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The Arctic is an area of low political tension in which the changed climate presents new opportunities and challenges. Issues concerning the security of flows and resource extraction are coming more to the fore. Sweden has a natural interest in the favourable current situation being consolidated and the entire Arctic region being driven by a positive political, economic and ecological dynamic. In bilateral and multilateral contexts, Sweden should stress the importance of an approach based on security in its broadest sense and that the use of civil instruments is preferable to military means. Ever since the Arctic Council was founded in 1996, there has been strong consensus on the view that economic, environmental and social development must be seen as a single concept to create long-term sustainable development in the region. Continued Swedish research and education initiatives are essential if progress is to be made. The priorities below are to be seen in this context:

- Climate and the environment
- Economic development
- The human dimension

### 4.1. Climate and the environment

- Sweden will work for substantially reduced global emissions of greenhouse gases and short-lived climate forcers.
- In cooperation with other Arctic countries, Sweden will contribute to proposals for knowledge-building and action to strengthen the capacity for adaptation to and recovery from the effects of climate change.
- Sweden will work to ensure that climate change in the Arctic and its global impact is highlighted in international climate negotiations.
- Sweden will work for an ambitious and effective international agreement on minimising and eventually eliminating the use, emissions and spread of mercury to sensitive areas including those around the Arctic.

- Sweden will work to reduce emissions of persistent organic pollutants with bioaccumulative properties<sup>11</sup> by making active efforts within the framework of the Stockholm Convention and the UN Convention on Long-Range Transboundary Air Pollution (LRTAP).
- Sweden will work for the conservation and sustainable use of biodiversity in the Arctic, taking indigenous Arctic peoples into consideration.
- Sweden will work to prevent and limit the negative environmental impact potentially caused by the opening-up of new shipping routes and sea areas in the Arctic.
- Sweden will work to ensure that environmental impact assessments are used to a greater extent in the Arctic.
- Sweden will contribute to ecosystem-based marine management/spatial planning.
- Sweden will work for international management plans to be drawn up for species affected by hunting and fishing and by a changed climate.
- Sweden will work for the establishment of a network of protected areas for flora and fauna and to strengthen the efforts to combat environmental degradation in the Barents region and elsewhere.
- Sweden will continue to be a leading nation as regards climate and environmental research, focusing also on the impact of climate change on humans.

#### **4.1.1. Climate**

Global climate change has made the Arctic one of the world's most vulnerable areas. The average temperature in the region has increased twice as much as the global average temperature over the last 100 years. This rapid rise in temperature increases the likelihood of dramatic effects on Arctic ecosystems and can reduce their resilience. This can in the long-term lead to losses in valuable ecosystem services, i.e. services that are supplied by nature and are irreplaceable for humans, which in turn affects people's ability to sustain viable livelihoods from, for example, hunting and fishing. Increasingly, research points to a greater risk of critical thresholds in the climate system being exceeded, for example as a result of melting ice-caps during the summer months and thawing permafrost. When the

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<sup>11</sup> Substances with bioaccumulative properties accumulate in the tissue of organisms.

permafrost thaws, large amounts of greenhouse gases are released, adding to the uncertainty surrounding existing and planned infrastructure and buildings. There are plenty of research findings concerning different aspects of environmental impact in the Arctic but only limited findings regarding how different factors interact. Observations of different changes and their effects play a central role both in order to understand the links and to increase the capacity for adaptation and action. Sweden should therefore continue to work to improve the coordination of environmental monitoring systems in the Arctic.

A reduction in emissions of long-lived greenhouse gases, including carbon dioxide, is the most important measure to combat Arctic warming. Shorter-term measures can however be taken that alleviate the effects of short-lived climate forcers such as soot, tropospheric ozone and methane. *The Intergovernmental Panel on Climate Change (IPCC)* established in 2007 that soot may have a considerable warming effect, especially in Alpine regions and the Arctic, because it both heats the atmosphere and accelerates snow- and ice-melt wherever it is deposited. A reduction in emissions of short-lived climate forcers, especially soot, could therefore combat the rapid warming of the Arctic and help slow down the pace at which snow and sea-ice are melting.

The Arctic Council has compiled research and environmental monitoring data on specific Arctic climate processes. This concerns not least threshold effects that can have a global impact, for example on ocean currents or emissions of stored methane from thawing permafrost. By developing and disseminating knowledge on how the Arctic is affected by climate change, the Arctic Council can raise the bar as regards international climate efforts. Important knowledge is fostered within the framework of forums such as the *International Arctic Science Committee (IASC)* and the Arctic Council's *Sustaining Arctic Observing Networks (SAON)*. Disseminating knowledge on soot particles and the role played by other short-lived climate forcers and proposing suitable measures are also very important for initiatives taken in other parts of the world. A global climate agreement with requirements for ambitious measures to reduce emissions of greenhouse gases is of substantial importance for the Arctic.

#### **4.1.2. Environmental protection**

Sweden needs to actively pursue issues relating to reduced emissions and the spread of oil, chemicals, waste, non-native organisms and other air pollutants. Despite there being few local sources of emissions in the Arctic, the spread of pollutants in and via the Arctic is a major problem both for the Arctic population and its fauna. Most pollutants are transported there via air or water currents. As a result of atmospheric conditions, the Arctic is particularly vulnerable to mercury deposition and the exposure is so serious that mercury-related health effects have been discovered in the Arctic population. Organic pollutants accumulating in fat tissues is another problem that can for example impair reproductive capacity.

Greater resource extraction in the Arctic significantly increases the risk of local emissions directly impacting the local environment and joint efforts are required to increase protection of the unique Arctic environment and the living environment for the Arctic population. The current state of knowledge needs to be improved as regards the effects of increased exploitation and as regards the measures needed to provide long-term sustainable protection. Especially sensitive areas must be protected from exploitation and the reports produced by the Arctic Council should focus on increasing the level of protection. Sweden will also promote greater use of environmental impact assessments in the Arctic, for example in the mining industry, shipping and oil extraction. An agreement on stronger rules of consideration and tougher restrictions on oil discharges and regarding the risks associated with oil transportation is also needed. Cooperation with the Barents Euro-Arctic Council on measures to combat what are known as *hotspots* should be strengthened.

#### **4.1.3. Biodiversity**

Changes in climatic conditions and the global spread of chemicals can have a serious impact on biodiversity in the Arctic. Shrinking sea ice leads to problems for species that live on or close to the ice. More open water causes increased indirect threats. Species composition is changing as a result of southern species starting to outcompete high-arctic species. Greater opportunities to extract fossil fuels in sensitive areas increase the risk of disturbances and accidents.

Knowledge about the occurrence of species and ecosystems needs to be strengthened as does knowledge about how biodiversity can be conserved and used in a sustainable manner so that ecosystem services can be safeguarded by increasing the resilience of ecosystems.

In order to strengthen the capacity for adaptation and resilience, networks of protected areas that are important for flora and fauna should be created in the Barents region and elsewhere. The indigenous peoples and their opportunities to pursue traditional industries have a key role in these contexts. A changed climate requires greater political cooperation across territorial borders to develop methods for managing species affected by hunting and fishing. Ecosystem-based management of marine resources based on the principle of conservation and sustainable use and with special protection for threatened areas, species and stocks would be a way forward. The Arctic Council should also contribute to continued global biodiversity-related efforts.

#### **4.1.4. Climate and environmental research**

Swedish climate-related research in the Arctic has a long tradition and its findings are constantly helping to increase understanding of ongoing processes. As a result of long measurement series, in some cases up to one hundred years, Sweden has contributed to greater global understanding of climate change. It is important to continuously analyse levels of both known and new hazardous substances in the sensitive Arctic area.

Adaptation to a changed climate requires good knowledge about the effects not only on biological and technical systems but also on communities and humans. In order to increase knowledge about the effects of global warming, current research cooperation and network-building need to move towards more integrated research in which natural scientist, social scientists and humanists cooperate to improve understanding of the many multi-dimensional problems.

Access to modern logistics platforms is crucial for environmental research. Northern Sweden is home to research stations in Abisko and Tarfala as well as the EISCAT<sup>12</sup> scatter radar facility in Kiruna. The Abisko Scientific Research Station administrates, coordinates and performs experiments and tests for researchers from all over the world. An extensive environmental monitoring programme on temperature, precipitation, ice-thaw, flora and fauna in the local area has been in progress here for nearly 100 years. The Tarfala Research Station, located in the Kebnekaise mountains, conducts basic research, glacier monitoring, meteorological and hydrological analyses, snow chemistry and permafrost studies. One aim should be to modernise and develop the Abisko Scientific Research Station. Sweden should also work to secure the availability of data from long-term environmental monitoring research.

The Swedish Polar Research Secretariat gives Sweden plenty of scope to perform marine research expeditions in both the Arctic and Antarctic Oceans with the icebreaker Oden. Sweden and Norway, together with 48 businesses and organisations in the mining, steel, energy and engineering industries as well as research institutes and universities, take part in the priority research programme ULCOS (*Ultra-Low Carbon Dioxide Steelmaking*) with the aim of halving carbon emissions from steelmaking.

## 4.2. Economic development

- Sweden will promote economically, socially and environmentally sustainable development in the entire Arctic region.
- Sweden's growth and competitiveness can be promoted by means of greater free trade and proactive efforts to combat technical trade barriers in the Arctic region.
- Sweden will work to ensure that the anticipated future extraction of natural resources (oil, gas and other minerals) and the use of renewable resources (including forest material) take place in a sustainable manner, environmentally, economically and socially. Improvement of the transport infrastructure is

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<sup>12</sup> European Incoherent SCATter scientific association.



crucial. Activities shall be pursued using the safest available methods and technologies.

- Sweden will highlight the importance of respecting international law when extracting the energy resources of the Arctic.
- It is important to continue development of regional cross-border cooperation in the field of sea and air rescue and to tighten the safety requirements for sea transport in several sectors.
- Sweden will promote the use of Swedish expertise in the field of environmental technology.
- Swedish Trade Council office staff in Denmark, Norway, Finland, Russia, the United States and Canada, as well as in northern Sweden, should be given the task of building up their expertise in order to promote Sweden's commercial interests in the Arctic.
- The tourism sector should be developed in a sustainable manner and communications between tourist destinations should be improved.
- Sweden will contribute to the international efforts in the IMO aimed at limiting emissions of greenhouse gases from ships. Sweden will work for the adoption and entry into force of the IMO's Polar Code.
- Sweden should work to support Arctic research and to monitor the vulnerable marine environment.
- Sweden should work for the improvement of and cooperation between the research resources that exist in the region in order to contribute to the region's sustainable management and development.

The basic prerequisites for the people living in the Arctic are: a long-term optimism; opportunities for them to earn a livelihood; good communications and social care. In order not to undermine the social or natural environment for people living in the region, its economic developments must be sustainable in the long term.

The Arctic region has rich natural resources such as forest, fish, wild animals, energy and minerals that play a key role in the economic development of the Arctic countries. There

is potential for further development and greater growth in several areas. Natural resources should be managed so that they can be used without being used up at the same time as other industries can be pursued and developed bearing in mind the unique conditions and sensitive environments and wildlife of the Arctic. Green growth can lay the foundation for new jobs where the business sector can play a central role in the development of innovative solutions. The environmental focus of Swedish businesses and their expertise in environmental technology can provide important leverage. Furthermore, the involvement of Swedish businesses in local communities and their willingness to adhere to the principles of human rights, labour law, social responsibility, sound environmental and sustainability efforts and anti-corruption will give them a competitive edge in future business deals and investments in the Arctic. Increased resource extraction in the Arctic involves considerable risks, however and especially sensitive areas must be protected from exploitation.

The EU's cohesion policy provides an important framework for financing investments and improving people's everyday lives. There are currently several structural fund programmes in the Arctic region that not only cover Swedish, but also Norwegian and Finnish areas. In addition, these regions can cooperate with Russian regions within the framework of the EU Kolarctic ENPI CBC<sup>13</sup> financing instrument. Regions in northern Scandinavia can also cooperate with Iceland and Greenland within the framework of the Northern Periphery Programme.

#### **4.2.1. Free trade in the Arctic**

Swedish trade policy is built on free trade. Proactive efforts to combat technical trade barriers and to promote greater border trade are also vital for economic development in the Arctic. The free movement of future traffic in the Arctic can contribute significantly to economic development and make people realise that free trade, coupled with respect for the rights of indigenous peoples, promotes peace and prosperity. The Nordic countries cooperate closely on trade issues within the EU/EEA and in the Nordic

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<sup>13</sup> European Neighbourhood and Partnership Instrument, Cross-Border Cooperation.

Council of Ministers, and Sweden is working in the Council of Ministers to promote the free movement of people, goods, services and capital.

#### **4.2.2. Industrial policy interests in the Barents region**

Sweden has significant industrial policy interests in the Barents region, which contains major ore, mineral, forest and fish assets, i.e. sectors in which Swedish industry is strong and has extensive research expertise. Increased trade and cooperation in energy- and raw-material-related sectors have been given high priority in Sweden and would help to achieve economic, energy and environmentally related objectives. Sweden is cooperating on this with the countries in the Barents region in for example the *Baltic Sea Region Energy Cooperation (BASREC)* and the Nordic Council of Ministers. The Barents region's trade and industry ministers adopted a joint statement on the development of the region's potential for business development, greater energy efficiency and renewable energy in May 2010. Energy efficiency is one area where there is considerable need in some of the Arctic states and within which Sweden has substantial expertise and a strong industry.

#### **4.2.3. Economic interests in the rest of the Arctic**

In addition to existing industries in Arctic Sweden, the increasing extraction of the Arctic's natural resources presents business opportunities within a number of different sectors.

##### ***Mining, petroleum and forestry***

Norwegian and Russian extraction of oil and gas resources in the Barents region over the next 10-15 years opens many windows of opportunity for Swedish companies in the mining and petroleum sectors. The Swedish resource base includes experience, skills, systems and machine suppliers - all important components of mining operations in the Arctic environment. Swedish petroleum companies can mostly be found in the sub-contractor chain of goods and services and their environmental focus gives them a competitive edge. Sweden is striving to ensure that especially sensitive areas are protected from exploitation and underlines the need for more environmental assessments. Future extraction of petroleum should be done sustainably. Sweden is also striving for

environmentally sustainable use of the forest in the Arctic and the Sámi villages affected will be consulted prior to forest being harvested in year-round reindeer-grazing grounds inside the Arctic area. Sustainable forestry will be the aim all across the Arctic region.

### ***Land transport and infrastructure***

Raw material extraction in the Arctic also generates the need for long-term sustainable land transport. The cold climate places tough demands on both the permanent infrastructure and vehicles. Sweden is currently a world-leading supplier of vehicle-tests in the Arctic environment. Swedish haulage companies also have comparative advantages as a result of their expertise and research on how all types of vehicles should be adapted for extreme winter climates. The increasing demand can also be expected to intensify calls for investment in infrastructure, such as new or upgraded harbours, railways, roads and airports.<sup>14</sup> To promote sustainable development in the raw material extraction and energy sector in the Arctic, Sweden should work for long-term and relevant transport solutions in the Barents region. The planning of such solutions will demand a close dialogue with Sweden's neighbouring countries and Russia.

### ***Maritime security and the environmental impact of shipping***

Shipping is the most energy- and cost-effective way of transporting goods. Melting glaciers and ice-caps are gradually creating possibilities to navigate along new routes, even if it will take time before the conditions will allow regular commercial shipping on a large scale. Goods transported across the Arctic Ocean travel significantly shorter distances leading to energy savings, less emissions, trade development and less pressure on transcontinental routes. On the down-side, the large land and sea areas of the Arctic constitute a very vulnerable part of the world's natural environment and climate system. Care of the marine environment, both at sea and in coastal areas, is of crucial importance to Sweden. Sweden is of the opinion that a common sea and air surveillance that creates the prerequisites to build a recognised maritime picture (RMP) of the Arctic, can contribute to safer and greener shipping.

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<sup>14</sup> Examples of transnational Arctic initiatives that affect Sweden are *the Bothnian Corridor*, *the Barents Link* and *the Northern Lights Route*.

The interest among the Arctic coastal states in expanding oil and gas extraction increases the need for sea transport. In the autumn, spring and winter, it is dark and extremely cold most of the time. Such an environment places tough demands on both crews and equipment. Experience of operations in both the sub-Arctic conditions of the Bothnian Bay and in the Arctic has given the Swedish maritime industry unique skills in this area, providing it with a clear competitive edge.

Greenhouse gas emissions from shipping have increased in recent years. According to a study performed by the IMO, international shipping is responsible for 870 million tonnes of greenhouse gas emissions, or 2.7 percent of global emissions. The same study indicates that emissions from shipping are expected to rise by 150-250 percent unless action is taken. It is important for Sweden to actively participate and drive forward ongoing efforts to develop rules to reduce shipping's carbon footprint. Sweden actively supports the ongoing work in the IMO and intends to promote the development of both technical and operative measures to reduce greenhouse gas emissions from shipping.

Development towards increased shipping in Arctic waters involves a greater risk for accidents resulting in significant spillage. There is also a risk of negative environmental impact from shipping as a result of non-accident-related discharges of oil and chemicals, air pollution, waste and the spread of non-native organisms. Increased shipping also brings issues related to safety requirements for sea transport to the fore. Poor safety routines or vessel construction can have devastating consequences for seafarers, marine flora and fauna and those who depend on the sea for their livelihoods. Greater awareness of traffic at sea, in the air and on land helps to reduce the risks of accidents. Active efforts in terms of preventive measures, surveillance and rapid accident response can reduce the risks associated with increased shipping in the Arctic. Sweden is working for the introduction of a mechanism to deal with discharges at sea.

In the IMO, efforts are currently being made to develop a "Polar Code" for maritime safety in Arctic waters. The main principle is to identify unregulated risk areas and to

draw up rules for dealing with identified risks. As part of these efforts, an assessment will be made of whether the existing international environmental regulatory frameworks offer a sufficient level of protection or whether further measures are needed. The aim is to be ready to introduce the Polar Code in 2012 and Sweden is taking an active part in this work.

### ***Sea and air rescue***

Increased seaborne tourism in Arctic waters heightens the risk of accidents affecting both the environment and humans. The Arctic is sparsely populated and there are currently no widespread mechanisms in place for rescuing people in distress at sea. Poor infrastructure makes it very difficult to deal with emergency situations. Some ships operating in the area have several thousand passengers on board. Swedish resources may be needed should a major accident occur off the coast of Norway or Arctic Russia. Better surveillance of shipping traffic, preventive measures and improved regional cross-border cooperation on air and sea rescue are all important components. The Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic agreement negotiated between the members of the Arctic Council will enable more flexible use of existing resources and make it possible to find cost-effective solutions.

### ***Ice-breaking***

Efficient ice-breaking operations are required to promote maritime safety and improve accessibility in frozen waters. Sweden possesses leading expertise as regards shipping in Arctic conditions. Swedish ice-breakers may be able to support increasing commercial shipping in the Arctic as well as help with both the monitoring of the vulnerable marine environment and Arctic research. This includes standardisation work for efficient winter shipping, such as generally accepted Swedish-Finnish ice class rules. The development of technology and communications that facilitate ice-breaking operations are important from a Swedish perspective. The Swedish Maritime Administration's ice-breaking resources are well suited to Arctic and sub-Arctic waters at times when the vessels are not needed in regular activities.

## **Energy**

The increasing interest in the Arctic in terms of energy depends on several concurrent factors. The region has large quantities of fossil fuels that can probably be extracted when climate change results in a reduced ice-cover. The region may have particularly large natural gas assets, possibly as much as a third of the world's undiscovered reserves. Furthermore, technological development has made it possible to exploit previously unextractable reserves. A third factor that has contributed to the trend in recent years is the high oil prices caused by, among other things, unrest and uncertainty in North Africa and the Middle East.

It should be stressed, however, that extraction under Arctic conditions already takes place on a large scale, not least in Russia. The development alluded to here has however led to the focus shifting further and further northwards and towards the inner Arctic Ocean. The public debate sometimes gives the impression that this is a kind of "gold rush", a fight over resources that inevitably leads to a higher level of conflict in the region. This picture is incorrect. The area is characterised by a high level of cooperation and a low level of conflict. Overlapping claims must be dealt with according to international law.

In contrast to the five coastal states, Sweden has no direct national energy interest in the Arctic and does not take part in energy policy cooperation initiatives in the area. Swedish industry does however play a role in industries that support the energy sector, not least in the fields of ice-breaking, sea transport and consultancy based on knowledge of business activities in the Arctic climate. Sweden is indirectly affected, as is the rest of the EU, if deposits in the Arctic are extracted since both liquid gas and oil are globally traded products. Large volumes of fuel produced in the Arctic may therefore affect European security of supply and prices on several markets. Access to increased volumes of liquid gas would probably lead to more free trade on the international gas market and there would be less price-setting in long-term contracts as is the case when transporting gas by pipeline.

In other words, Sweden is not influenced by any direct energy interests but more by the basic understanding that fossil fuels must be extracted in a socially, economically and

environmentally sustainable manner. Sweden needs to be a driving-force in international cooperation in order to protect the unique Arctic environment and minimise the negative effects and risks of an anticipated increase in extraction. In this context, the scope for developing green and climate-neutral energy supply needs to be taken into consideration. This includes hydro- and wind-power, solar and bioenergy and technology for improving energy efficiency and reducing carbon emissions. Nuclear safety issues may also come to the fore from an environmental and security perspective.

### ***Tourism***

The tourism sector, including hunting and fishing, has considerable potential for creating jobs and boosting economic growth. The sector has several tourist destinations that are already ready for export, and a number of regional destination development projects are under way, often cofinanced by EU structural funds. Many visitors choose the Arctic because of its clean air, water, mountains, forest and silence - things that are in short supply in many other parts of the world. Sweden welcomes the development of Arctic cooperation aimed at strengthening the conditions for tourism in the Arctic area. Accessibility is a key success factor in the development of the Arctic as a tourist destination. Sweden intends to promote cooperation with the other countries in the region aimed at developing sustainable and attractive tourist destinations, but also taking the Arctic's sensitive environment and the needs and situation of its indigenous peoples into account.

### ***Reindeer husbandry***

For many reindeer-herding Sámi, reindeer husbandry constitutes an important part of a “mixed economy” based on reindeer husbandry, hunting and fishing and a number of other secondary industries. Just like all industries, reindeer husbandry is facing different challenges that must be dealt with to survive and be economically viable. To be efficient and sustainable in the long term, reindeer husbandry must have access to suitable calving grounds, migration routes with resting pastures and central connected seasonal grazing areas for each season. The reindeer must also be able to graze undisturbed. Reindeer husbandry is affected by environmental factors such as weather and temperature, access to grazing areas and natural disturbances. The Sámi population shall be able to continue



to pursue and develop their reindeer husbandry and other Sámi activities such as hunting, fishing and handicraft to continue to survive, live and earn a livelihood in the Arctic region.

### **Other activities**

A strategic objective is to give the population and commercial actors in the Arctic access to cost-effective and leading **IT and telecom technology** which can present opportunities for Swedish businesses in this field. The skills of Swedish companies in for example telemedicine and rural environments are world-class. Sweden is striving for cooperation in the Nordic region and the EU in order to develop **space technology** to promote monitoring, exploration and communication in the Arctic. The Swedish space industry is based in Kiruna and has considerable development potential for service to the space programmes of other countries and communication with and control of satellites.

Another important factor to attract labour to the High North is **culture**, very much an underexploited resource in the business sector. Cultural richness promotes regional development and is a way of gaining a competitive edge. Cooperation in the Northern Dimension's new partnership for culture provides scope for helping to strengthen creative and cultural industries in the region.

#### **4.2.4. Educational and research needs**

Stronger forms of cooperation and better research infrastructure are needed to create opportunities for interaction between research, higher education, politics and society. The aim is to improve initiative and responsibility focusing on research and education. Strong research-based education programmes are needed to manage the High North's rich resources in a way that benefits both the region and the world in general. Such programmes are based on the special conditions, opportunities and local knowledge offered in the High North. Research vessels are an important part of the infrastructure and give researchers the same opportunities as onshore research stations.

Important research orientations from a maritime perspective include applied research on the technological development of vessels, platforms and systems in the Arctic

environment, and logistics. It is also a question of participating in maritime-relevant international research cooperation projects on a more fundamental level in, for example, geographical and biological subjects. Marine bioprospecting after unique genes, molecules and organisms can result in new products and processes for commercial use in a number of different areas of use such as the health sector, biologically based raw materials, food production and renewable energy production.

Sweden needs the right skills in order to utilise the potential released by a developed Arctic region. The recruitment requirement for the mining and mineral industries will be considerable in the forthcoming five-year period. It is mainly geologists and mountain workers who will be needed, including specialist skills in different activities. At Luleå University of Technology, there is a Masters programme in Natural Resources Engineering and the *Nordic Mining School*, which is a Masters programme and teacher exchange with Oulu University in Finland. This programme needs to attract more students. Sweden should encourage international research cooperation in areas of relevance for the Arctic, such as mineral research, environmental technology and sustainable natural resource use.

The university and research network, the *University of the Arctic*, focuses on postgraduate education, academic distance learning, masters programmes and the training of experts in a network comprising several institutes of higher education in the High North.

Cooperation among small and slightly larger institutions across national borders in the North is an effective way of ensuring good resource use and increasing the quality of education and research, which can help to secure access to relevant skills in the area. Cooperation across national borders in the North also helps to maintain good relations in the High North. Sweden, the Nordic countries, Canada and Russia participate in the exchange programme *north2north*. The programme should be strengthened for the exchange of students and researchers among the eight Arctic states.

Sweden should urge the EU to invest in Arctic research and higher education. This may include an improved Arctic window in Erasmus Mundus, the Bologna Process, an Arctic

research and student exchange programme as well as EU involvement in a strengthened infrastructure.

### 4.3. The human dimension

- Sweden will highlight the human dimension in the Arctic Council as a result of, among other things, its work on the Nordic Sámi Convention.
- Sweden will bring attention to and combat the negative health and social effects of climate change, hazardous substances and the anticipated increase in the use of Arctic natural resources.
- Sweden will strive to ensure that indigenous peoples have greater scope for preserving and developing their identity, culture and traditional industries and facilitate their traditional knowledge gathering and transfer.
- Sweden will promote the preservation of the Sámi language and other Arctic indigenous languages and present Swedish experiences of revitalisation work.
- Sweden will support initiatives to increase the participation of young people and women, especially from indigenous peoples, in political processes regarding the Arctic.
- Sweden will consult with Sámi Parliament representatives prior to important Arctic Council meetings.
- Sweden shall highlight how local Arctic communities, and especially those of indigenous peoples, can cope with changes brought about by the changed Arctic climate.
- Sweden will work to ensure that exchanges of problem-solving tools that concern the negative consequences mainly of climate change and resource use are used in Arctic contexts more actively.
- The Sámi research programme should use Nordic and Arctic cooperation to increase the effect of research initiatives and thereby promote knowledge transfer between research and local Arctic communities and indigenous peoples.

The Arctic's rapid change process creates both opportunities and challenges for its population. Indigenous peoples and other groups with a traditional lifestyle or who earn a living from biological natural resources, such as reindeer herders, hunters, fishermen and craftsmen, are dependent on high biodiversity and intact ecosystems. Climate change means that many traditional customs and livelihoods will be more difficult to maintain. Sweden intends to help strengthen knowledge processes regarding the traditional lifestyle and necessary adaptations to these changes. Active participation in decisions affecting them is required if indigenous peoples are to be able to meet future challenges. Political solutions should be based on a coherent analysis of knowledge gaps and an interdisciplinary approach. Swedish experiences from the Nordic Sámi Convention should, for example, be utilised. Sweden's treaty of accession to the EU recognises the obligations and undertakings of the Arctic states of Norway, Sweden and Finland in relation to the Sámi people under national and international law. The treaty states that Norway, Sweden and Finland are determined to preserve and improve the Sámi people's ability to support themselves, their language, culture and way of life as well as to consider that the Sámi culture and livelihood are dependent on primary sources of income, including reindeer herding in traditional Sámi settlement areas.

#### **4.3.1. Geographical conditions in the Arctic affect health**

The most important health indicators are average life expectancy at birth, maternal mortality and infant mortality. In most of the Arctic countries, those living in the Arctic area have a slightly lower average life expectancy than the population as a whole. Infant mortality is also slightly higher than for the rest of the country in general.

Most of the Arctic is characterised by widely scattered, small population centres. Long distance can lead to physical and social isolation and associated morbidity. But the relatively high degree of urbanisation in the Arctic limits the size of this risk category. The distances from traditional centres of power also provide greater scope for self-determination in everyday life, a form of practical Arctic empowerment. Long summer days and limited daylight during the winter can affect people's circadian rhythm. Long-lasting and severe cold is a risk factor for cardio-vascular disease. In the Nordic region, however, it is stressed that external physical conditions play only a limited role in health

problems. Health determinants are mostly made up of factors relating to the external, social and material environment, to infectious diseases and lifestyles. In addition, genetics naturally play a significant role. Universal measures in the areas of economic policy, employment, the environment and social policy in general are central in order to promote good health development in the Arctic.

#### **4.3.2. Climate change and hazardous substances affect the population**

Climate change leads to reduced salinity in the world's oceans, changed ocean currents and more frequent extreme weather events. This in turn alters the living conditions for humans, animals and the natural environment in the Arctic. The social and mental stress potentially caused by these problems can affect social well-being as well as psychosocial and physical health. Some indirect effects of climate change, such as the increased occurrence of pathogenic microorganisms that have previously found it difficult to establish themselves in an Arctic environment, have been noted, including tick-borne encephalitis (TBE)/meningitis. Other indirect effects include a greater risk of contaminated drinking water caused by changes in the permafrost that affect water sources.

High levels of organic pollutants, such as polychlorinated biphenyls (PCB) and other dioxins and certain heavy metals (mainly mercury), increase the risk of long-term health effects. Significant emissions of pollutants, both into the air and water, occur in a large number of industrial areas in the Russian Arctic, leading to increased morbidity. The food supply chain is also affected by the occurrence of pollutants. Sweden should therefore work to ensure that such point-source emissions are minimised as far as possible. This can be achieved by implementing a number of demonstration projects in the Russian Arctic. Barents cooperation can also play a major role in reducing local emissions and in remediating contaminated areas. Sweden is cooperating with other Arctic states to combat ongoing climate change and meet the ongoing social and health-related challenges. Focus on even stronger environmental cooperation in the Arctic also reduces the risk of emissions of compounds that could pose hazard to man and environment.

### **4.3.3. Impact on indigenous cultures and their industries**

The report “Sweden facing climate change” (SOU 2007:60) ascertains that land-based industries require active climate change adaptation measures and that the Sámi culture should receive particular attention when implementing such measures. The Swedish Commission on “Climate and Vulnerability” (SOU 2007:60) established that reindeer husbandry in Sweden will be seriously affected by climate change. The positive effects include an increase in plant production when there is no snow on the ground, which is positive for the reindeers’ food supply. The negative effects include the anticipated shrinkage of the bare mountain region which will increase grazing pressure if current reindeer stocks are maintained. According to the various climate scenarios, the winters will not only be shorter but also warmer and wetter, increasing the risk of severe snow conditions with ice and frozen ground that the reindeer find very difficult to penetrate. Supplying the reindeer with extra food is costly and is not a viable alternative for reindeer husbandry, which, in terms of design and economics, is very much based on natural grazing.

If we then add socioeconomic development, in terms of intensified forestry activities, expanded infrastructure and more tourism to the equation, the risk of conflicts of interest between reindeer herding and other land use becomes even greater. The Arctic peoples’ ability to preserve their culture, identity and way of life will come under pressure. This is why Sweden is taking a clear stance in favour of socially and culturally sustainable development for Arctic indigenous peoples with technological development to ensure ethically and biologically sustainable resource use. The Sámi culture has been given greater legal protection as a result of Sweden ratifying the UNESCO Convention on the Safeguarding of Intangible Cultural Heritage. This is in line with the idea of long-term sustainable development and protection of Sámi cultural heritage.

Between 2008 and 2010, the Swedish Government has targeted special measures at increasing the participation of Sámi women in political processes and the Sámi Parliament has been working actively on the issue. Within the framework of the gender equality measures, the Sámi Parliament has also begun an exchange of experience with Finland,

Norway and Russia on gender equality, men's violence against women, sexual harassment and abuse.

#### **4.3.4. The survival of Sámi languages**

Many indigenous languages are small and spoken only by a limited number of people. Indigenous languages often have a low status in society, and there are not always education systems in place to give children the chance to learn them. Both teachers and teaching materials can be in short supply. The possibilities for passing on the language and culture to younger generations are exacerbated by the migration of younger people away from traditional settlement areas in order to acquire an education or work elsewhere.

Sweden has recently taken a number of measures to give Sámi populations a better chance of survival (Government Bill 2008/09:158 "*From recognition to empowerment*"). Norway and Finland are also implementing measures to help the Sámi preserve their language. The Nordic countries are also obliged under international law to take measures to strengthen the Sámi language in accordance with Council of Europe conventions for the protection of minorities.<sup>15</sup> The Government's strategy aims to rectify this and other problems in cooperation with the Sámi Parliament.

#### **4.3.5. Knowledge transfer**

The culture of indigenous peoples is based on a life in which humans and nature have a reciprocal and close relationship with each other. Historically, it is based on self-sufficiency, unwritten tradition, knowledge of the surrounding natural and meteorological conditions. For most indigenous peoples, sustainable development is based on a balance between traditional and modern knowledge. Much of the traditional knowledge has been either entirely or partly forgotten. However, as a result of the Convention on Biodiversity and other agreements, the interest in traditional knowledge and its significance for sustainable development has increased. Many indigenous

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<sup>15</sup> The Framework Convention for the Protection of National Minorities and the Charter for Regional and Minority Languages.

communities want to highlight this significance in combination with new technologies and innovations. In cooperation with the Swedish Biodiversity Centre, the Sámi Parliament has brought traditional Sámi knowledge to the fore. Traditional Sámi knowledge and natural resource use have been documented as part of this Sámi initiative.

Sweden intends to contribute to in-depth analyses of existing knowledge gaps that need to be filled in order to meet future challenges. This supply of knowledge should help to solve *applied* issues to a greater extent than currently is the case and give indigenous peoples access to agency and information functions that can gather, translate and disseminate knowledge from the research world. Knowledge transfer between, for example, researchers and indigenous peoples must be improved and structured so that knowledge is available to the Sámi and other populations in the Arctic. To increase the impact of research findings in the Sámi community, funding for information initiatives is transferred every year to the Sámi Parliament from the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas). The Nordic cooperation “The Nordic Council for Reindeer Husbandry Research”, which is under the auspices of the Nordic Council of Ministers, is a good starting-point for continuing to develop cooperation even in an Arctic perspective. The Swedish Government looks positively upon increased exchange and greater cooperation among Sámi institutions in the countries affected within the Arctic Council, as well as among Swedish mountain and Sámi museums.

#### **4.3.6. Research programme on Sámi society**

At the end of 2010, the Government decided to start a new comprehensive research programme on Sámi society. The geographical distribution, knowledge gaps and status as an indigenous people have created a need for an interdisciplinary Sámi research programme. The programme aims to improve coordination of those who perform and finance Sámi-related research. The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Formas), the Swedish Research Council and the Swedish Council for Working Life and Social Research (FAS) are together responsible for designing the programme.



## APPENDICES

### 1. Key facts on the Arctic Council

The Arctic Council was established in Ottawa in 1996 on the basis of a system of cooperation between Arctic environment ministers – the Rovaniemi Process – that started in 1991. The Council is an intergovernmental forum devoted to shared regional challenges facing the States and people concerned. Its main activities concern the protection of the Arctic environment and sustainable development as a means of improving the economic, social and cultural well-being of the inhabitants of the Arctic.

The Arctic Council consists of the eight Arctic States: Canada, Denmark (including Greenland and the Faroe Islands), Finland, Iceland, Norway, Russia, Sweden and the United States. Six international organisations representing indigenous Arctic peoples have permanent participant status:

*Aleut International Association* (the islands in the Bering Sea between the United States and Russia)

*Arctic Athabaskan Council* (Canada and the United States)

*Gwich'in Council International* (Canada and the United States)

*Inuit Circumpolar Conference* (Greenland, Canada, the United States and Russia)

*Saami Council* (Norway, Sweden, Finland and Russia)

*Russian Association of Indigenous Peoples of the North* (representing around fifty indigenous peoples in Russia).

The Chairmanship rotates between the eight Arctic States every two years. In between the ministerial meetings, which conclude each Chairmanship, the work of the Council is led by a committee of officials consisting of representatives of the eight Arctic States and the six indigenous peoples' organisations (*Senior Arctic Officials* and *Permanent Participants*). The Council's activities are conducted in six working groups composed of representatives at expert level from sectoral ministries, government agencies and researchers. The working groups are: AMAP (*Arctic Monitoring and Assessment Programme*), CAFF (*Conservation of Arctic Flora and Fauna*), PAME (*Protection of Arctic Marine Environment*), EPPR (*Emergency Prevention, Protection and Response*), SDWG

(*Sustainable Development Working Group*) and ACAP (*Arctic Council Action Plan*). All working groups report to the SAO meeting and traditionally also to the foreign ministers meeting for approval of their mandates for the next two-year period. There are also 26 Observers (six states, nine inter-governmental and inter-parliamentary organisations, and eleven non-governmental organisations). There is a temporary secretariat in Tromsø, Norway. A more permanent secretariat will be established in 2013.

## **2. Key facts on the Barents Euro-Arctic Council**

Barents cooperation is being implemented on the national level in the *Barents Euro-Arctic Council, BEAC* and on the regional level in the *Barents Regional Council, BRC*. The BEAC and BRC have a small joint international secretariat in Kirkenes in Norway.

The members of the BEAC are Denmark, Finland, Iceland, Norway, Russia, Sweden and the European Commission. Its chairmanship rotates every other year between Finland, Norway, Russia and Sweden, and each country's foreign affairs minister acts as chairperson. France, Italy, Japan, Canada, the Netherlands, Poland, the United Kingdom, Germany and the US all have observer status.

The members of the BRC are 13 counties across northern Finland, Norway and Sweden and in north-west Russia. They are represented by their respective county governors. Chairmanship rotates among these 13 counties every other year in the same way as the chairmanship of the BEAC. The Swedish members of the BRC are the counties of Norrbotten and Västerbotten.

The practical work is divided among 16 working groups on the national, regional and mixed national/regional level in areas such as economic cooperation, environment, energy, transport and communications, health and social issues, youth work, culture, research and education, rescue service cooperation and tourism.

The three indigenous peoples (the Sámi, Nenets and Vepsians) living in the area are represented in their own working group that reports to and advises both the BEAC and the BRC.

### **3. Key facts on the Northern Dimension**

The Northern Dimension (ND) is a joint policy between the EU, Iceland, Norway and Russia. A meeting of foreign affairs ministers takes place every other year and there is a meeting of deputy foreign affairs ministers in the years in-between. A steering group meets as a rule three times a year. Concrete cooperation takes place in four partnerships, each of which has its own decision-making body. The geographical focus is on north-west Russia. Priority areas are the Baltic Sea, Kaliningrad Oblast and the Arctic, including the Barents region.

The Northern Dimension Environmental Partnership (NDEP) was formed following a Swedish initiative during the Swedish EU Presidency in the spring of 2001. This cooperation between Russia, a number of bilateral donors, the European Commission and international financial institutions funds investments in water purification, district heating and waste management in north-west Russia. Twenty such initiatives have received financial support in the form of donations totalling EUR 117 million from the NDEP's support fund. Projects are mainly funded by loans. The total project value amounts to EUR 3.3 billion. Sweden has contributed EUR 26 million to the NDEP over a ten-year period and Russia's contribution amounts to EUR 40 million over the same period.

The Northern Dimension Partnership in Public Health and Social Well-being (NDPHS) was established in December 2003 and has a two-person secretariat co-located at the CBSS secretariat in Stockholm. Eleven countries participate, including Canada, and nine organisations, including the European Commission and the WHO. Cooperation is pursued in four expert groups on 1) primary health, prison health systems, 2) HIV/AIDS and associated infections, 3) alcohol and substance abuse and 4) non-communicable

diseases related to lifestyles and social and work environments. The partnership is the coordinator for health in the EU Strategy on the Baltic Sea Region. Projects to combat HIV/AIDS in the Arctic, mainly in Murmansk, have been ongoing for many years. Cooperation also takes place in several places in north-west Russia to stem the increasing spread of tuberculosis.

The Northern Dimension Partnership on Transport and Logistics (NDPTL) comprises eleven countries, who in June 2010 entered into a binding agreement with the Nordic Investment Bank in Helsinki on the establishment of a small secretariat at the bank. The European Commission also takes a very active part in the NDPTL. The partnership is very much in its infancy but a number of studies have got under way. These include a forecast of anticipated traffic flows up to 2030 and a summary of the countries' national priorities for transport infrastructure, especially regarding cross-border transport and logistics solutions. The aim is for this partnership to become a forum for cooperation that makes it easier for the participating countries to decide jointly on which projects and other measures they wish to invest in in order to increase the transport capacity in a cost-effective manner on both sides of their common national borders. The partnership can also be a forum for assessing desirable transport solutions in the Arctic, including shipping solutions.

The Northern Dimension Partnership on Culture (NDPC) was established by eleven countries and the European Commission as the result of a memorandum of understanding in May 2010. The partnership is supported by the Nordic Council of Ministers and by a one-person secretariat in Copenhagen. The objectives of the partnership are to 1) function as a *focal point* for networks, projects and other cultural activities in the ND area, 2) set up priority projects focusing on cooperation between the culture sector and cultural and creative entrepreneurs and operators and 3) develop an advisory capacity for project funding issues.