SWEDISH ENVIRONMENTAL PROTECTION AGENCY

Mondi Pulp and Paper Mill (Ko3-2). Photo: Eugene Averochkin.

ENVIRONMENTAL IMPROVEMENTS AT THE **Barents Hot Spots**

The Barents Working Group on Environment (WGE) is responsible for addressing environmental issues in the Barents cooperation. One of the key areas of cooperation revolves around the work on severely polluted sites, so-called hot spots, that impose health and environmental hazards on their surrounding communities and nature. The Barents Environmental Hot Spot List from 2003 consisted of 42 hot spots and many of these have achieved significant environmental improvements, while others remain to be solved. During the Swedish Chairmanship 2017-2020, four more were excluded from the list and some of their results and environmental improvements are presented here. To date, eleven full hot spots and five partial ones have been excluded from the list. In addition, the design and implementation of supporting activities have strengthened the progress made on the environmental hot spots.

Connecting the hot spot work with the new Russian legislation

A priority in the work of the past years has been to align the work on Barents Environmental Hot Spots with the implementation of the Russian legislation on permit granting based on Best Available Techniques (BAT). The legislation is aimed at introducing a new system of state regulation on environmentally hazardous industries. The legislation requires industries to achieved specified conditions and to develop and implement action plans.

Hot spots can be excluded from the list in two ways. *The full-track exclusion procedure* is a step-by-step method of exclusion with designed and agreed criteria, development and implementation of an action plan and subsequent evaluation. This is done in close cooperation between the site owners, regional coordinators and the WGE Subgroup on Hot spot Exclusion (SHE), which is responsible for the hot spot list. This procedure has strong synergies with the Russian permit granting process.

The fast-track exclusion procedure is used when it can be concluded that the performance of the enterprise complies with current environmental requirements and does not cause transboundary pollution. It is a purely administrative method and does not involve jointly agreed environmental actions, nor does it include the knowledge exchange and access to potential funding as is the case with the full-track procedure.

The wastewater treatment plant in Petrozavodsk (K5). Photo: Rickard Nätjehall.

Enterprises of pulp and paper as sources of dioxin pollution (A9-1). Photo: Ivan Popov.

Sites excluded from the Barents hot spots list by full-track procedure

Significant reductions of hazardous emissions to water from the Mondi Pulp and Paper Mill

The Mondi Pulp and Paper Mill (Ko3) in the Komi Republic was originally added to the hot spot list due to its heavy pollution to air and water. Subsequently, the hot spot was divided into an air component (Ko3-1), which was excluded from the hot spot list in 2015, and a water component (Ko3-2). The Ko3-2 hot spot was subject to a 'double pilot' exercise wherein the facility went through both the Barents full-track exclusion procedure as well as the new Russian BAT-based permit granting process.

Over the last few years, the facility was fundamentally modernized through significant investments, both in terms of technological processes and environmental impact. In the last 14 years, the company spent approximately USD $80 million on modernizing the existing water treatment plant.

As a result, despite increasing production by 83%, the facility has reduced the consumption of river water by 34%, cut the volume of industrial effluent water by 28%, and decreased the mass of discharged pollutants by 21%. Moreover, the mill now fulfills the requirements of the Russian BAT-legislation. For these reasons, the Ko3-2 site was excluded from the Barents Hot Spot list in 2020.

Reduced discharge of pollutants from the wastewater treatment plant in Petrozavodsk

Poorly treated effluents from the aging wastewater treatment facility in Petrozavodsk were discharged into the lake Onega in the Karelia Republic, leading the high nutrient level to cause over-fertilization in this major source of potable water. The lake is also part of the Baltic Sea Basin, leading the hot spot to be of importance to the Baltic Marine Environment Protection Commission – Helsinki Commission (HELCOM) as well.

For these reasons, the city's wastewater treatment facility, today operated by AO PKS Vodokanal[1], was designated as a Barents Environmental hot spot. This hot spot also underwent the 'double-pilot' exercise by fulfilling both the Barents full-track exclusion procedure and the new Russian BAT- permit granting process.

Substantial environmental improvements have been made between 2012 and 2019 through joint Nordic and local investments. As a result, the emissions of phosphates have been reduced by 85% and of nitrite ions by over 96%. In addition, the wastewater treatment facility now fulfills the established discharge limits set by the Russian environmental regulatory agencies. For these reasons, the K5 site was excluded from the Barents Hot Spot list in 2020.

Sites excluded from the Barents hot spot list by fast-track procedure

Effective new measures cut emissions while increasing capacity at a pulp and paper enterprise in Arkhangelsk

The pulp and paper mill of the Koryazhma branch of the Ilim Group JSC (A5) in the Arkhangelsk region has been one of the region's major air polluters. Moreover, the mill's wastewater load was responsible for almost 50% of the total discharge in the Arkhangelsk area and large amounts of organic and suspended matter (i.e. slowly degradable substances) strongly affected the aquatic ecosystem. That is why the pulp and paper mill was included on the hot spot list.

Through targeted modernization measures e.g. the installation of a new evaporation station and ceasing the production of rayon pulp, the facility has managed to significantly reduce its pollution level despite increasing its production of pulp by 36%. Furthermore, the total discharge of substances in wastewater 2017 was 85% lower than in 2003 and 17% lower for the total emission to ambient air. With these results, the 'Koryazhma branch of Ilim Group JSC' (A5) was excluded by fast-track from the Barents hot spot list in 2019.

1 The full name of the enterprise is Aktsionernoye obshchestvo Petrozavodskiye Kommunal'nyye Sistemy – Vodokanal.

Koryazhma branch of Ilim Group JSC (Old name of the Hot Spot: Kotlas Pulp and Paper Mill, A5).
Taken from: https://arh.aif.ru/money/v_regione_zavershilsya_proekt_bolshaya_koryazhma.

New bleaching method and other technical upgrades leading to reduced emissions of dioxins in Arkhangelsk

In the Arkhangelsk region, pollution and deposits of dioxins were identified as a severe problem in the surroundings of the many active and decommissioned pulp and paper and timber industries. Originally, there was one large hot spot (A9) but it was split in 2018 between pulp and paper industries (A9-1) and timber industries (A9-2). The revised hot spot A9-1 is made up of the companies Arkhangelsk Pulp and Paper Mill (APPM) and JSC Ilim Group's Branch in Koryazhma (JSCIGBK).

The two plants have implemented a series of effective measures leading to significant reductions of harmful pollutants. For instance, the Ilim Group plant has reduced its specific emissions of AOX[2] by 97%, which is directly linked to a reduction of chlorinated dioxins. Similarly, the APPM plant has achieved a 76% reduction of AOX in wastewater between 1999-2018. Consequently, the current emissions levels of the two facilities are well in line with Russian BAT and either well or close to in line with EU BAT requirements.

Moreover, the mills are no longer considered to be significant sources of dioxin pollution in their surroundings. For this and the abovementioned reasons, A9-1 was excluded by fast-track from the Barents hot spot list in 2019.

Bolstering hot spot exclusion through Supporting Activities

In recent years, SHE has focused extensively on designing and implementing a set of so-called *supporting activities*. The aim is to use the collective expertise and experience of the Nordic countries and Russia to support the hot spots to take further steps towards exclusion, strengthen environmental action and support the implementation of the Russian legislation on BAT. Since there are strong synergies between the exclusion procedure and the permit granting process, the ambition is to use the BAT-reform as a lever to promote environmental action and technical modernization on the Barents hot spots as well as beyond to impact environmentally hazardous enterprises across the Russian Federation. An overview of the supporting activities is displayed below.

SUPPORTING ACTIVITY	DESCRIPTION
SA No1a	BAT Training for Managers
SA No1b	BAT Training for Experts
SA No2	Branch Specific Seminars
SA No3	Branch Specific Study Tours
SA No4	Drafting of Environmental Efficiency Plans
SA No5	Training in BAT-based Permit Granting leading towards Agreed Criteria at selected Pilot Plants
SA No6	Refinement of Screening & Analysis (S&A) Reports and Determination of Specific Exclusion Criteria
SA No7	Action Planning
SA No8	Implementation of Action Plans
SA No9	Voluntary Climate Inventories
SA No10	Support to Outreach Activities (communication)

Overview of the supporting activities.

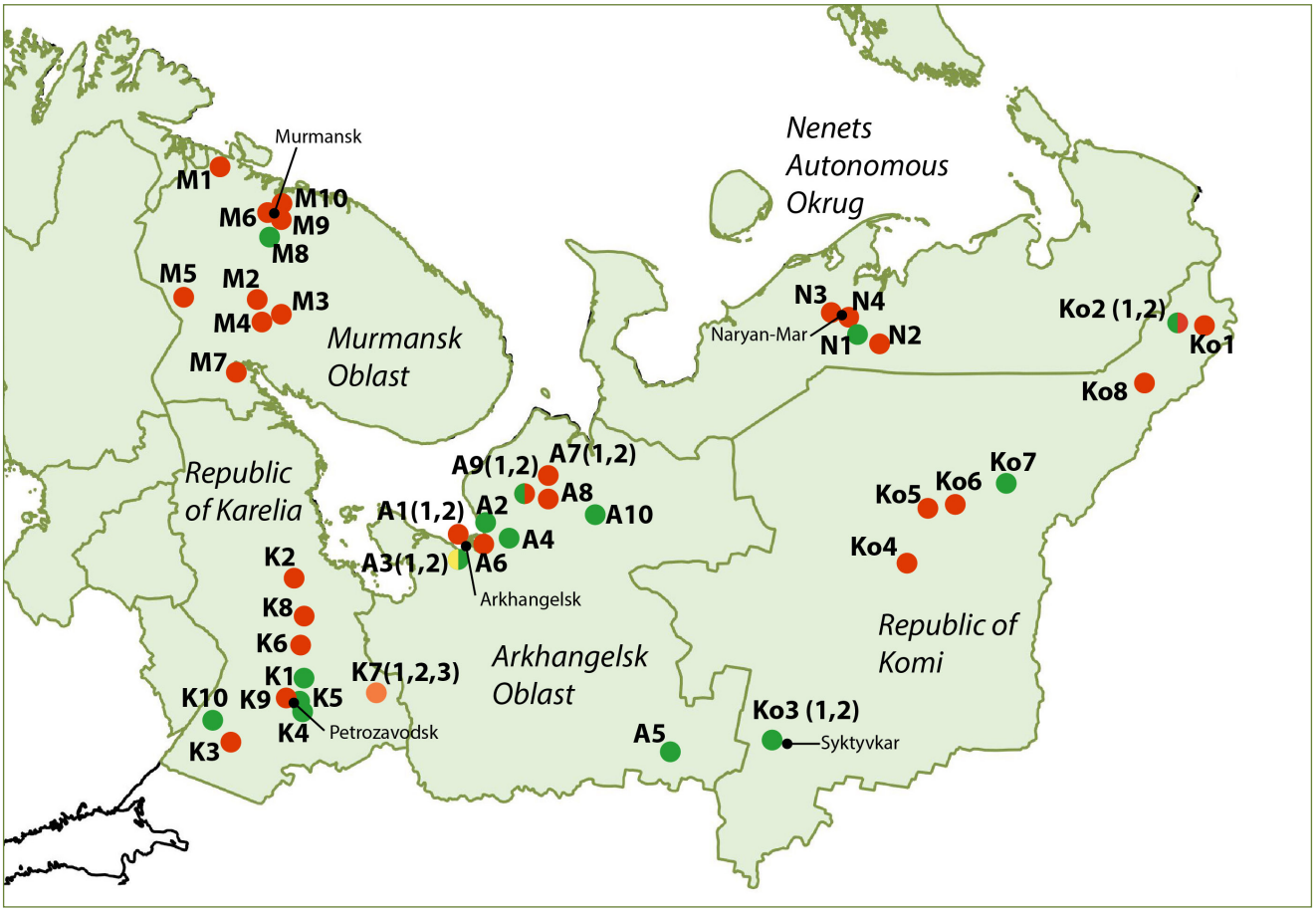
Implemented activities during the Swedish Chairmanship

To date, seminars in BAT-implementation has been held in all five Russian Barents regions (see the map below) with hundreds of participants from local and regional authorities, academia and different industries.

In October 2019, branch-specific seminars and site visits were organized for the pulp and paper industry and the wastewater sector in Syktyvkar and Petrozavodsk. Building on the results of these activities, tailored exercises were held for the hot spots Ko3-2 and K5 in the drafting of action plans and pilot-training in BAT permit granting, thereby paving the way for the full-track exclusion.

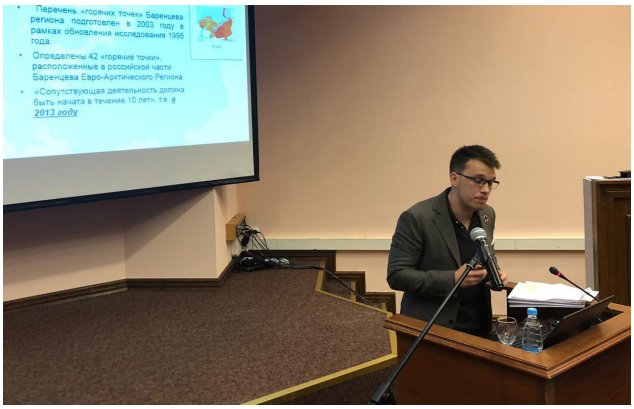
In addition, several hot spot owners have received support with site analysis reports and the determination of specific criteria needed for hot spot exclusion.

2 AOX stands for Hazardous halogenated organic compounds, which is toxic and dangerous for human health, biodiversity and the environment.



Barents Environmental Hot Spots. Green indicates that the Hot Spot is excluded from the Hot Spot list.
Map taken from https://www.barentscooperation.org/en/Working-Groups/BEAC-Working-Groups/Environment/SHE.

The supporting activities are developed and implemented with funding from the Barents Hot Spots Facility, a funding instrument managed by the Nordic Environment Finance Corporation (NEFCO) to promote hot spot exclusion. The work is also being done in close cooperation with the Russian Federal State Autonomous Research Institute 'Environmental Industrial Policy Centre' (EIPC).



Presentation by Rickard Nätjehall in Archangelsk, 22–26 October 2019. Photo: Richard Almgren.

THE BARENTS COOPERATION
The Barents Euro-Arctic Council (BEAC) is a forum for intergovernmental co-operation in the Barents region. It gathers the Barents countries and regional authorities to promote stability and sustainable development in the Region. The Working Group on Environment (WGE) is one of the working groups under BEAC. For more information, go to www.barentscooperation.org.

NEFCO
The Nordic Environmental Finance Corporation (NEFCO) is an International Financial Institution specialized on financing environmental projects. NEFCO is a possible partner in Financial Solutions for Environmental Action Projects in the Barents Region. See more information at www.nefco.org.