Guest Editorial

Introducing Climate change and natural hazards – the geography of community resilience

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This special issue originates from a research project on *Climate change and natural hazards: the geography of community resilience in Norway*[1] based at the Department of Geography at the Norwegian University of Science and Technology in Trondheim. The project was designed as a response to the Research Council of Norway's call for increased knowledge of how society can and should be adjusted to meet challenges of climate change. A key purpose of the project was to investigate what community resilience to climate related natural hazards might look like for different Norwegian municipalities and how it can be strengthened.

The geography of community resilience in Norway – why and how?

Disaster resilience can be understood as

> "the ability of individuals, communities, organizations or countries exposed to disasters and crises and underlying vulnerabilities to anticipate, reduce the impact of, cope with, and recover from the effects of shocks and stresses without compromising their long-term prospects" (IFRC 2015).

The crux of this definition is its emphasis on the contextual dimensions of resilience, be they spatial, social or institutional. There is hence no one recipe for how to be(come) resilient. The research literature nevertheless points at some recurring traits that are believed to help communities in better adapting to changing circumstances in order to be more resilient. These are for example community networks and relationships, good governance and leadership,

[1] https://prosjektbanken.forskningsradet.no/#/project/NFR/235490

local knowledge, communication, material resources and economic investment, preparedness, good health and a positive mental outlook (see e.g. Norris et al. 2008, Setten and Lein 2019).

Community resilience has, with few exceptions (e.g. Amundsen 2012), not been much explored within a Norwegian context. We know, however, that, across the country, there are substantial spatial differences in how well-prepared communities are for adverse events (as evidenced in Scherzer et al. 2019). Hence, the spatial complexity of community resilience reflects the complexity of the notion of community resilience itself. This challenged us to take three different, yet interlinked approaches, to the geography of community resilience in Norway.

First, and as a response to the scant attention given to qualitative work on the interlinkages between climate change and resilience in Norway, we have undertaken qualitative case studies in order to explore cultural and social factors that contribute to local-level resilience (e.g. Andresen 2017, Setten and Lein 2019). The studies have demonstrated that what and who people know can drastically shape the immediate response and thus the outcome of the crises. Setten and Lein (2019) also emphasise the role of peoples' values and norms for how they respond in a crisis, and in effect, the importance of how people see themselves for their actions taken during hardship.

Second, and from a quantitative angle, we have studied resilience 'from a distance'. Drawing on a long-standing tradition of measuring resilience (Cutter et al. 2008), we have identified community resilience dimensions and indicators, and constructed a resilience index for Norwegian municipalities based on publicly available statistics (Scherzer et al. 2019). The index can serve as a means for communication and awareness raising of why it is important for Norwegian municipalities to be more resilient. To gain further insights into people's perceptions of climate change and its consequences, natural hazard risks, preparedness and their communities' level of resilience, data from nationally representative surveys have also been analysed (Lujala et al. 2015; Lujala and Lein 2020, this issue).

Third, and in order to identify where the most exposed and less resilient areas are, we have developed interactive geovisualization tools that can be used to view the history and geography of insurance compensations from the Norwegian Natural Perils Pool (Opach and

Rød (2018).[2] The tool allows users to explore their levels of resilience, and it can also be used as a platform for participatory assessments of community resilience. Importantly, we have integrated the information provided by the resilience index to aid in this.

Needless to say, the project has been broad in empirical scope and ambitious in its methodologies. It has made clear to us that community resilience is inherently contextual, and that there are myriad ways to be(come) resilient, either individually or as a collective. The five articles included in this special issue examine some of the key aspects of geographies of community resilience as they surfaced throughout the project period, importantly also beyond the Norwegian context. They mainly take a quantitative approach to their issues at hand. To introduce and contextualise the articles, we invited Professor Lesley Head, member of the project's international advisory board, to write a commentary. Her commentary follows this guest editorial.

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[2] The ClimRes geovisualization tool can be accessed at this address: http://folk.ntnu.no/opach/tools/climres/

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