Arctic humanitarianism for post-disaster settlement and shelter

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Abstract

Purpose: This paper explores Arctic post-disaster situations by focusing on settlement and shelter in Arctic humanitarian contexts.
Design/methodology/approach: Principles of post-disaster settlement and shelter are examined for the Arctic and then for the case study of Svalbard, Norway.
Findings: Established principles apply in the Arctic, but are not easy to implement. Limited practical experience exists and some Arctic humanitarian situations require much more investigation to understand how to deal with the post-disaster settlement and shelter process.
Originality/value: Setting an agenda for aspects of the principles and practices of Arctic humanitarianism.

1. Arctic disasters

The Arctic is frequently represented as a potentially dangerous and disastrous region, particularly due to its alleged isolation and harsh environmental conditions. This narrative displays some realism, but is also countered by those who live in the region enjoying and seeking to retain the climate (Watt-Cloutier, 2015) alongside those highlighting the positive outcomes from the Arctic's characteristics (Sellheim et al., 2019). The various views converge in recognising that the Arctic is undergoing rapid social and environmental changes (AMAP, 2018; ARR, 2016), providing challenges and opportunities.

These challenges and opportunities include disasters and dealing with them (Duda, 2019; Milseki et al., 2018). Search-and-rescue in the northern latitudes has accepted the need for preparedness and speed (Sydnes et al., 2017), given that people caught outdoors without adequate equipment have limited survival prospects, especially in the winter (Gudmestad and Solberg, 2019). Weather at any time of year, though, can make survival difficult and can preclude prompt rescue attempts, especially considering the forces from the sea and the ever-drifting ice for non-land-based rescues. Whether in a lifeboat or a tent, cold and storms mean that adequate shelter is far more important to survival than in locations where post-disaster lack of freshwater is often the most imminent threat.

This paper explores aspects of Arctic post-disaster situations, focusing on the need for settlement and shelter in Arctic humanitarian contexts. The next section provides an overview of the literature and practice covering humanitarian settlement and shelter, to establish the principles and to examine their relevance to cold environments. Section 3 applies the principles to the specific case study of Svalbard, Norway in order to examine the relevance of the

principles for the Arctic in practice. The conclusions propose an agenda for Arctic-related humanitarian settlement and shelter. To ground this work better, examples of potential and actual Arctic disasters requiring humanitarian settlement and shelter include:

(i) Loss of power or freshwater supply to a community while the airport is out-of-action, perhaps due to weather. Iqaluit, Nunavut, Canada was reported to have experienced a blackout on 3 May 2017 (CBC News, 2017).

(ii) A major tsunami or wildfire, both of which affected Kalaallit Nunaat (Greenland) in 2017 (Chao et al., 2018; Evangeliou et al., 2019). The tsunami killed several people and washed away some houses in one village.

(iii) Emergency aircraft landings. Engines could shut down and other parts of an airplane could be damaged from volcanic ash, as occurred in 1989-1990 due to Redoubt Volcano, Alaska (Casadevall, 1994). US airspace was closed soon after the 11 September 2001 terrorist attacks forcing most flights above the US to land at the nearest airport, including Alaskan flights (Freni, 2003). Freni (2003) also states that Alaskan skies were opened to aviation before the 48 contiguous states due to recognition that some places in Alaska are accessible almost exclusively by air.

(iv) An earthquake toppling and damaging infrastructure. USGS (2019) lists the 28 March 1964 Alaskan tremor as the second largest earthquake yet recorded while Sidorin (2019) describes how the Kola and Karelia areas have experienced high-magnitude earthquakes in past millennia.

(v) A cruise ship being evacuated. In August 2016, the *Crystal Serenity* with over 1,600 people on board sailed through the Canadian Arctic, with Power et al. (2016) explaining that it prompted concerns that disaster-related resources were inadequate to deal with any major problem that might arise.

The need for Arctic humanitarianism, in terms of post-disaster activities such as immediate shelter, rescue, and response, is therefore clear.

The comparative lack of humanitarian experience in the Arctic exists partly because most Arctic post-disaster actions have been focused on search-and-rescue and clean-up (e.g. for oil spills, Sydnes and Sydnes, 2013), on the assumption that, if conditions permit, people will be brought to safety and thus ends the disaster. Another major component in the lack of Arctic humanitarian experience is the assumption that few major disasters occur within the region and that they have been addressed by fairly local and small-scale response. While the small populations mean that fewer people and less infrastructure tend to be affected in disasters, smaller scale impacts do not necessarily mean a "small disaster" or a situation of reduced relevance (Lewis, 1984; Marulanda et al., 2010). The principles of humanitarianism (e.g. Anderson, 1999; Davis and Alexander, 2015; Sphere Association, 2018) demonstrate that post-disaster situations are not necessarily simpler at smaller scales, as also illustrated by recent (e.g. Finnish Red Cross, 2018; Munk School of Global Affairs, 2014) disaster-related incidents and planning discussions for the Arctic.

2. Post-disaster settlement and shelter principles for Arctic humanitarianism

Following a disaster, the need for settlement and shelter has long been understood and accepted, by survivors and by responders (Cuny, 1983; Snarr and Brown, 1980). One of the first efforts to systemise how post-disaster settlement and shelter ought to be approached came from Davis (1978, p. 33) explaining that 'shelter must be considered as a process, not as an object' which reiterates Turner's (1972, p.148) 'housing as a verb'. That is, neither housing nor shelter, whether post-disaster or otherwise, should be considered as only the physical structure or only a specific object which is built. Instead, the processes of housing and

shelter(ing) involve numerous actions to fulfil ongoing needs which for operational contexts are typically outlined as (Corsellis and Vitale, 2005; Sphere Association, 2018; UNOCHA and Shelter Centre, 2010):

(i) Health, covering physical health such as protection from the environment and psychological health such as a feeling of home and place.

(ii) Privacy and dignity for individuals, families, and other groups.

(iii) Security which, as with health, is both physical and psychological.

(iv) Support for livelihoods and income generation.

In a post-disaster context, these needs should be considered and addressed from the beginning of response and reconstruction—and, as described by Horney et al. (2016) and Smith (2014), preferably planned for long before a disaster unfolds.

To do so, the phrase "Build Back Better" (or "Building Back Better") has been proposed (e.g., Monday, 2002), rising to particular prominence after the 26 December 2004 tsunamis around the Indian Ocean (e.g. Clinton, 2006). Continued failures in post-tsunami humanitarian relief led to discussions and critiques about the meaning and relevance of "build back better" for the tsunami and other contexts (Cohen, 2011; Di Giovanni and Chelleri, 2019; Kennedy et al., 2008; Maly, 2017, 2018; Rajasingham-Senanayake, 2005). Alternatives such as "build back safer" and other formulations (e.g. Maly, 2017, 2018; Parrack et al. 2014) were also proposed for an agenda covering post-disaster settlement and shelter.

As part of the exploration and evolution of "Build Back Better" and related notions, one concern has been the temperature range within which post-disaster settlement and shelter needs to be considered. Locations badly affected by the 2004 tsunamis were generally warm climates where it would usually be possible to survive within the environment's air temperature range. Indoor climate control via air conditioning would have made living more comfortable, but was not essential even for high humidity, while heating, even for some of the chillier nights, was rarely needed for survival. The same has held to a large degree for other notable humanitarian settlement and shelter responses, such as the 1994 Rwandan genocide and Hurricane Mitch in Central America in 1998.

Other humanitarian situations provided much colder climates, such as Afghanistan over the decades and the violence marking the breakups of Yugoslavia and the USSR (Kelly, 2002). These situations meant people experiencing temperatures below freezing for weeks or months in the winter. Humanitarian guidelines recognise the need for cold climate approaches, such as Sphere Association's (2018, p. 254) "Shelter and settlement standard 3: Living space" having a key indicator:

> "•Minimum 3.5 square metres of living space per person, excluding cooking space, bathing area and sanitation facility.
>
> •4.5–5.5 square metres of living space per person in cold climates or urban settings where internal cooking space and bathing and/or sanitation facilities are included."

Cold climate guidance notes in Sphere Association (2018)—which does not mention the Arctic—further discuss ceiling height, thermal capacity, insulation, air flow, and bedding for cold climates.

Such cold climate humanitarian situations are somewhat analogous to Arctic conditions where insulation or winterised shelters might still not be enough to survive without heating. In some cold climate locations, such as Kosovo and Afghanistan, the key settlement and shelter response was still frequently tents, leading to concerns regarding fire safety, indoor air temperature, and suffocation due to lack of ventilation while trying to keep cold air out

(Crawford et al., 2005; Manfield et al., 2004). Without expensive cold-weather tents, safe heating, or other forms of temperature-appropriate temporary family-size shelters, it is difficult to match the "Health" and "Security" criteria for post-disaster settlement and shelter while "Support for livelihoods and income generation" also suffers since working in an inadequate tent is as hard as living in it.

Other approaches for cold climate humanitarian settlement and shelter have been to use collective buildings, such as schools and community centres, or to aim for one warm room per house. Combinations are an option, such as collective buildings for day use and single-family shelters at night. These approaches have met with mixed success, with the level of achievement typically determined by the resources provided for each shelter, and also balancing fire prevention, warmth, and ventilation. With collective buildings involving shared facilities, the criteria of "Privacy and dignity" and "Security" might be difficult to meet. Wider contexts can suffer as well, such as keeping schools and community centres functioning after a disaster in order to provide continuity of education and community work (Ronan and Johnston, 2005). Another difficulty was documented by Norris (2007) explaining how, in the former Yugoslavia, the UN resettled refugees in another ethnic group's houses which had been abandoned due to the conflict—simply because apparently no other option was immediately viable.

Within the Arctic, further challenges emerge regarding all four principles. Outside of Scandinavia, many Arctic settlements face a perpetual problem of dilapidated infrastructure (Egeland, 2011). Houses are frequently overcrowded (e.g. Lauster and Tester, 2010) and lack adequate facilities, while collective buildings might not have sufficient water, sanitation, and heating. These buildings are typically too small to take in the numbers which would require shelter following a survivable aircraft or shipping disaster. Many Arctic locations lack safe places for tents or other temporary shelters. Communities have already built in the safe zones regarding avalanches, rock falls, waves, floods, ice, and other environmental hazards. In many locales, siting temporary shelters in the town's streets, people's yards if they have any, or port/airport facilities if they exist might be the only option, thereby leaving inhabitants susceptible to polar bear attacks (Bombieri et al., 2018; Smith and Herrero, 2019) and mud during a thaw (Davies 2015; Duffy, 1988). This approach would also interfere with the hosts' day-to-day activities, impinging on humanitarian principles (Cuny, 1983; Sphere Association, 2018). Bringing in the materials for temporary shelters poses logistics difficulties precisely because many Arctic communities do not have ports or airports sufficient for large craft and because weather conditions and distances preclude reliable and fast dockings and landings.

The principles of "Health" and "Security", though, can be supported to some level by the Arctic environment. A reasonable, although still far from ideal, quality of drinking water can generally be obtained by melting snow and ice, although this action requires a lot energy. Except for summer, insects are rarely a problem outside and the endemic vector-borne diseases in the region tend to require less medical attention than in the tropics. Other infectious disease transmission can be augmented (e.g. Parkinson et al., 2008), such as influenza due to cold weather and tuberculosis due to confined spaces.

As with all other locations, for the Arctic, achieving the four principles for post-disaster settlement and shelter is not straightforward, requiring pre-disaster planning and contextualisation. Examining analogies, past disasters, and possible scenarios would assist with putting the principles into practice. The next section provides an overview of one case study in practice.

3. A case study of Svalbard, Norway

Svalbard, an archipelago which is an Arctic territory of Norway, has approximately 2,700 inhabitants across four main settlements, as well as thousands of tourists, scientists, business people, and other visitors who regularly travel in and out (Holmgaard et al. 2019; Visit Svalbard, 2019). If any of the settlements were to experience a power outage, a failure of the freshwater supply, or a major fire, then post-disaster settlement and shelter would be required, possibly during winter's long hours of darkness and sub-freezing temperatures. The largest settlement is Longyearbyen with approximately 2,200 people and it could easily take in the population of the three other settlements—if the evacuated people could reach Longyearbyen, since Svalbard experiences storms which sometimes halt all transportation by air, sea, and land. If Longyearbyen becomes uninhabitable due to a disaster, as per plans from Longyearbyen Local Government (2017), then the town's population would require transport, shelter, and supplies in order to evacuate.

Even if adequate amounts of material and equipment, such as winterised tents and fuel for heating, were stockpiled in the correct location and were accessible post-disaster, then the weather—as well as polar bears—could create difficulties for erecting the tents, staying safely in them, and switching between the tents and buildings for toilets, food, and breaks from the confined space. One consideration might be sheltering people in Longyearbyen's coal mines, only one of which is operational, but the mines bring dangers of sub-freezing temperatures, unstable tunnels, lack of hygiene, and lack of supplies.

Consequently, planning for post-disaster settlement and shelter in Svalbard must cover thousands of people needing all services for several days in conditions inhibiting outdoors survival. Even more poignant, some cruise ships travelling around Svalbard and docking in the settlements carry more passengers than residents of Svalbard. For instance, from online advertisements, the *MSC Preziosa* which can carry over 3,500 passengers plus crew docked in Longyearbyen on 23 June 2019 and is scheduled to return in July 2020. If such a ship sinks or otherwise must be evacuated, then finding post-disaster settlement and shelter would be challenging, even if near one of the settlements. If Longyearbyen were inhabitable and the ship's crew and passengers could reach there, then it might be feasible to manage for several days by using the available buildings, including hotels, the university centre, government buildings, businesses, and people's homes. Finding enough bedding, food, freshwater, and toiletries would not be easy, but might be managed. If parts of Longyearbyen were not intact, or if power or water supplies were disrupted, then post-disaster settlement and shelter adhering to the four principles for everyone might not be feasible. Power et al. (2016) show how even the use of clothing with Arctic-relevant characteristics might not be enough to ensure survival while awaiting rescue.

Achieving the four principles for post-disaster settlement and shelter for the case study of Svalbard is not currently possible for many realistic scenarios. Much more preparation and planning are needed, building on what already has been completed (e.g. Longyearbyen Local Government, 2017), particularly for more scenarios in which Longyearbyen is either not habitable or not immediately accessible.

4. An Arctic humanitarianism agenda for post-disaster settlement and shelter

The principles and practice of post-disaster settlement and shelter in the Arctic provide an agenda setting out facets requiring deeper investigation and more testing in order to build up plans, preparedness, and experience before they must be applied in reality (Box 1).

Box 1: An Arctic humanitarianism agenda for post-disaster settlement and shelter

(i) Health: Physical health ought to ensure thermal comfort, ventilation, and fire safety, especially given that evacuation in cold climates requires other shelter to be available swiftly. Mental health should include dealing with being confined to the shelter for most of the time and the knowledge that even a minor flaw in the shelter, permitting cold air to enter, could quickly become lethal.

(ii) Privacy and dignity: These aspects are not easily maintained, given how much people would have to remain indoors and that showers and toilets must also be kept warm, so dedicated spaces for outdoors facilities are hard to provide without heating. For access in cold climates, these facilities should not be far from the main shelter—in warm climates, settlements normally separate them from the shelters—which further means addressing hygiene, due to the proximity to living spaces.

(iii) Security: Arctic-relevant considerations include polar bears and long winter nights. Security is hard to achieve with sea- and ice-based post-disaster settlement and shelter due to the dynamic environment. The need for close proximity of indoor showers and toilets to the living spaces might improve security, since assault and harassment are common where facilities are separated for hygiene and are outdoors.

(iv) Support for livelihoods and income generation: Large livelihood variations exist around the Arctic, and so need to be factored into Arctic humanitarianism, with dominant livelihoods being subsistence, tourism, or resource extraction, plus many communities with mixed livelihoods.

As per point (iv) in Box 1, the Arctic is not homogeneous, so differences in Arctic contexts must be incorporated into this agenda. As with Longyearbyen, some Arctic urban centres such as Tromsø (Norway), Yellowknife (Canada), Fairbanks (Alaska), Murmansk (Russia), and Nuuk (Greenland) have collective buildings and resources adequate for many humanitarian settlement and shelter scenarios. Hotels, offices, generators, fuel, preserved food, freshwater, and warm clothing are available along with members of the population who have needed professional skills such as doctors and electricians. As with Longyearbyen, many scenarios nonetheless exist which would test these locations; for instance, (i) a lengthy power outage following a major Fairbanks earthquake which damages the airport and roads and (ii) a cruise ship with 3,000 passengers plus crew sinking near Nuuk's population of 17,000, especially if poor weather limits the airport's operations.

In comparison, the smaller, outlying settlements around the Arctic might have fewer options. Jokkmokk—on the Arctic Circle in Sweden's interior and with a population similar in size to Longyearbyen's—could easily be cut off from outside help for days, so the population might struggle similarly to Longyearbyen with a lengthy power or water outage. Many predominantly indigenous communities around the Arctic have dozens or hundreds or residents, leaving few supplies, limited collective buildings, and difficult prospects for post-disaster settlement and shelter if large numbers of disaster-affected people arrive or if large numbers of buildings become unusable.

Another aspect of the agenda is differences in requirements for Arctic peoples (who live in the region) and visitors (who need mainly search-and-rescue followed by transport out of the Arctic). The principle of "Livelihoods and income generation" would not be relevant for cruise ship passengers or expeditions and it might be acceptable to reduce "Privacy and dignity" if transport out of the Arctic were imminent. Unlike many other humanitarian emergencies, post-

disaster settlement and shelter in the Arctic could easily have two forms, for visitors and residents. Residents deserve all four principles while visitors could focus on "Health" and "Security". Another question is whether visitors need humanitarian settlement and shelter, rather than just humanitarian shelter. Given the goal of transporting disaster-affected visitors out of the Arctic as soon as possible, settlement considerations might not be part of the agenda for them, so that the focus could be on (i) humanitarian shelter for visitors and (ii) humanitarian settlement and shelter for residents.

If this two-level system were effected, then three major limitations would need to be considered. First, the assumption that visitors would be able to depart their post-disaster shelter fairly quickly. The Arctic rarely provides such guarantees, with many instances feasible in which it is necessary to remain in place for days, if not weeks. The second limitation would be ensuring that residents are not short-changed in order to favour the visitors while trying to avoid complaints or jealousy from the visitors if residents' post-disaster settlement and shelter were of a higher standard than the visitors' post-disaster shelter. It is notable that neither "equity" nor "equality" is one of the seven fundamental principles of the Red Cross Red Crescent Movement (ICRC and IFRC, 2008) or one of the principles of Médecins Sans Frontières (MSF, 2019). There should be no expectation of Arctic residents and visitors being treated the same for post-disaster settlement and shelter, yet the practicalities of objections and frustration must be considered. As Sphere Association (2018, p. 8) advises, "In cases where the minimum requirements exceed the living conditions of the host community, consider how to reduce potential tension, such as by offering community-based services" and then later elaborates (p. 18):

> "Special attention should also be paid to host communities, because real or perceived differences in treatment may lead to escalating tensions or conflict. In such cases, advocating for an alternative to camp-like settings and addressing host community needs too can help to ensure that affected populations are able to live with dignity."

Furthermore, if visitors were able to leave the Arctic quickly, precluding the need for settlement-related consideration, then the residents should not be left with the decommissioning, deconstruction, or clean-up of the visitors' temporary shelters. Finally, this two-level system does not account for an Arctic humanitarian situation in which people move into the Arctic from further south. One example, described by Ivari (2018), was the Arctic winter of 2015-2016 when asylum seekers from countries including Afghanistan, Iraq, Somalia, and Syria travelled through Russia to cross into northern Norway and Finland where they required settlement and shelter.

This paper has explored Arctic humanitarianism for post-disaster settlement and shelter, examining the principles and how they might and might not apply in practice. Overall, post-disaster settlement and shelter within Arctic settings perhaps means dealing with long winter nights, polar bears, and possibilities for sea-, ice-, and land-based humanitarianism. The cold climate has parallels elsewhere, as do the other aspects such as dangerous animals. Further points discussed—such as the urban-rural continuum, logistics for stockpiling and delivering materials, and dealing with both residents and visitors, among others—should be part of the post-disaster settlement and shelter process for any location. Therefore, no specific or unique changes to humanitarian settlement or shelter approaches are necessarily needed for the Arctic, but as with all post-disaster situations, context still matters to determine which approaches and concerns to emphasise. The main gap to fill for Arctic humanitarianism in the settlement and shelter context is more training and testing to build up practical experience, especially for preventing problems.

References

AMAP (2018), *AMAP Assessment 2018: Arctic Ocean Acidification*, Arctic Monitoring and Assessment Programme, Tromsø.

Anderson, M.B. (1999), *Do No Harm: How Aid Can Support Peace—Or War*, Lynne Rienner, Boulder, CO.

ARR (2016), *Arctic Resilience Report*, Arctic Council, Stockholm.

Bombieri, G., del Mar Delgado, M., Russo, L.F., Garrote, P.J., López-Bao, J.V., Fedriani, J.M., and Penteriani, V. 2018. Patterns of wild carnivore attacks on humans in urban areas. *Scientific Reports*, Vol. 8, article 17728.

Casadevall, T.J. (1994), "The 1989–1990 eruption of Redoubt Volcano, Alaska: impacts on aircraft operations", Journal of Volcanology and Geothermal Research, Vol. 62 No. 1-4, pp. 301-316.

CBC News (2017) "Power restored to Iqaluit after brief community-wide outage", available at: https://www.cbc.ca/news/canada/north/iqaluit-power-outage-1.4097745 (accessed 20 December 2019).

Chao, W.-A., Wu, T.-R., Ma, K.-F., Kuo, Y.-T., Wu, Y.-M., Zhao, L., Chung, M.-J., Wu, H., and Tsai, Y-L. (2018). "The Large Greenland Landslide of 2017: Was a Tsunami Warning Possible?", *Seismological Research Letters*, Vol. 89, No. 4, pp. 1335-1344.

Clinton, W.J. (2006), *Lessons Learned from Tsunami Recovery: Key Propositions for Building Back Better*, United Nations Secretary-General's Special Envoy for Tsunami Recovery, United Nations, New York, NY.

Cohen, E. (2011), "Tourism and land grab in the aftermath of the Indian Ocean tsunami", *Scandinavian Journal of Hospitality and Tourism*, Vol. 11 No. 3, pp. 224-236.

Corsellis, T. and Vitale, A. (2005), *Transitional Settlement – Displaced Populations*, Oxfam Publishing, Oxford.

Crawford, C., P. Manfield, and A. McRobie (2005), "Assessing the thermal performance of an emergency shelter system", *Energy and Buildings*, Vol. 37 No. 5, pp. 471-483.

Cuny, F. (1983), *Disasters and development*, Oxford University Press, Oxford.

Davies, W.K.D. (2015), "Winter Cities", in Davies, W.K.D. (Ed.), *Theme Cities: Solutions for Urban Problems*, Springer, Cham, pp. 277-310.

Davis, I. (1978), *Shelter after Disaster*, Oxford Polytechnic Press, , Oxford.

Davis, I. and Alexander, D. (2015), *Recovery from Disaster*, Routledge, Abingdon.

Di Giovanni, G. and Chelleri, L. (2019), "Why and how to build back better in shrinking territories?", *Disaster Prevention and Management*, Vol. 28 No. 4, pp. 460-473.

Duda, P.I. (2019), "Informal Disaster Governance in the Arctic", in Menezes, D.R. and Nicol, H.N. (Eds.), *The North American Arctic: Themes in Regional Security*, UCL Press, London, pp. 289-308.

Duffy, Q. (1988), *Road to Nunavut: The Progress of the Eastern Arctic Inuit since the Second World War*, McGill-Queen's Press, Montreal, QC and Kingston, ON.

Egland, G.M. (2011), "IPY Inuit Health Survey speaks to need to address inadequate housing, food insecurity and nutrition transition", *International Journal of Circumpolar Health*, Vol. 70 No. 5, pp. 444-446.

Evangeliou, N., Kylling, A., Eckhardt, S., Myroniuk, V., Stebel, K., Paugam, R., Zibtsev, S., and Stohl, A. (2019), "Open fires in Greenland in summer 2017: transport, deposition and radiative effects of BC, OC and BrC emissions", *Atmospheric Chemistry and Physics*, Vol. 19 No. 2, 19, pp. 1393-1411.

Finnish Red Cross (2018), *Red Cross Arctic Disaster Management Study*, Finnish Red Cross, Helsinki.

Freni, P.S. (2003), *Ground Stop: An Inside Look at the Federal Aviation Administration on September 11, 2001*, iUniverse, Lincoln, NE.

Gudmestad, O.T. and Solberg, K.E. (2019), "Findings from two Arctic search and rescue exercises north of Spitzbergen", *Polar Geography*, Vol. 42 No. 3, pp. 160-175.

Holmgaard, S.B., Thuestad, A.E., Myrvoll, E.R., and Barlindhaug, S. (2019), "Monitoring and Managing Human Stressors to Coastal Cultural Heritage in Svalbard", *Humanities*, Vol. 8 No. 1, article 21.

Horney, J., Nguyen, M., Salvesen, D., Tomasco, O., and Berkee, P. (2016), "Engaging the public in planning for disaster recovery", *International Journal of Disaster Risk Reduction*, Vol. 17, pp. 33-37.

ICRC and IFRC (2008), *Handbook of the International Red Cross and Red Crescent Movement*, ICRC (International Committee of the Red Cross) and IFRC (International Federation of Red Cross and Red Crescent Societies), Geneva.

Ivari, P. (2018), "'We can't stop them' (Мы их не можем остановить): Russian media representations of the flow of asylum seekers at the Finnish-Russian border in 2015–2016", *Barents Studies*, Vol. 5 No. 1, pp. 83-105.

Kelly, C. (2002), "Cold weather: an unrecognized challenge for humanitarian assistance", *Global Environmental Change Part B: Environmental Hazards*, Vol. 4 No. 2, pp. 79-81.

Kennedy, J., Ashmore, J., Babister, E., and Kelman, I. (2008), "The Meaning of 'Build Back Better': Evidence from Post-tsunami Aceh and Sri Lanka", *Journal of Contingencies and Crisis Management*, Vol. 16 No. 1, pp. 24-36.

Lauster, N. and Tester, F. (2010), "Culture as a problem in linking material inequality to health: On residential crowding in the Arctic", Health & Place, Vol. 16 No. 3, pp. 523-530.

Lewis, J. (1984), "Environmental interpretations of natural disaster mitigation: the crucial need", *Environmentalist*, Vol. 4, pp. 177-180.

Longyearbyen Local Government, 2017. *Contingency Plan Longyearbyen, Local Government 2017*. Longyearbyen Local Government, Longyearbyen.

Maly, E. (2017), "Rethinking 'Build Back Better' in housing reconstruction: A proposal for 'People Centered Housing Recovery', *IOP Conference Series: Earth and Environmental Science*, Vol. 56, article 012025.

Maly, E. (2018), "Building back better with people centered housing recovery", *International Journal of Disaster Risk Reduction*, Vol. 29, pp. 84-93.

Manfield, P., Ashmore, J., and Corsellis, T. (2004), "Design of humanitarian tents for use in cold climates", *Building Research and Information*, Vol. 32 No. 5, pp. 368-378.

Marulanda, M.C., Cardona, O.D., and Barbat, A.H. (2010), "Revealing the socioeconomic impact of small disasters in Colombia using the DesInventar database", *Disasters*, Vol. 34 No. 2, pp. 552-570.

Mileski, J., Gharehgozli, A., Ghoram, L., and Swaney, R. (2018), "Cooperation in developing a disaster prevention and response plan for Arctic shipping", *Marine Policy*, Vol. 92, pp. 131-137.

Monday, J.L. (2002), "Building Back Better: Creating a Sustainable Community after Disaster", *Natural Hazards Informer*, No. 3, pp. 1-12.

MSF (2019), *MSF Charter and Principles*, available at: https://www.msf-azg.be/en/msf-charter-and-principles (accessed 20 December 2019).

Munk School of Global Affairs (2014), *National Roundtable on Arctic Emergency Preparedness: Report of Proceedings*. Munk School of Global Affairs, Toronto.

Norris, J. (2007), *The Disaster Gypsies: Humanitarian Workers in the World*. Praeger, London.

Parkinson, A.J., Bruce, M.G., Zulz, T., and the International Circumpolar Surveillance Steering Committee. (2008), "International Circumpolar Surveillance, An Arctic Network for the Surveillance of Infectious Diseases", Emerging Infectious Diseases, Vol. 14 No. 1, pp. 18-24.

Parrack, C., Flinn, B., and Passey, M. (2014), "Getting the Message Across for Safer Self-Recovery in Post-Disaster Shelter", *Open House International*, Vol. 39 No. 3, pp. 47-58.

Power, J.T., Kennedy, A.M., and Monk, J.F. (2016), "Survival in the Canadian Arctic Recommended Clothing and Equipment to Survive Exposure", paper presented at the Offshore Technology Conference, Arctic Technology Conference, 24-26 October, St. John's, NL.

Rajasingham-Senanayake, D. (2005), "Sri Lanka and the violence of reconstruction", *Development*, Vol. 48 No. 3, pp. 111-120.

Ronan, K.R. and Johnston, D.M. (2005), *Promoting Community Resilience in Disasters: The Role for Schools, Youth, and Families*. Springer, New York, NY.

Sellheim, N., Zaika, Y.V., and Kelman, I. (Eds.). (2019), *Arctic Triumph: Northern Innovation and Persistence*. Springer, Basel.

Sidorin, A.Y. (2019), Problems of Seismic Hazard Assessment for Nucler Power Facilities on the Kola Peninsula And in Karelia. Seismic Instruments, Vol. 55 No. 6, pp. 688-691.

Smith, G. (2014), "Involving Land Use Planners in Pre-Event Planning for Post-Disaster Recovery", *Journal of the American Planning Association*, Vol. 80 No. 4, pp. 306-307.

Snarr, D.N. and Brown, E.L. (1980), "User satisfaction with permanent post-disaster housing: two years after hurricane Fifi in Honduras", *Disasters*, Vol. 4 No. 1, pp. 83-91.

Sphere Association (2018), *The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response*, Sphere Association, Geneva.

Sydnes, A.K. and M. Sydnes (2013), Norwegian–Russian cooperation on oil-spill response in the Barents Sea. *Marine Policy*, Vol. 39, pp. 257-264.

Sydnes, A.K., Sydnes, M., and Antonsen, Y. (2017), "International Cooperation on Search and Rescue in the Arctic, *Arctic Review on Law and Politics*, Vol. 8, pp. 109-136.

Turner, J.F.C. (1972), "Housing as a Verb", in Turner, J.F.C. and Fichter, R. (Eds.), *Freedom to Build: Dweller Control of the Housing Process*, Macmillan, New York, NY, pp. 148-175.

UNOCHA and Shelter Centre (2010), *Shelter after disaster: strategies for transitional settlement and reconstruction*. UNOCHA (United Nations Office for the Coordination of Humanitarian Affairs) and Shelter Centre, Geneva.

USGS (2019), 20 Largest Earthquakes in the World, available at: https://www.usgs.gov/natural-hazards/earthquake-hazards/science/20-largest-earthquakes-world (accessed 20 December 2019).

Visit Svalbard (2019), *Statistikk fra Visit Svalbard AS*, Visit Svalbard, Longyearbyen.

Watt-Cloutier, S. (2015), *The right to be cold*. Penguin Random House, Toronto.