisition, land use management at disaster impacted land, and process of land acquisition.

Finding
The results indicated that the buyout project in the U.S. enhances re-naturalization in flood-prone areas but takes years, while land acquisition in Japan takes years due to the purchasing not only disaster risk areas but also newly developed or redeveloped relocation sites. Land acquisition in Italy demonstrates inheritance of the historical city through the continuation of public sectors and prefabricated housing for short-term social welfare. The distinctive concept of the case in Italy is “provisionality,” a noun of provisional things. The provisionality contributes to back-up or temporary capacity until the recovery of the main urban city. The case in the U.S. buyout land acquisition is in newly developed areas within a half of or a century, therefore, it would be easier to re-naturalize.

Originality
This international comparative study fills a gap which is less accumulative of focusing on land acquisition schemes in disaster recovery-phase. The novelty of this study is finding a distinctive concept “provisionality,” which could be critical in Japan as a population decline country and thinking ahead for the potential disaster and its recovery.

Keywords Buyout; Land acquisition; Relocations; Residential mobility; Provisionality

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Flawed Foundations for Radical Change: Land Management after Disasters in Türkiye

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Urban land management largely determines what will change and what will remain after disasters. It influences where and how affected people will live and determines whether and in which ways cities will grow and ecosystems will be preserved. In this paper, we look at the relationship between land management and post-disaster change after the 2020 Elazığ and İzmir earthquakes in Türkiye. We bring together three research methods to explore links between land policy and urban transformation: (i) a comprehensive analysis of literature to identify patterns in land-related decisions after disasters; (ii) a detailed analysis of five policy documents and fifty official statements newspaper articles, reports, and press releases; and (iii) eight semi-structured interviews with specialists and representatives of civil society groups.

Our results show that current legal frameworks fail to address the social, development, and economic factors that contribute to exposure to disasters, such as poor land-use strategies, insufficient enforcement of codes and norms, financial and governance problems, and the risky transformation of multi-level buildings. In addition, existing practices do not adequately fulfill the obligations that arise from disasters, including financial support for recovery and the reconsideration of land-use strategies. These results highlight the importance of improving current legislation and developing a specific legal framework for post-disaster recovery in Türkiye. They also suggest that more research is needed on the improvement of land management practices after disasters.

Keywords
Post-disaster reconstruction; Land management; Decision-making in disaster recovery; Land use planning; Urban Transformation

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An Evolving Methodology: The HIDECS Process

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The Hierarchical Decomposition HIDECS process was formulated by Christopher Alexander in 1962 and is a way of breaking down inter-connected variables/characteristics into a family tree structure. As such it is a unique method for breaking down “wicked problems’’ holistically which is the norm for the response, recovery and reconstruction phases following a disaster. We have computerised the process and have been using it to analyse and break down the structure within the work we are doing. This paper reports on a selected case study to highlight its usefulness with complicated relationships using this set theory approach. But at the same time how it manages to ‘’make sense’’ of such situations. And it is this sense making (through interrogation by the researcher) that produces useable material out of seemingly chaotic situations. In 1962 computers struggled with this decomposition approach however, with the computer power currently available this analysis takes seconds to produce outputs of a “family tree” structure. The case study was for logistics and warehouse designs in 5 locations for the Myanmar Red Cross Society MRCS, assisted by the NZ Red Cross NZRC and funded by the Ministry for Foreign Affairs and Trade MFAT. Three had existing warehouses, one a small warehouse and the 5th was bare land. Previous warehouse aid to Indonesia and the Philippines through MFAT (previously NZAid) resulted in the new warehouses being ‘repurposed’ after they were built and handed over to the respective country Red Cross Society. MFAT wanted to address this by ensuring that the design and construction of the 5 warehouses in Myanmar were designed appropriately. And a core part of this was done using HIDECS. The analysis of that HIDEC map, plus space design and warehouse workflow for the site resulted in the design of the 5 different warehouses at Yangon, Sittwe, Myitkyina, Mandalay, and Lashio. Each was a unique problem to be resolved.

Keywords: design, warehousing, engagement, logistics, HIDECS

What Happen after ownership belongs to residents in post-disaster house?

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When 19 years have passed since the Indian Ocean Tsunami in 2004, in Namkhem community, Phang Nga Province, Thailand, the post-disaster housing projects now transform ownership from community to individual residents. The results categorize by residents' involvement in community space and house re-design. The evaluation of resident involvement will focus on three main factors: 1) residents' satisfaction with housing and way of re-design, 2) economic and social relations, and 3) disaster awareness activities. After 15 years of living and paying a rental fee to CODI, which support residents for land-sharing lone house, The community have changed during long-term recovery and has been through the covid-19 pandemic. The result shows that many residents have shown more uniqueness in re-design and decorating after they got land-right ownership, some of them rent the property out, and it becomes their income also; the residents' change of lifestyle includes the involvement of residents in disaster prevention activities. The house also reflects the community dynamic.

Keywords
Indian ocean tsunami, housing recovery, Community, Namkhem

Post-disaster Communication Challenges: Recovery Options for the Future, a Case Study of Henderson Valley, Auckland, New Zealand

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This paper examines a case study of a High-Impact Weather event in Henderson Valley, Auckland, New Zealand. This was one of the worst storms the community had experienced, with precipitation of over 200mm within 24 hours. The event caused landslips that further exacerbated flooding that damaged the community's infrastructure. Poor communication between recovery authorities and residents delayed the recovery process.

Effective communication is critical for a successful recovery post-disaster. When communication is lacking between authorities and the affected community, expectations become misaligned with legislated responsibilities. It is important to be aware of who is responsible for what recovery actions in a post-disaster environment.

To better understand the expectations of the community, and how they differed from the recovery authorities' responsibilities, a study was conducted using a triangulation method. This involved using a range of research methods: community interviews, surveys, street stall sessions, community workshop methods, and recovery authority document reviews.

The study identified communication challenges and unclear responsibilities between residents and authorities. Communities expected more communication, but the expectations were often unmet. To address this, communities perceive that recovery authorities should improve communication and coordination which helps provide options for recovery. For building strong community resilience, options for successful

recovery are communication through partnership, and assisting communities develop Community Recovery Plans.

Keywords
communication and partnership, post-disaster recovery, community expectations, recovery authorities' responsibilities, community recovery plan

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Raised Under Bad Stars: Negotiating a Culture of Disaster Preparedness

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In efforts to prevent, respond to, and recover from disasters, what alternatives are available to top-down strategies for imposing expert knowledge on lay publics? How is the context of communities' socio-ecological context understood in the development of programs and policy on their behalf? What can be learned from community narratives and cultural practices to inform disaster risk reduction? The ways communities have regarded disasters and natural hazards in the cultural sphere can provide a lens to inform the understanding of their ability to withstand shocks and the factors that led to such conditions. Only by tracing the complexities of creating, transmitting, and preserving a culture of preparedness among disaster-vulnerable communities can we claim to be working towards policy that is informed by their own experience. I collected examples of how different communities perceive, prevent, and respond to disaster through art, music, and literature and analyzed how these were embedded into local narratives and how historical context influenced such approaches. My findings show that communities use cultural practices to contextualize experiences of hazards into their collective narrative; that is, storytelling and commemoration make disasters comprehensible. By framing disasters as an anthropological inquiry, practitioners can better recognize the influence of a place's nuance in the disaster management canon–guided by these details, not despite them.

Keywords
Culture; Storytelling; Folklore; Climate adaptation; Indigenous knowledge

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The Significance of Choice of Residence in Nuclear Accident-Affected Areas: What Choices Did Disaster Refugees Have Under Prolonged Evacuation?

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Where will they live again? Who will decide? How can you ensure the opportunity to choose residences? These are a series of critical questions in the disaster recovery process.
Guaranteeing the opportunity to choose where disaster victims live is a fundamental condition for rebuilding their lives, and alienation from this opportunity directly leads to the destruction of their lives and livelihoods. The problem of choice of residence is also serious in the areas affected by the nuclear accident. However, can this problem be treated in the same way as in the case of natural disasters such as earthquakes and tsunamis? The "choice" in recovery from natural disasters is a choice based on the risk of further disasters in addition to convenience and economy. In other words, it is a decision-making process that includes the question of how much risk to live with. In the case of a nuclear disaster, however, this question does not hold. This is because what the region is facing is not a risk, but an ongoing crisis. The reconstruction process is not after the disaster, but continues and runs parallel to the ongoing and cumulative damage. The opportunity to choose a place to live is inextricably linked to the accumulation of ongoing crises and damages and the process of accumulation.
If so, how did they decide to return and resettle in their original places of residence? What was behind the choice of place of residence? What exactly was the choice for the place of residence in the nuclear accident-affected area? We will approach these questions through the case of Kawauchi, Futaba, and Fukushima Prefecture.

Keywords
The Great East Japan Earthquake; Nuclear Power Plant Accident; Fukushima; Choice of Residence; Policies to Promote Return

Identification of factors influencing an operating room design for pandemic preparedness

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The surgical department is a critical unit in any hospital, responsible for performing surgeries and offering preoperative and postoperative care in a sterile environment. Due to the highly aseptic and restricted nature of operating rooms, all personnel, including surgeons, anaesthesiologists, nurses, and other staff, must possess a comprehensive understanding of the operating room's functionality while complying with relevant laws, regulations, and professional guidelines. Adherence to surgical protocols in the operating room enhances patient safety and yields positive outcomes. This study aims to explore the factors influencing the design of operating rooms, particularly in the context of pandemics. We conducted a literature review to develop a criteria framework and subsequently examined the primary factors impacting the design of pandemic-resilient operating rooms at Maharaj Hospital in Chiang Mai, Thailand.

Data collection involved three stages: (i) a literature review to identify factors affecting pandemic-resilient operating room design; (ii) walk-through observations in surgical units, analysis of building programming and maintenance data, and examination of healthcare facility requirements to establish key evaluation aspects, considering relevant legislation and standards; (iii) interviews with healthcare facility staff, followed by content analysis.

The study identified crucial factors such as the placement of hand hygiene stations, mobile surgical equipment, flexible spaces adaptable to evolving conditions (e.g., storage rooms for personal protective equipment like masks, gloves, gowns, and face shields), and waste disposal corridor arrangements. Spatial orientation and layout play a significant role in optimizing movement and minimizing infection risk. Healthcare facilities should assess the operating room's physical environment and implement suitable measures to enhance their pandemic preparedness.

Keywords
Pandemic Preparedness, Operating Room Design, Infectious Disease Control, Patient Safety, Thai Hospitals

A Study on co-creation-type reconstruction community planning in village affected by the Great East Japan Earthquake-Case Study of Osawa District, Karakuwa Town, Kesennuma City, Miyagi Prefecture

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Purpose

The purpose of this study is to present the possibility of co-creation type reconstruction methods by different organisations based on a case study of the reconstruction of a communication unit affected by the Great East Japan Earthquake. Since modernisation, reconstruction in Japan has mainly been carried out in a top-down manner. In recent years, there have been examples of inter-organisational cooperation, which can be considered as a consortium, for the purpose of establishing reconstruction projects. However, the keyword 'co-creation' is now being used as an idea to open up a future that is unclear due to the diversification of society and the arrival of a mature society. There are concerns that promoting one-size-fits-all reconstruction could have a significant impact on regional sustainability, given that the areas affected by the Great East Japan Earthquake have created communities that differ from region to region, and that many of these areas are facing declining birth rates and an ageing population. What kind of reconstruction is needed to create co-creation in these times? We believe that it will be important to explore what kind of reconstruction is needed to create co-creation in these times in order to enhance the sustainability and resilience of our country. In particular, we often see conflicts between actors with different positions in the field of reconstruction, which leads to unnecessary effort and time being spent. It can also reduce the sustainability of the region. However, it is unclear what exactly constitutes co-creation in reconstruction. Therefore, this research aims to present a hypothetical state of co-creation in reconstruction.

Study on the Activities of the Residents of the Town of Memory Project in Okawa District of Ishinomaki City and Their Transformation

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Purpose

The Great East Japan Earthquake caused a wide range of tsunamis to the Tohoku regional shore, killing 20,000 people.
Lands that have suffered enormously flooded damage are designated as an "disaster risk area" that cannot be lived, and residents have left their homes and land, which are the basis of life and memory, and have been forced to relocate to hills and inner lands. In Okawa district of Ishinomaki City, Miyagi Prefecture, where about 400 households and 700 people relocated to inland due to tsunami damage, the willingness to participate in the residents in the reconstruction process depends on the village characteristics, the magnitude of the damage, and the relationship with external supporters. In addition, the "residents" themselves change due to moving out and aging.

Design/methodology/approach

Under such circumstances, in the Okawa area, a project to reproduce the area before the disaster into a diorama model has been carried out by volunteers and students. Residents surrounded the white model that restored the area before the disaster. Lost Homes Project (LHP) in Okawa is intended to enrol with local spatial characteristics, but in Okawa area, the affected residents themselves hoped to realize the project, and one week under the collaboration that was not before the disaster. The workshop has been held five times. The memories of the spoken were published as a record collection.
In this study, based on the changes in the regional community that became the background of the model project, what kind of places, things, by analysing the stories of residents recorded by listening at the time of model production. The purpose is to clarify whether it can be a connected resource.

Findings

When considering the "continuation of the community", the process of the generation and collaboration of human networks over business, as well as the image of the

region that has been revealed and shared by the story of residents, is the social relationship between residents during the group transfer period.

Originality
We focus on reconstruction activities, and is characterized by clarifying the history of the formation and development of local civic organizations before and after the disaster, and the relationship between the LHP who has been involved in reconstruction activities in the Okawa area from the perspective of the local community.

Keywords
Great East Japan Earthquake; Memory of Hometown; Workshop; Multi-Partnership

Special Appendix: Photo Exhibition (Reprinted with the original Spanish language, with English translation provided below)

Resilient schools and survival in Japan: Lessons from the tsunami

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Located in the Pacific Ring of Fire on four tectonic plates, Japan has historically experienced numerous disasters with thousands of lives lost: earthquakes, tsunamis, volcanic eruptions, fires, typhoons and heavy rains. The last major disaster, on March 11, 2011, devastated the coast of the Tohoku region in the northeast of the country and left more than 15,000 victims. It could, however, have been more. In the midst of the emergency, the population and schools took action. How was the tsunami managed by schools and what lessons can be learned? Prevention training, rapid evacuation, survival in shelters and passing on the experience to new generations are the keys to disaster management in the Asian archipelago.

Credits and references
Images and text: Carmen Grau Vila, journalist and researcher at the Institute of Sustainable Community and Risk Management, Waseda University and Senshu University. Photographs, testimonies and data were collected during fieldwork conducted in Japan between October 2020 and November 2022 as part of the author's doctoral thesis research about the history of disasters in Japan.

Organizer
The exhibition is a project of Universidad Nacional de Educación a Distancia (UNED) of Madrid (Spain), presented at the International Congress: Education is the risk society. From education in prevention to resilience on 19 and 20th of December 2022 in Madrid. The exhibition was on display in the faculty of education from December 2022 to February 2023.

I. DISASTER PREVENTION TRAINING

1. Prevention training begins in Japan as early as age three. Kindergartens conduct monthly disaster and evacuation drills. Each child has an emergency cushion in the classroom, called Bosai Zukin. In the event of an earthquake, they protect their heads and evacuate in an orderly following the teacher's instructions. Six-year-old Teo is in the middle of a fire drill in the playground of his kindergarten.

2. Educational centers have didactic material and illustrated books to teach children how to act in the event of a disaster: how to look for safe points during an earthquake, how and where to evacuate, and how to differentiate the type of emergency.

3. Training is complemented by extracurricular activities at later stages. High school students travel to other parts of the country to learn about disaster experiences in memory transmission museums. A group of students visit the new Miyagi 3.11 Tsunami Disaster Memorial Museum in Ishinomaki City, a space opened in 2020 to spread the lessons of the tsunami.

4. In 2005, Hyogo Framework for Action: Building the Resilience of Nations and Communities to Disasters (2005-2015) was born influenced by Japan disaster experience. Japan believes that the key to a preventive culture is disaster risk education and the safety of school buildings. In 2011, schools withstood a major earthquake measuring 9 on the Ritcher scale. In the archipelago, school buildings become a refuge for the entire community in emergencies.

5. Survivors are involved in the continuous improvement of prevention. After surviving the 2011 tsunami, Honoka Shino recounts her experience. On that day, Honoka was 12 years old and a senior at Nobiru Elementary School (Higashi-Matsushima, Miyagi Prefecture). She was caught by the earthquake at 2:46 p.m. on her way home from the beach, but she turned around and took shelter with the other children in the school, as instructed. A few minutes later, the school officials led them to the gymnasium, which is attached to the building and has only one floor. This decision resulted in more than a dozen deaths when the tsunami hit the school. Shino climbed, along with her best friend, to an elevated gallery that saved the lives of both of them and other children who managed to escape in time to this small space. They remained in the dark, terrified, freezing cold and unable to move for hours until the night. They were rescued by a local fireman, the father of a student, who managed to pull the survivors out of the window. Shino has since recounted his experience to warn of the importance of weighing risk and decision making during a disaster.

II. THE SCHOOL RESPONDS TO THE EMERGENCY

Each school and community had no choice but to respond alone to the massive earthquake in a matter of minutes. Not all were able to save lives. At Okawa Elementary School (Miyagi), 74 children and 10 teachers who were gathered outside the building awaiting instructions died. After 50 minutes, when the large group finally set out to evacuate to a nearby hill, the tsunami reached them. Only five children and a teacher survived. The poor location of the school, waiting errors in decision making were factors that aggravated the impact and triggered the highest number of schoolchildren victims in the 2011 tsunami.

1. Others schools did manage to minimize the impact. A last-minute decision to evacuate all children and town residents gathered on the third and fourth floors of the school instead of the gymnasium saved 320 lives at Arahama Elementay School (Sendai, Miyagi).

2. The school staff and several neighbors in charge of the disaster response were able to follow the tsunami warnings by radio and acted according to their judgment as the meters the tsunami could reach increased. The broken clock in the school shows the time the tsunami hit the first two floors. Everyone survived.

3. Evacuated children and neighbors were able to access the rooftop and were rescued by the Japanese Self-Defense Forces by helicopter, an all-night operation.

4. 5. Arahama town disappeared under the water. It is one of the towns that has not been rebuilt, but the school building remains as a reminder of the disaster. The interior has been remodeled and recounts the lessons learned from successful management that saved all the children and other lives in the community.

III. SURVIVAL AND SHELTER AT SCHOOL

In the emergency, Japanese schools become an evacuation center and the population comes to take shelter. How was survival organized and prioritized? Leadership and a united community are key to a successful outcome.

1. 2. Kirikiri Elementary School, a fishing village of 1,800 inhabitants in Iwate prefecture. After the earthquake, the school took in 400 residents: 60 elementary school children and 30 junior high school children, adults and elderly people who lost their homes, some of them sick. The tsunami left the community without electricity and water. Surrounded by mountains, they were totally cut off by road. Neighboring populations were also in a serious situation due to the magnitude of the damage.

3. 4. Older neighbors took the lead without hesitation. They knew that help would take time, so they prioritized survival. The gymnasium was converted into a large dormitory. The swimming pool, located of the rooftop, provided them with water. The library was the place for children to play.

5. Masae Maekawa, a retired nurse (left), watched over the sick in the tatami room and helped dispose of the deceased outside. Fisherwoman Sachiko Azumaya (right) rationed 30 kg of rice stored in the shrine in the school kitchen.

6. Toshiaki Fujimoto, Shinto priest of Amaterasu Mioya shrine, was another leader who contributed to a successful management. Four days later, the community received first aid by helicopter.

7. For 3 months the school was a shelter for everyone. Later, another building was made available for evacuees so that the children could resume classes.

8. Three weeks after the tsunami, volunteers from other parts of the country could access and help with debris removal and cleanup. Today, a memorial for the victims remembers the disaster and the importance of evacuating in time.

IV. TRANSMISSION OF THE EXPERIENCE

A high school severely damaged by the tsunami has become a center of learning and transmission in Kesennuma, Miyagi, with the participation of the youth.

1. 2. Koyo Institute was located only 150 meters from the Pacific Ocean and 1 meter above the sea level. The tsunami reached 13 meters, but everyone was saved thanks to the quick evacuation. Today the site is a learning space called the Ruins of the Great East Japan Earthquake Kesennuma City Memorial Museum. Its objective is to reinforce citizen prevention.

3. The magnitude of the damage and force of the water can also be seen on the outside: cars, houses and debris swept away in a matter of seconds.

4. The new high school has been relocated away from the coast, but the memory of the disaster is present in the old and damaged building. Now a museum, it shows what school life was before the tsunami so that the importance of prevention and protection of future generations is not forgotten.

5. Emergency items to be taken into account in case of disaster or evacuation are also displayed.

6. 7. In the museum, the guides are high school students. Volunteer students from ages of 12 to 18 transmit the experience to the visitor. An initiative that involves new generations in disaster prevention and ensures the preservation of memory.

8. From left to right: Mio Fukuoka (11 years old), Mizuki Sato (18) and Kao Iwatsuki (16) are storytellers guides in the Museum. Interviewed in November 2021 by the researcher (center) each expressed a few reasons for enlisting: “On that day I was 5 years old and in kindergarten. I am the youngest generation to have experienced and remember this disaster, so I want to pass it on so that it is not forgotten” (Kao).
“I was 7 and was walking home from school alone. I ran towards my house, but a neighbor alerted me to run away. Being a guide here is a lot of fun. I have traveled to other parts of Japan to pass on the experience” (Mizuki).

Note: Pictures 6 and 7 have been provided by Ruins of the Great East Japan Earthquake Kesennuma City Memorial Museum.

V. MEMORY AND DISASTER REPRESENTATION

Over the past decade, much of de damaged towns, infrastructure and roads have been rebuilt along the Tohoku coast. In this process, the memory and representation of the disaster are another local element of the preventive culture. Not forgetting and protecting future generations are the goals of Japan, a country that lives with disaster.

1. The ruins of Kadonowaki Elementary School in Ishinomaki City still stand as a reminder of the magnitude of the disaster to next generations.

2. The authorities have built memorial spaces and museums to reinforce the transmission of learned lessons to the population. The Iwate Tsunami Memorial Museum, located in the esplanade of Rikuzentakata City, narrates the disaster from various approaches.

3. 4. 5. Outside the Museum, the Takatamatsubara Memorial Park is a park open to the Pacific that pays solemn tribute to the victims, recalls the magnitude of the damage with collapsed structures and leaves a glimmer of hope by guarding the “miracle pine”, the only tree in the area that survived the tsunami.

ESCUELAS RESILIENTES Y SUPERVIVENCIA EN JAPÓN

LECCIONES DEL TSUNAMI

Situado en el cinturón de fuego del Pacífico sobre cuatro placas tectónicas, Japón ha registrado a lo largo de la historia numerosos desastres con miles de pérdidas en vidas: terremotos, tsunamis, erupciones volcánicas, incendios, tifones o fuertes lluvias. El último gran desastre, el 11 de marzo de 2011, asoló la costa de la región de Tohoku al noreste del país y dejó más de 15.000 víctimas. Podrían, sin embargo, haber sido más. En mitad de la emergencia, la población y las escuelas actuaron. ¿Cómo se gestionó un tsunami sin precedentes desde los centros escolares y qué lecciones se pueden extraer? La formación en prevención, una rápida evacuación, la supervivencia en los refugios y la transmisión de la experiencia a las nuevas generaciones son las claves de la gestión del desastre en el archipiélago asiático.

IMÁGENES Y TEXTO

Carmen Grau Vila, periodista e investigadora adjunta del Institute of Sustainable Community and Risk Management de la Universidad de Waseda y la Universidad de Senshu. Doctoranda en la Universidad Complutense de Madrid. Las fotografías, testimonios y datos presentados fueron recopilados durante el trabajo de campo realizado en Tohoku entre octubre de 2020 y noviembre de 2022 como parte de la tesis doctoral de la autora sobre la historia de los desastres en Japón.

REGIÓN DE TOHOKU, ESCUELAS MENCIONADAS

1. Kirikiri
2. Kesennuma
3. Ishinomaki
4. Higashi-Matsushima
5. Arahama

2011
Gran terremoto del este de Japón con epicentro en la costa de la región de Tohoku, al noreste del país

Mapas:Vecteezy.com

ORGANIZER

Universidad Nacional de Educación a Distancia (UNED) in Madrid (Spain), December 2022.

I. FORMACIÓN EN PREVENCIÓN DE DESASTRES

1 La formación en prevención comienza en Japón a partir de los tres años. Las guarderías realizan mensualmente simulacros de desastre y evacuación. Cada niño cuenta con un cojín de emergencias en el aula, denominado *Bosai Zukin*. En caso de terremoto se protegen la cabeza y evacuan ordenadamente siguiendo las instrucciones del profesorado. Teo, de seis años, en mitad de un simulacro de incendio en el patio de su guardería.

2 Los centros educativos cuentan con material didáctico y libros ilustrados para enseñar a los más pequeños a actuar en caso de desastre: buscar puntos seguros durante un terremoto, cómo y adónde evacuar o diferenciar el tipo de emergencia.

3 La formación se complementa con actividades extraescolares en etapas posteriores. Los alumnos de secundaria viajan a otros puntos del país para conocer las experiencias del desastre en museos de transmisión de la memoria. Un grupo de estudiantes visita el nuevo Miyagi 3.11 Tsunami Disaster Memorial Museum en la ciudad de Ishinomaki, un espacio inaugurado en 2020 para difundir las lecciones del tsunami.

4 En 2005 nació el *Marco de Acción de Hyogo: Aumento de la resiliencia de las naciones y las comunidades ante los desastres (2005-2015)*, una herramienta de las Naciones Unidas, de fuerte influencia japonesa, para promover la prevención de desastres. Japón considera que la clave de una cultura preventiva es la educación en riesgo de desastres y la seguridad de los edificios escolares. En 2011 las escuelas resistieron al gran terremoto de magnitud 9 en la escala de Ritcher. En el archipiélago, estos edificios se convierten en refugio de toda la comunidad en emergencias.

5 Los supervivientes también se implican en la mejora continua de la prevención. Tras sobrevivir al tsunami de 2011, Honoka Shino narra su experiencia. Aquel día tenía 12 años y estaba en el último curso de la Escuela Primaria de Nobiru (Higashi-Matsushima, prefectura de Miyagi). El terremoto la sorprendió a las 14.46 a la salida, a punto de regresar a su hogar a pie de playa, pero dio media vuelta y se refugió junto a los demás niños en la escuela, según las instrucciones. A los pocos minutos, los responsables del centro les guiaron al gimnasio, anexo al edificio y de una sola planta. Esta decisión derivó en más de una decena de muertes cuando el tsunami golpeó la escuela, a escasos metros del mar. Honoka fue testigo de la llegada del agua y el fallecimiento de los vecinos. La ola alcanzó el gimnasio y ella se encaramó, junto a su mejor amiga, a una galería elevada que les salvó la vida a ambas y a otros niños que lograron escapar a tiempo a este pequeño espacio. Permanecieron a oscuras, aterrados, helados de frío y sin poder moverse durante horas, hasta bien entrada la noche. Fueron rescatados por un bombero local, padre de un alumno, quien logró sacar por la ventana a los supervivientes. Desde entonces cuenta su experiencia para alertar de la importancia de ponderar el riesgo y la toma de decisiones durante un desastre.

II. LA ESCUELA RESPONDE A LA EMERGENCIA

Cada escuela y comunidad no tuvo más opción que responder sola al gran terremoto en cuestión de minutos. No todas pudieron salvar vidas. En la Escuela Primaria de Okawa (Miyagi), fallecieron 73 niños y 10 profesores que se encontraban reunidos en el exterior del centro esperando instrucciones. Tras 50 minutos, cuando finalmente el numeroso grupo se puso en marcha para evacuar hacia una colina aledaña, fueron sorprendidos por el tsunami. Solo sobrevivieron cinco niños y un profesor. La mala ubicación de la escuela, la espera y los errores en la toma de decisiones fueron factores que agravaron el impacto del desastre y desencadenaron el mayor número de escolares fallecidos en el tsunami de 2011.

1 Otras escuelas sí lograron minimizar el impacto. La decisión, en el último momento, de evacuar a todos los niños y vecinos del pueblo congregados hasta la tercera y cuarta planta de la escuela y no al gimnasio salvó 320 vidas en la Escuela Primaria de Arahama (Sendai, Miyagi).

2 El equipo directivo y varios vecinos al mando de la gestión pudieron seguir por radio las alertas de tsunami y actuaron de acuerdo a su criterio conforme aumentaban los avisos de los metros que podía alcanzar el tsunami. El reloj roto de la escuela muestra la hora a la que llegó el tsunami e impactó en las dos primeras plantas. Todos sobrevivieron.

3 Los niños y vecinos evacuados pudieron acceder a la azotea y de allí fueron rescatados por las Fuerzas de Autodefensa niponas en helicóptero, una operación que duró toda la noche.

4 5 El pueblo de Arahama desapareció por completo bajo las aguas y el único edificio que quedó en pie fue la escuela dañada. Es una de las localidades que no ha sido reconstruida, pero el edificio escolar permanece a modo de recordatorio del desastre. El interior ha sido remodelado y cuenta las lecciones aprendidas de una gestión exitosa que salvó vidas en la comunidad y a todos los niños. Renombrado como Tsunami Ruins of Arahama Elementary School exhibe estas experiencias para todos los ciudadanos.

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III. SUPERVIVENCIA Y REFUGIO EN LA ESCUELA


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En la emergencia la escuela japonesa se convierte en centro de evacuación y la población acude a refugiarse. ¿Cómo se organizó y priorizó la supervivencia? Liderazgo y una comunidad unida son fundamentales para un buen desenlace.

1 **2** La Escuela Primaria de Kirikiri, pueblo pesquero de 1.800 habitantes en la prefectura de Iwate, está en lo alto de una colina a escasos metros del mar. Tras el terremoto, esta escuela acogió a 400 vecinos: 60 niños de primaria y 30 de secundaria, adultos y mayores que perdieron sus casas, también enfermos. Las condiciones fueron muy complejas: El tsunami dejó sin electricidad y agua a la población. Rodeados de montañas, quedaron totalmente incomunicados por carretera. Las poblaciones vecinas también estaban en una grave situación por la magnitud del daño.

3 **4** A oscuras, sin agua y con temperaturas bajo cero, los vecinos mayores asumieron el liderazgo sin dudarlo. Sabían que la ayuda tardaría, por lo que priorizaron la supervivencia. El gimnasio se convirtió en un gran dormitorio. La piscina, ubicada en la azotea, les permitió disponer de agua. La biblioteca acogió los juegos de los más pequeños.

5 Masae Maekawa, enfermera jubilada (a la izquierda), se encargó de velar por los enfermos en la sala de tatami y ayudar a disponer de los fallecidos en el exterior. La pescadora Sachiko Azumaya (a la derecha), racionó en la cocina de la escuela 30 kg de arroz almacenados en el santuario del pueblo para que nadie se quedase sin comer.

6 Toshiaki Fujimoto, sacerdote sintoísta del templo Amaterasu Mioya, fue otro de los líderes que contribuyeron a una exitosa gestión. Cuatro días más tarde, la comunidad de Kirikiri recibió los primeros auxilios (alimentos y agua) de las Fuerzas de Autodefensa en helicóptero.

7 Durante tres meses la escuela fue refugio de todos y, de acuerdo a estos líderes, se trabajó duro. Después se habilitó otro edificio para los evacuados con el fin de que los niños pudiesen retomar las clases. Japón prioriza la educación y la continuidad lectiva sean cuales sean las circunstancias.

8 Tres semanas después del tsunami, ciudadanos voluntarios de otras partes del país accedieron para ayudar en el desescombro y la limpieza, primeras acciones antes de la reconstrucción. Hoy, un memorial por las víctimas recuerda el desastre y la importancia de evacuar a tiempo.

IV. TRANSMISIÓN DE LA EXPERIENCIA

Un instituto gravemente dañado por el tsunami se ha convertido, junto a la participación de los más jóvenes, en centro de aprendizaje y transmisión en Kesennuma (localidad de Miyagi).

1 2 El Instituto Koyo estaba ubicado a tan solo 150 metros del Océano Pacífico y a 1 metro del nivel del mar. Aquel día había en las instalaciones 250 personas entre alumnos, profesorado y obreros que realizaban remodelaciones. El tsunami alcanzó 13 metros, pero todos se salvaron gracias a la rápida evacuación. Hoy el lugar es un espacio de aprendizaje llamado Ruins of the Great East Japan Earthquake Kesennuma City Memorial Museum. Su objetivo es reforzar la prevención ciudadana.

3 En el exterior también se observa la magnitud del daño y fuerza del agua: coches, casas y hierros arrastrados en cuestión de segundos.

4 El nuevo instituto ha sido reubicado alejado de la costa, pero la memoria del desastre sigue presente en el antiguo y dañado edificio. Reconvertido en museo, muestra cómo era la vida escolar antes del tsunami para que no se olvide la importancia de prevenir y proteger a las futuras generaciones.

5 Se invita a los visitantes a reflexionar sobre el desastre. En un rincón se ha habilitado una Biblioteca *Bosai*, con libros y material de prevención. También se muestran los artículos de emergencia a tomar en cuenta en caso de desastre o evacuación.

6 7 En este museo del desastre los guías son los propios estudiantes de secundaria. Treinta alumnos voluntarios de entre 12 y 18 años son formados y narran la experiencia al visitante. Es una iniciativa pionera que involucra a las nuevas generaciones en la prevención de desastres y garantiza la preservación de la memoria. Los jóvenes quieren transmitir la experiencia a sus familias y hermanos pequeños. Se sienten motivados por formar parte de la comunidad y les gusta sentirse escuchados por los visitantes. La actividad tiene como objetivo proteger vidas y entender los riesgos ante cualquier desastre.

8 De izquierda a derecha Mio Fukuoka (11 años), Mizuki Sato (18) y Kao Iwatsuki (16). Las tres son guías en este espacio. Han sido formadas como narradoras del desastre. Entrevistadas en 2021 por la investigadora (centro) cada una expresó unos motivos para enrolarse: "Aquel día yo tenía 5 años y estaba en la guardería. Soy la generación más joven que ha experimentado y recuerda este desastre, por lo que quiero transmitirlo para que no se olvide" (Kao). "Yo tenía 7 años y estaba regresando de la escuela sola. Corrí hacia mi casa, pero un vecino me alertó para que huyese. No había adultos conmigo en ese momento y si no hubiese sido por ese vecino quizá yo no estaría ahora aquí. Ser guía es muy divertido. He viajado a otras partes de Japón a transmitir la experiencia." (Mizuki)

Nota: Las fotos 6 y 7 han sido cedidas por Ruins of the Great East Japan Earthquake Kesennuma City Memorial Museum.


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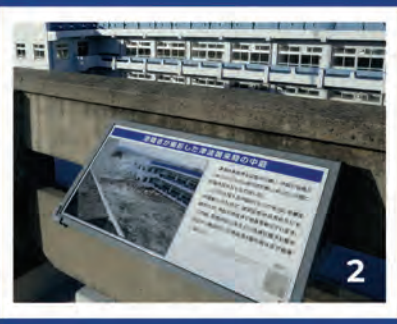
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V. MEMORIA Y REPRESENTACIÓN DEL DESASTRE

Durante la última década, gran parte de las poblaciones, infraestructuras y vías dañadas han sido reconstruidas a lo largo de la costa de Tohoku. En este proceso, la memoria y representación del desastre son un elemento local más de la cultura preventiva. No olvidar y proteger a las futuras generaciones son los objetivos de Japón, un país que convive con el desastre.

1 Las ruinas de la Escuela Primaria Kadonowaki en la ciudad de Ishinomaki siguen en pie como recordatorio de la magnitud del desastre a las próximas generaciones.

2 3 4 5 Las autoridades han construido espacios y museos de la memoria para reforzar la transmisión de enseñanzas preventivas a la población. El Iwate Tsunami Memorial Museum, ubicado en la explanada de la ciudad de Rikuzentakata, narra el desastre desde varios enfoques. En el exterior, el Takatamatsubara Memorial Park es un parque abierto al Pacífico que rinde solemne tributo a las víctimas, recuerda la magnitud del daño con estructuras derrumbadas y deja un resquicio a la esperanza custodiando el "pino del milagro", el único árbol del área que sobrevivió al tsunami.

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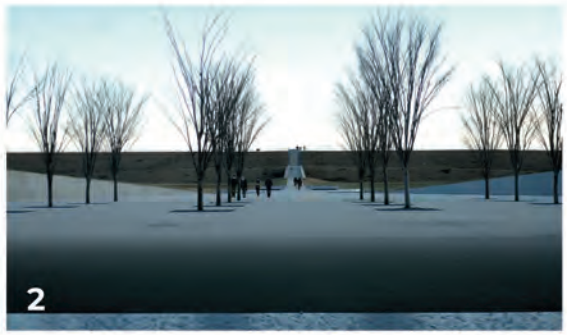
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