



The High North Dialogue Research Workshop

Perspectives of the young

Abstracts

Tuesday, April 27, 2021

Track 1

Smart city initiatives for the Arctic

Mikhail Uksusov – advisor of Murmansk Arctic State University, Ph.D. student of Saint-Petersburg Polytechnical University of Peter the Great

The development of smart city concept and issues of smart urban planning have recently acquired high relevance. To date, academic inquiry and practical experience shaped a number of approaches and methods for implementing this concept, aimed at ensuring sustainable development of the territory and improving the quality of local community's life. The contradictions existing between the approaches and methods, as well as the ambiguity of the term "smart city" itself, necessitate considering each of them in the context of a separate territory. The same planning strategies applied to different territories can lead to different effects. Thus, the analysis of smart initiatives' realization and the peculiarities of their implementation in the context of the Arctic is relevant in view of natural, economic, social, cultural and political characteristics of these territories. In addition, close attention in this regard must be paid to the smart urban strategies implemented and planned for implementation in the Arctic zone of the Russian Federation since this territory has very particular context and history of colonization and population as well as economic household and bureaucratic environment which still facilitates debates on the suitable Russian Arctic urban model – proper cities of various types or rotating scheme.

Among the approaches to formulating the concept of a smart city, the main ones are 1) restrictive (focusing on the inclusion of information and communication technologies (ICT) in the physical and service level of the primary urban infrastructure), 2) reflective (focusing on the "usefulness" of using ICT in urban infrastructure) and 3) rationalistic (determining the "smartness" of the city, i.e. its ability to meet the needs of residents and other stakeholders).

The first two approaches are based on the technology driven method and are more relevant for the development of Arctic cities when the priority of the national policy is building up the resource-based Arctic economic potential. The third approach is based on the human driven method and might seem more relevant for the development of the Arctic through the diversification of economic activities. However, having a brief look at most countries' Arctic strategies, including the one developed by Russia and its territorial entities, shows that Arctic never encounters prioritization of either of these economic scenarios: they both are necessary. This puts forward a problem of whether it's worth developing a holistic approach or it would be more rational to alternate the approaches and to perceive them as stages of smart urban development.

Energy Resources and Electricity Generation in Arctic Areas

Magnus de Witt, Ph.D – student, Reykjavik University

Most communities in the Arctic use fossil fuels as primary energy source. This has a significant effect on the climate, in a region where the climate change happens first and on a faster pace than



elsewhere. Since fossil fuels are not locally available they have to be imported, which is very complicated and risky. Furthermore, the long and risky transportation lead to an insecure electricity supply. That results in high fuel prices which leads to high electricity prices. This has a negative impact in a cold region where electricity is needed to secure a healthy and safe livelihood. A transition from diesel to renewable energy sources can help to provide clean, secure and cheap electricity to isolated Arctic communities. Electricity is the backbone of any kind of economical development. To be more precise sustainable energy can be a driving force for sustainable development in the Arctic. For the energy transition process, a successful strategy must take social, economic and environmental factors for the involved parties (consumers, providers and government) into account. All the parties furthermore should be paired with the available and appropriate technologies and resources.

The aim of this project is to study the transmission process from the use of fossil fuels to sustainable energy in Arctic areas. General data on consumption and resources will be collected and the System dynamics methodology will be used to model the transition process, because of its capability to encounter feedbacks between the different activities. Different case studies will be used to validate the model under real life conditions. In experimental studies the system dynamics model will be used to identify suitable policies for the implementation of renewables in Arctic communities.

Arctic Climate Change Analysis from a Machine Learning-informed Sea Ice Drift Standpoint

Thomas Chen, Academy for Mathematics, Science, and Engineering

The movement of sea ice is influenced by a number of factors, from winds to ocean currents. As climate change continues to occur rapidly, understanding sea ice drift in the Arctic is a key parameter to understanding the effects of rising temperatures in the region. Recent literature has shown that the Arctic and the Antarctic are most affected by global warming, which raises questions regarding climate justice, as most of the carbon emissions causing anthropogenic climate change are produced in other regions. To analyze this impact, we employ artificial intelligence to predict sea ice drift velocity based on external features. Machine learning is the process of computers gaining insights by seeing and correlating large quantities of data. Using external parameters, including wind speed, and drift velocity ground truth as the inputs of the model, we train multiple different architectures and compare the results. Particularly, we experiment with a convolutional neural network (CNN), a random forest (RF), and a support vector machine (SVM). This research leads to a greater understanding of the Arctic's response to climate change.

ARCTIC: A NATURE-BASED ECONOMY

Barbara Fioravanzo, Master student, Sustainable Development, Geopolitics of resources and Arctic studies SIOI, Unitelma Sapienza

Expert: Alla Raspopova, PhD, Associate Professor, Murmansk Arctic State University

The most precious value of the Arctic lies in its resources, both natural and social. Factors such as the cold climate, geographical isolation and low accessibility raise production costs and hinder the creation of a strong economic system. To these structural problems must be added the exploitation of natural resources due to climate change and the action of the extractive companies that export them to external markets and contribute to crushing local entrepreneurship. The Arctic, by its nature, cannot survive on an economy based on the progressive destruction of its resources and the gradual disappearance of traditional small-scale activities. For this reason, we need to invest in more sustainable economies, both from an environmental and financial point of view, which leverage the most important capital that the North has: natural capital.



My idea is to adopt the "rewilding" approach as it is the most plausible, pragmatic and courageous future direction. Based on the restoration of natural processes, it represents a real solution and not a palliative to the problem of climate change, like many technologies of carbon capture and geoengineering.

Through the recovery and enhancement of territories, many rural activities that are now stagnant can flourish again, create jobs for young people who should not be forced to leave their own country for work purpose; income opportunities can be generated through the construction of nature-based economies, for example, sustainable tourism industry.

Outdoor activities such as birdwatching and nature photography can be enhanced and integrated with concrete awareness practices such as citizen science.

Local craftsmanship and accommodation facilities would benefit economically.

Rewilding Europe has been working in this sense for several years, promoting a wildlife comeback process and helping the different territories at a local level to profit from the enhancement of local natural beauty.

However, this is not enough to eliminate problems such as accessibility and high costs. Together with the solution proposed above, it is necessary to implement the specific technological innovation for the North so that it acts as a glue to create a solid and unitary economic system and helps local populations, especially young people, to keep up with progress and globalization despite isolation and to break down the high costs.

The University-enterprises collaboration: the Russian point of view in the region development

Yulia Verina, Moscow Institute of physics and technologies, Higher School of Systems Engineering, Head of the educational program

"Here we need advanced science, the most modern models, and educational technologies. It is necessary that our universities are not closed and always have access to the most advanced knowledge and transfer advanced knowledge and technologies for the benefit of the country, region and those enterprises with which they cooperate..."

The University is a unique corporation that should help the government develop the region..."

Valery Falkov, Minister of Science and Higher Education

In my research I focus on the problem of higher education in Russia, highlighting the general and specific features inherent in different research currents. I explore the factors that influence the development of higher education in Russia in the context of interaction with regional enterprises. I highlight the tools that researchers use to improve the higher education system in the regions of Russia. Due to the findings I provide guidelines for building an engagement policy for The University-enterprises relationship.

Track 2

The comparison of Chinese and Norwegian Arctic Strategies and Policies

Wenxuan Sun, Master student, Nord University Business School

As a country adjacent to the Arctic, China has been constantly focusing on this land, whether it is the rapid growth of energy demand, climate concerns closely related to its agriculture and ecology, as well as abundant resources of property and scientific research. Nordic countries are one of the most important participants in Arctic governance and development. Norway is the most active and



influential country. China should not ignore the cooperation with Nordic countries, especially Norway, if it wants to participate in the governance and development of the Arctic. The potential conflicts of interest with Norway in Arctic affairs must also be taken into account in the pace of China's march into Arctic affairs. This paper focuses on the Arctic strategy and policy of the two countries, and focuses on the cooperation and competition between the two countries in the Arctic region from the perspective of geopolitics and national interests.

International cooperation within the framework of the bridge project as an initiative of entrepreneurship development in the Arctic

Nikita Morokhotev, Advisor of International Cooperation office, Murmansk Arctic State University

In the Arctic zone of the Russian Federation, the coefficient of migration growth is negative - there is an outflow of population. Despite the fact that the outflow of the population is decreasing, we should keep in mind that often during migration within the country there is a part of the population that may not be taken into account by official statistics.

Young specialists make up a significant part of the migration outflow from the regions. Despite attempts to improve the socio-economic situation of the Arctic regions of Russia, young people still leave to try their hand at large cities in the south of the country. This trend is a negative phenomenon that endangers the economic security of the northern regions of Russia.

Despite the reduction in the outflow of the population, business activity in the regions is not developing. The number of individual entrepreneurs in the Arctic zone of Russia has not changed significantly over 4 years and it is about 64 thousand subjects for now.

At the same time, the idea of opening own business and turning a hobby into a source of income is gaining popularity among young people. It is easier to do business in "home" regions, where competition is lower and there are more free niches for business. It is the factor that could become a reason for young people to stay in their native regions and start developing them.

In such conditions, projects for the development of entrepreneurship and the use of professional skills have a beneficial effect on the development of business activity in the regions of the north. One such project is the BRIDGE initiative launched by Kolarctic CBC. The mechanism of its functioning will be discussed in the report.

Distribution of bite anomalies among the population of the High Northern regions of Russia.

Nikita Chernomorchenko, Assistant of the Department of Dentistry, Saint Petersburg State University
Sokolovich Natalia Alexandrovna, Professor, Doctor of Medical Sciences, Head of the Department of Dentistry, Faculty of Dentistry and Medical Technologies, Saint-Petersburg state University.

Liman Irina Alexandrovna- Professor, Doctor of Economics, Tyumen State University

Dental health is an essential component of the general condition of the body and a criterion for the quality of life and well-being of society. The object of this study is malocclusion in children and adolescents of high north, in particular their prevalence and methods of prevention. The high prevalence of malocclusion among the population is one of the main problems of clinical orthodontics and one of the main criteria for the quality of the performance of the system for the prevention of malocclusion. Thus, the prevalence of malocclusion among children is high and ranks second after caries and its complications. In everyday clinical practice, the situation with a high prevalence of malocclusion is complicated by the lack of the required number of dentists orthodontists (Andreeva I.L., 2009; Demographic Yearbook of Russia 2007; Mikhailova Y.V., Khalfin R.A., 2007; Assessment of the state of Russian health care by civil The report of Leonid Roshal, Chairman of the Public Chamber Commission on Health Issues at the III plenary meeting of the Public



Chamber of the Russian Federation on September 29, 2009; Sokhov S.T., Sabgaida T.P., 2011), low level of promotion of a healthy lifestyle (Akatieva G. G., Chuikin S.V., 2002) and an insufficient level of communication between related specialists (Davydov A.A., 2017).

Folk toponymy of the Murmansk region: tourist-oriented approach

Ekaterina Denezhkina, Murmansk Arctic State University

The project is aimed at researching folk toponymy of the Murmansk region and its role in the Arctic tourism. Before the pandemic the Murmansk region was characterized by an increased number of tourists from different countries (USA, UK, Norway, China, etc.) who came to the region for various purposes, from salmon fishing to hunting Aurora Borealis. As a rule, when visiting a particular country, tourists want to get to know about the culture and history of the region. On excursions a guide-translator can tell tourists about folk toponyms, because it carries information about the development of the region. Apart from providing the cultural information about the place, such toponymy can also reflect the attitude of the local people to the place through the folk name. Such names raise interest of the tourists as they give them a feeling of the place itself the way it is perceived by the locals.

The presentation of the project will provide examples of folk toponyms of the Murmansk region and their explanations. Some folk toponyms cannot be translated word-for-word because of the peculiarities of the Russian word-building, therefore, an explanation is given for each example (history and principle of toponym formation).