

**STATUS REPORT (rev 2016-07-13)**  
**Short-Lived Climate Forcers and Pollutants Expert Group**

**For ACAP WG meeting August 2016, Krasnoyarsk Krai, Russian Federation**

**(1) Work accomplished since last ACAP WG in February 2016.**

**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 is working on a four-step project to reduce black carbon emissions in the Russian Arctic. Specifically, the US is working to:

- Assess primary sources of black carbon in the Russian Arctic;
- Develop targeted baseline emission inventories 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 from 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.

- A National Emissions Inventory (EI) of diesel sources in Russia, an extrapolation of the Murmansk EI, will be developed by August 2016. It will cover several sectors, including on-road transport, off-road transport (i.e. agriculture, railway, mining and construction sectors) and diesel generators. Preliminary results show that heavy-duty trucks account for 70% of on-road diesel emissions, while cars represent only 4%. In addition, off-road diesel sources emit 52% of all diesel BC in Russia.
- EI article, *Russia's black carbon emissions: focus on diesel sources*, published as discussion paper (<http://www.atmos-chem-phys-discuss.net/acp-2016-475/>) in Atmospheric Chemistry and Physics in June 2016. Published as article in Fall 2016.
- EI article comparing National BC EI methodologies composed in August 2016.

- 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. Wind/diesel equipment was procured and installed in Spring 2015 with use and improvements seen in early 2016.
- Circumpolar policy and financing recommendations on reducing black carbon from diesel sources were approved by ACAP in 2015, were presented to the SAOs for approval in early 2016 and are expected to be finalized for Arctic Council publication in early Fall 2016.

### **Project 2: 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. Initial Case Studies from the U.S. with assistance from the U.S. EPA's Alaska office and Norway have been completed. Project partners are working on cleaning up the platform and hope to have it ready to demo again for the next ACAP meeting. The U.S. continues to encourage any additional partners in this project who would like to contribute informational, in-kind, or financial resources.

### **Project 3: Valday Cluster Upgrade for Black Carbon Reduction in the Republic of Karelia, Russian Federation**

The project lead is the US. This project which concerns eight settlements aims to implement, together with NEFCO, 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. Five settlements will improve load management and install hybrid solar photovoltaic- wind - diesel systems. Three settlements are dealing with hybrid wood gasification - diesel systems and construction of a small hydropower are somewhat delayed due to financial prerequisites for the projects.

### **Project 4: 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

*ACAP asked for changes in September 2015. After these changes were made, this project was approved by ACAP in February 2016.*

The mitigation component for the flaring part of the above project is currently being developed with financing from the Swedish EPA Trust Fund with NEFCO. The project aims to identify black carbon and methane emission reduction opportunities from flaring, in the Russian Arctic and has three tasks:

- Task 1: Review of the flare situation.
- Task 2: Location and volume estimates of flares
- Task 3: Identification of possible flare reduction investment cases

The principal deliverables from the Flaring Project will be a report summarizing the results from Task 1-3, including also a set of recommendations for follow up with possible investment cases requiring further scrutiny a project proposal such as on improving knowledge on and reducing emissions from black carbon and methane in the oil and gas sector in the Arctic through efforts including technical and financial feasibility assessments, project design; mitigation via leak detection and repair etc. for financing from the PSI.

### **Project 5: Mitigation of Methane Emissions -- Syktyvkar Dyrnos Landfill Project, Russian Federation**

The Dyrnos Landfill project will consist of two main components: Final closure of the existing landfill and installation of a methane gas collection and utilization system and Construction of a new sanitary plot at the existing landfill and completion of construction works and commissioning of a new waste sorting facility.

The Dyrnos Landfill Project will take important steps towards reducing the adverse environmental and health impacts from the current waste management system. It will contribute towards achieving the compliance with the relevant Russian and EU environmental standards, and will be a key contribution to the final exclusion of the Barents Environmental “Hot Spot” Ko-6 (Waste management in the Republic of Komi).

The project is expected to demonstrate the improvement of municipal solid waste management towards integrated waste management systems in Russian cities

It will mitigate of SLCP/Methane emission, improve resource efficiency and reduced release to water

This project is being reviewed by the ACAP SLCFC EG.

## **Projects under development not approved by the SLCP EG**

### **Project 1: 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 EG review and waiting for Russia to provide another version. A list of comments provided by countries (US, Canada, Sweden, and Norway) is being addressed.

### **Project 2: 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 (e.g. see Project 4 below)

Project 2-BC: Reduction of Black Carbon Emissions

Project 3-HFC: Establishment of inventory (Russian Federation); mitigation of HFC (including ODS) emissions (including 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.

Individual projects from this larger group of projects are being separately approved by ACAP as appropriate.

### **Project 3: Black Carbon mitigation from Agri-burning**

This Project is being developed as a proposal for the SLCP EG and could include the following components:

- Agricultural extension: gaining farmer buy-in to no-burn methods due to economic advantages
- Spreading word of exact methods and needed equipment to reduce agricultural burning, in coordination with NEFCO equipment financing mechanism to address financial barriers
- Assistance with potential oblast- and national-level supportive measures
- Education also of general public through real-time monitoring of fires, widely available

This project could have the following project principles:

- Use of Russian expertise wherever possible, complemented with international experts and farmer-farmer connections
- Detailed maps of burning activity in real-time, correlating with on-the-ground checking of actual land use (kind of crop, abandoned fields, forest, etc.) by Russian experts
- Financial barriers for farmers: NEFCO designing micro-financing component to assist small and medium-sized farmers to purchase alternative equipment
- Integrated project would entail NEFCO Financing Mechanism, and PSI support for farmer education and promotion of alternatives; synergies also with CCAC Open Burning project

**Project 4: Inventory for HFC, end-of-life equipment**

This project is under development and is not yet approved by the SLCP EG.

## **(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 August 2016. Battelle has \$1,195,000 to expend through August 2016.

**Project 2: Case Studies Platform**

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

**Project 3: 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.

**Project 4: Black Carbon and Methane Emissions in the Russian Arctic – Mapping and Mitigating**

This project has not been approved and funded yet. Part of the project development for mitigating flaring in the oil and Gas Sector is being financed by the Swedish EPA Trust Fund with NEFCO. Potential to propose to PSI.

**Project 5: Mitigation of Methane Emissions -- Syktyvkar Dyrnos Landfill Project, Russian Federation**

This has not been funded yet.

### **Projects under development not approved by the SLCFE EG**

**Project 1: 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 2: 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	Tundra Reindeer Settlement	Q4 2015	100 000
3	Mapping alternative solution for diesel power plants in NW Russia.	Q1 2015	30 000
4	Dolgoshcheliie wind-diesel complex.	Q1 2015	90 000
5	Energy Supply Conversion in Kolguev Island.	t.b.d.	t.b.d.
6	Structuring of power supply in Arkhangelsk Region;	t.b.d.	t.b.d.
7	Mitigation of Flaring in the Oil and Gas Sector	t.b.d.	t.b.d.
8	Mitigation of BC in agri burning (for submission to EG)	t.b.d.	t.b.d.
9	HFC Inventory, end-of-life equipment	t.b.d.	t.b.d.

## **Project 3: Black Carbon mitigation from Agri-burning**

This Project is being developed as proposal for the SLCP EG. Has been funded by the Swedish Trust Fund with NEFCO. Once approved, it has a potential to propose to PSI.

## **Project 4: Inventory for HFC, end-of-life equipment**

This project is under development and is not yet approved by the SLCP EG.

### **(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.
- Nationally, heavy duty trucks account for 70% of on-road BC emissions, while cars represent only 4%. Off-road diesel sources emit 52% of all diesel BC in Russia.
- Top Policy Findings:
  - Off-road vehicles represent an important opportunity for additional emission reductions; regulation is required to achieve these reductions;
  - On-road vehicle emission control regulations have had a strong positive impact;
  - Fleet upgrades play an important role in emission reductions;
  - Comprehensive government policy is needed, including development of air quality monitoring system.
  - Financial incentives including public procurement requirements would be helpful in leading to upgrades of diesel fleets
  - Transport management policies, retrofit technologies, emission standards (availability of low-sulfur fuel) and community-scale wind-diesel systems could all contribute to the reduction of BC.

#### **Project 2: Arctic Black Carbon Case Studies Platform**

A number of case studies that demonstrate best practices have been developed and are uploaded onto the Arctic Council Website.

#### **Project 3: Valday Cluster Upgrade for Black Carbon Reduction in the Republic of Karelia, Russian Federation**

The project is in the implementation phase.

#### **Project 4: Black Carbon and Methane Emissions in the Russian Arctic – Mapping and Mitigating**

ACAP approved this project in February 2016.

#### **Project 5: Mitigation of Methane Emissions -- Syktyvkar Dyrnos Landfill Project, Russian Federation**

This project was approved by ACAP in March 2016.

#### **Projects under development not approved by the SLCFC EG.**

The SLCP EG/ACAP is in the process of identifying potential projects.

#### **Project 1: System for Black Carbon Emissions Impact Management from sources in the Russian Arctic**

A draft of this project proposal is being updated by Russia for review by the SCLP EG.

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

This project is under development in cooperation with Sweden and potentially Norway and is not yet approved by the SLCFC EG. 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.

#### **Project 4: Black Carbon mitigation from Agri-burning**

This Project is being developed so has no current findings.

#### **Project 5: Inventory for HFC, end-of-life equipment**

This project is under development so has no current findings.

### **(4) Next Steps for the Projects**

#### **Projects being implemented**

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

- A paper on circumpolar policy and financing options to reduce black carbon from diesel sources to be finalized as an Arctic Council publication in Fall 2016.
- A national Emissions Inventory of Diesel Sources of Black Carbon will be completed by August 2016.
- The Project "Wind-diesel project at Tundra Collective, Murmansk Region, Russian Federation will be completed.

#### **Project 2: 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 3: 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.

**Project 4: Black Carbon and Methane Emissions in the Russian Arctic – Mapping and Mitigating.**

Approval of proposal by the SLCP EG. ACAP approved this in February 2016.

**Project 5: Mitigation of Methane Emissions -- Syktyvkar Dyrnos Landfill Project, Russian Federation**

ACAP approved this project in March 2016.

**Projects under development**

**Project 1: System for Black Carbon Emissions Impact Management from sources in the Russian Arctic**

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

**Project 2: Arctic-Barents Region Short-lived Climate Pollutants Mitigation Project**

Work is underway with the stakeholders to assess the projects and proceed to develop the ones that are considered sustainable. These will be submitted to the SLCP EG as appropriate.

**Project 3: Mitigation of BC: Agri-burning.** The project is under development for consideration of the EG and PSI financing.

**Project 4: Mitigation of HFC: Inventory work.** Under development for consideration of EG and PSI financing.