

STATUS REPORT (rev 2015-08-18)
Short-Lived Climate Forcers and Contaminants Expert Group

For ACAP WG meeting September, 2015, Norway

(1) Work accomplished since last ACAP WG in January 2015.

Projects Being Implemented

Project 1: Reduction of Black Carbon from Diesel Sources in the Russian Arctic

The project lead is the United States (US). The US Department of State has prioritized reducing black carbon in the Russian Arctic, and has sought the US Environmental Protection Agency's (US EPA) expertise in reducing diesel emissions to address this challenge. \$5 million USD has been committed by the US towards the reduction of black carbon emissions in the Russian Arctic, part through the Arctic Council. The Diesel Project has \$2.5 million USD led by US EPA. Battelle Memorial Institute (Battelle), Murmansk State Technical University (MSTU), WWF, Russia and NEFCO are all US EPA partners. The US Department of Energy is also responding by developing collaborative programs on combined heat and power to attempt to address the residential sources of black carbon. The US Forest Service is working on reducing black carbon from forest fires and agricultural burning in the Russian Arctic.

From 2011-2016, the US will work on a four-step project to reduce black carbon emissions in the Russian Arctic. Specifically, the US will work to:

- Assess primary sources of black carbon in the Russian Arctic;
- Develop a targeted baseline emission inventory for black carbon from diesel sources, in key areas;
- Implement targeted, on-the-ground demonstration projects for reducing black carbon from diesel; and
- Establish policy recommendations and financing options for reducing black carbon diesel sources.

While the US's work will be focused in the Russian Arctic, the project will collaborate more broadly to reduce diesel black carbon emissions across the Arctic.

- The project Murmansk area emissions inventory was completed in October 2014. An article by members of the team from Battelle and MSTU, titled, *Black carbon emissions from Russian diesel sources: Case study of Murmansk*, has been published in the journal, *Atmospheric Chemistry and Physics* in July 2015 (<http://www.atmos-chem-phys.net/15/8349/2015/acp-15-8349-2015.html>). Another EI article focusing on on-road transport will be out in an international journal in late 2015. A National EI of diesel black carbon will be completed by March 2017.
- The pilot mitigation projects will address two of the largest sources of black carbon, on-road and off-road transport. A case study of a bus company deciding to purchase more fuel-efficient buses, which reduced the black carbon in its fleet is completed and available as an Arctic Council published brochure in English and separately in Russian. The Bus company

partial fleet upgrade to more energy efficient buses reduced BC emissions by 90%, reduced fuel and O&M costs and improved service.

- Guidelines for mines on off-road vehicles will be out as a report and an article in the Russian Journal, *Mining Industry*, in August 2015. Engine repowering, retrofits, vehicle replacement are cost effective as vehicles are then more reliable and fuel efficient. Emissions are also reduced.
- The Battelle/WWF-Russia-developed pilot project, *Wind-diesel Project at Tundra Collective in the Murmansk Region* is being implemented by NEFCO. This Pilot Project is developing a wind-diesel alternative to traditional diesel-powered generators at the remote Tundra Collective reindeer farm in the Murmansk region. Equipment was procured and installed in Spring 2015.
- NEFCO completed two feasibility studies: *Mapping substituting solution for diesel power plants in the Arctic and Northwest Russia* and *Feasibility study for energy supply conversion from diesel in Dolgoshcheli, Mezenskiy District*. They serve as examples for communities across the Arctic.
- Circumpolar policy and financing recommendations will be out as an Arctic Council publication in late 2015. Russian-specific policy and financing recommendations will be out in an International Journal in 2015.

Project 2: Reduction of Black Carbon Emissions from Residential Wood Combustion

The project co-leads are Norway and Finland. The ACAP project on Reduction of Black Carbon Emissions from Residential Wood Combustion has been finalized. The Arctic Council (AC) has recognized that there are climate and health benefits to be gained from reducing short-lived climate forcers and encouraging work to reduce black carbon (BC) emissions in the Arctic. The overall objective of this ACAP project is to contribute to actions that will reduce emissions of black carbon from residential wood combustion in the Arctic. The project has compiled information on wood burning stove and boiler technologies in the Arctic and has analyzed existing approaches to emission inventories, emission reduction methodologies and mitigation instruments and measures in the project partner countries: Canada, Denmark, Finland, Norway, Sweden and the USA.

The report findings state that the full potential for reduction cannot be achieved, even with today's or tomorrow's modern stove technologies, without introducing complementary policy instruments, such as emission limits and measures to promote fuel homogeneity, regular training of the users of wood stoves, information campaigns and stove inspections.

The report identifies voluntary actions that could be adopted to reduce black carbon emissions from residential wood combustion, both on national level and on a pan-Arctic regional level. The recommended actions are published in a separate brochure and may benefit the Arctic people through improved local air quality and climate change mitigation. The report has also identified a number of outreach activities.

Project 3: Arctic Black Carbon Case Studies Platform

The project lead is the US. The Arctic Council Secretariat is moving forward to host a platform that would be interactive and easily evolve with additional information. Research into what types of technical capacity this project could tap in order to meet its stated interface goals continues.

Additionally, research on specific cases to include in the initial set of studies continues, with assistance from the U.S. EPA's Alaska office. Norway has formally joined the effort to prepare this project and generated initial case study contributions. Case Studies from US and Norway have been completed. The U.S. continues to encourage any additional partners in this project who would like to contribute informational, in-kind, or financial resources.

Project 4: Valday Cluster Upgrade for Black Carbon Reduction in the Republic of Karelia, Russian Federation

The project lead is the US. This project aims to implement a range of alternatives for providing energy to off-grid settlements in this region. It will result in potential improvement in services, emission reductions, energy savings, and lessons learned that will contribute to an improved energy system across this Cluster of communities. The objectives of the Project are to:

- Contribute to mitigation of pollutants, including SLCPs such as BC and other GHGs
- Decrease the dependence of the Cluster settlements on transported fossil fuels [Reduce the electricity/district heating costs for the municipality]
- Increase the reliability and quality of electricity/district heating supply
- Strengthen the expertise of the local institutions in the energy supply and project management

The project is now in the implementation phase currently identifying and contracting with the necessary consultants.

Projects under development

Project 1: Black Carbon and Methane Emissions in the Russian Arctic – Mapping and Mitigating

The Project seeks to improve knowledge on black carbon and methane emissions in the Russian Arctic, with emphasis on the oil and gas sector, and spur enhanced actions to reduce emissions. The ultimate objective is to contribute to reduced emissions of black carbon and methane emissions from the oil and gas sector in the Arctic. The Project should create the basis for concrete mitigation measures and improved policies through better knowledge about emission sources, the scale and characteristics of emissions and abatement costs (including technology options), and cost effectiveness of available options. Efficient and effective policies and regulations require knowledge as a basis for prioritizing actions.

The Project will have a duration of three years and will include:

- Emissions Inventory of black carbon point sources
- Mitigating emissions from flaring sites
- Reporting of methane emissions from the oil and gas sector
- Mitigating methane emissions from the oil and gas sector
- Policies and regulations
- Capacity building and dissemination

Project 2: System for Black Carbon Emissions Impact Management from sources in the Russian Arctic

The project lead is Russia. This project will include:

- Project launch event
- National methodical framework development
- Inventory of black carbon emissions
- Review of integrated assessment models for black carbon emissions transport deposition and impact assessment
- Development of database for black carbon emission reduction techniques
- Black carbon emissions transport and evaluation of the Russia-originated black carbon emission impact on the Arctic
- Evaluation of black carbon emission reduction technique efficiency and recommendations on the black carbon emissions reduction in the Russian Arctic
- Development of recommendations on the application of the black carbon emissions management system for sources in the Russian Arctic and transfer of the system to an authorized public authority of the Russian Federation for further implementation
- Organization of the final project results international conference

This project is currently under ACAP SLCFC PSG review. A list of comments provided by countries (US, Canada, Sweden, and Norway) is being addressed with the next draft expected soon. An official letter from the Ministry of Natural Resources and Environment of the Russian Federation on the project ownership and related issues has been provided.

Project 3: Arctic-Barents Region Short-lived Climate Pollutants Mitigation Project

Partners: Interest Tentatively FIN, [NO], RF, SE, USA, NEFCO

NEFCO is working on the development of three SLCP initiatives with a number of respective sub-projects:

Project 1-M: Reduction of Methane Emissions

Project 2-BC: Reduction of Black Carbon Emissions

Project 3-HFC: Mitigation of HFC (including ODS) Emissions (End-of-Life Equipment)

Not all Projects are expected to proceed, subject to feasibility studies, however. Some of the sub-projects are also on the NEFCO-AMAP Barents Hotspot list, (as Project Kr 14 & Kr16). NEFCO is working to develop a detailed Work Plan.

(2) Funding expenditures for 2015

Projects being Implemented

Project 1: Reduction of Black Carbon from Diesel Sources in the Russian Arctic.

The US and NEFCO signed an agreement for the US to participate in the Arctic Council (AC) Project Support Fund (PSI) in June 2012. The U.S. has allocated up to USD 5 million to the Arctic Council's environmental projects with a near term allocation is of USD 1.0 million to address BC mitigation from diesel sources by February 2016.

Battelle has \$1,000,000 to expend through August 2015 and \$170,000 to expend through March 2017.

Project 2: Reduction of Black Carbon Emissions from Residential Wood Combustion.

Total funding provided for the project by Norway is 1.8 million NOK and Finland has provided 5500 EUR. Most of this is spent in 2013, the remaining will fund the finalization of the project spring 2014.

Project 3: Case Studies Platform

This has not been funded beyond in-kind. Funding from partners and/or the PSI would be welcome.

Project 4: Valday Cluster Upgrade for Black Carbon Reduction in the Republic of Karelia, Russian Federation

The project has been approved for PSI funding, with a combination of grants, concessional loans, and project owner investment as elements of a comprehensive business plan.

Projects under development

Project 1: Black Carbon and Methane Emissions in the Russian Arctic – Mapping and Mitigating

This project has not been funded yet. Potential to propose to PSI.

Project 2: System for Black Carbon Emissions Impact Management from sources in the Russian Arctic

This has not been funded yet. Potential to propose to PSI.

Project 3: Arctic-Barents Region Short-lived Climate Pollutants Mitigation Project

NEFCO's activities for the SLCP work can be summarized as follows:

No.	Description	Timing	Budget, EURO
1	Energy Supply in 8 Karelian Settlements:	Q42015	up to 4.15 million
2	Mapping alternative solution for diesel power plants in NW Russia.	Q1 2015	30 000
3	Dolgoshcheliie wind-diesel complex.	Q1 2015	Max 70 000
3	Energy Supply Conversion in Kolguev Island.	t.b.d.	t.b.d.
4	Structuring of power supply in Arkhangelsk Region;	t.b.d.	t.b.d.

(3) Main findings

Projects being Implemented

Project 1: Reduction of Black Carbon from Diesel Sources in the Russian Arctic.

- Results from the project's Murmansk emissions inventory has determined that on-road and off-road transit are two of the largest sources of black carbon from diesel sources in the Murmansk Region.

Project 2: Reduction of Black Carbon Emissions from Residential Wood Combustion.

- Information on BC emission inventories from residential wood combustion and measures and instruments in the participating countries has been compiled. Recommendations for further work both on the national and international level are given.

Project 3: Arctic Black Carbon Case Studies Platform

This project is in its initial phases, so no progress report is available.

Project 4: Valday Cluster Upgrade for Black Carbon Reduction in the Republic of Karelia, Russian Federation

The project is in the implementation phase.

Projects under development

The SLCFC SG/ACAP is in the process of identifying potential projects.

Project 1: Black Carbon and Methane Emissions in the Russian Arctic – Mapping and Mitigating

This project hasn't begun yet so there are no findings.

Project 2: System for Black Carbon Emissions Impact Management from sources in the Russian Arctic

This project has not begun yet so there are no findings.

Project 3: Arctic-Barents Region Short-lived Climate Pollutants Mitigation Project

This project is under development in cooperation with Norway and Sweden. From preliminary discussions with AMAP (Dec 2013), emissions from gas flaring contribute 42% to Arctic-mean BC surface concentrations. In addition, there is a need to have a common understanding on the methodology to use in determining mitigation measures of respective SLCPs for projects.

(4) Next Steps for the Projects

Projects being implemented

Project 1: Reduction of Black Carbon from Diesel Sources in the Arctic.

1. Guidelines for mines (report and article in Russian Journal Mining) to upgrade to more energy efficient vehicles will be completed by August 2015.
2. An article will be out in an International Journal on policy and financing options for the reduction of black carbon in the Russian Arctic by late 2015.
3. A paper on circumpolar policy and financing options to reduce black carbon from diesel sources will be out as an Arctic Council publication in late 2015.
4. The Project "Wind-diesel project at Tundra Collective, Murmansk Region, Russian Federation will be completed.

Project 2: Reduction of Black Carbon Emissions from Residential Wood Combustion.

Norway continues to present and share the report and brochure, which are also available on the ACAP website.

Project 3: Case Studies Platform

The following steps are in progress and will continue:

- Continuing case study content acquisition
- Coordinating with the Secretariat and other partners on the platform design
- Continuing partnership outreach
- Website and relevant print product design
- Website and relevant print product launch plan

Project 4: Valday Cluster Upgrade for Black Carbon Reduction in the Republic of Karelia, Russian Federation

The PSI approved the FID of up to EUR 4.2 million with a PSI commitment up to

EUR 1.120.000, regarding the Project "Valday Cluster Upgrade for Black Carbon Reduction in the Republic of Karelia, Russian Federation". The project now is under implementation.

Projects under development

Project 1: Black Carbon and Methane Emissions in the Russian Arctic – Mapping and Mitigating.

Approval of proposal by the SLCFC EG and ACAP is in process.

Project 2: System for Black Carbon Emissions Impact Management from sources in the Russian Arctic

1. Finalize the project proposal to be approved by SLCFC EG.
2. Submit the project preapproved by SLCFC EG for consideration of the ACAP WG.

Project 3: Arctic-Barents Region Short-lived Climate Pollutants Mitigation Project

Work is underway with the stakeholders to assess the projects and proceed with the ones that are considered sustainable.