Comparing project organisation approaches to post-disaster housing reconstruction in Indonesia

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Research Problem Statement

Natural hazards are seemingly inducing ever-increasing losses globally. Since 2015, there has been an 80% increase in the number of people affected by disasters (UNDRR, 2023). We build on foundational disaster scholarship to challenge the idea that natural hazards are solely responsible for such losses – positioning disasters as socially constructed. Disaster risk creation is the concept we employ to explore this idea - we define this as the process through which risk is constructed (by human actors) in relation to (socio-)natural hazards (Muir and Opdyke, 2024). Post-disaster settings have been highlighted as sites of risk (re-)creation, where houses have been rebuilt on hazard-prone land without adequate risk-mitigating measures. There is deficient scholarly attention on housing reconstruction approaches and their risk-creating potentiality. Practitioners subsequently lack the tools to anticipate and account for their risk creation contributions, fuelling the (re-)creation of disasters. This research explores project organising approaches that lead to disaster risk creation in post-disaster settings. Indonesia is selected as the study context given the prevalence of loss and damage in the housing sector – in 2023, a total of 47,214 houses were damaged by natural hazards.

This research sets out to address the question: *What are the organisational approaches to post-disaster housing reconstruction projects implemented in Indonesia?*

And subsequently: *How do these modes of organising influence projects' potential to induce disaster risk creation?*

Research Methodology and Approach

Our approach observes post-disaster housing reconstruction projects implemented in multi-hazard settings across Indonesia. This study undertakes a comparative case analysis to explore how projects' organisational approaches contribute to risk creation outcomes. A comparative case study methodology enables us to examine causal complexities within cases while also theorising across cases. We focus on elements of project design, implementation, and risk reduction intents by combining field observations, hazard models, interviews, workshops, focus groups, and project documents as data sources.

We draw inferences from a selection of seismic, volcanic, tsunami, and landslide settings from Central Aceh; Pidie Jaya; Central Sulawesi; Cianjur Regency; East Java; Bogor Regency; Kupang Regency; Jayapura; Lombok; Lebak Regency; Karo Regency; and Lumajang Regency. We sample different lead authorities, including international development agencies (e.g. the

World Bank); district provincial, and national disaster management agencies (BPBD/BNPB); the Ministry of Public Works and Public Housing (PUPR); non-governmental organisations; United Nations Development Programme (UNDP) Indonesia; the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management; and city and regency governments. In case selection, we intentionally sought variation in conditional elements of the cases deemed relevant for determining discrepant risk creation outcomes. The sampling approach adopted also constitutes having a selection of projects that are, from preliminary data sources, assumed to represent a range of low to high levels of risk creation and a spectrum of diverse 'forms' of risk creation. Components actively varied between projects include the presence of (e.g.) participatory project design; diverse lead organisations; building codes; and local or regional risk management policies. These conditions are drawn out of initial guiding conceptual insights derived from a review of literature.

Data has been collected for two cases of post-disaster housing reconstruction in the province of Aceh. The first of these followed the 2013 Central Aceh (Gayo) earthquake. The second followed the 2016 Pidie Jaya (Pijay) earthquake. In Gayo, we conducted 34 household interviews and held a focus group discussion with stakeholders involved in project implementation. This included participants from the district housing agency, community facilitator groups (x2), the regional development planning authority (Badan Perencanaan Pembangunan Daerah - Bappeda, Central Aceh), the Ministry of Public Works and Housing (PUPR), BPBD, and the consultants involved in post-disaster damage classification. In Pijay, we conducted 30 household interviews, ran a mapping workshop with seven representatives (community leaders or persons involved as community facilitators) from six different communities, and interviewed BPBD and Aceh's provincial disaster management agency (BPBA) staff. We supplement this with documents and project data sourced from organising bodies. Additional hazard data is obtained from the national risk database (InaRisk) and local disaster management agency resources.

We adopt elements of practice theory to understand the practice of implementing post-disaster housing reconstruction projects (Reckwitz, 2002). Although practice theories constitute diverse conceptually intertwined approaches (Nicolini, 2012), practice theorists generally coalesce around seeing the social world as constituting constructed practices. Scholars utilising practice theory examine how practices are enacted, reproduced, transformed, and contested. These lenses are adopted to help us unpack how reconstruction practices are organised in each pilot case and understand the conditions of reconstruction projects that contribute to disaster risk creation. Analysis of project plans and risk management policies, for instance, informs on the formalised elements shaping practice enactment.

We then use comparative case analysis to understand the diverse means through which housing reconstruction is shaped and performed as a collective practice in Indonesia. By carrying out in-depth analysis of multiple cases, we identify which stakeholder groupings and interactions are unique to or common across projects, to observe how this has influenced the practice and performance of housing reconstruction.

Key Findings

Preliminary findings from two cases in Central Aceh (Gayo) and Pidie Jaya (Pijay) are presented here. We frame the findings around three abductively derived themes: stakeholder engagement, project design, and guiding principles.

Stakeholders Engaged – District, Provincial, and National Assemblages

Schatzki (1996) argues that by integrating diverse groups' practices, norms can evolve in ways that affect how they are performed and interpreted – diverse housing reconstruction applications are observed in line with each case's distinct organisational assemblages. We observe two distinct organisational assemblages in stakeholder involvement in Aceh. In Gayo, the reconstruction of houses was principally overseen by the national and district disaster management authorities, BNPB and BPBD, respectively. For Pijay, instead of BNPB, the provincial disaster management agency (BPBA) took the lead coordinating role. This difference in lead actors seemingly affected how each project was organised. For Gayo, the involvement of the national agency meant personnel were sent from outside the province to engage 'facilitators' in specialised training to guide local communities through the reconstruction effort. The facilitators were supported by five external consultants allocated by BNPB where they faced conflict with communities. BNPB conducted oversight checks for two sub-districts, but ultimately, the responsibility to (re-)classify housing damage and disseminate reconstruction funds lay with local community leaders. With the local leaders determining the final damage classification and funds houses received, we identified instances of moderately to heavily damaged houses that did not receive any funds, following inconsistencies in beneficiary selection standards. When compared to BPBD Pijay's approach, these findings suggest the decentralisation of damage classification responsibilities and the absence of clear selection criteria can have significant implications for funding provisions to persons in need.

Project Design – (in)Directly Enforcing Specified Housing Designs and Rebuilding Locations

A significant difference in project design between the projects lay in the prescription of building standards and the development of a 'masterplan' housing design. In Pijay, a highly standardised design was employed across the regency, while in Gayo, although a 'masterplan' template existed, there appeared to be much higher variation in the designs employed. The exception to this in the latter case was within three relocated villages under the project, where households had no choice over the adopted design. While in both cases households could choose to present their own designs to be approved by the responsible parties, more variation was apparent where every household had to go through a design approval process in Gayo, as compared to Pijay where approval was only necessary for households proposing modifications. Modifications were oftentimes only made where houses had additional funds to supplement the provided reconstruction funds. In Gayo, facilitators were used for housing design approval via a more decentralised approach than in Pijay where they used district authorities. The lack of a standardised housing design and central approval process in Gayo had implications for the consistency of seismic design standards adopted, with, in addition, no official seismic standard to guide semi-permanent or confined masonry housing reconstruction. The former comprised a large percentage of the reconstructed housing stock.

Relocation in reconstruction played a more prominent role in Gayo, where three villages were relocated. In contrast, in Pijay, unless households owned other land, the option to relocate was not afforded to them – even in instances where households feared landslide and flood threats and they expressed a desire to relocate. However, negotiating suitable land for relocation in Gayo resulted in 50 houses in one of the villages being situated on a site with landslide potential. No local or district hazard maps were used to formulate this decision. Since houses were not forced to give up ownership of their previous land or residencies, an increased distance to farmland or need for more space meant people ended up living again in the original site - deemed 'high risk'. The practice of restricting locations for rebuilding limited the potential for several households to evade conditions of risk.

Guiding Principles – Disaster Risk Reduction Sitting at the Forefront, or on the Sideline?

We analyse the risk reduction principles regulating project managers' and implementors' (officials, facilitators, households) practices, deeming risk conceptions important in shaping reconstruction project outcomes. Comparing how risk is conceived, operated, and shapes practices helps us understand how guiding principles differentially shape practice enactment and contribute to counter-productive outcomes across projects. Our analysis interrogates the im/explicit rules guiding practices (e.g. policies; cultural norms) and enforcement mechanisms (e.g. building codes; compliance tactics) to attend to the normative dimension of practice (Schatzki, 1996). Such assemblages of norms, upheld by differential enforcement, have observed implications for the unique performance of housing reconstruction in each case.

In Gayo, households' financial capability to afford their proposed design was the main consideration of facilitators in determining design approval or rejection. Minimum standards were otherwise related to the number and types of rooms. Authorities were seemingly not overly concerned with prescribing seismic safety in housing design. Despite this, in select communities, local leaders 'strongly suggested' households adopt semi-permanent housing designs or else made them perceive no room for individual choice. In other communities, households preferred rebuilding this way after observing higher co-seismic damages for reinforced concrete houses. The formal non-prioritisation of seismic-safe design, although mediated in instances by more localised practices, differed from the reconstruction effort in Pijay, where there was a high regard for enforcing seismic design elements from project conception.

Unpacking the empirical grounding of projected risk discourses is important because although seismic risk reduction agendas were prioritised in Pijay, narrow conceptions of risk can undermine holistic risk reduction (Cheek & Chmutina, 2022; Chmutina et al., 2021). In both case sites, communities were forced to accept implementing authorities' conceptions of 'safe' housing or 'safe' locations - given the conditions surrounding the reception of funds - despite additional observed (unaccounted for) hazard potentialities (e.g. liquefaction, flood, or tsunami). Since this research ultimately aims to uncover means towards resisting risk-creating practices, deconstructing counter-productive and singular risk discourses will be significant to uncovering suppressed (competing) knowledge claims. Exploring new ways of knowing in

disaster studies can follow from understanding that dominant discourses can fail in guiding practices towards true risk reduction, as perceived by those at risk.

Implications

The results of this study contribute to a deeper understanding of how post-disaster housing reconstruction projects are organised in Indonesia. The analysis of project management approaches aims to unpack the degree of institutionalisation of risk knowledge in planning processes and the influence of diverse actors in decision-making. From this, we contribute to understanding how diverse organising modes influence projects' potential to induce inequitable disaster risk conditions for housing beneficiaries and surrounding communities. The present trend for project-implementing organisations to ignore the risk-creating potential of their approaches is insufficient for ensuring housing beneficiaries are afforded equitable capacities to evade risk conditions.

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