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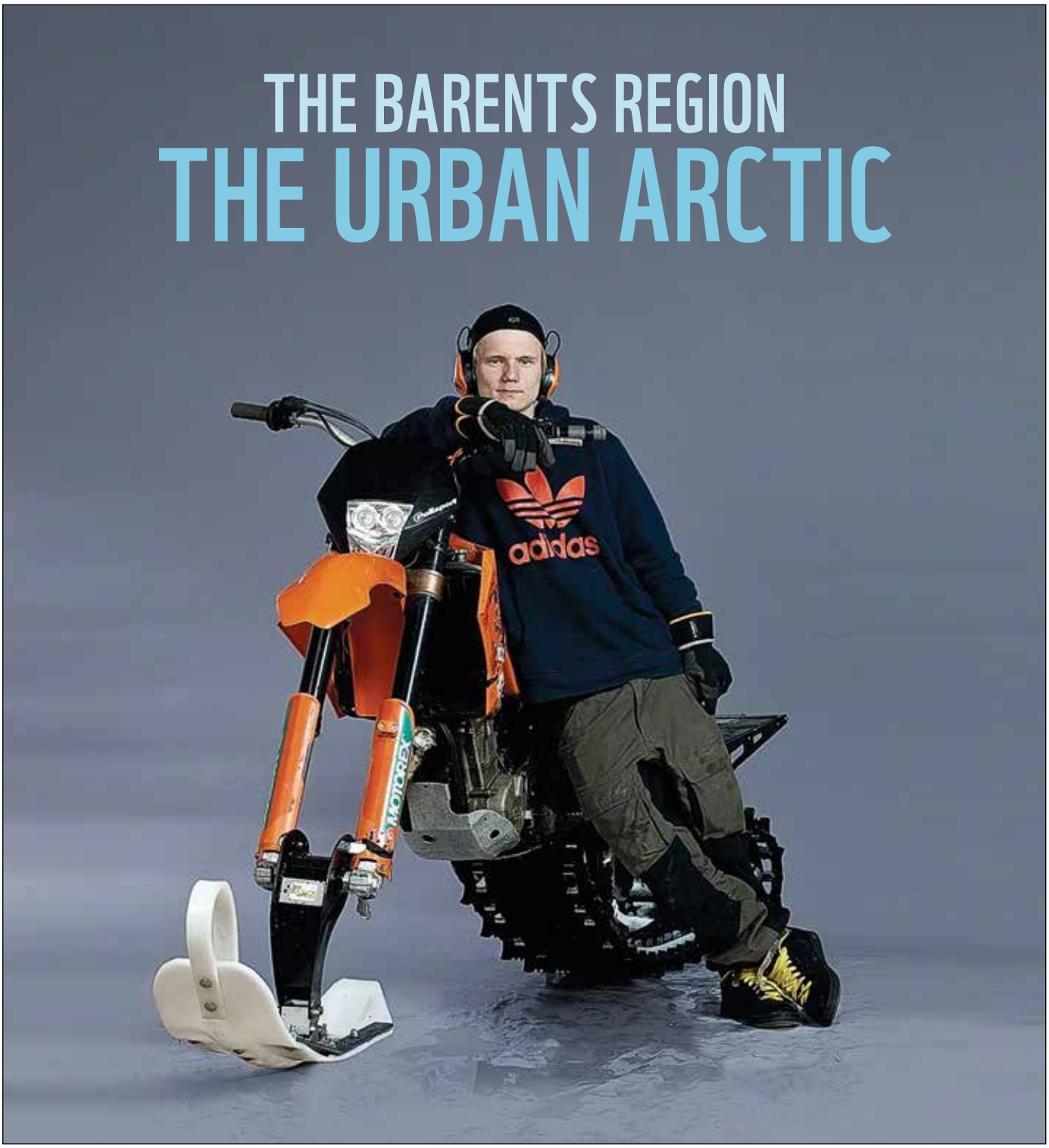
THE CIRCLE

THE BARENTS REGION

THE URBAN ARCTIC



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THE BARENTS REGION

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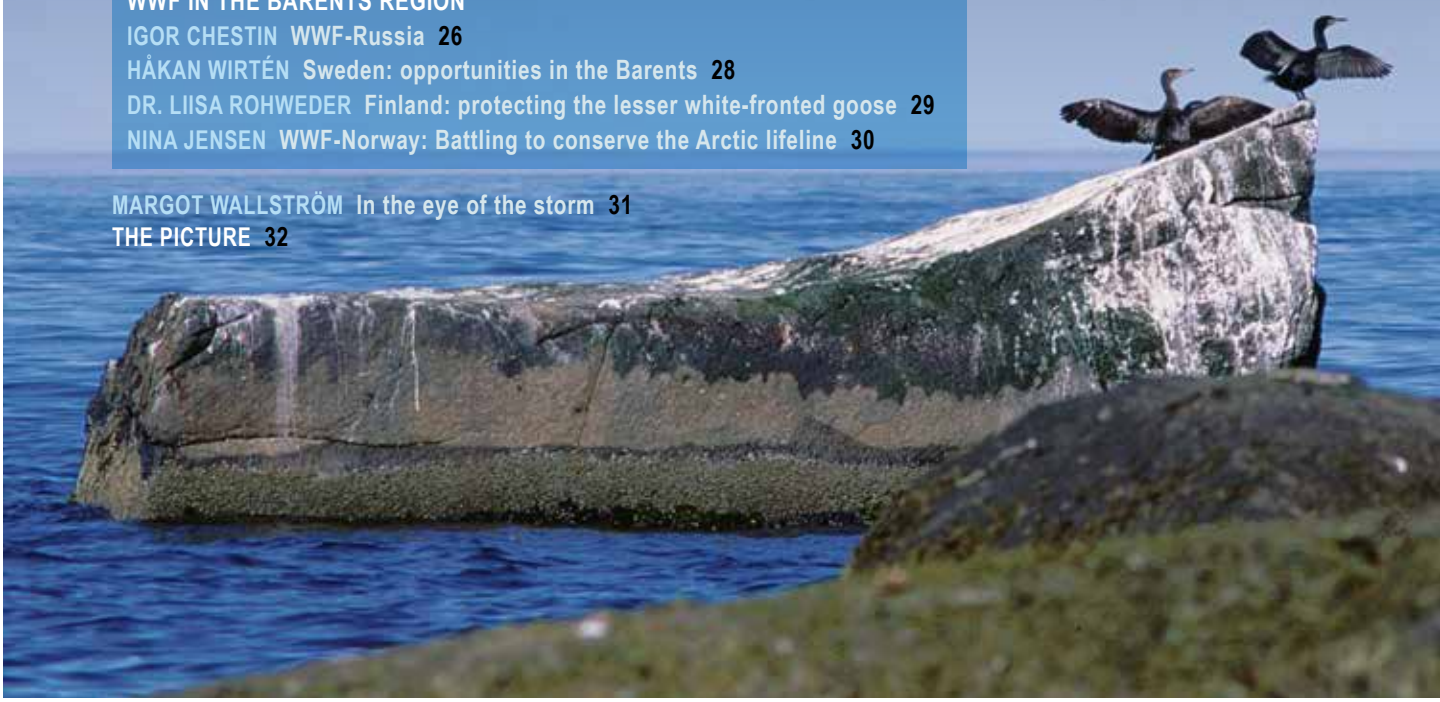

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ABOVE: Great Cormorants (Phalacrocorax carbo), Lofoten, Norway.

Photo: © WWF-Norway / Frode Johansen / WWF

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Looking to the future, building on the past

I HAVE HAD a personal connection to the Barents ecoregion for over 30 years. My memories of this incredibly diverse part of the Arctic include seeing walruses and polar bears living on the ice; the snow-covered mountains of Kola peninsula and Svalbard; watching whales and fishermen in Norway's waters warmed by the Gulfstream and reindeer roaming the tundra of Scandinavia and Russia's Nenets region. But there is much more to the Barents than wildlife and beautiful landscapes. This region has been inhabited for thousands of years, making it the most densely populated and developed part of the Arctic with unique and exciting cultures.

There are modern cityscapes such as Murmansk, Tromsø, Kiruna and Vorkuta that support an array of industrial development including oil and gas production, mines, power stations and nuclear power plants, forestry production and large ports filled with commercial fishing vessels and processing plants.

THERE IS MUCH MORE TO THE BARENTS THAN WILDLIFE AND BEAUTIFUL LANDSCAPES

The Barents encompasses the only commercially operational trans-Arctic sea route – the Northern Sea Route – linking western and eastern markets. Globally significant fisheries within the Barents support food security far beyond the region. Traditional fossil fuel resources are abundant and governments in the region plan to develop new reserves. Iron, nickel and other metals from the region supply global markets. Meanwhile, climate change is having an impact in this region, as in the rest of the Arctic, at a much faster rate than the rest of the world.

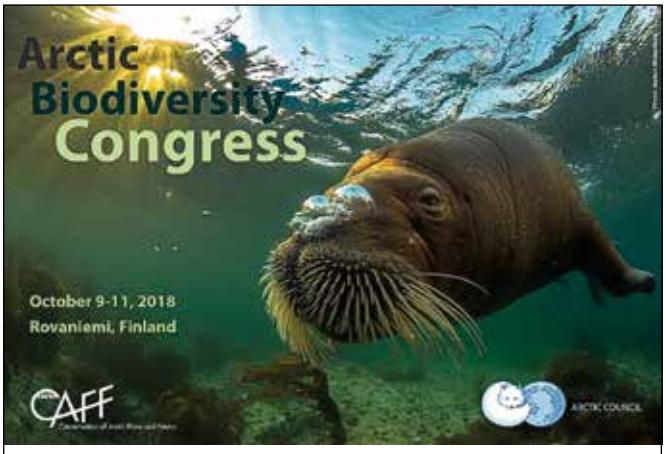
This edition of *The Circle* explores these challenges and opportunities. Thomas Armstrong addresses future influences of the industrial sector within the Barents. Bo Storrank writes about the joint efforts needed to safeguard the biodiversity and ecosystem of the region, while looking at measures already in place under the Barents Protected Area Network. Aleksandr Pavlenko and Alexei Golenkevich weigh in on improved fishing technology for the sustainable use of the vitally important marine resources.

It is critical to learn from the Indigenous peoples of the region such as the Saami and Nenets. They strive to maintain their traditional lifestyles through reindeer husbandry and fishing while enriching modern culture with their unique knowledge systems and experiences. On behalf of its member organizations, the Saami Council outlines the role they expect to play. Lars Georg Fordal writes about advanced research into alternative energy, telecommunications and modern technology to benefit all the peoples of the Barents.

Tero Vauraste calls the Barents a model for sustainable economic development in the north, citing numerous ambitious plans to develop offshore resources as climate change pushes sea ice away and brings access to what people call "new ocean." The Barents can be a global leader in creating a sustainable Blue Economy integrating Sustainable Development Goals that benefit communities while maintaining biodiversity and stewardship of their rich natural capital. Achieving sustainability will require national commitment as well as a strengthening of regional co-operation. Oran Young and Alexander Vylegzhanin disuss the Barents' strong roots in collaborative governance through the Arctic Council, Barents Protected Areas Network, the Nordic Council of Ministers and the Barents Euro-Arctic Council. The new Chair of the BEAC, Margot Wallström acknowledges that even though the Barents is the epicentre of the global climate crisis, there is enormous potential here.

Dr. **ALEXANDER SHESTAKOV** is Director of the WWF Arctic Programme

WWF's role is to navigate these changes, challenges and opportunities. Each of our CEOs in the Barents will update you in how they plan to work to the advantage and protection of all peoples, species and the environment in this complex, multinational and ecologically diverse region. ○



ARCTIC BIODIVERSITY CONGRESS 2018
ROVANIEMI, FINLAND
OCTOBER 9-11, 2018

The Conservation of Arctic Flora and Fauna (CAFF) (https://caff.is), the biodiversity Working Group of the Arctic Council, is seeking individuals and organizations to provide abstracts, organize sessions and submit posters that will encourage a dialogue on Arctic biodiversity among scientists, indigenous peoples, policy makers, government officials, students, industry representatives and others at the Arctic Biodiversity Congress 2018 (https://www.arcticbiodiversity.is/index.php/congress).

Submit via the online submission system by March 30, 2018 (https://www.arcticbiodiversity.is/index.php/program)

CAFF in partnership with the Ministry of the Environment, Finland, is organizing the Arctic Biodiversity Congress 2018 to promote the conservation and sustainable use of Arctic biodiversity. The Congress is relevant to all who wish to make specific and significant contributions to the conservation of Arctic biodiversity.

The Congress will be held in Rovaniemi, Finland on October 9-11, 2018, and will build upon the success of the first Congress, held in Norway in 2014.

Learn more about the Arctic Biodiversity Congress program and register (https://www.arcticbiodiversity.is/index.php/register-2018) now.

Please submit proposals for presentations, posters and/or sessions that address the Arctic Biodiversity Assessment recommendations (https://www.arcticbiodiversity.is/index.php/the-report/report-for-policy-makers/policy-recommendations) and implementation actions (https://caff.is/actions-for-arctic-biodiversity-2013-2021) by March 30, 2018.

Thank you for your interest in participating in and contributing to the Arctic Biodiversity Congress 2018!

Please contact caff@caff.is if you have any questions.

Scientists experiment with oil-eating bacteria

TEACHERS AND STUDENTS at Murmansk Arctic State University have teamed up with WWF-Russia to identify bacteria that may help clean up oil spills in cold Arctic waters. Oil-eating bacteria could be particularly useful in remote areas of the Arctic, where delivering oil spill equipment and removing the collected oil is nearly impossible. This technique has not been widely used, and has never been used in the north. At low temperatures, some bacteria are inactive while many may not survive the winter.

Student scientists are researching which bacteria are more tenacious and have the better appetite, and under what weather conditions they work best.

Russian tanker clocks record time through Arctic

A RUSSIAN TANKER travelled through the northern sea route in record speed in August and without an ice-breaker escort for the first time. The Guardian newspaper reports the voyage underscores how climate change is opening the high Arctic to increased shipping.

The tanker Christophe de Margerie carried liquefied natural gas (LNG) from Norway to South Korea in 19 days. That's about 30% faster than the conventional southern shipping route through the Suez Canal.

The tanker was built to take advantage of the diminishing Arctic sea ice and deliver gas from a new Russian facility on the Yamal Peninsula. It is the biggest Arctic LNG project to date and a favoured project of Russian President Vladimir Putin.

On its maiden voyage, the tanker crossed ice fields 1.2m thick, transiting the northern sea section of the Russian Arctic route in just six-and-a-half days.

Norway continues push into Arctic waters for more oil

NORWAY HAS ANNOUNCED it will open an unprecedented 93 blocks for Arctic oil exploration in the Barents Sea. The new production licenses are expected to be awarded to oil companies in early 2018. Norway is in many ways a forerunner in preventing climate change with plans to replace gaso-

LNG tanker Arctic Lady, Norway.

Photo: Adrian Hu Follow, CC, Flickr

WWF-Canada pushes to ban HFO in the Arctic

THE INTERNATIONAL Maritime Organization (IMO) has agreed to steps towards phasing out the use of heavy fuel oil (HFO) in Arctic shipping following appeals from the Government of Canada, Indigenous participants and WWF-Canada.

HFO is almost impossible to clean up because of its thick tar-like qualities. Its air emissions have high levels of soot, black carbon and particulate matter which absorb sunlight and hasten the melting of sea ice. Its use has already been banned in the Antarctic, and in Norwegian Arctic waters.

During a week-long meeting at IMO headquarters in London in July, the Canadian delegation's submission on how to reduce the impacts of HFO received wide support from all Arctic and several non-Arctic states.

"The IMO is taking steps to protect the fragile Arctic ecosystem, and the communities that depend on it, from the dirtiest and most polluting ship fuel in the world," says Andrew Dumbrille, senior specialist, sustainable shipping for WWF-Canada. "We hope this leads to an eventual ban on the use of HFO in the Arctic. It poses an unreasonable threat to both the environment and human health."

Dumbrille notes that as ship traffic increases in the Arctic, the risk of an environmentally devastating spill becomes more likely. "We have an opportunity to end the use of this toxic substance while ship traffic is still relatively low." WWF wants the IMO to phase out the use of HFO in Arctic shipping by 2020.

line-fueled cars with electric vehicles; becoming carbon neutral by 2030 and helping poorer countries reduce their carbon footprints by giving them billions of dollars. However, it is also pushing ever farther into the Arctic to drill more oil.

"It's shameful. Future generations will look back and ask what the hell were you thinking?" said Nina Jensen, head of WWF in Norway. "It's just a perfect example of the dichotomy of Norway as a leading, environmentally-conscious nation. We are telling everybody else what to do. But for us, it's not even business as usual; it's escalating business as usual."

Challenges

The Barents Region is the most developed, populated and fastest growing part of the Arctic. While climate change is a strong global force, other forces might be more important locally. TOM ARMSTRONG says these must be identified and assessed so we can fully understand the overall impact of cumulative change to take successful adaptation actions and promote greater resilience.

THE BARENTS AREA was defined in 1993 as an area of political cooperation between Norway, Sweden, Finland, and Russia. It was extended northwards to include Svalbard and Franz Josef Land in the High Arctic, eastwards to incorporate Yamalo-Nenets, and includes the Barents Sea to constitute the overall Adaption Actions for A Changing Arctic (AACA) Barents study area (Figures 1 and 2).

Dr. **THOMAS R. ARMSTRONG** is a member of the Arctic Monitoring and Assessment Programme (AMAP) Executive Secretariat, a Working Group of the Arctic Council.

The area is inhabited by more than 5 million people, including many indigenous peoples, with an average population density of 2.9 inhabitants per square kilometer. Although this is low compared to other areas of the globe, it is by far the most populated area above the Arctic Circle. The Barents Area includes sizeable cities such as Murmansk and Archangelsk in Russia, Oulu in Finland and Umeå in Sweden. This region is home to many cultures.

In the Nordic part of the Barents Area, the services sector is by far the largest employer. Forestry is important in northern Sweden, Finland and northwest Russia, while fishing, oil and gas exploration and extraction/transport are important in northern Norway and northwestern Russia. Conversely, the area is an important source of hydroelectricity for local use and for export. Mining is economically important in parts of each country, as is the issue of mine contamination of water resources and the related food web which are critical to the sustainment of healthy, naturally functioning terrestrial and marine ecosystems.

CLIMATE AND ECOLOGY

Climatically, the area is heavily influenced by proximity to the sea and its high latitude, although the Gulf Stream makes it warmer than other circumpolar areas. Climate impacts on flora and fauna are already noticeable, especially

RESILIENCE WILL ONLY OCCUR IF SCIENTISTS, RESOURCE MANAGERS AND POLITICIANS COME TO AGREEMENT

Kiruna, Lapland, Sweden: View from the old mine to the new mine.

those vulnerable to changes in ocean water temperatures, acidity and other climate impacts. The changing climate is also influencing hibernation periods, phenological changes and altering complex food webs.

Ecologically, the area is largely boreal forest (54%); alpine and Arctic tundra (20%); mountain glaciers (4%); freshwater lakes and rivers (10%), and open wetlands (12%). The boreal forest is relatively low in animal species but many species of prey can be found there, including reindeer, moose, red deer, roe deer, mountain hare, and rodent species such as beaver, squirrel and voles. Resident predators include the Eurasian lynx, Stoat, European otter, Wolverine, Gray Wolf, Red Fox and Brown Bear. The Barents Sea hosts more than 200 species of fish, with Capelin Polar Cod and juvenile herring being two of the most commercially exploited. The Barents also supports some of the largest concentrations of seabirds in the world.

INDUSTRIAL GROWTH AND POTENTIAL IMPACTS ON WILDLIFE AND ECOLOGY

Changes related to increased industrial activity and areal growth include:

1) continued expansion of industry-related land-use and land-cover change and associated fragmentation of key terrestrial species' habitat;

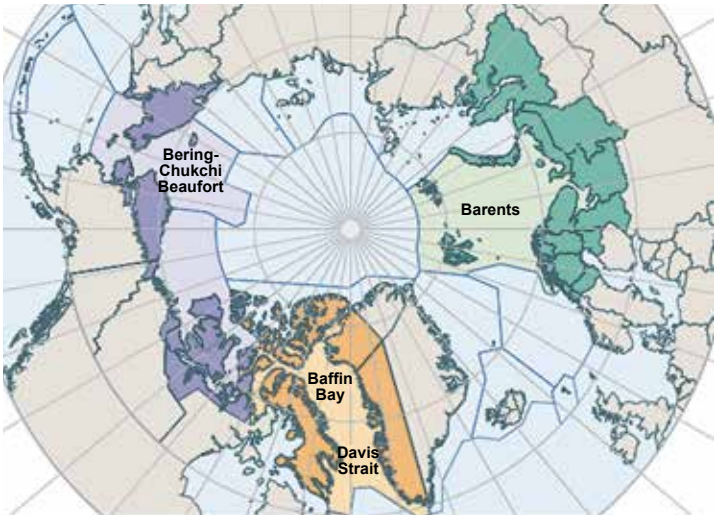


Figure 1. Circum-Arctic map detailing the extent of the AACA Regional Pilot Studies.

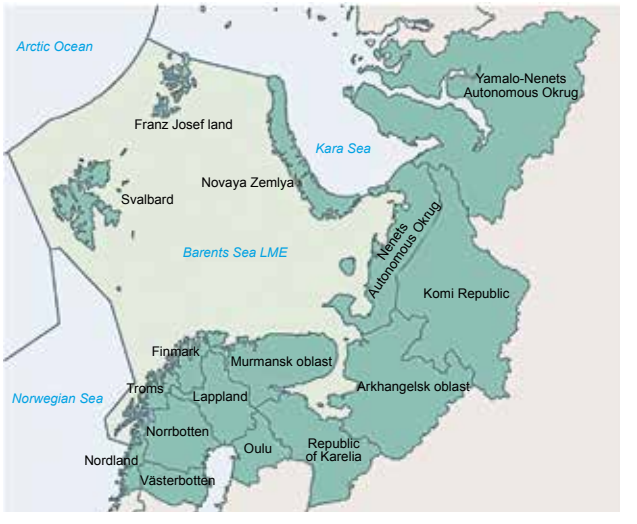


Figure 2. The Barents Area of the AACA.

Photo: Michiel van Nimwegen, CC, Flickr

Predators in the Barents Region include the Eurasian lynx, Stoat, European otter, Wolverine (pictured), Gray Wolf, Red Fox and Brown Bear.

2) increased contamination of critical lands and associated surface water and ground water resources;
3) continued degradation of marine environments that serve as breeding grounds for key fish and marine mammal species;
4) declines in overall biodiversity within areas currently rich in these species;
5) ocean acidification and warming which alters complex food webs and the concentrations of fish species critical to indigenous people's needs as well as commercially viable food sources.

CONCLUSIONS

These changes, along with many others, will need to be considered during the early onset of any new Barents areal assessments; including future iterations of the AACA process, currently under discussion. Successful adaptation and increased resilience over the next few decades will only occur if scientists, resource managers and politicians come to agreement on the role that the different change agents, such as climate change, population increase and related land-use change and land-cover change are going to have on the Arctic's remaining species, ecosystems, biodiversity and unspoiled natural resources.

Substantial investment into well-integrated science, grounded with the long-standing information of traditional knowledge is critically needed. Otherwise, successful adaptation actions related to sustainability and welfare of natural ecological systems will not occur and will follow the typical course of most policy and other decisions that rely largely on political bias rather than on sound, objective scientific knowledge and subsequent actions. ○

Improving governance

The Barents Sea region stands out as one of the better-governed eco-political marine regions. ALEXANDER VYLEGZHANIN and ORAN YOUNG tell us why.

LOCATED TO THE NORTH of Norway and the European part of the Russian Federation, the Barents comprises areas largely under the jurisdiction of those states. Although there are numerous ways to delineate its boundaries, the Barents region encompasses an area of ~3 million kilometres. It is distinct from other marine regions at high latitudes because the bulk of the Barents region has been ice free, year-round in modern times.

Regional, bilateral cooperation between Norway and Russia dealing with matters of common concern, especially fisheries management, began in the 1950s. The 2010 Barents Sea Treaty on boundary delimitation resolved a longstanding dispute over jurisdiction in the central part of the Barents Sea, solidifying and extending international cooperation. Today, three bilateral mechanisms dealing with fisheries, hydrocarbon deposits, and environmental protection handle governance in the Barents. The International Council for the Exploration of the Sea (ICES) provides scientific advice especially regarding annual allowable harvest levels for major fisheries.

Some key changes need to be acknowledged, including fluctuations in the abundance and spatial distribution of key stocks of living resources (e.g. Northeast Arctic Cod) and the spread of species not native to the region (e.g. snow crabs). Other important changes are the growth of functionally distinct

Photo: Michiel van Nimwegen, CC, Flickr

Fisherwoman Mari-Ann Johansen, Norway.

human activities that interact with one another in important ways.

Natural fluctuations in Northeast Arctic Cod stocks have led ICES to recommend reductions in allowable harvest levels for 2017 and 2018. Shifts in the spatial distribution of cod have increased opportunities for fishers from third states to harvest fish in "the loophole," encompassing waters beyond the Exclusive Economic Zones of the coastal states. This has resulted in quotas that exceed ICES recommendations, opened opportunities for Faroese and Icelandic fishers in the region, and increased pressure to devise a more explicit mechanism for recognizing the interests of harvesters not associated with the coastal states.

THE BARENTS SEA REGION STANDS OUT AS ONE OF THE BETTER-GOVERNED ECOPOLITICAL MARINE REGIONS

While fisheries remain the primary human activity in this region, interest in exploiting Barents Sea hydrocarbons is rising, with the volume of commercial shipping thus generating additional environmental risks. The Barents Sea itself has large deposits of hydrocarbons, and shipments of liquefied natural gas (LNG) from the Port of Sabetta on the Yamal Peninsula passing through the region are expected to ramp up substantially. Hydrocarbon development is a politically sensitive issue both in Norway and the Russian Federation. Shifts in world market prices could intensify these concerns in short order.

Governance arrangements in the region are currently segmented along functional lines. Fisheries and hydrocarbons are handled through separate Norwegian-Russian arrangements; commercial shipping is subject to regulatory measures (e.g. the Polar Code) negotiated under the auspices of the International Maritime Organization. The key concern here is the need for an integrated governance system capable of weighing trade-offs among competing human activities and making decisions on a more synoptic basis.

Overarching these concerns is the issue of creating or enlarging marine protected areas (MPAs) in the Barents Sea Region. There are already sizable protected areas in the Svalbard Archipelago under Norwegian jurisdiction and Frans Josefs Land under Russian jurisdiction. Norway and (increasingly) Russia make use of ecosystem-based management in their policy processes, and the Joint Commission on Environmental Protection plays an advocacy role in efforts to protect the ecosystems of the region. With the growth of human activities in the Barents, however, calls for more MPAs are increasing. Various groups, including WWF, have identified priority areas for some form of protection. A key issue now concerns the development of a governance system that will ensure decisions about these matters are integrated with decisions dealing with fisheries, hydrocarbon development, and shipping. ○

■ The U.S. National Science Foundation supported this work through the Arctic Options Project (NSF-OPP1263819) and the Pan-Arctic Options Project (NSF-ICER 1660449).

ALEXANDER VYLEGZHANIN is professor and head of the Department of International Law, Moscow State Institute of International Relations (MGIMO University).

ORAN YOUNG is professor emeritus & co-director of the Program on Governance for Sustainable Development at the Bren School of Environmental Science & Management, University of California (Santa Barbara)

Arctic change and reindeer husbandry in the Barents region

Environmental and social changes in Saami and Nenets reindeer husbandry are sweeping the Barents region and more are expected. The biggest driver of change, write SVEIN D. MATHIESEN and MIKHAIL POGODAEV, is infrastructure development on lands used by reindeer herders in Sweden, Norway, Finland and some parts of Russia. Climate change is another increasing threat to traditional livelihoods with global and regional scenarios projecting changes in temperature, precipitation and snow conditions in important reindeer pastures. ➤

Nenets reindeer herdsman Alek Sulentiev feeding his pet reindeer from the kitchen window of the family's tent, Kánin Peninsula, Russia, Arctic.

Photo: © Staffan Widstrand / WWF

Nenets reindeer herders migrating across Yamal peninsula on their way to the coast and rich summer pastures.

➤ **THE IMPACTS** of these changes on indigenous peoples are exacerbated because they don't have a voice in the development of adaptation tools and strategies for planning and development. Therefore, reindeer husbandry must develop adaptation strategies that recognize the value of traditional knowledge in the management of reindeer husbandry while at the same time using the best practices developed from science.

Adaptation to changes in reindeer herding will require future Arctic leaders to be knowledgeable and aware of long-term sustainability for reindeer husbandry. This must be the basis for building socio-ecological resilience against the rapid changes in Arctic ecosystems. We need new methods and delivery of education in reindeer herding communities that are multidisciplinary, multicultural and holistic approaches for sustainable development and which include traditional and gender knowledge**.** Meaningful collaboration between traditional knowledge and science is key to creating successful adaptation strategies.

REINDEER HUSBANDRY MUST DEVELOP ADAPTATION STRATEGIES THAT RECOGNIZE THE VALUE OF TRADITIONAL KNOWLEDGE

Contributing to the erosion of resilience in herding communities is the explosion of research which fails to involve indigenous peoples' institutions and organizations, and can be seen as a new kind of knowledge extracting industry**.** In future, the University

of the Arctic could play a new role in bridging knowledge systems by increasing cooperation between academia and indigenous institutions, networks and organizations.

Distibution of reindeer husbandry in the Barents Region

There is a need to further develop multidisciplinary indigenous transboundary institutions to meet the effect of these changes. Knowledge held by reindeer herders is key to their future economic sustainability. With a changing climate and increased industrial development, reindeer husbandry's ability to adapt will decline if their own traditional knowledge about pastures, environment and reindeer is not used.

We are heading toward a tipping point for some communities and we need to rigorously examine the protection and sustainable management of critical natural resources for the practice of traditional livelihoods. The complexity of the threats to reindeer husbandry and their far-reaching consequences demand impact assessments that evolve into more holistic and long-term, social-ecological resilience assessments examining the complex systems of how people and nature persist, adapt and transform in the face of Arctic change.

All levels of government need to make a strong commitment to the survival of Indigenous languages. Language loss has a direct correlation to the loss of practical skills, coping, and ultimately, biodiversity itself. Finally, it is important to engage youth in practical reindeer husbandry and strengthen the training of local leaders in long-term sustainable thinking. ○

SVEIN D. MATHIESEN works at the International Reindeer Husbandry Center, Kautokeino, Norway heading the University of the Arctic Institute for Circumpolar Reindeer Husbandry.

MIKHAIL POGODAEV is Chair of the World Reindeer Herders Association, which unites 24 indigenous reindeer herding peoples across the circumpolar north. He is also President of the UArctic EALAT Institute for Circumpolar Reindeer Husbandry

■ The UArctic Institute of Circumpolar Reindeer Husbandry (UArctic EALÁT Institute) is one of three institutes reporting directly to the board of the University of the Arctic with 12 academic partners in the Circumpolar North. Its mandate is to increase public understanding of Arctic issues and challenges for indigenous peoples and reindeer husbandry. This includes monitoring, and greater educational and research capacity for Arctic peoples – particularly indigenous and reindeer herding peoples. The institute is re-envisioning traditional knowledge to enhance the socio-ecological resilience and ability of small communities to navigate and adapt to the consequences of rapid Arctic change.

Reindeer herder, Lapland; Sweden

Photo: Michiel van Nimwegen, CC, Flickr

Saami in the Barents Region

Sápmi, the traditional lands of the Saami people, lies in the northernmost regions of Norway, Sweden, Finland and Russia. For many centuries, the main traditional activities of the Saami have been reindeer herding, fishing, gathering of wild plants and traditional art.

THE SAAMI COUNCIL is a voluntary organization with member organizations in each of these countries including a large part of the politically-defined Barents Region. Established in 1956, the Saami Council is one of the oldest active Indigenous peoples´ organizations in the world. Its primary objective is to safeguard Saami interests and strengthen Saami solidarity across national borders as one people and as Indigenous people. The council also works to ensure Saami cultural, political, economic, civil, social and spiritual rights are legally protected nationally and internationally.

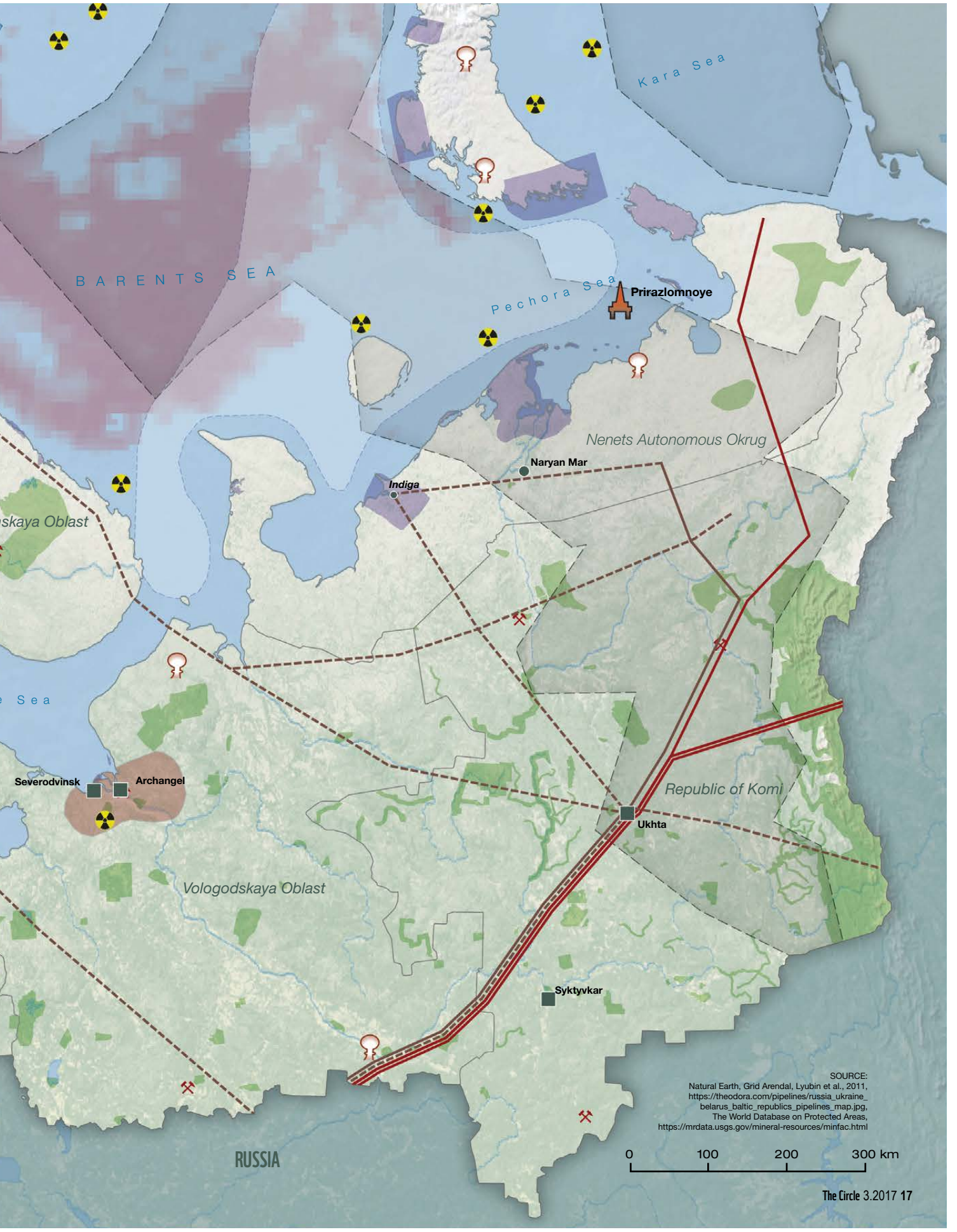
Every four years the Saami Council hosts a conference. During the 1986 conference in Sweden, the concept of a Nordic Saami Convention was proposed. This Convention would ensure that the Saami people can maintain, practice and develop their culture across national borders. It is expected the Convention would establish a joint legal framework for Finland, Norway and Sweden, that conforms with standards set by international law and adapted to the Nordic Saami setting.

THE SAAMI COUNCIL STILL HAS GREAT CONCERN ON THE POINT OF SELF-DETERMINATION FOR THE SAAMI PEOPLE

This process has been complex and taken decades of negotiations. In January 2017, a proposed draft was presented and is being discussed by state governments and the Saami Parlia-

18 ➤


The Barents Region
Snøhvit
Goliat
NORWEGIAN SEA
Tromsø
Troms
Finnmark
Deatnu (Tana) River
Vadsø
Bodø
Murmansk
Mo i Rana
Nordland
Lapland
Norrbotten
Rovaniemi
Kandalaksha
NORWAY
Luleå
Kemi
Västerbotten
Skellefteå
Northern Ostrobothnia
Oulu
White
Umeå
SWEDEN
GULF OF BOTHNIA
Oulu
FINLAND
North Karelia
Republic of Karelia
Joensuu
Petrozavodsk
PROTECTED AREAS
Marine
Terrestial
FISHERIES
Important spawning areas
Main trawling areas
POLLUTION
Environmental damage caused by severe air pollution
Dumping area nuclear waste
Nuclear bomb test
Nuclear power plant
Mines
PETROLEUM FIELDS
Areas with known oil and gas fields
Fields in production
PETROLEUM PIPELINES
Gas
Oil
Oil, planned
POLITICAL
Exclusive economic zone
City
Village
County
Map: Ketill Berger, filmform.no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Pechora Sea
Prirazlomnoye
Nenets Autonomous Okrug
Naryan Mar
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Archangel
Republic of Komi
Ukhta
Vologodskaya Oblast
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https://mrdata.usgs.gov/mineral-resources/minfac.html
0
100
200
300 km

Distribution of the Sami languages

The Saami people, their language and culture stretch across national borders

15 ➤ ments. The Saami Council, which initiated the concept of a Saami Convention, still has great concern on the point of self-determination for the Saami people. The Convention states that the Saami peoples' right to self-determination is covered through consultation processes, but the Saami Council maintains such consultation is not according to international standards.

The Russian Saami are not included in this Convention but are represented by the Russian Association of Indigenous Peoples of the North. However, there are numerous issues related to Saami language and traditional activities that are of common concern for all Saami peoples throughout the Barents region.

Issues specific to the Saami in Murmansk include the decline of private reindeer husbandry, which – in the times of the Soviet Union – was liquidated and a collective state farm was created, thereby violating the traditional Saami way of life. There is some revival of private reindeer herding in the Murmansk region and traditional lifestyles are carried out by both family (tribal) and territorial communities. Unfortunately, young people are reluctant to work in reindeer husbandry: the unsettled nature of life on the tundra and the desire to be closer to urban centers are turning most away from traditional lifestyles.

With the support of the Russian state which grants subsidies at the federal and regional levels, traditional communities are developing with some engaged in fishing both on inland waters and at sea. The Saami are allocated a quota for their catch of sea fish such as cod and haddock as well as other types of fish in inland waters.

Another critically important issue for the Kola Saami is the preservation of their native language, which is only offered as an elective class at schools. Saami is used less and less in everyday life, contributing to the breakdown between generations.

The Saami Parliament is also involved in negotiations over the regulation of fisheries in the Deatnu River, which forms part of the border between Norway and Finland. The Deatnu holds rich Saami traditions for the people and fisheries on both sides of the border. Finland and Norway ratified the Deatnu River Agreement in 2017, regulating fishing in what is Europe's largest salmon river. But this new agreement violates Saami cultural and property rights by restricting traditional fishing practices. The Saami and other people in the region united against these negotiations that took place without legally-required Saami involvement and consultation. The Deatnu case is yet another example of the lack of Saami self-determination.

There is a resurgence in the develop-

Photo: © Staffan Widstrand / WWF

Saami woman in traditional dress shopping in a supermarket, Kautokeino, Finnmark, Norway.

ment of Sami art and needlework across the Sápmi. Many master Sami artisans and craftspeople willingly engage in making products from deer antlers, bones, fur, leather, as well as fish skin and wood. The Saami culture is internationally recognized and many Saami public associations in the Murmansk region actively work to preserve and develop traditional skills and knowledge. The Cultural Committee of the Saami Council offers financial support for various activities such as festivals, seminars, conferences, book publishing, film making and music recording. This close cooperation in cultural and social life is reaping excellent results in preserving the rich and diverse culture of the Saami people. ○

■ Contributed by the Saami Councils of Finland, Norway, Sweden and Russia

Photo: Bjarte Aarmo Lund, CC, Flickr.com

Reindeer race, Tromsø, Norway.

Conservation

The ecosystems of the Barents Region are diverse and include large areas of boreal forests or taiga, as well as vast areas of wetlands and tundra. BO STORRANK looks at how to protect and preserve these resources.

THE REGION HAS a diverse coastline bordering the Norwegian, Barents, Kara and Baltic seas. The Barents countries – Russia, Finland, Sweden and Norway – face similar challenges in conservation of these unique ecosystems. Joint efforts are needed to safeguard the biodiversity and ecosystem services of the region. The Barents Euro-Arctic Council's Working Group on Environment and its sub-group on nature protection coordinate cooperation on biodiversity and habitat conservation in the Barents Region. One main aim of the transboundary cooperation is to contribute to the fulfilment of the Aichi Biodiversity Targets of the Convention on Biological Diversity.

In 2011-2014, national and regional authorities, scientific institutes and non-governmental organizations from Norway, Finland, Sweden and Russia implemented the Barents Protected Area Network (BPAN www.bpan.fi). The project produced unified information on protected areas in the Barents Region, including a comprehensive set of thematic maps, tables and figures. A follow-up project was launched in 2015 focusing mainly on forests important for biodiversity. The project – soon to be finalized – produced new information

on forests with high conservation values in the Barents Region. This information can be utilized in the future development of the protected area systems of the region. As a short-term result, responsible authorities and other main stakeholders will be better informed about the value of important forest areas and their current protection status.

Preliminary project results show there are still many important forest areas that need protection. Enhancing the connectivity of the region's protected area systems is also highlighted and data compiled by the project provides material for further analyses in this field. The project particularly underscores the importance of the main ecological mega-corridors of the region.

Photo: Tapio Lindholm

Wildfire. Yugyd Va National Park, Republic of Komi, Russia.

Strengthened efforts to protect valuable forest areas are in line with the Strategy for Protection of Intact Forests in the Barents Region. The strategy, acknowledged by the Environment Ministers of the Barents Region in November 2015, offers guidance for the preservation of forest biodiversity in this extensive region.

Mapping existing and planned protected areas in the coastal areas has also been undertaken. In 2016, an expert workshop produced updated information about the protection of coastal areas in the Barents Region. The experts concluded that the network of marine protected areas (MPAs) of the region should be further strengthened. Several actions need to be taken: more analyses to identify biodiversity hot spots; agreed-upon criteria for designation of MPAs and the designation of planned MPAs should be reinforced. For example, the use of remote sensing data should be further explored when making large-scale analyses and assessments. It is also critical that climate change be taken into consideration in planning and developing MPA networks. Furthermore, improving the engagement of stakeholders such as local communities and Indigenous people is imperative when developing the management of MPAs.

THERE ARE STILL MANY IMPORTANT FOREST AREAS THAT NEED TO BE PROTECTED

Climate change and changes in land use influence the long-term viability of the protected area systems of the Barents Region. It is important to include nature considerations in forestry practices, to implement existing plans for establishment of protected areas, and to strengthen the management of protected areas. Knowledge and data sets produced by joint transboundary projects are essential to future sustainability. ○

BO STORRANK is Project Manager at the Finnish Environment Institute

Kitkajoki River, Oulanka National Park, Finland, September 2008.

Photo: © Wild Wonders of Europe / Widstrand / WWF

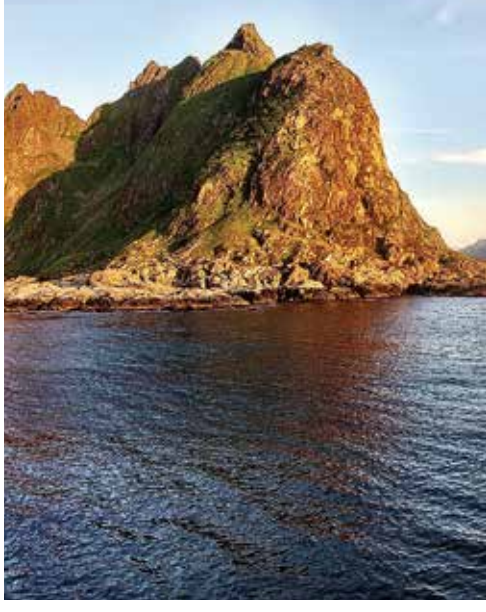
■ The Strategic Plan for Biodiversity 2011-2020 (of the Convention on Biodiversity) includes 20 global Biodiversity Targets. Target 11 focuses on protected areas:

By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.

Contemporary architecture and dramatic nature experiences.

Celebrating the Arctic cod.

Arctic taxis.



The world's first all-electric commercial

Innovation in the urban

The Barents is the most populated Arctic region. As LARS GEORG FORDAL writes, along with its unique geographical position and fragile environment, it is the perfect laboratory for innovation and sustainability.

WHEN the Norwegian National Bank chose a new design for the most popular Norwegian banknote – the 200 kroner – it opted for an image of the skrei. This Norwegian Arctic cod lives in the Barents Sea and derives its name from

fishing vessel, Karoline.

Arctic

the Norse word "*skrida*" which means "*to wander or walk*". When the skrei reach maturity at about five years old they migrate to the Norwegian coast to spawn. Fishermen catch the mature skrei from January to April, and since the time of the Vikings the migrating Norwegian skrei has been synonymous with life, wealth and survival. The absence of the skrei would spell disaster. Considering cod stocks around the world are dwindling and threatened, the Norwegian skrei fishing industry is now considered one of the best managed and sustainable cod stocks in the world.

This story illustrates the dynamics of innovation in the Barents Region. The future of the Barents must be about the need for people to thrive and make a living while protecting the fragile Arctic environment. It underscores the importance of international cooperation. Currently, Norway and Russia successfully share responsibility for maintaining the skrei stocks which are certified sustainable by the Marine Stewardship Council.

POWERED BY WIND AND SUN

Sparsely populated with approximately 5.3 million inhabitants living within its geographical territory, the Barents region is nonetheless the most populous area in the Arctic. At just 10 percent of the Arctic landmass, this is where approximately 55 per cent of the total Arctic population resides. This relative density in population is why we call it the "urban Arctic" and why it is an Arctic hotspot for innovation and technology.

■ For more than a year, the world's first all-electric commercial fishing vessel, *Karoline*, has been operating daily from the Norwegian city of Tromsø. The vessel is emissions-free, producing no greenhouse gasses including carbon dioxide and generates less noise and vibration compared to a standard diesel-powered fishing vessel. The *Karoline* is built by Selfa Arctic AS, a manufacturer based in the Norwegian city of Harstad.

■ In the land of both eternal darkness and light, Swedish, Norwegian and Finnish researchers are collaborating to prove that solar power in the far north is possible and profitable. The cold climate in Nordic countries pushed researchers to find solutions to problems caused by snow and icing. It seems counterintuitive but the frigid Nordic temperatures are an advantage in solar energy production because the efficiency of the solar panels increases with lower temperatures. A solar energy project in the Swedish town of Piteå is now expanding.

SUSTAINABLE TOURISM

The tourism industry is an important sector for innovation, new jobs and growth in the north with ongoing efforts to make it as environmentally friendly as possible. In the Norwegian town of Kirkenes, for example, dog sledding is an alternative to cars and taxis when tourists need transportation to and from the airport

LARS GEORG FORDAL is head of the Norwegian Barents Secretariat

The architectural project Biotope combines the best of contemporary Norwegian design with dramatic nature experiences. Innovative designs for bird hides – shelters used to observe wildlife – nature trails or outdoor amphitheaters provide new ways of experiencing nature. Attempts to make this a cross-border project are funded by the Norwegian Barents Secretariat.

The Barents region needs to balance challenges such as infrastructure, harsh climate, NATO borders and large socio-economic differences. The key to success will continue to be respectful and frequent cross-border dialogue, and good relations with neighboring countries. This is how we have carefully managed the most sustainable stock of cod since 1816. Through cooperation and innovation, we hope to keep this busy corner of the arctic safe, sustainable and a good place to live for future generations. ○

Driving sustainable economic development

The Barents Region is a model for sustainable economic development in the North. TERO VAURASTE explains.

THE ARCTIC Business Forum Yearbook is the best assessment of economic activity and future investment potential in the Barents Region. It is published each spring by the Lapland Chamber of Commerce and written with a candid business eye and a twist of stout optimism. It helps us understand the regional economic perspectives and the diversity of business in this huge tract of land, wilderness, towns and communities.

TERO VAURASTE is President and CEO of Arctia Ltd and Chair of the Arctic Economic Council

In northern Norway, major cities such as Tromsø, Kirkenes and Hammerfest, are fuelling growth. They are joined by smaller towns searching for their own niche and benefitting from innovation and growth in sectors including fishing and aquaculture. Earlier this year High North News reported the number of applications from prospective aquaculture students in Norway has nearly tripled in four years likely due to the potential of sea farming industries garnering interest among young people. The whole Arctic region has much to gain from diligent study, research and innovation in the fishing and aquaculture sectors. And it's not only fish and shellfish anymore – seaweed cultivation will be a means of providing the world with sustainable, healthy food.

Business has a significant role in the public sector and social well-being in sparsely populated Arctic areas. The Russian mining and smelting company Nornickel is the biggest taxpayer in the Kola Peninsula. It has invested in the improvement of employee living and working conditions. Overcoming past environmental challenges, it has worked to reduce emissions of major air pollutants and is committed to reducing emissions and discharges. Western companies should continue working closely with Russian counterparts to drive economic development into an even more sustainable future in the Murmansk and Arkhangelsk regions. The Belkomur railway connection project, for example, is expected to create up to 6,400 jobs and once operational, more than 40,000 employees will be needed.

DEVELOPMENT IN THE BARENTS REGION CAN BE A DRIVER FOR SUSTAINABLE ECONOMIC DEVELOPMENT THROUGHOUT THE ARCTIC.

In northernmost Sweden, LKAB is striving to become one of the most sustainable mining companies in the world. In 2016 it initiated a project for a carbon dioxide-free steel industry with electricity producer Vattenfall and Swedish steel manufacturer SSAB. Wind power production is gaining ground and expected to become the biggest investment potential in northern Sweden. Svevind is building a massive wind power park with over 1,100 turbines in the Markbygden area near the town of Piteå.

In 2016, tourism in Finnish Lapland set new records with over 2.6 million overnight stays – a 13% increase over the previous year and well above the national average of 3%. Chinese tourists doubled their visits from 2015. The Chinese are not only visiting, they are investing as well. In January 2016, the Chinese renewable energy company Sunshine Kaidi New Energy Group announced plans to construct a second-generation biofuel refinery in Ajos, Kemi – an investment of one billion euros. Kaidi's sustainable technology produces biofuels using wood-based biomass, such as leftover bark from the forest industry as the main feedstock.

These examples show how development in the Barents Region can be a driver for sustainable economic development throughout the Arctic. But it depends on the boldness and robustness of regional economies, stable regulatory frameworks across borders, and active political dialogue on regional, national and international levels. The Arctic Economic Council will continue supporting and providing forums for this development. ○

Photo: Alexandr Pavlenko, WWF Russia

Bottom trawling remains the key fishing technique for Russian anglers.

Protecting marine ecosystems

Amidst the vast array of fishing gear, trawlers remain one of the most efficient methods of catching nearly every type of fish the world over, including in the Barents Sea. But ALEKSANDR PAVLENKO and ALEXEI GOLENKEVICH say trawlers can also be harmful to marine ecosystems. They scoop up huge bycatches of undesired species resulting in large volumes of discards.

WHEN GOING AFTER bottom-dwelling fish, the impact of the rigid gear of the trawler on the sea floor causes extensive damage to the ocean bed and its inhabitants, adversely affecting benthonic ecosystems. The metal trawl boards – often weighing upwards of 6 tons – deeply gouge the sea floor and a heavy ground rope up to 40 metres long presses the trawl into the sea bed trapping fish beneath it. In the process, the trawler scrapes the upper layer of the sea floor that serves as a fertile, nourishing substrate and habitat for many types of sea life.

For the past century, cod and haddock have been the main target of bottom trawling in the Barents Sea. Part of the life cycle of these species takes place ➤

exclusively at or close to the ocean floor, making it extremely difficult and less profitable to catch them without a trawler scraping the sea bottom. It is possible to catch cod using other fishing gear such as longline, nets and traps, but these are significantly inferior to bottom trawling in efficiency and profitability. Therefore, bottom trawling remains the key fishing technique for Russian anglers of cod and haddock.

WWF-Russia is working to reduce the adverse effects of bottom trawling on marine ecosystems without prohibiting fishing –the basis of the marine industry in the Barents Sea – and to lay groundwork for the sustainable use of marine resources.

ALEKSANDR PAVLENKO, Chief of the commercial fishing laboratory, PINRO

ALEXEI GOLENKEVICH, Coordinator of the sustainable fishing program, WWF Russia, Barents Office

Scientists and anglers are collaborating to develop a less invasive form of bottom trawling. Norebo – a consortium of large fishing companies – has agreed to finance this project with the support of the Union of the Fishermen of the North, and JSC Arkhangelsk Trawl Fleet. Those organizations combined catch about 90% of the Russian quota of cod and haddock in the Barents Sea. Anglers have also united to establish and finance a center for the development of sustainable fishing in the North Atlantic.

RESEARCH IS UNDERWAY TO DEVELOP A LESS INVASIVE FORM OF BOTTOM TRAWLING

Meanwhile, specialists at the Polar Research Institute of Marine Fisheries and Oceanography in Murmansk developed several technical solutions to minimize the adverse effects of trawling. Updated designs include specialized rigging that will be applied to a new version of trawler gear to reduce friction and minimize direct contact of trawlers with the sea bed. Improved design will reduce the overall resistance of trawling as it drags the ocean floor. These innovations will lead to reduced fuel consumption and CO_2 emissions that contribute to climate change.

Research into new technologies such as acoustic signals charting fish behavior is another promising trend. This research will develop state-of-the-art ecological fishing gear with maximum catching performance and high selectivity of the target fish. Upon completion of the design and testing phase, proposals will be developed for a new, full-scale trawl with experimental gear for trial under real fishing conditions at sea. We hope further cooperation between WWF and Russian anglers will result in a working model for the new trawl design. ○

WWF-Russia

RUSSIA CONSTITUTES a significant part of the Barents terrestrial and marine ecoregion. This unique, diverse and rapidly developing ecoregion is on the WWF Arctic priority map: it is home to polar bears and walruses, embracing great Arctic high latitude archipelagos and mountains of the Kola peninsula. It maintains unique natural ecosystems and rich biodiversity. But it also faces an increasing number of threats related to climate change and expanding human industrial activities.

Major oil and gas companies are targeting offshore petroleum reserves here. The only high Arctic operational offshore oil rig, Prirazlomnaya, has already extracted 10 million barrels of oil. The oil shipping rate is increasing every year, yet there are no efficient infrastructures, solutions, means or personnel for prompt response and full-scale mitigation of oil spills in Arctic conditions. In 2016, the Russian Government halted allocation of new off shore oil leases for 10 years: exactly what WWF-Russia and its supporters asked for. This pause on oil leases will open new opportunities for Barents conservation.

The anticipated increase of shipping via the Northern Sea Route (North-East Passage) triggered the construction of

Photo: SCF Group

Arctic shuttle tanker Mikhail Ulyanov made the first shipment from the Prirazlomnaya platform in 2014.

new icebreakers in several countries including non-Arctic states such as China and Korea. At the same time, climate change imposes new challenges for vulnerable ecosystems and the people who live and work here. WWF Russia advocates a shift from heavy fuel oil to liquefied natural gas as bunker fuel for all types of transport vessels to reduce the risk of oil spills and lessen the impact of climate change. This initiative is supported by the Russian Minister of Natural Resources.

The Barents Sea is a fishbasket of global importance – every second cod sold in the UK alone is caught here. WWF Russia is proud of the success promoting sustainable fisheries, with over 90% of the whitefish catch in the Russian part of the Barents Sea MSC certified. Fishermen are strong conservation allies as their industry is directly connected to the health and resilience of the Barents marine ecosystem.

The Barents region also has large tracts of protected taiga forests in the Arkhangelsk region. WWF Russia cooperates with the largest timber companies in the region to introduce sustainable forestry methods. We participate in the Barents Protected Areas Network that created Onezhskoje Pomorje National Park and approved of Dvinsko-Pinezhsky Nature Reserve. These spaces will protect Europe`s largest mass of intact spruce forests.

WWF support to conserve Arctic species and ecosystems resulted in the creation of more than 1.4 million hectares of regional and federal protected areas in the Russian part of the Barents region.

Another successful initiative is the introduction of polar bear patrols – equipped, mobile groups of residents – aimed at reducing human-polar bear conflicts in communities throughout the Barents region.

WWF-Russia will continue to work closely with other WWF national organisations to address the conservation needs, and challenges in the Barents ecoregion. Partnerships with a range of stakeholders including indigenous peoples and local communities will be key to our success. ○

IGOR CHESTIN is the CEO of WWF-Russia

Sweden: opportunities in the Barents

THE DEVELOPMENT and economic potential of the Barents region is drawing increasing attention, so the need for trans-boundary collaboration has never been more urgent. With Sweden chairing the Barents Euro-Arctic Council (BEAC) to 2019, WWF and WWF-Sweden have numerous opportunities to implement and support projects in this region.

The Arctic has many faces, and the Barents region is among the most developed concerning infrastructure, extractives, tourism, fisheries and human population. Many different stakeholders are interested in the same resources and there is a need for integrated governance and landscape planning. The Barents region is also the home of the Saami and it is critically important to secure the future of reindeer herding and Saami culture. One of the crucial drivers for future development in this region is climate change, how it affects

It is critically important to secure the future of reindeer herding and Saami culture.

Photo: Lawrence Hislop, www.grida.no/resources/2011

societies and how they will adapt.

WWF Sweden supports a broad spectrum of projects in the Barents region together with several stakeholders. Many species are affected by climate change and it is of utmost importance to have good management plans. We focus mainly on gyrfalcon, bowhead whales, reindeer, walrus and polar bear. WWF Sweden is also a co-partner of *Felles Fjellrev II,* an EU interreg project to support the transboundary management of Arctic fox in Norway and Sweden.

Other areas of economic importance where WWF Sweden is working in the Barents for good governance and sustainable development include forestry, commercial fishery, shipping and renewable energy. Some of the projects are in collaboration with large companies, others with NGOs or regional governments. A key tool to maintain biodiversity and ecosystem services is to create a functional network of conservation areas that is resilient to change caused by climate and/or exploitation. There are many challenges as well as opportunities in the Barents region, but development has to be long-term and sustainable for people and nature to live in harmony. ○

HAKAN WIRTÉN is the CEO of WWF-Sweden

Finland: protecting the lesser white-fronted goose

THE BARENTS region is an important breeding area for several Arctic bird species including the lesser white-fronted goose. This rare, endangered species was once a common breeding bird that almost disappeared during the 1900s.

Photo: Olaf Oliviero Riemer, Wikimedia Commons

*Lesser white-fronted goose (*Anser erythropus*).*

The greatest threat to the lesser white-fronted goose is hunting occurring along the birds' migration routes and over-wintering sites in the eastern parts of the Mediterranean Sea and the Middle East. A new and growing threat in the birds' breeding areas due to climate change is the range expansion of the red fox in the tundra.

WWF-Finland established a working group for the research and conservation of the species in the 1980's, and has since been active in international conservation work for the bird. Several projects, many supported by the EU LIFE fund, helped reduce hunting pressures along the migration routes, provide suitable foraging and roosting habitats in wintering and staging grounds, and increase knowledge and awareness of the species. Targeted conservation efforts are aided by mapping the migration routes of the lesser white-fronts by following the movements of the geese via lightweight satellite transmitters and color ringing. These long-term efforts are finally showing positive results: since 2009, the decline of the Fennoscandian population has been halted and the number of geese has since slowly increased. Despite all this progress the species is still critically endangered in the Nordic countries, with only some 35 breeding pairs. The species is also globally threatened with a population of some 28,000-33,000 individuals. ○

DR. LIISA Rohweder is the CEO of WWF-Finland

WWF-Norway: battling to conserve the Arctic lifeline

WWF-NORWAY IS committed to conserving the vitality and viability of the Arctic's most precious area – the marginal ice zone. Already severely threatened by climate change, ocean acidification and pollution, the added risks posed by oil drilling are unconscionable in a time when new wells cannot be developed.

Norway's energy politics and petroleum industry have been aggressively advancing on the marginal ice zone in the northern Barents Sea since 2012. Further development has been an uphill battle for them thanks to WWF-Norway, our allies in other environmental organizations, and national scientific bodies. Still, they advance.

NINA JENSEN is the CEO of WWF-Norway

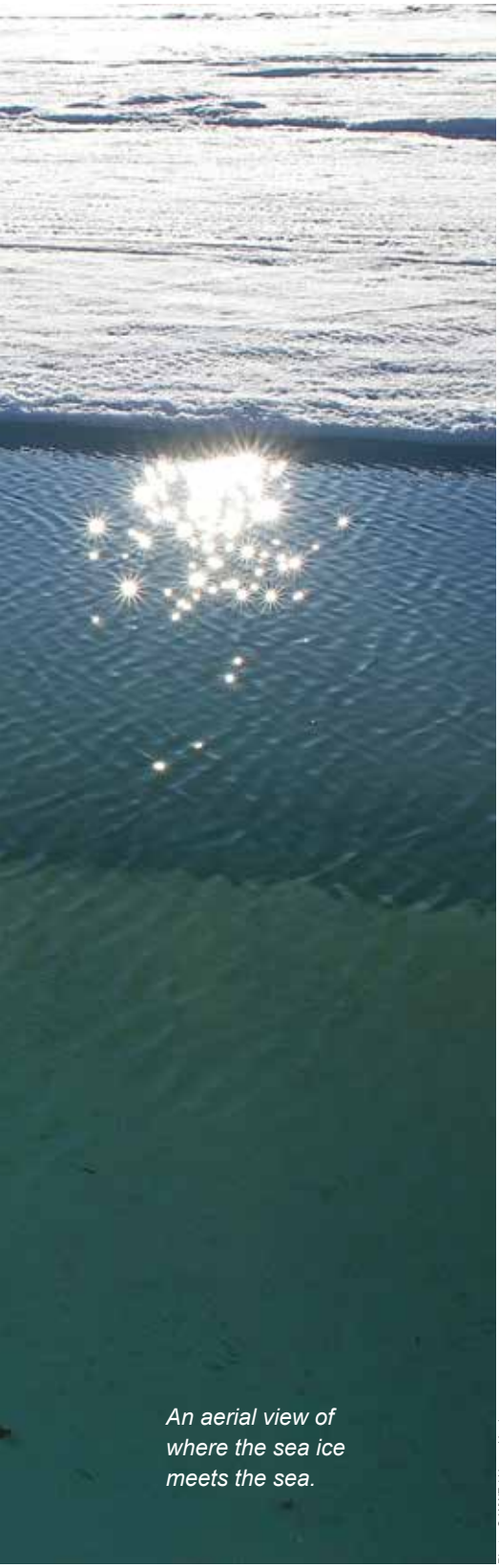
In its eagerness to appease the oil industry the Norwegian government has ignored even the recommendations of its own technical bodies and the Ministry of Environment. Earlier this year, WWF-Norway released the report, "Life on the edge," documenting the importance of Arctic life. The report summarizes research that confirms the impacts climate change has on nature and important species in this extreme ecosystem.

The deterioration of Arctic sea-ice means enhanced access to Arctic seas for commercial activity, such as exploitation of previously unavailable petroleum reserves. This new climate opportunism in the Arctic raises many environmental concerns regarding the risks of contamination, disturbance and infringement on the Arctic's unique and already heavily threatened natural habitats.

WWF-Norway's priorities in the Arctic are:

- Ensure Norway's marine management plans are updated according to the most recent scientific knowledge and maintain their integrity as a tool to ensure the health of the environment;
- Establish marine conservation areas in collaboration with other Arctic countries. New conservation areas must protect the crucial zone where the open sea meets the ice;
- Inspire appreciation and stewardship of the Arctic marine ecosystems in the Norwegian people and
- Prevent oil drilling near the marginal ice zone.

The rapid impact of climate change in the Arctic causes dramatic change in highly vulnerable areas. WWF-Norway demands that all political decisions concerning the ice edge are based on scientific and not commercial advice. We cannot accept that already endangered species be put at greater risk. ○



An aerial view of where the sea ice meets the sea.

Photo: © WWF / Henry Harrison

In the eye of the storm

AS SWEDEN assumes the rotating two-year chairmanship of the Barents Euro-Arctic Council from Russia this year, the eyes of the world increasingly turn north. Greater access to the Northeast Passage is likely to revolutionise conditions for the shipping industry. There is enormous economic potential linked to the blue economy, mineral and forestry industries.

The Barents region is also the epicentre of the global climate crisis. Temperatures here are rising more rapidly than the global average while swelling sea levels from melting ice threaten all of us, from Sweden to Fiji. What happens in the Barents region has global consequences.

The 2030 Agenda for Sustainable Development and the Paris Climate Accord represent a paradigm shift, enabling us to embark on the sustainable development of our societies. They provide aspirations for a good life for us and for future generations. The Swedish Chairmanship of the Barents Euro-Arctic Council will pursue an agenda built on sustainable development and the goals of the 2030 Agenda, with an emphasis on enhancing people-to-people contacts and promoting youth engagement. Barents Cooperation – created to promote sustainable economic and social development – gains strength from the unique interaction between stakeholders at national, regional and local levels. The Swedish Chairmanship will work closely with them and continue to promote the rights of Indigenous peoples – the Saami, the Nenets and the Veps. Peace and stability are preconditions for development.

WHAT HAPPENS IN THE BARENTS REGION HAS GLOBAL CONSEQUENCES

Our harsh climate challenges innovation in the far North. But the Barents region continues to innovate in ways that create jobs, growth and confidence, and contributes solutions to the climate crisis. This kind of sustainable innovation power creates business opportunities and increases our competitiveness.

Collaborating with Indigenous peoples is a given and a necessity. We cannot meet the challenges of climate change without listening to and learning from their traditional knowledge. We look forward to working closely with them throughout our chairmanship.

In 2018, Barents Cooperation will mark its 25th anniversary, providing an excellent opportunity to take stock of previous achievements while moving forward. I am convinced our joint efforts will contribute to a sustainable and equitable future for the Barents region. ○

MARGOT WALLSTRÖM is Sweden's Minister for Foreign Affairs

In 2018, Sweden will chair the Barents Euro-Arctic Council

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THE PICTURE

Dalai Lama and the Sami president

Photo: Kenneth Hætta, CC, Flickr.com

The Dalai Lama visited Norway in 2014. He was not allowed to speak with members of the Norwegian government due to Norway's strained relations with China, but he was welcomed by Aili Keskitalo, the president of the Sami Council.

Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

www.panda.org/arctic