Financing Options for Black Carbon Emissions Reduction Projects

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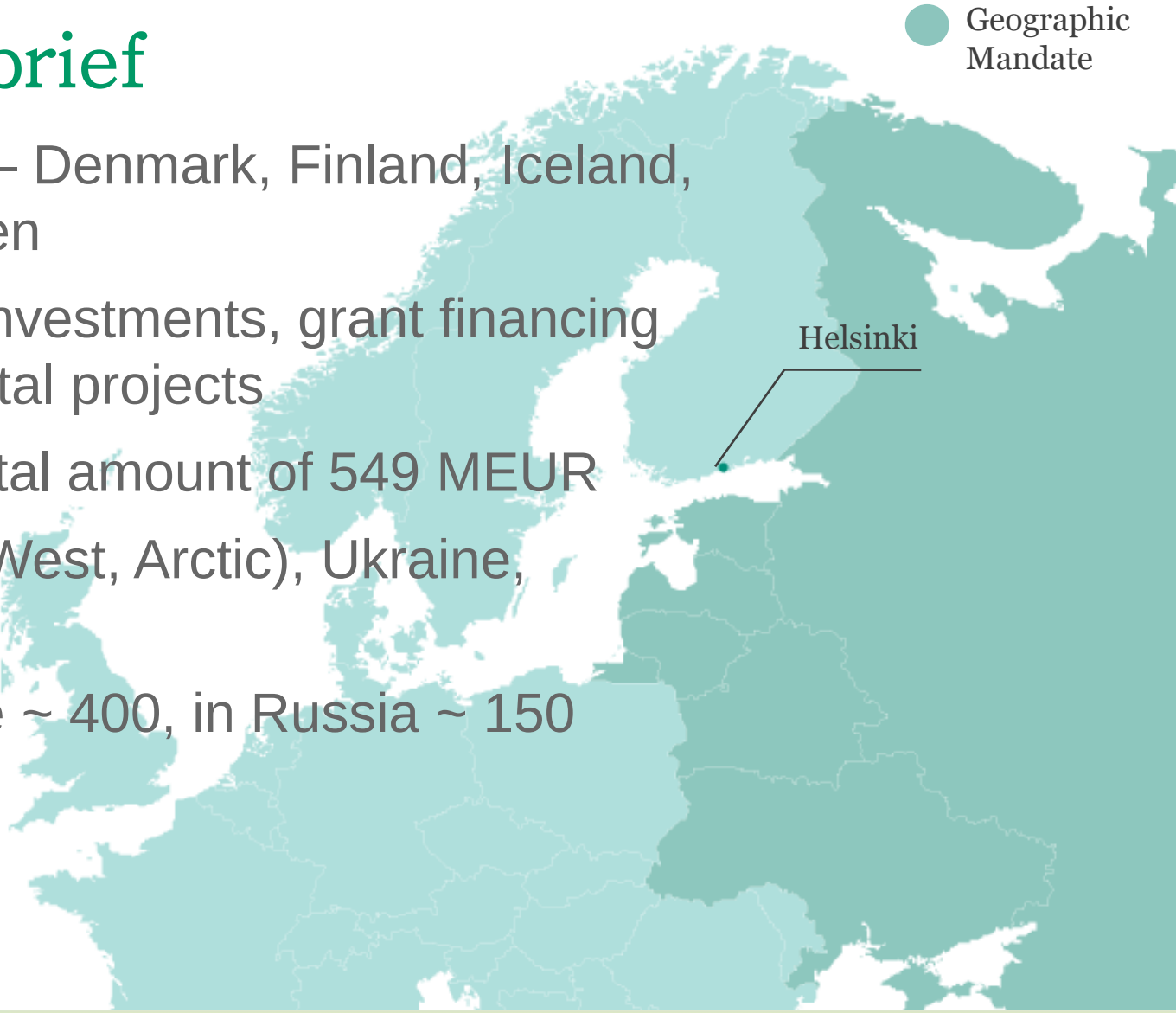
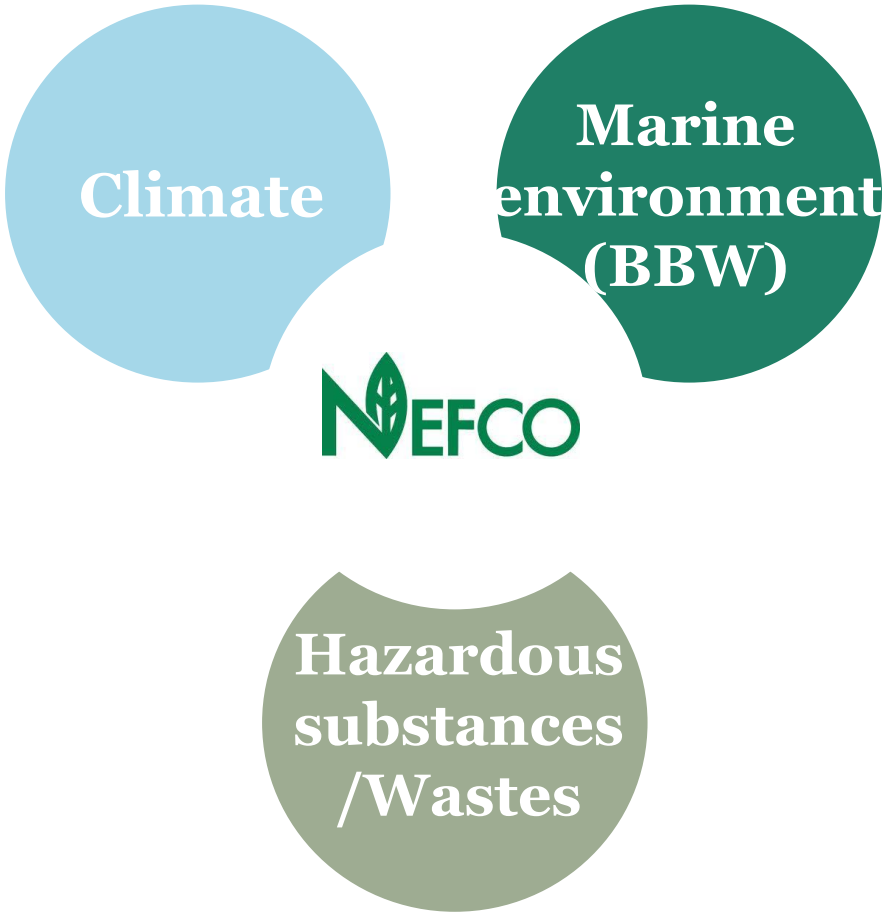
NEFCO in brief

- IFI (est. 1990) – Denmark, Finland, Iceland, Norway, Sweden
- Loans, equity investments, grant financing for environmental projects
- Funds in the total amount of 549 MEUR
- Russia (North West, Arctic), Ukraine, Belarus
- Project pipeline ~ 400, in Russia ~ 150



Priority areas



Focus on climate change mitigation, efforts for cleaner marine environment and elimination of toxic pollution

Key Pollutants and Sectors

- Climate forcers (CO2, SLCP incl. Black Carbon, CH4, HFC, terrestrial Ozone)
- Ozone Depletion (CFC, HCFC, Methyl Bromide,CCl4)
- Acidification (SO2, NOx, CO2)
- Long Range Trans-boundary Pollution (POPs, PCB, HM, Hg etc.)
- Eutrophication (P, N)

- Industry (mining, metallurgy, oil, coal, gas, paper/pulp, food, engineering, construction)
- Housing (private, public, industrial) and Services (water and waste management, district heating, maintenance)
- Transportation (land based, river and marine)
- Agriculture
- Cross cutting: complex/combines, energy efficiency

NEFCO – funds and resources

- Own funds (Investment Fund)
- Nordic Funds (Nordic Environmental Development Fund)
- Barents Euro-Arctic Council (Barents Hot Spots Facility)
- Arctic Council (ACAP and AMAP SG, PSI Fund Manager)
- Northern Dimension Environmental Partnership (NDEP)

Loan Programmes and Funds

- ***Investment Fund***

- up to 5 MEUR

- market financing conditions

- modernization and reconstruction of heating/energy supply systems, RE, upgrade and replacement of vehicles

- ***Cleaner Production Facility***

- modernization of production processes and equipment (including replacement of vehicles)

- up to 500,000 EUR

- favourable financing conditions

- ***Energy Saving Credits***

- energy saving measures at the social sphere facilities (schools, kindergartens, hospitals)

- rehabilitation of the heating supply sources and systems

- subsidized lending rates

Replacement of buses at the Autoline Company (Moscow, 2004)

Description: replacement of 20 of 175 buses at Autoline company through a leasing scheme with Scania Leasing. “Gazel’” buses were replaced by Scania Omni Link buses, corresponding to Euro 3 standard

Partners and financing scheme:

Scania	3 MEUR (loan for Scania Leasing)
NEFCO	3 MEUR (loan for Scania Leasing)
Swedfund	3 MEUR (loan for Scania Leasing)
Autoline	3 MEUR (equity)
EBRD	12 MEUR (loan for Autoline)
TOTAL	*24 MEUR*

Environmental effect: reduction of NOx, solid particles and hydrocarbons emissions, including black carbon, by 70-80%; CO2 reduced by 10-12%.

Replacement of buses at the Autoline Company (Moscow, 2004)

		CO	HC	CO2	Nox
Gazel’	g/kWh	48.5	6.2	823	11.1
Scania OmniLink	g/kWh	0.6	0.5	670	4.6
Mitigation	%	98.9	91.9	18.6	58.5
Prevention	t/y	600	75	2 000	90

Barents Hot Spots Facility (BHSF)

- Financial mechanism of the Barents Euro-Arctic Council (20 years anniversary in 2013, Minister Meeting in Inari)
- 2003 – Joint report by NEFCO and AMAP, 42 Barents “hot spots”, establishment of BHSF
- 4 MEUR, above 70 initiatives
- Minimization of black carbon emissions as result of the improvements in the heat and energy supply systems

NEFCO-AMAP Barents Environmental Hot Spots

Arctic Council - ACAP
Black Carbon Projects in ACAP pipeline

ACAP Projects Under preparation (Reykjavik Sept. 2013):

- Russia – System for Black Carbon Emissions Impact Management from sources in the Russian Arctic
- NEFCO – Russian Arctic-Barents Region Short-lived Climate Pollutants Mitigation Project
- US – Arctic Black Carbon Case Studies Platform
- Sweden- SLCF Trust Fund with NEFCO in Russian Federation
- NEFCO- “Early Start” Projects: BC Reduction from Heat and Power

Arctic Council – Project Support Instrument (PSI)

- 2011 – Russia pledges 10 MEUR
- Current pledges, deposits & allocations currently stand at EURO 15.9 million
- Finland, Iceland, NEFCO, Norway, Saami Council/Parliament, Sweden, United States and Russian Federation

PSI Projects - Strategic Planning

Table 1 - PSI Resource allocation [2012-2015] strategic business plans*. [1]

AC Projects -	[2012-2015]	Total Euro
	Percentage	
Integrated Hazardous Waste Management demo incl. POPs**	[40]	[6 345 200]
Mercury demonstration project***	[25]	[3 965 750]
Clean Production/Energy Efficiency/SLCF-Black Carbon	[20]	[3 172 600]
Other areas	[6]	[951 780]
Standard Costs	[9]	[1 427 670]
Total	100	15 863 000

*This represents NEFCO's understanding of the priorities of the Contributors

** Persistent Organic Pollutants (POPs) are hazardous substances such as Polychlorinated Biphenyls (PCBs), pesticides and the allocation for demonstration project includes destruction of POPs.

*** Mercury demonstration project is to address concrete mitigation of mercury release to the environment.

PSI projects – Work underway

The FM is currently preparing a pipeline of proposals for processing with an AC subsidiary body & taking into account the tentative resource allocation 2012-2015 for the 1st PSI COM. The pipeline includes:

		EURO, M	Estim
1	SLCP Projects (Black Carbon, Methane and HFC)	57-77	Table 1
2	NEFCO Early Action SLCP Projects	12	CP/EE
3	Non-ferrous Zinc Smelter Mercury Project	3.5	CP
4	PCB/Pesticide/POP Waste Management, RF	3	WM
	Total	Up to 95	

SLCP Project- Work underway

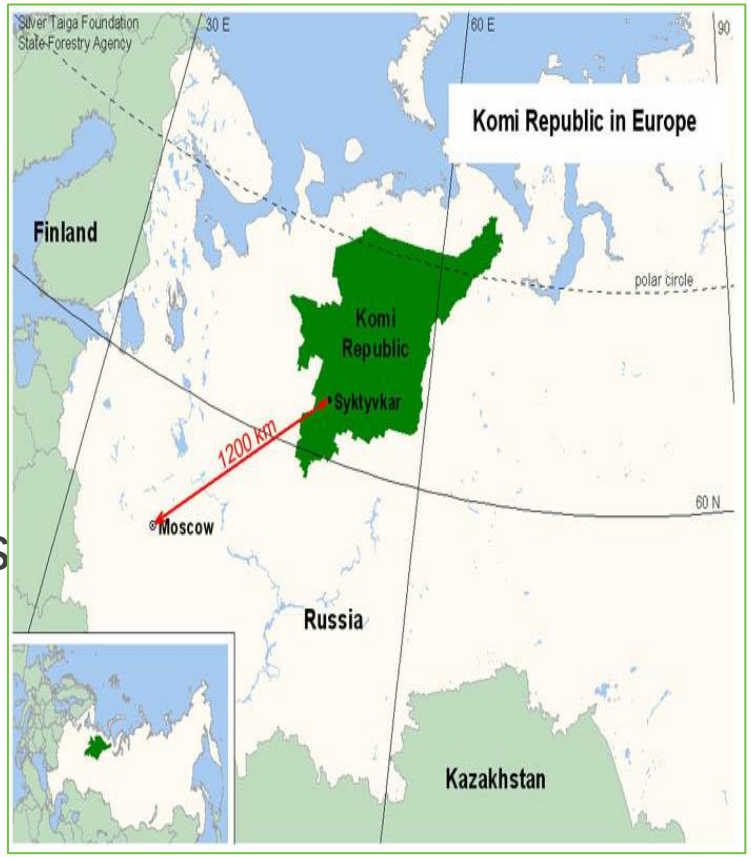
Table1 –Summary of NEFCO SLCP Project Initiative in NW Russia

Project	EUR, Mio
Project 1-M: Reduction of Methane Emissions	10
Sub-pr*1.1-M-K	
Sub-pr. 1.2-M-L	
Project 2-BC: Reduction of Black Carbon Emissions	47-67
Sub-pr. 2.1-BC-K: Kostomuksha	
Sub-pr. 2.2-BC-K Nadvoitsy	
Sub-pr. 2.3 -BC-K Sortavala	
Sub-pr. 2.4-BC-K Suojärvi	
Sub-pr. 2.5-BC-K: 8 Karelian settlements with diesel power.	
Sub-pr. 2.5.1-BC-K :Valdai	
Sub-pr. 2.5.2 to 2.5.7-BC-K: The remaining 7 Settlements:	
Sub-pr. 2.5.8-BC-K Kemi	
Sub-pr. 2.5.9-BC-K Louhi	
Sub-pr. 2.6-BC-N Kolguyev Island Nenets	
Sub-pr. 2.7-BC-Komi: District Heating Upgrade in Komi	
Sub-pr. 2.8-BC-NWR: Assembly Plant for Special Transportation	
Project 3-HFC: Mitigation of HFC Emissions	0,05
Sub-pr. 3.1-HFC-NWR: Management of End-of-Life Equipment	
Total (rounded off)	57-77

*Sub-pr. = Sub-project

Komi District Heating Rehabilitation Project

- **Current situation**
  - Large region with sparse population
  - One company, Komi heating company provides heating services for 80% of rural districts
  - Inefficient operations and heavy use of coal subsidized by the regional authorities



Komi Project Objectives / Investments

- **The main goals** of the Project are
  - (i) to improve heat supply and increase efficiency of systems
  - (ii) to stimulate fuel switch to biofuel.
  - (iii) to reduce emissions of CO2 and black carbon (BC)

- **Investment components**
  i. Installation of biomass boilers
  ii. Reconstruction of distribution networks
  iii. Installation of water treatment systems
  iv. Installation of individual heat substations at consumer level

  Total estimated cost 8.2 MEUR(NEFCO, NDEP, Sweden, local financing)

Komi Project Environmental benefits

- Reduced 10 400 t CO_2 /a
- Reduction of Black Carbon 2300 kg/a
- Negative Unit abatement cost considering real, non-subsidised fuel prices

Optimization of the heating supply system and energy efficiency increase in the Republic of Karelia

- Development and implementation of energy efficiency investment projects in 4 settlement in the Republic of Karelia
  - Kostomuksha city;
  - Nadvoitsy settlement;
  - Sortavala city;
  - Suoyarvi city
- Potential technological solutions: new biofuel boilers, networks replacement, installation of individual heat substations (IHS)

Optimization of the heating supply system and energy efficiency increase in the Republic of Karelia

- Current status: preparation of a Feasibility Study (AF Industry AB, Sweden)
- According to preliminary estimates, priority investments in the district heating supply system in Kostomuksha could comprise up to 4 MEUR. Investments for the heating supply system in Nadvoitsy, Sortavala and Suoyarvi to be clarified.
- Considerable reduction of CO2 and black carbon emissions (to be clarified)

Reconstruction of Energy Supply Systems in 8 settlements in the Republic of Karelia

- The Project includes 8 remote settlements supplied with energy generated by diesel power stations of OJSC “Prionezhskaya Network Company”:
  - Valdai
  - Polga
  - Vozhmozero
  - Reboly
  - Kimovaara
  - Lindozero
  - Yustozero
  - Voinitsa

Reconstruction of Energy Supply Systems in 8 settlements in the Republic of Karelia

- Possible technological solutions:
  - replacement of diesel generators and energy load management
  - combination of photovoltaic power systems and wind generators with existing diesel generators
  - construction of small hydropower plants
  - biomass gasification
  - heat recovery of the diesel generator exhaust gases
- Required investments and reduction of black carbon emissions (and other environmental benefits) under clarification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