UArctic

UArctic Report to Standing Committee of Parliamentarians of the Arctic Region

Dear members of the Standing Committee of Parliamentarians of the Arctic Region,

In preparation for the upcoming meeting of the Standing Committee of Arctic Parliamentarians, The University of the Arctic, UArctic, wishes to present:

I. **UArctic Strategic Plan 2014-2020**
Our brand new Strategic Plan provides our ambitions for capacity-building and research cooperation in the Arctic region. UArctic, a child of the Arctic Council, is the Arctic states' primary tool to ensure circumpolar higher education and research cooperation in the North.

II. **North2north+ : A comprehensive Circumpolar Mobility Program**
We now have over ten years' successful experience with the circumpolar north2north mobility program. This complements a series of bilateral and institutional mobility and exchange efforts, essential to the development of the Arctic. Mobility represents a relatively small investment compared to other capacity building efforts and has proven to be formative for many of today's Arctic young leaders. It is high time to utilize present and future investments even better through concerted efforts under a common frame: north2north+.

III. **Arctic Innovation and Northern Capacity-Building – a discussion paper**
This hopefully inspiring and challenging vision piece on innovation and capacity-building in the Arctic region will be presented to you by Professor Ken Coates[1] during your session on "Capacity Building" in Ottawa. We look forward to a reality rooted discussion on the prospects, opportunities, and challenges for economic development in and by the north.

The University of the Arctic thanks you for your unwavering support and open exchange of views since UArctic was founded in 2001, and trust that you will continue to find ways to encourage governments, and other private and public actors to strengthen UArctic, and in turn northern knowledge, education and human capacity. Specifically, we would ask your support to:

- Strengthen cooperation between higher education institutions and other knowledge organizations in the Circumpolar North, and encourage financial mechanisms that stimulate the institutions circumpolar collaboration.
- Develop instruments for collaboration, coordination, and increased funding for indigenous, academic, and private sector mobility across the Circumpolar North.
- Encourage regional and federal authorities, private sector, and academic partnership to build environments for northern relevant innovation and capacity building that focuses on the northern economies of the future that overcome dispersed population, long distances, is rooted in past and present knowledge and cultures and utilize the comparative advantages the north give.

We look forward to meet you in Ottawa

Lars Kullerud
UArctic President

[1] Professor Ken Coates is Canada Research Chair in Regional Innovation, Johnson-Shoyama Graduate School of Public Policy, and co-Director (Research) for the International Centre of Northern Governance and Development, University of Saskatchewan and initiative taker for a new University of the Arctic Thematic Network on Northern Innovation.

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Part I: UArctic Strategic Plan 2014-2020

About UArctic

UArctic is a cooperative network of universities, colleges, research institutes and other organizations concerned with education and research in and about the North. UArctic builds and strengthens collective resources and collaborative infrastructure that enables member institutions to better serve their constituents and their regions. Through cooperation in education, research and outreach we enhance human capacity in the North, promote viable communities and sustainable economies, and forge global partnerships. UArctic was created through an initiative of the Arctic Council (Iqaluit Declaration 1998) and was officially launched in 2001.

Our Vision

An Empowered North – With Shared Voices

Our Values

Circumpolar

UArctic promotes northern voices in the globalizing world, reflecting common values and interests across all eight Arctic states and among all northern peoples and cultures.

Inclusive

UArctic promotes cultural diversity, language plurality and gender equality while highlighting the partnership between the region's indigenous peoples and other northerners.

Reciprocal

UArctic promotes respectful relationships in education, science, research and policy based on reciprocity, equality and trust between northerners and other partners. This approach values the inclusion of traditional and indigenous knowledge systems, together with multidisciplinary perspectives from the arts, social and natural sciences.

Our Mission

Empower the people of the Circumpolar North by providing unique educational and research opportunities through collaboration within a powerful network of members.

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How We Serve the North

UArctic benefits students, public and private sectors, and the North as a region by creating strong international collaboration among its members that:

- Creates shared knowledge, competences and resources by matching capacity to needs
- Connects traditional and indigenous knowledge systems with modern academia
- Partners with northern communities and indigenous populations to respond to their educational aspirations and requirements
- Bridges dialogue across different sectors and regions of the North, and with the world
- Builds shared services that facilitate and promote cooperation and collaboration
- Increases collaboration opportunities for our community of faculty, staff and students
- Promotes the collective views of its members and broadens the voice of the North in the world

Our 2020 Goals

Educational Access for Northern Students

Students in the North have access to the best and most relevant instructional and training resources.

- UArctic leads student mobility efforts among the Arctic states
- Northern students have easy access to and participate in top-quality undergraduate and graduate programs throughout the Arctic
- Northern students have easy access to field schools and joint programs among UArctic member institutions
- Northern students can participate in degree programs, shared courses or field schools initiated by UArctic Thematic Networks
- UArctic members combine student and faculty mobility with research cooperation adding values to learning environments

Research Representation in the North

UArctic members are the key participants in Arctic research.

- UArctic maintains the foremost inventory of Arctic research capacity
- UArctic members are involved together in addressing critical Arctic research issues
- The Arctic Council and others look to UArctic and its members as their shared infrastructure to address relevant research needs
- UArctic Thematic Networks link educational and research programs that identify and respond to the strategic needs of the Arctic states
- UArctic develops new methods to combine academic research and traditional knowledge through participation by and with northern communities.
- UArctic works with IASC, IASSA and other partners to build strong northern-relevant and collaborative research capacity in the North

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Expanding Knowledge of the North

UArctic is a leader in expanding knowledge about the North.

- UArctic's Circumpolar Studies is the leading curriculum for overall circumpolar understanding
- UArctic members use the network to attract students interested in the North
- UArctic members' research results are accessible to researchers, policy makers and the public
- UArctic members share instructional, training and research resources to expand northern knowledge
- UArctic Thematic Networks communicate their efforts to the broader public

Engaged Membership Network

UArctic members gain value by their participation in the organization.

- UArctic members cooperate with each other on multiple levels, focusing on faculty, institutional leadership and international collaboration
- Past and present UArctic students form a community who share pride in their knowledge
- UArctic represents its members' interests internationally by promoting their diverse and shared capacity to serve northern communities and interests
- UArctic has a sustainable business model providing necessary infrastructure to support the network
- The Arctic Council, the Standing Committee of Arctic Parliamentarians and other Arctic leadership institutions recognize UArctic and its members as the educational, training and research engine of the North

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With Shared Voices

UArctic works in partnership with indigenous peoples, recognizing their integral role in northern education, training, knowledge generation and transfer, and seeks to engage their perspectives and participation in all of its activities.

Representatives of the Arctic indigenous peoples have been strong partners in the development of UArctic through both their organizations, who are Permanent Participants to the Arctic Council, and their higher education institutions. During the feasibility study phase, the (then) three indigenous peoples permanent participant organizations drafted a statement of support and a challenge to the new organization entitled "With Shared Voices." UArctic took this phrase as its motto to be a constant reminder of the organization's commitment to the views and forms of knowledge of the region's indigenous peoples.

UArctic remains committed to the particular education needs of northern indigenous peoples and must act to ensure indigenous perspectives are meaningfully represented in all its activities and structures.

With Shared Voices

UArctic act to ensure indigenous perspectives are meaningfully represented in all its activities and structures.

How We Operate

UArctic's organization and operations model are geared towards maximizing value for its members and impact for students and the region. UArctic programs are based on northern needs and member priorities, and they are expressions of our goals and values. UArctic carries out its mission through collaborative activities that build joint education and research through Thematic Networks, Institutes, mobility and shared services, and by representing the interest of its members in circumpolar cooperation. UArctic's activities, leadership and organization are distributed among its members. UArctic is fully controlled by its members who elect the Board of Governors. To the Arctic Council and other international fora, UArctic represents the educational, training and research engine of the North.

Our Organization

UArctic's activities, leadership and organization are distributed among its members

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Our Context

The world, particularly the Circumpolar North, is in a period of rapid change. Similarly, the world of international higher education and research is changing. These changes include climate change, increased socio-economic interdependence, heightened economic interest in northern natural resource extraction, internationalization, changes in higher education, and the accelerating use and spread of information and communication technologies.

The Arctic region is rich in resources and has a small and dispersed population. With the global population approaching ten billion, the world's need for northern resources is evident,

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producing both opportunities and challenges. At the same time, climate change in the Arctic is twice the global average. The world influences and is dependent on the Arctic; what we do in the Arctic influences the world.

The North possesses a vast set of knowledge and skills, built over generations by indigenous peoples and other northerners. This capacity is manifested in the region's modern institutions of learning and in the indigenous knowledge held by communities. Combining traditional knowledge with modern academic approaches at northern academic institutions represents an opportunity unique to the Arctic. Northern competence needs to be strengthened and utilized to deal as effectively as possible with the opportunities and challenges that the region faces. With a small, dispersed and shifting population, northerners must work together, as well as with external partners.

The North has roughly 0.1 percent of the global population, ten percent of the surface of earth, and is estimated to hold over twenty percent of undiscovered petroleum resources. The region has some of the world's most important fisheries, minerals, and supply of fresh water. The vast boreal forest, which surrounds the Arctic region, is the largest terrestrial ecosystem in the world, and represents forty percent of the world's forestry economy. The North also holds large areas of land unaffected by modern human activity and unique ecosystems of global significance, and is an attractive destination for tourists. The North is essential to the global climate system. It is evident that the resources and ecosystems of the North could easily support its population in a sustainable manner and build a modern future with modest outtake of the region's resources. The challenge is, however, how to safeguard the natural and social values in the North and develop opportunities for its peoples while making sensible use of the available surplus in order to meet the needs of a growing global population.

The sustainable use of northern resources can serve the growing global need. The peoples of the North have the right to choose a path to their own future. Respect, knowledge, and building northern competence can ensure northerners have a strong say and receive fair benefits from the export value of northern resources.

The North

- *0,1% of global population*
- *10% of earth surface*
- *20%+ of global undiscovered petroleum resources*
- *some of the world's most important fisheries*
- *some of the world's most important mineral resources*
- *20 of world's 100 largest rivers*
- *40% of the world's forestry economy is in the boreal forest*

The University of the Arctic will work to strengthen knowledge and capacity that meets the needs of the North and the world. UArctic believes that a sustainable future for the North and its people lies in a competent northern population, a strong northern knowledge base, and partnerships with the non-Arctic world. The key elements of this vision include strengthening the voice of the Arctic in the world and likewise the world's understanding of the Arctic, as well as cooperating across borders in the North to leverage experience, knowledge, competence, investment and influence.

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Part II: North2north+

A comprehensive Circumpolar Mobility Program

Concept paper for the Standing Committee of Parliamentarians of the Arctic Region

The north2north program, originally proposed by Finland to the SAO's of the Arctic Council and later launched by the Arctic Council, has served since 2002 the higher education students in circumpolar area to move across the North for a study period in another circumpolar country to enhance their knowledge about northern issues. The program has been successfully carried out by UArctic within its higher education member institutions since the beginning. The students who over the past 12 years have gained from the north2north experience are the most tangible proof of the need for and success of both governmental and academic collaboration in the Circumpolar North. Today former north2north students appear as young leaders in both the private and public sectors throughout the North and beyond.

The strong focus on in the Arctic issues in politics, industry and business as well as in research and education during the past years has resulted into the growth of UArctic to cover most higher education and research institutions in the circumpolar North. Another development has been the organization of the education and research around specific themes around UArctic's Thematic Networks to identify and respond to the need of information and knowledge in various issues by the Arctic states and to foster innovations for sustainable development.

"Studying abroad provides different education, new society, new conditions of living and it makes a person more flexible. Also it is very helpful in understanding the global world."

Vladislav Petrov (Russia)
north2north exchange at Harstad University College

On one hand, these developments have created a comprehensive circumpolar education and research forum to address the Arctic issues in the North by the northern academics in ways most appropriate in their field. On the other hand, they have created a need for growth in volume of mobile students and staff as well as a variety in modes of international education in the circumpolar co-operation that are not covered either geographically or by mode of activity through existing north2north program or other created funding instruments, such as Fulbright, Erasmus, Nordplus, High North, etc. designed for international co-operation. Moreover, the contacts of higher education sector with arctic business and industry need to be strengthened. Internships across the North would enhance the students understanding of the Arctic business environment on one hand, on the other, the experience will increase the work life skills and expand the employability prospects after graduation across the northern regions. To continue with, the indigenous peoples' access to international higher education mobility should be secured by acknowledging their special needs.

The north2north program was evaluated as a part of the overall external evaluation of UArctic in 2012. The external evaluation report was extremely positive about the north2north program. It also expressed a clear need for a continuation as a structural and funded program to cover all the UArctic higher education institutions and to better meet the needs of academic activities aiming to share resources for joint efforts in the northern and Arctic education and research.

The Norwegian Royal Ministry of Foreign Affairs has provided funding for a two-year project (2014-2015) to study possibilities for creating a fully developed north2north+ circumpolar mobility program with sustainable funding. The project is carried out by UArctic, led by UArctic's Director of the north2north in Norway and group of higher education professionals across UArctic's membership. Currently the project group is in process of establishing a reference group to optimize the communication with the stakeholders, i.e. governments, business and industry, indigenous community and the students in the North to embrace their needs in the planning process. The national agencies, such as SIU and CIMO are engaged to support the project with their consultation throughout the process. The project aims to recognize and identify the aspirations of arctic states and societies regarding their aims in education, research, innovation and employment.

The goal is to stimulate circumpolar experiences by learning from each other, and by that, build a circumpolar community that opens new academic and career opportunities for northerners…

It is time to explore the possibility of creating a structural, comprehensive and inclusive Circumpolar Mobility Program that would serve our northern youth through possibilities for educational and entrepreneurial cooperation. The goal is to stimulate circumpolar experiences by learning from each other, and by that, build a circumpolar community that opens new academic and career opportunities for northerners and provides a deeper understanding of both the complex issues that the North is facing and the vital role that the North is playing in the overall development of the globe. Mobility, as demonstrated by the successful programs like Erasmus, Nordplus and Fulbright helps northern institutions optimize the use of resources between institutions and increases the quality of education at large.

UArctic suggests that a Circumpolar Mobility Program for UArctic be developed in cooperation with the Arctic Council member states stepwise towards a full program that includes the following five components:

1. **north2north** - A mobility program for bachelor and master- level students in UArctic member institutions moving between locations in the North, allowing young students to pursue short or long term studies at another northern higher education institution. This is a further developed continuation of the present north2north program.
2. **north2north Graduate** - In addition to the bachelor and master- level exchanges of students with northern-relevant study plans in another part of the Circumpolar North, there is a growing need for structural exchange opportunities for students studying in joint master programs between northern institutions or in joint PhD programs within UArctic's growing number of Thematic Networks.

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3. **northTREX** – NorthTREX (Northern Teaching Resources Exchange) – online matchmaking service allowing UArctic members to post needs for visiting scholars, and for faculty to inform their availability for teacher exchange with primary focus within teaching staff mobility within UArctic's Thematic Networks. The service is designed to highlight existing expertise in the North and to leverage teaching resources among UArctic members.
4. **north2north Enterprise** – A placement program that gives students 3-5 months placements in a northern enterprise in another northern country. This will over time build strong business to business ties and give northerners insight in how business is conducted in other circumpolar countries. This could be expanded to cover business internships/work placements for young people who have finalized university programs but seek practical experiences to qualify for jobs in northern places. Placements in NGO's, government agencies etc. could also be built into the program.
5. **Verdde** – Mobility for student and faculty at smaller Indigenous institutions in the North. This will be a circumpolar expansion of the Verdde program successfully piloted between Nunavut Arctic College and the Sami University College. Verdde is a Sami word meaning "a mutually beneficial exchange".

The practical operations of the above programs can be carried out through the existing and well-established nort2north network of coordinators. Funding of such mobility can be patched, to some extent, from many independent sources, the way north2north is operating today. However, to ensure continuity and to give the Arctic Council a tangible program that truly contributes to sustainable development in the North, it is proposed that a sustainable funding mechanism for north2north student mobility scholarships and travel grants be primarily funded by the Arctic Council member states. The funding mechanism should be open for contributions from Arctic Council observers, as well as private donors and governments. Currently, all the Nordic countries except Iceland, with the latest contribution by the Denmark through DK Mobility initiative, support the circumpolar mobility. The Federal State of Russia is introducing a significant contribution to the international education within the circumpolar area. In the North-America, Canada is investing on bridging research with business and industry to drive innovation and prosperity also through internationalization. All these endeavours create a promising basis for the fully developed north2north+ circumpolar mobility program.

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PART III: Arctic Innovation and Northern Capacity-Building

By Ken Coates and Greg Poelzer

The International Centre of Northern Governance and Development, University of Saskatchewan, and University of the Arctic Thematic Network leaders

The Circumpolar North faces major challenges in the years ahead, beyond the often-mentioned issues of climate change, indigenous empowerment and rapid resource development. While the world's attention has shifted North in a way not seen for generations, the reality is that the region is not yet well-placed to tackle the challenges and capitalize on the opportunities posed by the 21st century. These are remarkable times, marked by the fastest and widest scientific and technological transformation in world history and the shift in requirements for personal and collective capacity building in the regional population.

... the region is not yet well-placed to tackle the challenges and capitalize on the opportunities posed by the 21st century

The Circumpolar World has to keep its eyes firmly on the climate change and resource development issues, but must also integrate into its planning the challenges of the changing world of work and the prospects that technological discoveries could greatly enhance the quality of the life in the region.

Arctic Innovation

Consider the technological situation first. Northern resource development is possible largely because of continued improvement in extractive technologies, transportation systems, weather monitoring and the like. Continued improvement in these areas will make regional development more efficient, less expensive, safer, environmentally sustainable and more dependable. Technological advances could -- and should -- also contribute to sharp improvements in the quality of life for residents in the area. The advent of the Internet services, admittedly requiring improvement across the Far North, have already brought major changes to the Arctic, from e-commerce to digital education, from greater access to entertainment to the early stages of tele-medicine.

Circumpolar innovation, however, at its infancy. At present, the world's techno-philanthropists, like Bill Gates, focus their attention on the global south, where investments in clean water systems, social media innovations, new health services and the like can and have brought sweeping changes to literally millions of the world's poorest people. No comparable effort is being made in the Far North. Given that rich nations control the Arctic, it has fallen to these countries to take up the challenge of Arctic scientific and technological innovation and to develop innovative solutions to northern conditions. Outside of the resource sector, development has been slow. To date, there has been no concerted and truly innovative approach to improving the quality of life through innovation. Northern regions get later and smaller versions of southern innovations, with very few North-centred innovations delivered as yet.

The North's future hinges, in substantial measure, on a truly Circumpolar initiative to capitalize on new technologies to address pressing Arctic issues.

The North's future hinges, in substantial measure, on a truly Circumpolar initiative to capitalize on new technologies to address pressing Arctic issues. On issues from domestic water supplies, northern food security, aggressive digital medicine systems, advanced educational technologies, remotely controlled delivery technologies, improved construction materials, responsive e-government approaches, improved Arctic clothing and the like, there is far too little research and development underway. Companies are loathe to invest the necessary money on the comparatively tiny Arctic population. An innovation that gains traction in the global south could find several billion users in short order; a comparable solution suited to the needs of the Far North might attract several hundred thousand consumers.

Responding to the technological opportunities of the 21st century requires the rapid and effective mobilization of Arctic talent and resolve. No one northern nation by itself has the technological capabilities, research facilities, entrepreneurial acumen or risk capital necessary to attract sustained attention to Arctic challenges. Collectively, the Circumpolar World has a sizeable market, talent pool, business environment and human resolve to make more, if not the most, out of the greatest sustained, intense and remarkable period of scientific and technological change ever experienced. If this effort is left to national innovation eco-systems and to existing free market solutions, it is all but assured that the Far North will fall technologically behind the rest of the developed world, not on the resource and climate change front but rather on the quality of life sectors of greatest importance to the people of the Arctic.

Northern Capacity Building

Racing ahead to fall behind, or barely keep up, is hardly the foundation for long-term competitiveness and prosperity

For the past thirty years, the Arctic has attracted a great deal of government and even private sector investment to northern capacity building. In many parts of the North, regional educational achievement has lagged behind the norms for the developed world, particularly among the Indigenous populations. Significant investments in such initiatives as the University of the Arctic and, at the national level, northern colleges, universities, institutes and high schools have improved the situation, but not at the same pace as across southern districts in the Arctic countries. Put simply, northern conditions have improved, but the scale and intensity of capacity building has expanded faster in the South. Racing ahead to fall behind, or barely keep up, is hardly the foundation for long-term competitiveness and prosperity.

The same technological revolution that holds such promise for the Arctic quality of life presents formidable challenges for the region as well. Technology is very effective at displacing jobs. Innovations in extractive technologies generally produce greater output with fewer workers, and those jobs left in play have ever higher educational requirements. Gone are the days of heavy manual labour at the core of the extractive industries. In the future lies the prospect of even more machine-intensive, remotely-controlled resource developments. The changes are not just occurring in the extractive sector. As recent experience and new studies have shown, advanced digital technologies are rapidly replacing workers in many

sectors. Mechanization and advanced robots are transforming standard industrial practice. Even China, famed for the availability of vast armies of low cost workers, is in the midst of a massive expansion of industrial robot use.

The transformation of manufacturing is but the tip of the proverbial iceberg. Technological shifts in office work are starting to replace accountants and lawyers, just as they earlier gutted much of the architectural field. Digital medicine has the potential to handle a lot of the preventative and diagnostic work currently requiring doctors and nurses. Educational systems are being challenges by the advent of computer-based systems, in much the way that the financial sector has been upended by technological change and the replacement of humans by machines. So it could easily be with government (crowd-sourcing and e-government), the retail sector (digital commerce and supply management), transportation (drones) and other major sectors of the economy. More than 15 years ago, Jeremy Rifkin forecast The End of Work. What Andrew McAfee and Erik Brynjolfsson call The Second Machine Age is upon us, with disruptive potential that is greater and faster than the industrial revolution.

The Second Machine Age is upon us, with disruptive potential that is greater and faster than the industrial revolution

The Circumpolar World, already at a disadvantage in the innovation age, faces incremental challenges in terms of capacity building. The emerging world of work and high technology requires widespread advanced scientific and technological capabilities. Many smaller and remote Arctic communities are struggling with basic education at a time that Southern areas are ramping up scientific education at the high school level. While the Scandinavian North has impressive educational outcomes, the same does not hold across the Far North. Capacity-building, therefore, has to accelerate, both in terms of the traditional educational metrics of reading, writing and arithmetic but also in scientific and technological fields. Of course, the same digital technologies that make it possible for the North to consider richer, better and more effective elementary, high school and post-secondary training in the Arctic will be available, with massively greater economies of scale, to southern populations.

The most fundamental problem -- and this is an area where the Far North may have an small advantage -- is that few governments or regions have begun serious contemplation of the shape and nature of work in the "Second Machine Age." There is no consensus on what will happen as new technologies displace work and workers, improving the quality of life perhaps but rendering many skills and millions of jobs obsolete. There is, however, growing agreement that the technological revolution will accelerate global and internal inequality, creating a highly paid class to gifted designers, technicians and analysts and a very large group of lower skilled service personnel. Because of its nascent educational transformation and with the prospect for Circumpolar collaboration, the Arctic has the potential to leapfrog existing economies, which have massive investments in and commitments to the existing economy and workforce. The Far Northern countries could start preparing Arctic residents for the era of technologically enabled employment. That the advanced Internet will make geographic location much less of a priority provides northerners with a unique and powerful opportunity to move forward in the brave and disruptive world of work.

… the Arctic has the potential to leapfrog existing economies

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Concluding Thoughts

The 21st century will not be won by those countries and regions that move slowly and cautiously, but rather those that innovate at the speed of the technological revolution. The Arctic is not well-poised for a technological acceleration at present. Most of the innovative work -- the research facilities and the highly talented people behind the rapid improvements in extractive and other technologies -- are located in the south. Diseconomies of scale have limited northern entrepreneurial innovation and regional capacity building across the Arctic. The Far North is, indeed, on the verge of being left far behind through a series of technological transitions that will make the shift from company/resource towns to fly in/fly out operations seem minor in comparison. The future of work, the sustainability of communities, the quality of life for northerners, and the opportunities of technologically-based transformation all hang in the balance.

There is a way forward, but it requires great resolve and commitment on behalf of Arctic governments, business and citizens. The transitions of the scientific and technological revolution are upon us, just as the world of work and capacity building are already shifting rapidly. Meeting the challenges and opportunities of the 21st century requires a fundamental change in the North's approach to innovation and capacity building, with the two elements closely linked. Collaboration amongst northern peoples is essential; there are no outside agencies beyond national militaries and the extractive industries focusing their attention of Circumpolar innovation. An Arctic innovation eco-system, which draws together the best minds from science, business, government and the Indigenous communities, is essential if the region has a hope of competing with global technological change. Equally, the focus of the North's capacity-building needs to shift from the acceptance of minor, albeit systematic improvements to one focused on enriched learning, dramatically improved outcomes, and greater promotion of entrepreneurship, North-centred science and technology, and regional governance abilities.

An Arctic innovation eco-system, which draws together the best minds from science, business, government and the Indigenous communities, is essential if the region has a hope of competing with global technological change.

Commentary on the contemporary North is awash in descriptions of this as the "age of the Arctic" based largely on the disruptive potential of climate change and the prospects of Arctic resource development. The prospect also looms of an almost jobless frontier, with technology replacing many workers, and of a region struggling to catch up to major improvements in southern capacity that leaves the Far North on the margins of the technological revolution. Arctic parliamentarians have known for years that the rest of the world -- even when it is interested in the region -- does not bring a great deal of money, technology or resolve to the table in terms of building a new North. The Far North is pretty much on its own in tackling the twin challenges of Circumpolar Innovation and capacity-building. Given the intense and imminent nature of the technological revolution and the related need for more extensive capacity-building, there is no time to waste.

The Far North is pretty much on its own in tackling the twin challenges of Circumpolar Innovation and capacity-building

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