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aritime activity in the Arctic has increased significantly in recent years. A number of factors, such as high reserves of natural resources, more viable

shipping routes and opportunities connected to tourism, have slowly changed the Arctic into a more lucrative domain for human activity. However, as more and more people and vessels operate in the High North, the risk for large-scale maritime incidents also increase. Due to its remoteness, inadequate connectivity, low temperatures, uncertain ice and weather conditions, and lack of infrastructure, the Arctic region is a risky and highly complex area in terms of search and rescue operations and maritime safety as a whole. International cooperation, technological innovations and sharing of best practices are therefore vital in order for operators to be able to safely and efficiently carry out coast guard duties in the area.

The Arctic Coast Guard Forum (ACGF) was established to improve maritime safety cooperation, to address the newly emerged challenges in the Arctic maritime domain, and to protect the vulnerable Arctic environment. This cooperation was initiated in 2015, and the Forum has already made considerable progress in cooperation related to joint search and rescue (SAR) operations in Arctic areas. The scope of activities will be further extended to environmental response as agreed in the Agreement on Cooperation on Marine Oil Pollution, Preparedness, and Response in the Arctic.

Finland held the chairmanship of the Arctic Coast Guard Forum as well as the Arctic Council in 2017-2019. Some of the ACGF activities that took place during the ACGF chairmanship include the ACGF Experts' and Principals' meetings, the Search and Rescue Capabilities survey, the Arctic states' Rescue Coordination Centers meeting, simulator and tabletop exercises, the Arctic On-scene Coordinators' course, and the initiative on cooperation in the field of Arctic SAR training. The Finnish ACGF chairmanship concluded with the second Joint Live Exercise (LIVEX), Polaris 2019, held in Finland in April 2019. Parallel with the exercise, an Arctic Search and Rescue seminar was arranged, during which Arctic stakeholders working in various fields had the opportunity to present their activities and develop new partnerships.

To support the ACGF and the Arctic Council chairmanships, the Finnish Border Guard launched the Arctic Maritime Safety Cooperation (SARC) project with financial support from the Ministry for Foreign Affairs of Finland. The SARC project aims to develop practical-level cooperation in Arctic maritime safety between Arctic states' Coast Guards, with the overall objective to launch training cooperation among the Coast Guards and enhance and increase the sharing of knowledge and best practices in Arctic SAR training. In addition, the project promotes cooperation between Finnish authorities and other stakeholders who operate in the Arctic maritime domain. One aim is to bring forward Finnish companies working with Arctic solutions by providing an opportunity to showcase their know-how on an international arena.

As part of the SARC project, the Finnish Border Guard initiated a survey on maritime and aeronautical search and rescue capabilities of the Arctic countries, with the aim to identify the main gaps that could be improved with international cooperation. The survey assessed common challenges for Arctic maritime SAR in order to compile recommendations for developing practical cooperation on Arctic SAR training, information sharing, common situational awareness and technological development. One of the conclusions was that there is a lack of comprehensive educational planning concerning Arctic SAR. At the same time most of the Arctic countries were interested in joint courses and training. As a response to this, the Finnish Border Guard placed cooperation in the field of Arctic SAR training as one of the main themes for the Finnish ACGF chairmanship period.

In order to assist in filling the identified training gaps, the Finnish Border Guard organized workshops to gather the Arctic Coast Guards' SAR training experts together, and to discuss and identify the most relevant topics that should be covered in Arctic SAR training cooperation. During the first workshop, the focus was on mapping the ACGF member states' training systems and course offerings in Arctic SAR, with the aim of improving cross-organizational cooperation in this area. Laurea University of Applied Sciences collected the data on the states' current SAR training and education, and compiled it into the report on "Developing Arctic

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Maritime Safety Cooperation Through Enhanced Training Cooperation". One of the recommendations was to identify existing national Arctic SAR courses and integrate them into a joint ACGF SAR training module. The second workshop resulted in a first draft of a theoretical Arctic SAR training module, which can be incorporated in the existing training within the Arctic Coast Guards. The training module includes four individual topics that should be addressed in Arctic search and rescue training: Arctic rescue and survival competence; Arctic weather knowledge; communications in the Arctic; and characteristics of Arctic SAR operations.

The Finnish Border Guard had also requested Laurea University of Applied Sciences to evaluate Arctic Maritime SAR Table Top exercise (TTX) arranged for the Arctic Coast Guard Forum participants in Turku in March 2018. The goal was to solve how simulation enhances training activities. As a result, Laurea provided a report that included the following key findings and recommendations to foster Arctic SAR TTX development:

- 1. The simulation environment should be as authentic as possible, and especially the information-sharing equipment should be the same as in reality.
- **2.** Simulation exercises are especially beneficial for operational training, and they are related to communication, coordination and cooperation.
- **3.** The simulation environment should be built in a manner that serves exercises with a variety of needs and themes.
- 4. The next technical development phase for simulation environment and exercises is to have a network-based approach in which participants could join the exercise from anywhere using their own laptop.

The cooperation between Laurea and the Finnish Border Guard was most pleasant, because Laurea's expertise is to conduct research projects that will solve and serve practitioners' needs. For the Finnish Border Guard, Laurea was considered a neutral research organization who could deliver high-quality evaluation on the tabletop exercise.

In general, cooperation in research and development (R&D) projects is an excellent way for the Finnish Border Guard to receive new information from other authorities. research institutions and companies from all over Europe. The Border Guard is often invited to partner in various projects, and the research unit of the Border Guard has also been closely involved in different projects. R&D projects contribute to exchanging best practices among different actors, and to gaining knowledge about new developments and innovations in border and coast guard activities. Of course, cooperation also has a larger benefit of increasing the awareness and capabilities of the authorities and thus the safety and security of the entire society.

In conclusion, the cooperation between the Finnish Border Guard and a variety of NGOs and academic and industry representatives ensures the expansion of the network of Arctic actors who share the passion to enhance Arctic safety and security in the vast Arctic region.

At the UArctic Congress in September 2018, the research unit of the Finnish Border Guard was in charge of organizing the session "Challenges in Arctic Education". It was organized as part of a project developing Arctic maritime safety cooperation – the SARC project – that the Border Guard coordinates. The session also included a presentation from Laurea University of Applied Sciences on the evaluation they had made within the SARC project, commissioned by the Border Guard.