1. Introduction
The Chairmanship of the BEAC Working Group on Environment (WGE) was transferred from Russia to Norway at the 12th Meeting of the Ministers of Environment in Sortavala, in November 2015. In Sortavala, the ministers adopted a declaration that gave a renewed mandate for WGE for 2016-2017 and directions for further work. During the Norwegian chairmanship, the Subgroups on Hot Spots Exclusion, Nature Protection and Water Issues have continued their work. Climate change issues have been handled directly by the WGE.

The WGE was chaired first by Ms Helén Andersen, then Ms Ingrid Lillehagen, both from the Ministry of Climate and Environment. The Climate and Hots Spots adviser at the International Barents Secretariat, Maria Dianova, has assisted the WGE in climate and hot spots issues, and in facilitating the WGE-meetings.

The WGE had four meetings; in Svanhovd in March 2016, in St. Petersburg in September 2016, in Tromsø in February/March 2017 and in Kjerringøy in September 2017. The WGE meetings were held back-to-back with meetings in the WGE Subgroups, with a total of up to 40 participants. In addition, the Subgroups and projects under the WGE have organized their own separate meetings.

Information on the WGE activities has been posted on the Barents Euro-Arctic Cooperation’s webpages (www.barentscooperation.org) and social media by the International Barents Secretariat.

2. Climate change
Climate change has been an overarching priority for the WGE during the period. During the period, the Action Plan on Climate Change for the Barents Cooperation has been updated, under the lead of the International Barents Secretariat. The first Action Plan was adopted at the BEAC Environmental Minister's Meeting in Inari, 2013, and contained climate related projects from most relevant BEAC Working Groups up to 2015. The updated Action Plan contains projects up to 2020 from the Working Group on Environment, Working Group on Indigenous Peoples, Joint Working Group on Education and Research, Joint Committee on Rescue Cooperation in the Barents Region, Barents Regional Youth Council, Barents Forest Sector Network and Regional Working Group on Transport and Logistics.

The updated Action plan was endorsed at the BEAC 16th Session, 19 October 2017, in Arkhangelsk, and is proposed to be adopted by the Barents Ministers of Environment 29-30 November in Vadsø.

WGE would like to thank the working groups that have contributed to the renewed Action Plan. The WGE further stresses that climate change will affect most sectors represented in
the Barents cooperation, and urges other working groups to engage in concrete climate action.

In order to envision possible implications for the Barents Region of the Paris Agreement, the WGE has commissioned a study called "Barents 2050 – Opportunities for contributing to climate change mitigation". The goal of the study is to assess how low emission pathways, consistent with the Paris Agreement, could affect economic activities in the Barents region. Furthermore, the study aims at assessing how the region could contribute to the achievement of the Paris goals and build resilience – both to the effects of climate change and to the effects of mitigation actions. In addition, the study highlights the potential for a sustainable economic development, arising from mitigation action. The VTT Technical Research Centre of Finland has conducted the study, which will be presented to the Ministers of Environment in Vadsø 29-30 November.

*Development of Regional and Energy Strategies*, led by Norrbotten, Sweden. Since 2015, there has been active collaboration between Norrbotten, Arctic Centre in Rovaniemi and the Archangelsk region. The project is aiming at developing region specific climate and energy strategies that can support and enhance the speed of the transition to a low-carbon society. So far, the focus has been on exchanges of experiences both at WGE meetings, through a conference in Archangelsk in March and through a study visit in Norrbotten in May 2017. The collaboration has also received support from the Nordic-Russian Programme for Environment and Climate Co-operation (PECC) in North-West Russia. This project will be conducted through collaboration between Archangelsk, Troms, Norrbotten and Västerbotten. An application for a three-year project to the first Kolarctic CBC call of 2018 is being prepared.

3. Subgroup on Hot Spots Exclusion (SHE)
The Subgroup on Hot Spots Exclusion was chaired by Ms Hanne Aronsen (Norway) and Ms Maria Dronova (Russia). SHE held 16 meetings in 2016-2017, both physical (6) meetings and Skype-meetings (10). The subgroup works closely with the Nordic Environment Finance Cooperation (NEFCO) and the International Barents Secretariat. NEFCO’s Barents Hot Spots Facility is a useful tool for financing activities in the subgroup and to facilitate the implementation of concrete measures in the Barents environmental "hot spots".

The Barents Hots Spots List from 2003 describes 42 prioritized environmental problems in the Russian part of the Barents region. Solving these hot spots contributes to better health and environment locally, and to reduced emissions of climate gases and environmental pollutants into the Arctic. Up to now, seven hot spots have been excluded from the list, due to environmental improvements.

During the Norwegian chairmanship, the work has been targeted towards further exclusions of hot spots from the Barents Hot Spots list from 2003. During the period, SHE received four new exclusion proposals. The following three hot spots were forwarded to the WGE with recommendations, and the WGE decided to exclude these hot spots from the list:

- **Arkhangelsk Pulp and Paper Mill (Arkhangelsk A4)**
- Vorkuta Cement Plant (Komi Ko2-1)
- Wood waste in the Komi Republic (Komi Ko7)

The fourth proposal, *Methane emissions from coalmines in Vorkuta* (Komi Ko1) was not ready in time for the 2017 Ministerial meeting, and the issue will be forwarded to the next chairmanship.

For many of the remaining hot spots on the list, more precise definitions are needed in order to determine if they can be excluded from the list. In close cooperation with the regional environmental authorities, SHE has developed *Specific Exclusion Criteria* for the Hot Spot Wood waste in the Komi Republic (Komi Ko7). These will serve as a pilot for development of specific exclusion criteria for the remaining hot spots on the list. The Specific Exclusion Criteria will be followed by Action Plans with concrete measures that will enable the hot spots to be excluded from the list.

*Meetings between SHE and the Regional Hot Spots Exclusion Groups in Murmansk and Komi were conducted in March and October 2017, and facilitated capacity building both for the regional Hot Spots Exclusion Groups as well as for SHE. The meetings included information from SHE on the hot spot procedure and exclusion criteria, and information about the environmental progress in the hot spots from the hot spots owners. SHE has received documentation about the environmental improvements from the regional Hot Spots Exclusion Groups and hot spots owners if the Komi Republic, and is awaiting submission of proposals for exclusions of some of the hot spots in Murmansk.*

SHE has during the period focused on the development of *support activities for the exclusion of hot spots*. The activities are aimed at capacity building for hot spots owners and regional environmental authorities on the new Russian legislation on best available techniques (BAT) that will enter into force from 2019. SHE has met with the Russian BAT Bureau in Moscow, which is responsible for developing BAT Reference Documents and for education and awareness raising, and it was agreed to cooperate on capacity building in hot spots, for instance on integrated environmental permits.

Concrete support activities during the reporting period:

- SHE participated in a seminar in Arkhangelsk on the introduction of integrated environmental permitting based on BAT in the Pulp and Paper Mill industry in Russia in September 2016, organized by the BAT Bureau and Arkhangelsk Pulp and Paper Mill.
- Consultant support on coordinating the development of Hot Spot Specific Exclusion Criteria for three pilot Hot Spots; Wood waste in the Komi republic (Komi Ko7) has been finished, while development of specific exclusion criteria for Severodvinsk Heat and Power Plant (Arkhangelsk A3-1) and Waste in Komi (Komi Ko-6) are ongoing.
- Consultant report on conducting an expert review of the hot spot Methane emissions from coal mines in Vorkuta in the Komi Republic (Komi Ko-1), ongoing.
- Two bilateral conferences on waste management (FI-RU and NO-RU, respectively) in 2017
• Norwegian-supported project on cleaner production in the hot spot Wood waste in the Komi Republic (Komi Ko7). See further information under section 4 Cleaner Production and Environmentally Sound Consumption (2013-2017).

**Climate change** – Solving the environmental problems in the hot spots, will often have a positive climate mitigation effect, as many of the hot spots contribute to the emissions of greenhouse gases and short-lived climate pollutants. SHE has prepared guidelines on how to include information about climate change mitigation contribution in the review of each hot spot applying for exclusion. The contribution to climate change mitigation has been estimated for the Hot Spot Ko7 for the use of wood waste as bioenergy in the Komi Republic. Based on the year 2016 as an example, the reductions in greenhouse gas emissions by avoiding landfilling the wood waste (65 630 CO$_2$ equivalents) and substituting coal and heavy oil with bioenergy as an energy source (82 872 CO$_2$ equivalents), the emission reductions in 2016 was estimated to 148 502 CO$_2$ equivalents. Noting that the decomposition of organic material in the landfills takes very long time, the emission reductions through avoiding landfilling will also continue for a long time into the future. The CO$_2$ emission reductions through substituting coal and heavy oil with bioenergy is expected to increase in 2017, since additional 18 new boiler conversion projects are expected to be realized during 2017. For the other two Hot Spots excluded from the List (Ko2-1 and A4), greenhouse gas emissions are not considered relevant.

4. Cleaner Production and Environmentally Sound Consumption.
The Subgroup on Cleaner Production and Environmentally sound Consumption (CPESC), was in the period 2016-2017 put on hold, due to reduced capacity for working with these issues in the participating countries. Support activities for the exclusion of hot spots, which were originally a part of the CPESC-agenda, have however been covered by The Subgroup on Hot Spots Exclusion. (See section 3).

A priority in the Norwegian chairmanship has been to continue to support cleaner production as part of the project Exclusion of Hot Spot Ko7. The project is carried out by the Republic of Komi, the Norwegian consultant Norsk Energi and the Russian Centre for Cleaner Production in Moscow. The aim of the project is to contribute to the exclusion of Hot Spot Ko7 ”Wood waste in the Komi Republic” from the Barents Hots spots list, by converting wood waste from the timber industry to bioenergy. Training in cleaner production techniques and counselling are support activities to the Republic of Komi's own programme for the development of bioenergy. The results so far are very good; the amount of wood waste being put on landfills has been reduced significantly, and the wood waste converted to bioenergy has replaced coal and heavy oil as heating sources. The project has contributed substantially to solving the environmental problem that was the reason for listing wood waste in the Komi republic as a "hot spot". The project should be used as model project for other regions with similar environmental problems caused by the timber industry.

5. Nature Protection Subgroup and Subgroup on Water Issues
During the Norwegian chairmanship, the Nature Protection Subgroup (NPS) and Subgroup on Water Issues (SWI) have met jointly under the heading Nature and Waters. Ms Bente Christiansen has chaired both subgroups, with Ms Tiia Kalske as secretary. NPS and SWI held five meetings in 2016-2017.
The main goals of the two subgroups are to strengthen the regional cooperation on mitigation and adaptation to climate change and to protect the ecosystems of the Barents region and the services they provide. Exchange of information and enlightening the inhabitants in the Barents region about the natural resources of the regions and the increasing pressure on them, is another high priority.

Examples of projects that were carried out in the period 2016-2017, are:

*The 9th Habitat Contact Forum (HCF)* was arranged 6-9 June in Oulu, Finland. The main themes of the 9th HCF - climate change and biodiversity, forest protection, ecosystem services, wetlands and connectivity - were presented and discussed during the meeting.

*The Barents Protected Area Network (BPAN)* continued with its second phase, focusing on marine and coastal cooperation and forest protection. BPAN II has produced updated facts and figures about the progress towards fulfilling the Aichi Biodiversity Targets of the UN Convention on Biodiversity, and will be presented to the ministerial meeting in Vadsø 29-30 November. More information: [www.bpan.fi](http://www.bpan.fi).

*Cooperation on developing the Green Belt of Fennoscandia* is based on a Memorandum of Understanding, signed in 2010 between Finland, Russia and Norway, and a Strategy for the Development of the Green Belt of Fennoscandia until 2020 was later developed. Within this framework, several events were organized as a part of the implementation of the strategy, for instance the 9th Pan European Greenbelt meeting in Koli, Finland autumn 2016. The trilateral working group had one meeting in September 2016 in St. Petersburg.

*A seminar on local and traditional ecological knowledge and cross-border cooperation* was arranged, in May 2017 in Bugøynes Norway. With regards to the Convention of Biological Diversity (CBD), traditional knowledge is to be respected and considered in natural resource management. At the seminar, this theme was highlighted through a case study on the Tana river wild salmon fishing culture and followed up with discussions on the importance of creating fora where the local and traditional knowledge and conventional science can meet and where dialogue is created.

*Co-operation on transboundary waters* in Tana, Torneå and in Pasvik rivers proceeded with good results, to the benefit of the nature and the people living in the catchment areas.

*The Nordic Council of Ministers (NCM) project Monitoring mercury (Hg) in the border areas of Norway, Russia and Finland 2015-2017* was carried out. When harmonising sampling, analysing and reporting methods, the common results confirm that mercury levels also are rising in the northern cross-border areas.

*Development of project applications to cross-border cooperation financial instruments within the EU, Nordic Council of Ministers and North Calotte Programmes.* Developing applications for these financial instruments is resource demanding, but once approved for funding, these

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instruments provide valuable and joint financial contribution to the activities in the subgroups for nature and waters. Project applications that have been prepared and accepted for funding in this period is:

- "Tana River Interreg North – Joint environmental management of the River Tana" - cooperation on water and biodiversity management,
- “SEAmBOTH Interreg North" - seamless mapping and management of the northern Bothnian Bay/ marine underwater mapping and management harmonisation project.
- “Cross-border dialogue and Multiuse planning in the Pasvik and Grense Jakobselv river catchments" - results will be a revised multiuse plan for the river catchments with joint recommendations and a program of measures (Action plan).
- SALMUS - Salmonid Fish and Freshwater Pearl Mussel – Ecosystem Services and Biodiversity in the Green Belt of Fennoscandia" - The project will work with issues linked to salmonid fish and freshwater pearl mussel and their role in providing ecosystem services and biodiversity in Green Belt of Fennoscandia area and Sweden.
- “ReArc -Ecological Restorations of Arctic Rivers" - improved environmental monitoring capacity, awareness raising, mappings and preparation for restoration actions, restoration actions, fish migration barriers to be remediated and erosion protection.

A priority of the Norwegian chairmanship has been to strive for the implementation of the Strategy for protection of intact forests in the Barents region, which was asked for by the Ministers in their meeting in Inari, Finland in 2013. The strategy was presented to the Ministerial meeting in Sortavala in 2015, but not adopted by the ministers. The Ministers, however, acknowledged the Strategy as an important contribution to preserve the Region’s last pristine forests, and to meet the Aichi biodiversity targets of the Convention of Biological Diversity (CBD). The strategy has been under consideration by the Russian Forestry Agency, which in September 2017 forwarded a series of questions and comments to the strategy. Based on this input, the WGE has decided that it will be necessary to rewrite the strategy or to write a new strategy. Further work with the Forest strategy will be followed up by the forthcoming Swedish chairmanship of the WGE in close cooperation with the relevant Russian authorities. In the 2016-2017 period, the BPAN Phase II project compiled new information valuable for the issue of forest conservation.

6. Cooperation with other working groups and regional organizations
The WGE puts emphasis on good cooperation with other relevant fora in the Barents Cooperation and with other regional organizations in the north.

Cooperation between the WGE and the Regional Working Group on Environment (RWGE) was promoted by inviting the Regional Working Group on Environment to all WGE meetings. In practice, RWGE members met as a part of the meetings in the Subgroups on Nature and Water and in the WGE-meetings. A possible merging of WGE and RWGE was discussed at some of the WGE meetings, but no conclusion was reached so far. A possible merging of the two groups will need a more thorough assessment. Indigenous Peoples' representatives take an active part in the WGE meetings and provides input to the work.
The WGE seeks close cooperation with other working groups in the Barents cooperation as well as other regional organizations in the north. There has been coordination with the Arctic Council by inviting representatives from the Arctic Council's Secretariat to the WGE meeting in Tromsø, March 2017. At the WGE meeting in September 2017, the Chair of the Arctic Monitoring and Assessment Programme (AMAP), presented the *Adaptation Actions for a Changing Arctic* with a special focus on the Barents Area.

In June 2016, the WGE Chair presented the WGE's work in Brussels at the event "Talking Barents", organized by the Norwegian Barents Secretariat, the Russian chairmanship of the Barents Euro-Arctic Region, North Norway European Office and the Mission of Norway to the EU.

WGE participated in two conferences on forestry and climate change, organised by the Barents Forest Sector Network – The Barents Forest Sector Network Meeting/Innovation and Technology in Forestry in June 2016 in St. Petersburg and the Barents Forest Forum, in September 2017 in Arkhangelsk.

The WGE chair participated in an Information event, organized by the International Barents Secretariat on behalf of the Russian chairmanship in BEAC and the Kainuu chairmanship of the Barents Regional Council in Moscow, April 2017. The event gathered representatives from most working groups in the Barents cooperation and the WGE chair informed about the work of the WGE.

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