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Abstracts from the panel

Cascading disasters: how to design resilient crisis-management institutions and organizations?
According to strategies for the new Total Defense, civil society needs to build resilience to various types of disasters, such as loss of societal important infrastructure, fires, and pandemics. The technological development has created both opportunities but also vulnerability, since we are dependent on electricity and communication systems. Municipal activities must be organized so that societal important activities can be maintained. To make the civil defense work, an overview of the organization and resources, the division of responsibilities, planning and collaboration is required.

For particularly vulnerable groups, extra care is needed on how to handle crisis. For elderly people, municipalities offer different kind of retirement homes as Sheltered housing or Nursing homes. These also belong to the municipality's own operations and are therefore subject to what is stated in the legal text to function even in the event of a crisis. For the elderly and care-dependent population, mobilization and relocation become difficult. The municipalities' Risk and Vulnerability Analysis shows that there are major differences in the degree of preparedness in internal collaboration between administrations and companies. Personnel need the resources and knowledge to carry out their caring work even in the event of a crisis. How can a model for residing and maintaining care in a Nursing home be structured by using a scenario exercise?

Crisis management can be secured together with actors responsible for maintaining the safety of the elderly’s home, by stating a “Staying at home” scenario. With theoretical scenarios, collaboration and exchange of experiences can be discussed when sharing the visualized wholeness. Digital tools for supervising vital technical conditions in the building can be visualized in a Digital Twin. People responsible for and those who are working and living in the building can also get a Digital Twin. These identities describe their responsibilities, activities, and needs, to foresee and prepare for when extraordinary measures must be taken.

This paper will describe how to manage the function of a municipal Nursing home by using a scenario exercise. Different actors will describe activities and needs for obtaining safety and care for one week. By using a Digital twin to identify weaknesses in the technical supply system and management organization measures for preparedness can be taken. This can also enable a full-scale exercise with figurants. Documentation for activities, supplies, and how to use technical back-up systems can then be used as a manual for preparedness in different types of building and functions.
Resilience of the Blood Supply in the Face of Cascading Disasters – Results from a Case Study in South Africa

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Blood supply systems are elementary pieces of health-related critical infrastructure. Particularly due to their dependence on blood donors they constantly interact with environmental dynamics and are directly influenced by social and societal developments. As a result, blood supply systems are vulnerable to a variety of external factors that may lead to shortages in blood supply. Such shortages often occur in the wake of disasters and can be considered individual elements of a chain of events generating a cascading effect. As systems and crises become more complex, cascading effects and thus the resilience of critical elements such as blood supply systems play an increasingly significant role. The blood supply system in South Africa is in a particularly well-rehearsed interaction with its environment, given numerous experiences with past crises and challenges, such as epidemics or power outages. In this light, the main research question addressed in this contribution is what factors affect the resilience of the South African blood supply sector in crises and which role does communication play in this regard. Within the contribution, preliminary results from a third-party funded international research project are presented. These results are based on an in-depth literature review and qualitative analysis of primary literature and a current estimate of twenty interviews conducted with disaster management actors and representatives from blood supply services in South Africa. The qualitative analysis draws on assumptions of concepts of resilience from an actor-network theory perspective and selected crisis communication models focusing on a process-view of crises and the interconnection of risk and crisis communication. Findings of a scenario process, which aims at identifying possible consistent courses of crises as well as dependencies on relevant influencing factors, are presented. Besides, results from the analysis of crisis communication at the interface of crisis management actors, blood services and the public are discussed, exploring communication's impact on tackling crises affecting the South African blood supply system. As part of the contribution, the researchers critically reflect on research methods and their role as European researchers working on a phenomenon in the global South while contributing to the discussion of crisis prevention and management in different cultural contexts and addressing a cascading disaster scenario that is not comprehensively investigated within academic literature.
Development of IoT based Early Warning System and strengthening the coastal climate resilience

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Background

Around 10% of the world population live in coastal zones that are less than 10 m above the sea level and are impacted by multiple hazards such as coastal flooding, cyclones, storm surges etc. The coastlines along the Bay of Bengal experience recurring cyclones accounting to large numbers of deaths, loss of livelihood opportunities, severe damage to infrastructure and environment. While it is not entirely possible to control the material losses, especially in case of large events, the loss of human lives and livestock could be prevented by timely management and response. This paper outlines conceptual idea that the authors believe could be turned into a working solution with the right support and funding.

People-centered early warning system (EWS)

This idea proposes to communicate crucial information from the forecasting agency to the local rural communities in a timely manner. For an effective relay of disaster alert and weather information, the recent technological innovation on IoT (Internet of Things) based is suggested. An IoT based hardware device which is weather-proof is designed and will be installed at nodal points in the community. The IoT device is then connected to a display board where information is delivered in infographic format and in the regional language.

Based on the severity of the warning alert and the available time, a siren will be triggered along with a tailored infographic emergency response plan displayed. Once the alert is sounded, the farmers will be provided time to install flood dams. Flood dams are a recent technological innovation available in the market and considered as an alternative to sandbags, but are light in weight and easy to install and remove and can be reused multiple times. These flood dams could help to mitigate the saline water inundation at farms, which take a long recovery time.

Prior capacity building events and mock drills are planned for the end-users to interpret the information and use the system effectively. Also, a team of selected volunteers selected in each coastal village along with life jackets will aid in the evacuation plan. Also, these volunteers will be connected to the nearest NGO’s/private firms through walkie-talkies to address any immediate concerns.

This idea is targeted to benefit the poor coastal communities along the South Asian regions, but could be scaled for a global use.
Leadership for crisis management: flexibility in curriculum design for competence development

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Over the past two decades crisis leadership has become a comprehensive, wide developed and viable topic as none of the innovative and unique solutions in crisis management happens without strong leadership. At the same time, creating an effective leadership development program for crisis management is a challenging task as the crisis environments becomes highly complex and dynamic, increasingly faced with cascading disasters. This changing nature of crisis requires not only flexibility in the times of event, but also in the preparation and development of competencies for crisis management and leadership. The competence development programmes have to be flexible and open for new knowledge from the field and unbarred for immediate adaptation to changing environments.

Taking military education in Lithuania as a case study, the authors examine how crisis leadership development programmes are created and how a flexible curriculum that responds to the complex, dynamic, and high-risk environment is composed. A qualitative study using semi-structured interviews and reviews of program documents was used in exploring the context, composition, and sources of the curriculum.

The research results indicate that a flexible curriculum is created using a “buffet” principle, when study subjects, pedagogical methods, and techniques are freely borrowed from the leading practices in education, military, and civil practice. International cooperation under EU and NATO enables educational institutions to take over best practices, use second opinion from outside as institutions do not treat each other as competitors. This resulting curriculum has advantage of being easy to update and highly dynamic as well as the disadvantage of being segmented and discontinuous.
International collaboration for meeting the challenges of huge and cascading disasters

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Some crisis have an international impact. How is it possible to enhance collaboration between nations in huge and cascading disasters? We will present Barents Rescue (BR) as an inspiration for our Student Barents Rescue (SBR) and thereafter show examples from a student pilot with an international scenario.

The Barents Agreement was signed in 2008 by the governments of Finland, Norway, the Russian Federation, and Sweden. The agreement includes cross border collaboration in the following areas: emergency prevention, preparedness and response, and the ability to extend cooperation to facilitate the provision of mutual assistance in the event of natural or man-made disasters or other emergency situations. The Barents Rescue is a recurring civil international crisis management exercise, which was initiated and conducted in Sweden for the first time in 2001. The purpose of the Barents Rescue exercises is to increase the disaster response capabilities in the Barents Region through enhanced cooperation.

The Student Barents Rescue (SBR) exercise was initiated and conducted in Norway for the first time in 2020. It is a collaboration between UiT – the Arctic University of Norway and Nord University, with intentions for further cooperation and participation from other universities in Finland, the Russian Federation, and Sweden (2021Sept).

The student pilot exercise 2020 UiT: The Arctic University of Norway and Nord University with participation from the Northern Arctic Federal University (NARFU), conducted a pilot SBR exercise for Bachelor`s and Master`s students in February 2020. The students participated in the discussion-based exercise via a hybrid approach. Three study programs from UiT and Nord University met physically in Bodø while the students from NARFU participated digitally. The SBR exercise topic was about a large forest fire spreading across national borders, which had the potential to reach an atom reactor in Russia. A mentor from the regional fire- and rescue service in Bodø participated and assisted the students during the discussions. A mentor from the regional fire- and rescue service in Arkhangelsk facilitated students` discussions in Russia. The purpose of the exercise was to familiarize the students with international cooperation mechanisms concerning emergency prevention, preparedness, and response (EPPR) within the Barents Euro-Arctic Region. This was done via establishing an understanding for the students regarding the different management tasks, complexities during escalating cross-border emergencies.

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Links

Barentsinfo.org - general information portal to the Barents region - Barentsinfo
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This scholarly work sought to investigate the leadership response to the COVID-19 pandemic crisis in the MENA region based on the strategic leadership framework put forth by Boin, 't Hart, Stern and Sundelius. We seek to understand the contextual (institutional, administrative and political) factors explaining the differences in the stringency of measures and centralization/decentralization of response in the MENA region. What trade-offs did public leaders implement between effectiveness and efficiency to successfully manage the crisis? We find that reliance on expertise plays out differently in centralized and decentralized structure, while a salient lesson drawn for practitioners is that there is more than one path to successful crisis leadership response contingent on institutional capacity, bureaucratic autonomy and political system. The article concludes with implications for leadership response during crises and practical lessons for crisis managers.
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Natural events such as lightning, floods, heavy rainfall, wind storms and earthquakes, can trigger damage to industrial facilities and critical infrastructure such as tailings dams. The effect of Natech (Natural Triggered Technological Hazards) on tailings is quite destructive to public safety and the environment. Dam failure can cause flash flooding and cause loss of life, property loss, damage to public facilities and severe environmental damage. In several cases of tailings dam construction failure, the threat to community safety is related to the location of the tailings dam which is close to residential areas. The objective of this study is to review the current literature about risk management in the Natech tailings dam. The methodology that used in this paper is review several accidents relevant to Natech disaster on the tailings dam will be reviewed; lessons learned from Natech accident; best practices in several companies in Natech Risk Management including risk identification, risk mapping, including lesson learned from different companies across global countries. Result suggested that several key lessons learned from accident have been identified including the failure of the tailings dam and overflow after heavy rains, damage to the tailings dam structure due to the earthquake, infrastructure defects, low awareness of the surrounding community causing many casualties during the disaster and delays in evacuation. Best practices related to risk management include identification and risk assessment against Natech, risk mitigation and communication strategies, Natech risk communication strategies and disaster management strategies.