



## CLIMATE CHANGE AS A CHALLENGE FOR ORGANIZATIONS IN THE ARCTIC

Day: Wed 13 Nov, 2019

Time: 14:00-16:30

Venue: Arktikum, Library

Moderator: Małgorzata (Gosia) Śmieszek, Arctic Governance Research Group, Arctic Centre, University of Lapland

### PROGRAM

14:00 – 14:05 Welcoming remarks

14:05 – 14:25 Keynote: **Alexandra Middleton**, Researcher at Nord university, Norway  
*Climate change accountability in the European Arctic: a study of TCFD implementation*

14:25 – 14:35 Questions and discussion

5 min organizational break

14:40 – 14:50 **Muhammad Naeem Tahir**, Finnish Meteorological Institute (FMI), Arctic Research Centre, Sodankylä, Finland. **Cancellation**  
*Impact of Climate Change on Intelligent Transport System (ITS) using Road Weather Information*

14:50 – 15:00 **Ilona Mettiäinen**, Researcher, Arctic Centre at the University of Lapland  
*Climate service as a decision-support tool for winter tourism industry - user-friendly climate information for securing snow*

15:00 – 15:10 **Daniela Toma**, Researcher, the Norwegian centre for the Law of the Sea, Tromsø, Norway  
*Biodiversity Conservation and Area Based Management in the High Seas: What can the existing experience offer to the ongoing BBNJ Negotiations?*

15:10 – 15:20 **Sabrina Hasan**, PhD Candidate, the South China Sea Institute of Xiamen University  
*Appraising the conservation and sustainable development of Arctic marine biodiversity within the legal framework of EU: Challenges and prospects of the adoption of the BBNJ instrument*

15:20 – 15:30 Questions and discussion

5 min organizational break



15:35 – 15:45 **Bamidele “Dele” Raheem**, Senior Researcher, Arctic Centre at the University of Lapland  
*Climate change, Generation XYZ and the Arctic food industry*

15:45 – 15:55 **Raihanatul Jannat**, University of Eastern Finland  
*Role of transnational law in regional climate adaptation: the case of the Sámi community*

15:55 – 16:05 **Stéphanie C. Lefrère**, The Finnish Environment Institute (SYKE)  
*Interactive exhibition as tool for raising public awareness and dialogue on climate change in the Arctic*

16:15 – 16:30 General discussion



## Climate change accountability in the European Arctic: A study of TCFD Implementation.

Recent attempts on the international level to address climate change have resulted in setting up in 2015 The FSB Task Force on Climate-related Financial Disclosures (TCFD). In 2017 TCFD introduced recommendations on voluntary, consistent climate-related financial risk disclosures for companies to provide information to investors and other stakeholders about risks and opportunities related to transition to lower-carbon economy. Climate change accountability or willingness to take responsibility can be proxied by companies' reporting in compliance with TCFD. First, I investigate institutional mechanisms of TCFD adoption in the European Arctic including Norway, Sweden and Finland.

To achieve that I study Finnish, Swedish and Norwegian institutions that endorse or provide practical guidelines for implementation of TCFD, e.g. stock market regulators and stock exchanges. Second, I investigate financial and sustainability disclosures of biggest firms listed on Norwegian, Swedish and Finnish stock exchanges to evaluate to what extent they follow TCFD. The study results provide an overview of governance structures and practical implementation of TCFD in the European Arctic. Moreover, results let us assess long-term commitments in addressing climate change by the biggest Norwegian, Swedish and Finnish corporations.

*Alexandra Middleton*  
*Assistant Professor*  
*Oulu Business School*  
*University of Oulu*

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## Impact of Climate Change on Intelligent Transport System (ITS) using Road Weather Information

In the recent years, the weather situation is changing rapidly and it has been a key cause behind road accidents in the northern regions of Europe, America and Canada as well. In Finland, the most important aspects of climatic change that can affect the road transport system are wind, rain and temperature. Each of these factors have their own implications on road traffic and maintenance system. Road transport is reasonably susceptible to the effects of climate change and can severely cause interruptions in road transport i.e. accidents and road infrastructure maintenance.

In this article, we are presenting the test experiences and pilot road weather related services by executing a set of Vehicle-to-Vehicle (V2V) and Vehicle to Infrastructure (V2I) communication scenarios by using IEEE 802.11p and 5G test networks. FMI has an extensive experience in the development of advanced road weather services by using road weather information. By utilizing its experience, FMI has built a state of the art infrastructure of ITS-G5 and 5G testing environments, equipped with advanced road weather stations into the institute's vehicle winter testing (1.7 km) track in Sodankylä. FMI has an executed large-scale test environment for these purposes: the 5G controlled vehicle winter testing track for both 4G/5G cellular networking and ITS-G5, the Arctic Intelligent Trucks vehicle fleet for operational testing within a normal highway traffic environment under the challenging winter weather conditions.

The financial impact is also an important in climatic change regarding the road traffic management and development system. For example, roads need to be cleared of snow whenever snow falls, traffic jams (time critical) and traffic accidents (human life critical). There are some other financial aspects related to climatic change as well i.e. the required maintenance of road depends on many other factors such as materials used to construct roads, the amount of road users, and earlier repairs etc. These impacts will affect both existing property and future possibilities of producing income and are forecast to be notable.

Additionally, political decisions can be used to guide the progress in the development of the road traffic system. By doing research and taking in to account the financial aspect, the negative effects of climate change, can be adjusted to as well as some of the impacts can offer benefit.

Ministry of Transport and Communications, Finland has some future plans to concentrate on the development of digital transport services, automated road traffic, carbon-free transport & data economy. This is a decent strategy to counter and mitigate the climate change effects in Finland, by implementing the intelligent transport projects with the introduction of demanding applications for enhanced user experience, safety, exploiting the enhanced capacity and mobile edge computing of upcoming 5G cellular architecture. It would not only benefit the stakeholders but also the whole society.

*Muhammad Naeem Tahir*

*Finnish Meteorological Institute (FMI), Arctic Research Centre, Sodankylä, Finland.*

*Urooj Rashid, Comsats University, Islamabad, Pakistan.*

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## Climate service as a decision-support tool for winter tourism industry - user-friendly climate information for securing snow

Skiing is an important branch of winter tourism also in Northern Finland. Winter tourism industry relies on cold climatic conditions for economically successful operation, and Haanpää et al. (2015) consider downhill skiing as a “canary in the coalmine” type indicator on the impacts of climate change. In Northern Finland, climate change is expected to decrease snow cover days by 20 – 30 %. Moreover, climate change influences also the amount and quality of snow. Particularly the beginning of the potential skiing season is influenced. Relevant and usable information on future climate and specific local weather conditions is fundamental for ski centres for preparing and adapting to the future climatic change in their operational and investment decisions.

The European Council promotes climate services as decision-support tools that provide relevant climate information for end-users in a meaningful way. This presentation introduces a climate service for winter tourism industry that is developed by the Arctic Centre led multidisciplinary case study team in the Blue-Action: Arctic Impact on Weather and Climate (EU Horizon 2020) project in 2016-2021. The climate service can help with optimizing snowmaking so that energy consumption and costs can be minimized while ensuring early season start and highest possible customer experience. The climate service is piloted with Ruka Ski Resort, and the service can be replicated to other ski resorts and other winter tourism businesses after the project. The climate service prototype is tested in Ruka Ski Resort during the skiing season 2019/2020. The project’s results will be published in October 2020.

The Blue-Action project has received funding from the European Union’s Horizon 2020 Research and Innovation Programme under Grant Agreement No 727852.

*Ilona Mettiäinen*  
*Researcher*  
*Arctic Centre*  
*University of Lapland*

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# Biodiversity Conservation and Area Based Management in the High Seas: What can the existing experience offer to the ongoing BBNJ Negotiations?

While the international community debates the possible content of a new global instrument for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction (ABNJ), this thesis is looking at existing approaches of regional and sectoral bodies and organizations that aimed to improve their application for biodiversity conservation and to enhance cooperation and coordination. By doing so, it aims to assess what these experiences can bring to the BBNJ Process. The core study of this research is based on area-based management of marine biodiversity.

For this reason, it considers two different existing efforts to protect the marine environment: (1) the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic, and its Network of marine protected areas (MPAs) that expand already in ABNJ; and the (2) the International Maritime Organizations' (IMO) Particularly Sensitive Sea Areas (PSSAs), which could potentially function in ABNJ and analyzes the shortcomings from the existing models.

Looking at the above under the umbrella of the BBNJ Process it is further examined how the several stages of the BBNJ Process have shaped the current views on area-based management in ABNJ, focusing on institutional arrangements between the new instrument and the existing mechanisms and the rule to not undermine the existing architecture. The analysis continues, examining the significance of cross-sectoral collaboration as practiced by the existing instruments for an integrated approach to the conservation of marine biological diversity but highlights the need for their further development. Complementing these concerns, the study describes the potential utilization of the CBD Process for identifying Ecologically or Biologically Significant Areas (EBSA process) under the new instrument as a mechanism with a mandate to enhance cross-sectoral collaboration in ABNJ. Concluding, the thesis presents a summary of the issues analyzed and some remarks regarding the future development of the BBNJ Negotiations and the future ILBI.

*Daniela Toma*  
*Researcher*  
*the Norwegian centre for the Law of the Sea*  
*Tromsø, Norway*

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# Appraising the conservation and sustainable development of Arctic marine biodiversity within the legal framework of EU: Challenges and prospects of the adoption of the BBNJ instrument

States under the European Union being surrounded by different seas and oceans including both ice-covered and non ice-covered areas are enriched with marine biodiversity. Arctic Ocean (AO) is one of such maritime area being enriched with marine resources and due to its rapid changes, opening the door for human activities, it has attracted the concern of the protection of the Arctic marine biodiversity through the effective implementation of legally binding instruments which will be influential to the enforcement of scientific cooperation between Arctic and Non-Arctic States. Among the Eight Arctic States, majority of the States includes EU member states. Thus, the concern to protect Arctic marine biodiversity is very much crucial to EU. Adoption and enforcement laws and regulations by EU are also apparent and the strategy to stop biodiversity loss by the year 2020 is a simple reflection of such statement. However, the analysis on the outcome of the existing policies, laws and regulations seem to be not within the reach of the target. In the recent years, signing of the 2018 Agreement to Protect Unregulated High Seas Fisheries in the Central Arctic Ocean can be considered to be a great initiative taken by EU. However, it is influential here to determine how sustainable the initiative is and what would be outcome of the compromised attitude of not to conduct fishing. Furthermore, in the circumstances where the existing initiatives are in confrontation of sustainability, a new legally binding instrument is under negotiations, commonly known as BBNJ. Thus, the questions arise whether BBNJ instrument can be an effective mechanism to protect Arctic marine biodiversity and what would be the impacts of the instrument on EU if it gets adopted. Therefore, this paper aims to address such questions with the evaluation to measure sustainability of existing policies, laws and regulations adopted and enforced by the EU and assess the prospect and effectual applicability of BBNJ instrument for the protection of Arctic biodiversity.

*Sabrina Hasan*

*PhD Candidate*

*the South China Sea Institute of Xiamen University*

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## Climate change, Generation XYZ and the Arctic food industry

The pristine nature of Arctic environment, its organic soil and its unique growing conditions makes it attractive to produce high quality foods. However, the challenges of climate change and increased tourism in the region will have impacts on the demand and supply of traditional foods in the region. Traditional foods such as berries, mushrooms, fish, meat from game animals and natural plants are important source of nutrients that have sustained the well-being of local inhabitants from one generation to the other. Local food processors will need to respond to the demand of consumers for foods with health benefits by supplying such foods while ensuring sustainability. For generation XYZ, a better understanding of the relationship between food choice, ethical considerations, greenhouse gas emissions, food miles, carbon footprint and the planet are important topics. In this presentation, the future of food will be considered from these topical issues. Furthermore, there will be emphasis on the threats from extractive industries, plastic waste, pollution, food loss etc. The Arctic food industries, in keeping their processing local and closer to the people need to avoid these threats. For instance, food loss and waste is not only an economic loss but also an issue with the embedded carbon impacts that result when food is wasted in the supply chain. Most of these Arctic food industries are small and medium enterprises (SMEs), they are economic drivers, eager to innovate and reach out to the international market. The processing techniques of these SMEs encouraged by smart processing, an efficient use of energy and water will help to promote sustainability.

*Dele Raheem  
Arctic Centre (NIEM)  
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## Role of transnational law in regional climate adaptation: the case of the Sámi community

Law plays a critical role in adapting to climate change by acting as a vehicle for implementing effective adaptation strategies; and strengthening the resilience dimension of a community. Transnational law specifically can strengthen climate resilience in the European High North by making use of its multi-level structure to establish linkages, coordination, and collaboration between relevant frameworks, institutions, and actors; and fill in the gaps in the fragmented Arctic governance when required.

Against this background, this proposed research seeks to explore and establish the role of transnational climate law in regional climate adaptation. In doing so, the research focuses on enhancing the socio-economic resilience of the Sámi community in the European High North - through critically reviewing the relevant regulatory frameworks at the international, supranational, and regional level that address climate change adaptation for the region; the interactions between the Sámi community and transnational climate law; the role of non-state actors engaged in climate change adaptation in the region; and transnational climate law's role in assisting climate change adaptation in the European High North through fostering economic transformation of the region.

It is anticipated that this research will have a significant societal and policy impact by defining socio-economic resilience for the Sámi community; and contributing to transnational climate law scholarship by expanding its application to climate change adaptation in the European High North.

*Raihanatul Jannat*  
*University of Eastern Finland*

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## Interactive exhibition as tool for raising public awareness and dialogue on climate change in the Arctic

We present how the international, multilingual and interactive traveling exhibition «Climate Change in Lapland's Nature - What can we do?», has been used since 2013, as a successful educational tool on climate change in the Arctic.

This exhibition summarizes the impact of climate change on the Arctic biodiversity of Finnish Lapland and identifies solutions that people can take on a daily basis to reduce their carbon footprint and to help mitigate climate change.

Studies by the Finnish Environment Institute SYKE, along with various Finnish research institutes and universities, show that the distribution of plants and animals in Finland has started to change in relation to climate warming. In the exhibition, recent scientific results related to the impact of climate change on animal and plant species characteristic of the Arctic such as e.g. reindeer, lemmings and plants of the fells, are displayed in panels with the help of figures and graphs, along with photos, movies, slideshows and pedagogical quizzes. The exhibition author has given so far lectures and workshops to schools and general audiences by turning difficult scientific results into a clear message for a lay public. School pupils have responded very positively to the exhibition and to related lectures by participating actively in workshops. This exhibition conveys the value and importance of Arctic biodiversity and raises public awareness of how individual efforts to reduce greenhouse gas emissions can contribute to protecting biodiversity and mitigating climate change.

This exhibition also answers to the goals of the Paris agreement to enhance climate change education, public awareness, public participation and public access to information and thereby helps to broaden the public dialogue.

Key-words: Arctic, biodiversity, climate change, education, Finland, exhibition, Lapland, lectures, mitigation, public awareness, solutions, workshops.

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[www.climatechangeinlapland.org](http://www.climatechangeinlapland.org)

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