

Emergency management in small remote communities – an urgent issue in the Nordic countries

Nina Baron, Nina Blom Andersen, Jacob Taarup and Rico Kongsager

Emergency and Risk Management, University College Copenhagen, Denmark

Context

Nordic countries face increased risk as a result of climate change [1–3], and both sparsely and densely populated areas will be affected. Most climate change adaptation research focuses on densely populated areas [4,5], but globally and in the Nordic countries, a significant proportion of people still live far outside the bigger cities, and many of those small remote communities face climate-related hazards that cannot be solved with the same approaches as employed in the densely populated areas, which have robust infrastructure and ready access to emergency services [6-11].

Overall, there are two ways a risk can be reduced. One is to reduce the likelihood of a hazard occurring. Here, building structures is often the preferred solution, but this is costly. The second is to reduce the consequences if the hazard occurs [12], which, for instance, can be achieved by improving emergency management [13,14]. There is a large focus on how to adapt cities to climate change. Solutions frequently referred to are, for instance: the construction of infrastructure such as dykes or avalanche barriers to remove potential hazards, or the relocation of the most important infrastructure or buildings. In small remote communities, this will not be an option, or, if it is an option, this would only be possible in a scaled-down version because of the cost of those measures. Governmental funds will be prioritised to more densely populated areas, and there are too few people in the small communities to fund these structures themselves. Thus, climate adaptation in small remote communities must be thought of differently.

Across the Nordic countries, climate change-related incidents will add further strain to the contemporary emergency management system. Climate-related hazards occur more frequently and on a large scale [15,16] and will thereby stretch existing resources [17-19]. Hence, it is not realistic that the formal emergency management system will be able to prioritise all operations in small remote communities. Instead, there is a need to rethink the present organisation of emergency management in the Nordic countries to support the inclusion of novel resources and the implement of new principles for organisation. In practice, this can be done by involving citizens living in small remote communities but also local civil society organisations and private entities not traditionally part of emergency management set-up. Most importantly, this is not to be organised in the midst of a disaster. There is an urgency for the integration of new actors and entities through planning and training before disasters occur. Consequently, in-depth explorations are needed to find solutions to this impending need.

Key findings in recent Nordic projects

- There is an inherent tradition of independence in relation to handling local emergencies and disasters in small remote Nordic communities, since they cannot expect emergency management assistance from external sources. However, they lack formal context-specific scenario training concerning climate change-related incidents, since these hazards pose new challenges that most communities have limited experience with. However, the frequency and scale of these disasters will increase.
- Exercises and training within established, traditional emergency management systems are designed to facilitate learning and secure preparedness among professionals, but when new actors such as citizens, civil society organisations, and private entities are included in those exercises, their learning is limited.
- There is a need then to develop new ways of organising emergency management systems in small remote communities and also to create new methods to train and learn within emergency management that has been designed for a situation where a diverse and heterogenous group of actors are involved.

Ways Forward

Novel ways of organising Nordic emergency management

Remoteness forces community members to deal with hazards themselves when they initially occur, since the isolation often complicates the presence of the rescue service. However, the remoteness not only creates challenges but can also create a strength concerning building adaptive capacity to climate change. Such communities often have a long tradition of responding independently to challenges and developing local solutions [9,14]. Many small remote communities already have their own first responders and fire brigades, and they have a well-established tradition that local services are operated based on voluntary work [10].

Contemporary emergency management in the Nordic countries identifies and addresses the need for including new actors in the existing system [20]. A growing attention towards new ways of including volunteers and other organisations can be identified [21]. The prognoses for more extreme weather events are to a large extent expected to overwhelm the capacity of the emergency management system. Larger events such as avalanches, landslides, flash floods, temperature extremes, wildfires, storms, and floods will most likely create a situation in the future where the civil society needs to be included in ways that there has not previously been a tradition for in the Nordic countries [21]. It will create situations where other actors, not only people and organisations in remote areas, need to play an active part in the relief work in case of an emergency or disaster.

An intensified focus on both the establishment and improvement of emergency management in small remote communities will not only strengthen the resilience of those communities but also provide an important testing ground for developing a Nordic emergency management system better prepared for a future affected by climate change.

Novel approaches to training and learning within emergency management

Despite the tradition in remote communities of independent problem-solving and the development of solutions tailored to local needs, most communities still lack the formal training and experience to do so [22]. Thus there is not only a need for new ways of organising emergency management in a Nordic context but also for developing new ways to train and develop the competencies among the new actors involved.

The use of emergency management exercises is a traditional and often applied format to practice skills and competencies within professional emergency management organisations. Exercises are used to train, for example, coordination, communication, and decision-making [23]. The aim is to enhance the organisations' and stakeholders' capacity to react, their ability to prioritise critical societal functions, and to respond in a sound way to rare incidents through simulation. The central aims of such exercises are to practice the organisations' plans for responding to a certain scenario and to test weaknesses and address the need for improvements. Representatives meet across sectors, organisations, and spheres to train their capacity to cooperate and coordinate their response and need for resources [11].

Despite the fact that actors and entities outside the emergency management sector, such as citizens, private companies, and civil society organisations, are nowadays also included in emergency management plans, they are rarely included in the training and exercises of professional emergency management. The engagement of remote communities in training and exercising emergency management requires the development of new formats. Firstly, there is a need to include all the participants' know-how and insights, including those who are not professionally engaged in emergency management organisations but who have a knowledge of local conditions and routines [24]. Secondly, it is important to overcome the often-faced problem that initiatives are required to construct exercise formats which ensure that individuals, organisations, and communities actually become better prepared for a real incident through exercises [25]. Thirdly, the formats are often directed either towards decision makers on a strategic national level [26] or towards firefighting, healthcare and medical care, and law enforcement on an operational level. Finally, there is a need to include the context of climate change-caused extreme weather events in the formats [26].

Added value in a Nordic context

Research has shown that despite their differences, the challenges that small remote communities face across the Nordic countries are very similar [9,10,13,14]. In some communities, robust solutions have been developed, such as the development of local extreme weather emergency plans [9,10], but there is a lack of sharing such insights across communities facing similar situations.

Hence, there is a comprehensive potential for facilitating learning and developing solutions in cooperation across the Nordic countries. It is very plausible that good examples, experiences, or solutions to learn from can be found in the other Nordic countries. At the same time, parallel welfare state systems, governance standards, and principles of emergency response provide transferability of solutions.

Policy recommendations

- Small remote communities have to adapt to climate change through other solutions and tools compared to cities and more densely populated areas. Consequently, it is paramount to include the communities when developing solutions and plans for how to face climate change in the Nordic countries.
- To respond to and manage the increasing number of climate-related hazards in the future, also in the smaller communities, emergency management organisations need to transform and reorganise resources. The inclusion of citizens, civil society organisations, and the private sector in the emergency management structure is imperative.
- Special attention is needed to develop new formats of training and learning for managing emergencies. New actors, such as local communities, need to strengthen their own capacity and to learn to cooperate with professional emergency management systems both locally and nationally, but also across the Nordic countries.

Recent research projects in a Nordic context

This paper builds on international, European, and Nordic research, and the latter includes results from two NordForsk-funded research projects:

“The Climate Change Resilience in Small Communities in the Nordic Countries project” (CliCNord, 2021–2023) focuses on how to increase capacity building in small communities to meet the effects of climate change. The project investigates how small communities understand their situation in relation to climate change, how they handle climate-related challenges, how competencies and resources among the local citizens can help build capacity, and the circumstances regarding the citizens’ need for help from the established system and civil society organisations. CliCNord has received funding from the NordForsk Nordic Societal Security Programme under Grant Agreement No. 97229.

“Building resilient communities in the High North” (2020–2022) aimed to map out an understanding of community resilience to catastrophic incidents in Greenland and the Faroe Islands through scenario exercises and workshops to enhance situational awareness. The project sought to improve the understanding of the currently available learning tools on organisational resilience when applied to a context that significantly differs from our knowledge of communities that are logistically well connected to national emergency response infrastructure. The project was financed through Nordplus under the Nordic Council.

References

- 1 Lee H, Calvin K, Dasgupta D, et al. Climate Change 2023: Synthesis Report of the Sixth Assessment Report (AR6) Climate Change. Geneva; 2023.
- 2 Danish Meteorological Institute. The Danish Climate Atlas [Internet]. 2023 [cited 2023 Feb 2]. Available from: <https://www.dmi.dk/klimaatlas/>
- 3 IPCC. Regional fact sheet - polar regions. In: Climate change 2021: The physical science basis [Internet]. 2021 [cited 2023 Jun 1]. Available from: science basis. https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Polar_regions.pdf
- 4 Heikkinen M, Karimo A, Klein J, Juhola S, Ylä-Anttila T. Transnational municipal networks and climate change adaptation: A study of 377 cities. *J Clean Prod.* 2020 Jun;257:120474.
- 5 Dodman D, Hayward B, Pelling M, et al. Cities, Settlements and Key Infrastructure. In: Pörtner. H-O, Roberts D, Tignor M, et al., editors. *Impacts, Adaptation and Vulnerability Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge, UK and New York, NY, USA: Cambridge University Press; 2022. p. 907–1323.

- 6 Amundsen H. Place attachment as a driver of adaptation in coastal communities in Northern Norway. *Local Environ.* 2015 Mar 4;20(3):257–76.
- 7 Taarup-Esbensen J. Community resilience – Systems and approaches in remote settlements. *Progress in Disaster Science.* 2022 Dec;16:100253.
- 8 Exner-Pirot H. Between Militarization and Disarmament: Challenges for Arctic Security in the Twenty-First Century. In: *Climate Change and Arctic Security.* Cham: Springer International Publishing; 2020. p. 91–106.
- 9 Baron N, Kongsager R. Facing climate change on small islands: how sense of place influences perspectives on flood risk prevention on small Danish islands. *Regional Environmental Change.* Forthcoming 2023
- 10 Kongsager R, Baron N. Dealing with a climate-related hazard: Place attachment, storms, and climate change in the Faroe Islands. *Regional Environmental Change.* Forthcoming 2023.
- 11 Cox RS, Hamlen M. Community Disaster Resilience and the Rural Resilience Index. *American Behavioral Scientist.* 2015 Feb 23;59(2):220–37.
- 12 Coppola DP. *Introduction to international disaster management.* Fourth edi. Amsterdam: Elsevier/ Butterworth-Hein; 2021.
- 13 Eriksson K, Sjöström J, Plathner FV. "This community will grow" – Little concern for future wildfires in a dry and increasingly hotter Nordic rural community. *Regional Environmental Change.* Forthcoming 2023.
- 14 Kokorsch M, Gisladottir J. 'You talk of threat, but we think of comfort': The role of place attachment in small remote communities in Iceland that experience avalanche threat. *Regional Environmental Change.* Forthcoming 2023.
- 15 Arctic Council. *Arctic Resilience Report.* 2016.
- 16 Bednar-Friedl BR, Biesbroek DN, Schmidt P, et al. Europe. In: Pörtner HO, Roberts DC, Tignor M, et al., editors. *Climate Change 2022: Impacts, Adaptation and Vulnerability Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge, UK and New York, NY, USA: Cambridge University Press; 2022. p. 1817–927.
- 17 Danish Emergency Management Agency. *National Risk Profile 2022.* 2022.
- 18 Myndigheten för samhällsskydd och beredskap (MSB). *Nationell risk- och sårbarhetsbedömning [National risk and vulnerability assessment] (NRSB) 2023.* 2023. Swedish.
- 19 Ministry of the Interior. *National risk assessment 2023.* Helsinki; 2023.
- 20 Nielsen LR. Dismantling boundaries between citizen volunteers and emergency authorities – Cocreating emergency response in Denmark. *International Journal of Disaster Risk Reduction.* 2022 May;74:102910.
- 21 Beredskabsstyrelsen. *National strategi for forebyggelse af ulykker og katastrofer [National strategy of accidents and disasters].* Birkerød; 2016. Danish.
- 22 Naalakkersuisut. *Redegørelse om det kommunale beredskab (november) [Review of the Emergency management of the Municipalities (November)].* Nuuk; 2018. Danish.
- 23 Wolbers J, Boersma K. The Common Operational Picture as Collective Sensemaking. *Journal of Contingencies and Crisis Management.* 2013 Dec;21(4):186–99.
- 24 Danielsson E. Following Routines: A Challenge in Cross-Sectorial Collaboration. *Journal of Contingencies and Crisis Management.* 2016 Mar;24(1):36–45.
- 25 Curnin S, Brooks B, Brooks O. Assessing the influence of individual creativity, perceptions of group decision-making and structured techniques on the quality of scenario planning. *Futures.* 2022 Dec;144:103057.
- 26 Hukkinen JI, Eronen JT, Janasik N, Kuikka S, Lehtikoinen A, Lund PD, et al. The policy operations room: Analyzing path-dependent decision-making in wicked socio-ecological disruptions. *Saf Sci.* 2022 Feb;146:105567.