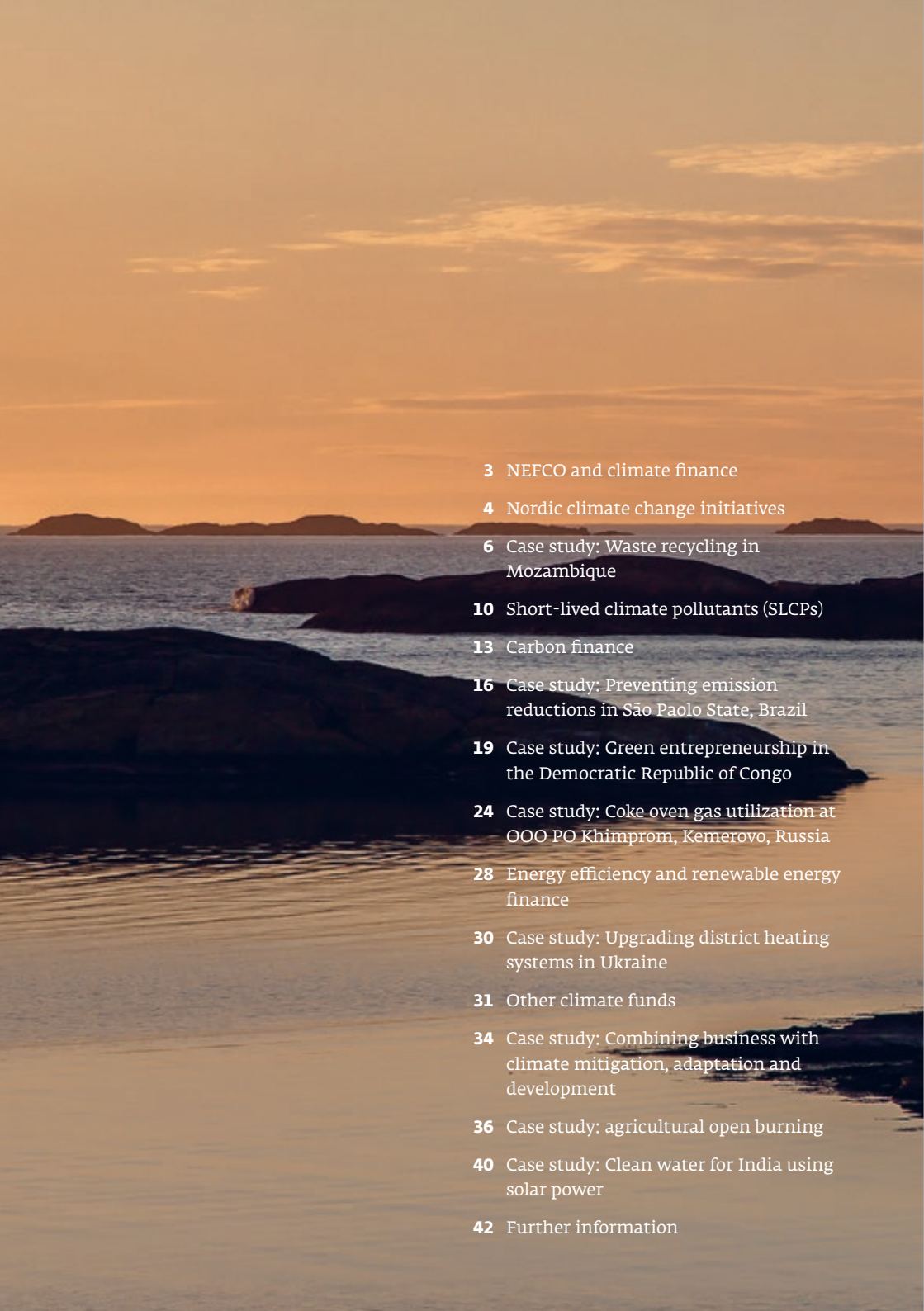


NEFCO and Climate Finance



Mobilising innovative
climate finance



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NEFCO and climate finance



Financing climate change mitigation and adaptation is one of the core competence areas of NEFCO.

NEFCO is a Nordic institution with 25 years of experience in financing environmental and climate projects of benefit to the Nordic region and globally. Financing climate change mitigation and adaptation is one of the core competence areas of NEFCO. Since its establishment, the organisation has been involved with energy efficiency, cleaner production and energy savings, as well as renewable energy – all of which are critical in the fight against climate change. For over 10 years, NEFCO has had specific experience of climate finance – through the management of dedicated financing instruments to address this specific environmental challenge, – and has developed successive financial and knowledge products to meet the needs of its stakeholders, in both public and private sectors. NEFCO has been an early participant in, for example, areas such as Joint Implementation, post 2012 climate funding and in piloting Nationally Appropriate Mitigation Actions.

The climate team has been involved in over 125 climate change projects in 41 countries on four continents, and through this and the management of a number of other trust funds NEFCO's activities have over the years extended far beyond the Nordic region and Eastern Europe.

NEFCO also engages selectively in advocacy, policy and development work, where this is in line with its mandate and the needs of its owners, the five Nordic countries. It has e.g. contributed to strategic initiatives in multilateral fora in emerging climate change areas as diverse as methane abatement, black carbon and fossil fuel subsidy reform.

As a result, NEFCO is today a specialist fund manager of environmental and climate projects, currently with assets representing over EUR 400 million under management. It is recognised as such by the European Union (EU) having completed the “seven pillar” assessment to allow it to carry out EU budget implementation tasks.

Nordic climate change initiatives

NEFCO has been testing new, innovative approaches to climate financing in line with Nordic and EU priorities. In terms of market mechanisms, this has been with the intention to build on the existing experience and market infrastructure, as well as to test new mechanisms. Outcomes of these initiatives include enhanced carbon market infrastructure such as measuring, reporting and verification standards, baselines, inventories and registries. Examples include the Nordic Perspectives on Carbon Market Mechanisms under the Nordic Council of Ministers' Globalisation Initiative (2010) and the Nordic Partnership Initiative (2011 to date).

NEFCO undertakes these developmental activities to promote the concept of market-based mechanisms as an important means of mobilising international finance for climate action and rewarding innovation in low carbon technology. This approach recognises that to be effective in facilitating the shift to low carbon technology, pricing mechanisms must be credible, stable and sustainable over time.

Nationally Appropriate Mitigation Actions (NAMAs)

The concept of NAMAs was first introduced in the UN climate negotiations by the 2007 Bali Action Plan, which called for "nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable" manner. As later defined in the Cancún Agreements, the objective of the NAMAs is to produce a deviation of the emissions compared with a business-as-usual scenario using appropriate support from the developed countries through technical, financial and capacity-building assistance. Looking at the global universe of existing NAMAs, significant growth in such actions has been in evidence, across all sectors and regions of the world.

Since 2010, NEFCO has sought to promote the innovative concept of NAMAs in order to provide tangible Nordic input into the Paris climate agreement negotiations. Many NAMAs and NAMA-like actions and policies may contribute to fulfilling the target commitments made by countries in connection to the Paris Agreement under so-called Intended Nationally Determined Contri-

butions (INDCs)¹, and as such NAMAs offer themselves as an important implementation vehicle for achieving the INDCs.

While most NAMAs remain largely at the preparation stage (similar to the Nordic Partnership Initiative NAMA activities in Peru and Vietnam discussed below), some climate programmes have secured funding also for full scale implementation, notably through the NAMA Facility. Some Nordic support for NAMAs have been made available through the Nordic Development Fund (NDF) and other multilateral institutions, but the Green Climate Fund (GCF) mitigation window should direct a much greater volume of funding and operationalising toward such activities. A stronger signal is required from donors and institutions that implementation support will be forthcoming to support the increased number of already well-developed NAMA proposals.

Nordic Partnership Initiative (NPI)

NEFCO, as a founding member of the NPI for Up-Scaled Climate Action, has been working with the development of NAMAs in the field since 2011. The NPI, which includes the Nordic Council of Ministers, NDF and NEFCO, was constituted in October 2010 with a mission to start a pilot initiative to test the potential of support for up-scaled NAMA approaches to climate change mitigation, initially focusing on solid waste management in Peru and the cement sector in Vietnam. The NPI was formally launched at the Durban Climate Change Conference in South Africa (COP17) in December 2011.

In Peru, NEFCO administers a multi-donor trust fund and acts as the implementing agency for an initial two-year programme in cooperation with the Peruvian Ministry of Environment (MINAM). A Memorandum of Understanding with MINAM was concluded in 2012. The initial two-year technical work programme was undertaken 2013-2015, and additional work is being programmed for the next phase of development.

The NPI is also active in Vietnam through a NDF-funded cement sector NAMA programme in Vietnam. NEFCO is part of the Nordic steering group overseeing this programme.

Other NAMA activities

NEFCO is also contributing to the international community of practice through other NAMA project activities in Bangladesh (steel sector), Honduras and Nicaragua (livestock management) and Mozambique (solid waste management) under the Nordic Climate Facility (see page 31).

NEFCO shares its experiences with peers and donors through in particular the UNFCCC NAMA Partnership and regional events organised by the Secretariat.

¹ Countries specify their own targets, actions and policies to reduce greenhouse gas emissions. The nature and ambitions of such INDCs, however, will be based on the host country's domestic political considerations and other factors.

Case study

NCF

Waste recycling in Mozambique



PHOTO: ASH SHARMA

Uncontrolled waste disposal in Beira, Mozambique

A side event on the project was held at the Africa Pavilion at COP21 in Paris, December 2015

Growing urban populations in Africa are producing increasing amounts of waste that typically end up in uncontrolled dumpsites. This not only results in negative environmental and health impacts at local level, but the landfills are also responsible for 8% of greenhouse gas emissions worldwide. At the same time, the market for recycled materials has grown significantly in recent years creating new opportunities for sustainable waste management. Mozambique generates an estimated 2 million tonnes of municipal waste per year, yet it is estimated that formal waste recycling rates are languishing below 1%.

This Nordic Climate Facility (NCF) project has the dual purpose of testing and demonstrating the implementation and viability of a Waste Transfer and Recycling Center (WTRC) in Beira, the second largest city in Mozambique, and formulating a bottom-up climate programme under the Nationally Appropriate Mitigation Action (NAMA) framework to a national programme to promote waste recycling. Recyclable waste will be processed at the WTRC into value-added products for onward selling in national and international markets whereas non-recyclable waste will be transferred to the municipal landfill for final disposal. During the initial phases, the WTRC will focus on processing of plastics, glass and metals. Organic waste will be trans-

formed into compost, briquettes and/or refuse-derived fuel, depending on the local market conditions.

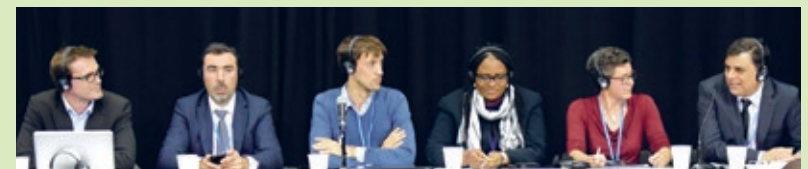
This private sector-driven demonstration project aims to further enhance the waste value chain in Mozambique and create an enabling environment for private sector involvement in waste management activities in the country.

The NAMA is an innovative component of the project, and a Working Group for the Development of a NAMA in the Waste Sector in Mozambique has been established, chaired by the Mozambican Ministry of Environment. It has become the prime mover behind the project.

The project value is EUR 0.5 million, which covers about half the investment cost. The project is carried out by a consortium of Carbon Africa Ltd, the Mozambican Recycling Association and NIRAS. This project was selected under the fourth NCF call for proposals launched under the theme: 'Inclusive green growth projects contributing to private sector development'.

NCF is financed by the Nordic Development Fund and projects selected under the first four calls are administered by NEFCO.

PHOTO: BELGIAN MINISTRY OF ENVIRONMENT



Other international initiatives

NEFCO also participates in broader climate initiatives together with the Nordic Council of Ministers and other international groups and stakeholders. Examples of cooperation include:

- Participation in the Working Group on Fossil Fuel Subsidy Reform (FFSR) convened to undertake a project with the Global Subsidies Initiative of the International Institute for Sustainable Development to address the role of supporting FFSR (2013-2016).
- Activities as a Member of UNEP Bilateral Finance Institutions Climate Change Working Group, (2009-2012), together with AFD, the European Investment Bank, the Japanese International Cooperation Agency (JICA) and KfW Development Bank. The group was an effort to coordinate implementing agencies on climate finance issues of common interest. These included an annual mapping report, a thematic report on NAMA Financing-, and the first international workshop on NAMA Finance, organised and hosted by NEFCO, and side events at UNFCCC COP meetings in Cancún (2010), Durban (2011) and Doha (2012).
- NEFCO is an observer to the Baltic Sea

Regional Energy Cooperation (BASREC), which was established by the energy ministers of the Baltic Sea Region in 1998 in order to pursue sustainable development in the region and develop regional solutions to the challenges of economic growth and security of supply and climate. The NEFCO-administered carbon fund, the Baltic Sea Regional Testing Ground Facility was established under the auspices of BASREC.

- NEFCO has been admitted to the Climate Technology Centre and Network, the operational arm of the UNFCCC Technology Mechanism.
- NEFCO is currently an Observer to the Green Climate Fund and is seeking accreditation as an Accredited Entity under the fund.



NEFCO seeks to contribute to the international community of practice on Nationally Appropriate Mitigation Actions.



Short-lived climate pollutants (SLCPs)



Mitigation of methane and black carbon emissions offers an important near term opportunity for reducing the impacts of climate change.

SLCPs are agents that have a relatively short lifetime in the atmosphere, ranging from a few days to a few decades, but exert a significant warming influence on the climate. These short-lived climate pollutants are also dangerous air pollutants, with various detrimental impacts on human health, agriculture and ecosystems.

Methane, for example, is the second biggest cause of global warming. Methane abatement has a concerted near-term impact on global warming, particularly on vulnerable areas such as coral reefs and the cryosphere. Black carbon, another short-lived climate pollutant, is an area of acute relevance in the Russian arctic region and an area in which NEFCO is actively engaged.

In respect of results-based finance, NEFCO contributed to the G8/World Bank-convened Methane Finance Study Group in 2012-13. The Group made recommendations on the use of payment for performance mechanisms to finance methane mitigation in sectors including oil and gas production and natural gas processing, transmission, and distribution; coal mine methane; solid waste and wastewater management, and agriculture.

In terms of methane, NEFCO has been involved in a number of solid waste management investment projects through its carbon finance activities in Eastern Europe, Africa, Latin America and developing Asia, principally through the NEFCO Norwegian Carbon Procurement Facility (NorCaP). Also NEFCO's work through the Arctic Council Project Support Instrument (PSI) includes SLCP projects. See more on both NorCaP and PSI below.

Climate and Clean Air Coalition (CCAC)

The CCAC is an international forum whose focus is on methane, black carbon and Hydrofluorocarbons (HFCs). The CCAC's objectives are to address SLCPs by:

- Raising awareness of SLCP's impacts and the development of mitigation strategies.
- Enhancing and developing new national and regional actions, including by identifying and overcoming barriers, enhancing capacity and mobilizing support.
- Promoting best practices and showcasing successful efforts.
- Improving scientific understanding of SLCP's impacts and mitigation strategies.

NEFCO joined the CCAC in 2013. It had been working with financing issues around SLCPs for many years, particularly black carbon and methane, in the context of its financing of green growth projects dealing with energy efficiency and cleaner production mainly in Eastern Europe, but also in relation to its funds administration activities involving climate projects across the world. In addition to NEFCO joining the CCAC, it also administers the SLCP Trust Fund for the Swedish Environmental

Protection Agency. The purpose of the Swedish SLCP Trust Fund is specifically to contribute to the funding of projects that reduce SLCP emissions impacting the Arctic.

The CCAC Finance Initiative, of which NEFCO is a Lead Partner, is a global, cross-cutting initiative – compared with the sectorial initiatives such as agriculture, residential and transportation – which seeks to support the design of tailored finance strategies for the aforementioned initiatives and to build knowledge and capacity on finance, and provide outreach for high impact partnerships.

NEFCO was part of the Black Carbon Finance Study Group led by the World Bank and UNEP. The Group undertook its work in 2014-2015 as a cross-cutting and sector focused initiative under the CCAC's Financing of SLCP Mitigation Initiative. It was carried out by a group of 20 international experts, and undertook a work programme resulting in scaleable, actionable and demand driven recommendations for black carbon mitigation focusing on developing possible interventions in cleaner cooking/heating solutions and diesel vehicles.

Arctic Council Project Support Instrument (PSI)

The PSI financing focuses on actions against pollution and strengthens the Arctic Council's work on environment protection, including climate change. The PSI is a voluntary, non-exclusive mechanism for financing specific priority projects approved by the Arctic Council and can use a broad range of funding arrangements including grants and revolving instruments. For the period up to 2019, about 20 per cent of the pledged PSI resources have been tentatively allocated for projects dealing with clean production, energy efficiency, and short-lived climate pollutants (SLCP).

The PSI fund has eight contributors and pledgers, namely: Finland, Iceland, NEFCO, Norway, the Russian Federation, the Sami Parliament, Sweden and the United States of America.

Since the PSI became operational in 2014, eight Arctic Council projects have been completed or are near completion with PSI assistance. For the period 2016-2019, the PSI will be addressing a pipeline of approximately 40 projects with a total investment estimate of about EUR 60 million. In 2015 two studies, relating to mitigation of SLCP – black carbon from diesel sources – were completed and shared with the Arctic Council Expert Group on Short-lived Climate Pollutants: The “Mapping Substituting Solutions for Diesel Power Plants in Arctic and North-West Russia” and the Dolgoshcheliye Diesel Energy Conversion Study. The latter report has been translated into Russian for further discussions with local partners related to possible specific investment measures.



PHOTO: SHUTTERSTOCK

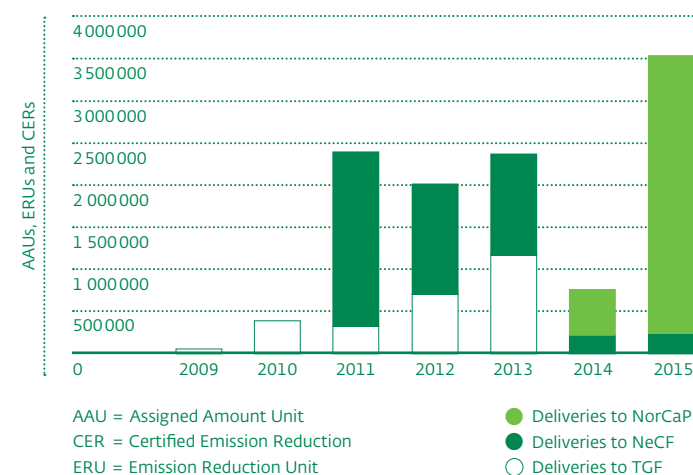
The PSI supports climate and environmental projects in the Arctic.

Carbon finance

Since 2004, NEFCO has been an active participant in the carbon market, in line with its belief in the concept of market-based approaches as an important mobiliser of international, private sector finance for GHG mitigation. These activities have focussed on the Clean Development Mechanism (CDM) and Joint Implementation (JI) instruments under the UNFCCC. To this end, it has structured dedicated specialist funds to originate, evaluate and contract emission reduction projects, and undertake portfolio management, including back office functions such as financial administration and distribution.

The total funds managed in NEFCO's three carbon funds have exceeded EUR 280 million. Since the first deliveries in 2009, over 11.5 million credits (equivalent to 11.5 million tCO₂e) have been distributed to investors in these carbon funds.

Emission reduction deliveries 2009-2015



NEFCO Norwegian Carbon Procurement Facility (NorCaP) for vulnerable CDM projects

NorCaP was established in October 2013 by NEFCO on behalf of the Norwegian government. The principal purpose of establishing this facility was to purchase carbon credits in the second commitment period of the Kyoto Protocol from so-called vulnerable CDM projects. The facility thus sought through its procurement to ensure the viability of existing CDM projects and their continued emission reductions, by financially supporting sustainable climate and development outcomes associated with the projects it purchased from, and, to the extent possible, maintain Measuring Reporting Verifying (MRV) capacity in the market.

NorCaP is wholly funded by the Norwegian government, acting through the Ministry of Climate and Environment, and the 17 contracted projects have been originated through two global, competitive Calls for Proposals (CFPs) organized by NEFCO.

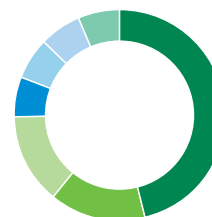
NorCaP purchases of Certified Emission Reductions (CERs) come only from registered projects under the CDM and from projects otherwise considered at risk of discontinuation due to the prevailing low CER prices (which fell to near zero and, at the time of writing, remain below the cost of generation and issuance). This includes projects that had been stalled, but with priority given to projects that could be re-started promptly. To this effect, NEFCO and the Ministry developed a methodology for establishing vulnerability.

NorCaP has purchased CERs from all CDM project types with the exception of hydro and wind projects (in countries other than LDCs). Other exceptions were industrial gases, namely trifluoromethane (HFC-23), produced as a by-product of chlorodifluoromethane (HCFC-22), nitrous oxide (N₂O) from adipic acid and coal-based energy production without carbon capture or storage.

The facility's target was to procure some 30 million CERs from eligible project types, and it reached this target by the end of 2015.

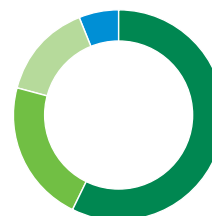
The NorCaP facility was notable in being able to receive the first credits from projects in the same calendar year of closing the first CfP. This demonstrates well the immediacy of results-based financing under an existing CDM instrument and the ability of the market to respond quickly to a price signal.

NorCaP projects by host countries (by number)



- Brazil: 7 projects / 44%
- South Africa: 3 projects / 19%
- Chile: 2 projects / 13%
- Colombia: 1 project / 6%
- Mexico: 1 project / 6%
- Nigeria: 1 project / 6%
- Malawi: 1 project / 6%

NorCaP projects by project type based on volume (tCO₂eq)



- Landfill gas: 17.8 Mt / 57%
- N₂O abatement: 6.8 Mt / 22%
- Mixed renewables: 4.5 Mt / 15%
- SF₆ reduction: 1.8 Mt / 6%

NEFCO Carbon Fund (NeCF)

The NeCF is a global public-private partnership carbon procurement vehicle launched by NEFCO in 2008 for long-term purchasing of greenhouse gas emission reductions under the Joint Implementation (JI) and the Clean Development Mechanism (CDM) up to 2020. At the time, it was one of the early post-2012 carbon funds.

The NeCF was directed at private investors (corporate entities with compliance obligations under the EU Emissions Trading Scheme, or EU ETS) as well as sovereign investors. Its peak capitalisation was EUR 165 million.

NeCF public investors

- Denmark
- Industrialisation Fund for Developing Countries (Denmark)
- Finland
- Norway
- Nordic Environment Finance Corporation

NeCF private sector investors

- DONG Energy (Denmark)
- Eesti Energia (Estonia)
- EPV Energy (Finland)
- Electrabel (Belgium)
- KymppiVoima (Finland)
- Vapo (Finland)

Case study

NorCaP

Preventing emission reductions in São Paulo State, Brazil

The CGR Paulínia Landfill (CGR stands for Centro de Gerenciamento de Resíduos, or Waste Management Centre) started operations in May 2000 and will subsequent to an extension, continue accepting waste from a catchment area of 7 million people until 2025. It is a modern, engineered site located in the Campinas Metropolitan Region, approximately 130 km from the capital of São Paulo State. The site accepts approximately 5,700 tonnes per day.

The project activity is to capture and destroy the landfill gas, which is typically 50% methane, a potent greenhouse gas. Six enclosed flares with a capacity of 2,500 m³/hr each are operating in the biogas complex. The biogas plant can potentially flare 25,000 m³/hr if all of the wells are connected to the system and additional flaring capacity is installed.

The investment is financed solely by revenue from the sales of certified emission reductions under the Clean Development Mechanism. However, due to the price collapse at the end of the Kyoto period (in 2012), the project has been struggling to meet the significant operating and maintenance costs, and therefore the project was

judged to be at risk of discontinuation under NorCaP's methodology developed to assess vulnerability.

The project is now supported by an Emission Reduction Purchase Agreement with the NEFCO Norwegian Carbon Procurement Facility (NorCaP), an instrument structured to support emission reduction projects which are stalled or at risk of discontinuation. Under this agreement, NorCaP procures 3.5 million CERs up to the period 2020, thereby ensuring the financial viability of the operation.

At the time of evaluation, only 55% of the gas wells at the landfill were producing biogas, 28% were non-producing, and 17% were not connected at all. The carbon revenue from NorCaP allowed the project owner, ESTRE, to hire additional technicians, invest in connecting the extra wells and further extend the collection system. This prevented the reversal of emission reductions and protected the investment.

It is ESTRE's intention to eventually promote utilisation of the LFG collected by the project activity as a fuel for generation of electricity, if the electricity market conditions improve.

PHOTO: CGR PAULÍNIA



CGR Paulínia is a state-of-the-art disposal facility.

PHOTO: JESSE UZZELL



The enclosed flares allow the project to mitigate up to 700,000 tCO₂e annually.

NeCF projects

The NeCF has sought to invest in a wide range of greenhouse gas mitigation projects including – but not limited to – renewable energy projects (e.g. biomass, small-scale hydropower and wind), energy efficiency and fuel switching. The portfolio developed to date has fallen almost exclusively into these categories. To be eligible for NeCF, projects should be in line with the requirements of the Kyoto Protocol, in particular fulfil the requirements of the CDM Executive Board and JI Supervisory Committee, and the specific eligibility criteria under the EU ETS. Over 45 projects were contracted by NEFCO on behalf of NeCF globally, with a strong geographic focus on Asia.

In 2014, a joint Call for Proposal was made under NorCaP and NeCF with funding from the Norwegian government, seeking new NeCF projects located only in LDCs. As a result, purchase agreements were signed for additional projects in Sudan, Democratic Republic of Congo and Mozambique. This part of CFP was targeted at CDM projects/Programmes of Activities (PoAs) with high sustainable development impact, and as a result consists of projects for improved cook stoves and waste management.

The NeCF is currently in portfolio administration mode until final deliveries are made in 2021.



The NEFCO Carbon Fund was structured as a flexible instrument. It was able to rapidly open and execute a window for LDC projects in 2014-15, focused on African projects.

Case study

NeCF

Green entrepreneurship in the Democratic Republic of Congo



PHOTO: ASH SHARMA

Biso na Bino offers skilled work for local artisans in Kinshasa.

Biso na Bino SARM is a bottom-of-the-pyramid business aimed at significantly reducing wood fuel consumption of Congolese households by providing them with affordable, improved cook stoves (ICS) to replace low-efficiency cook stoves by marketing efficient cooking solutions tailored to their specific needs. The project is carried out in Kinshasa, where households mainly rely on charcoal for cooking purposes, with inefficient devices. With climate financing from the NEFCO Carbon Fund using Norwegian funds, the dissemination of up to 16,938 affordable improved cook stoves un-

der the brand name Jiko Mamu and the associated awareness and training campaigns will help halving the households' wood fuel use, thus reducing greenhouse gas emissions by 36,167 tCO₂/year.

Biso na Bino SARM has started up manufacturing of the proprietary stoves at a greenfield site in Kinshasa. The plant was inaugurated in November 2015. Production is almost entirely manual, but the technology is proven and product quality is good, as evidenced by the extensive pilot programme and experience gained from projects in Ghana and Cote D'Ivoire.

Baltic Sea Region

Testing Ground Facility (TGF)

The TGF was a pioneering carbon fund operational since 2004 that had its origins in existing multilateral energy cooperation in the Baltic Sea Region (BASREC). The original philosophy of the TGF was to test projects within the Joint Implementation (JI) mechanism and gain experience in what was, at the time, an emerging carbon market. However, by the time the facility started operating and with the subsequent addition of private sector investors in 2006, the actual implementation of JI projects became more relevant than only 'testing' the JI concept (although the name remained).

The TGF was structured as a public-private partnership (PPP) with investors from six governments and nine heat and power and industrial companies. It was finally capitalised at EUR 35 million, split equally between public and private investors. As the first dedicated JI multi-donor fund in the market, TGF has been an excellent example of a functioning PPP, starting from its origins as a publicly backed demonstration facility and graduating to a commercially operating, compliance vehicle.

The fund was operational from 2004 until 2013, whereupon the final deliveries were made, and was wound up in 2014.

TGF public investors

- Denmark
- Finland
- Germany
- Iceland
- Norway
- Sweden

TGF private sector investors

- DONG Energy (Denmark)
- Fortum (Finland)
- Gasum (Finland)
- Keravan Energia (Finland)
- KymppiVoima (Finland)
- Outukumpu (Finland)
- Vapo (Finland)
- Vattenfall Europe Wärme and Vattenfall Europe Generation (Germany)

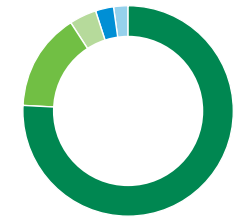
A review of the TGF, The Baltic Sea Region Testing Ground Facility – A Pioneering Climate Finance Instrument was published in January 2015 and is available at NEFCO's website. The review concludes that the objectives of the original public financing mechanism were fulfilled, with lessons learnt and returns generated for investors. More generally, the TGF offered a good example of a climate finance instrument that could achieve public policy goals also in a post-2015 Kyoto agreement with absolute emission caps. JI as a baseline and credit system has provided several lessons for the development of new mechanisms under the Paris Agreement: the power to incentivise innovation and ultimately capital investment to reach emission reduction goals, cost effectively, with due process and transparency.



The original philosophy of the TGF was to test projects within the Joint Implementation mechanism and gain experience in what was, at the time, an emerging carbon market.

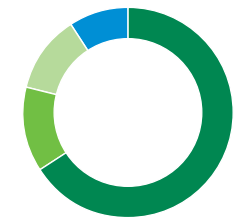
Final TGF portfolio

Delivered TGF credits per project type



- Energy efficiency: 3 projects / 76%
- Wind: 5 projects / 15%
- Landfill gas management: 1 projects / 4%
- Associated gas: 1 project / 3%
- Animal waste / biogas: 1 project / 2%

Delivered TGF credits per project country



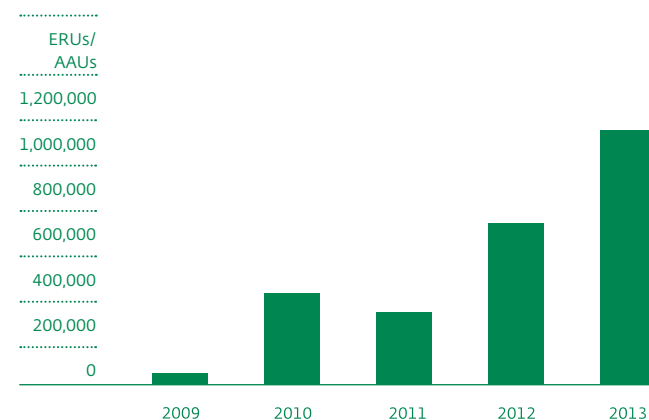
- Ukraine: 2 projects / 66%
- Russia: 2 projects / 13%
- Lithuania: 4 projects / 12%
- Estonia: 3 projects / 9%

Final TGF portfolio

Project	Country	Category	Delivered ERUs (and AAUs)
01 Saaremaa animal waste management project	Estonia	Animal waste/ biogas	57,155
02 Viru Nigula 24MW wind power project (Joint purchase with Swedish Energy Agency)	Estonia	Wind	115,851
03 Vanaküla 9MW wind power project	Estonia	Wind	52,656
04 Lapes landfill gas utilisation project	Lithuania	Landfill gas management	94,252
05 Benaiciai 16MW wind power project	Lithuania	Wind	113,742
06 Sudenai and Lendimai 14MW wind power project	Lithuania	Wind	69,003
07 Rudaiciai 30MW wind power project	Lithuania	Wind	43,954
08 Khimprom waste coke oven gas utilisation project	Russian Federation	Energy efficiency (supply side)	272,167
09 Associated petroleum gas project (Confidential)	Russian Federation	Associated gas	69,935
10 Alchevsk coke plant waste heat recovery	Ukraine	Energy efficiency (demand side)	872,753
11 Industrial cleaner production project (Confidential)	Ukraine	Energy efficiency (demand side)	863,840

TGF deliveries to investors

Total 2,625,308 ERUs/AAUs



Technical support to the climate neutral Norway programme

Building on NeCF and NorCaP, NEFCO provides since 2015 technical support to the Norwegian Ministry for Climate and Environment through the detailed evaluation of short-listed projects under the Norwegian Carbon Credit Procurement Program.

These evaluations are aimed at reducing the risks associated with the Ministry's procurement of CERs under its own global procurement programme. This includes an assessment of:

- Project technology and viability of the underlying industry
- Main stakeholders and key agreements
- Technical capacity of the involved parties
- Credibility and integrity of the involved parties
- Quality of data provided in the submission,
- Verification of sustainable development benefits from the project
- Environmental and social impact assessment
- Assessment of the regulatory compliance of the project activity.

As of March 2016, over a dozen projects have been evaluated by NEFCO for this programme within a variety of sectors.

Case study

TGF

Coke oven gas utilization at OOO PO Khimprom, Kemerovo, Russia



PHOTO: ISTOCK

Coke-oven gas is generated in coke production when coal is converted to coke. Coke is a key ingredient in the steel making process, itself an important part of the manufacturing economy of the Kemerovo region. The objective of this Khimprom JI project was to use coke-oven gas which would otherwise be wasted as a fuel from a nearby coke facility at two new boilers at the Khimprom site for the plant's own consumption. Khimprom is an example of a circular economy project whereby waste gases from one industrial facility are utilised as heat in another.

Khimprom was at the time the biggest producer of industrial and consumer chemicals in the Kemerovskaya oblast, located over 3,400 km east of Moscow. The Khimprom facility produced more than 20 different types of chemicals. The JI project contributed to enhance efficiency economic savings and to improve the reliability of energy (steam) supply to the production facilities of Khimprom as well as to reduced greenhouse gas emissions. Without the JI project, excess coke-oven gas would have been flared. Furthermore, less steam was needed from the Novo-Kemerovo Combined Heat and Power Plant burning coal and natural gas. Coke-oven gas also substituted some steam produced by three existing natural gas boilers at Khimprom.

Khimprom is an example of a circular economy project.

The investments at the Khimprom site included two new boilers, a 1.7 km long coke-oven gas pipeline as well as some additional instrumentation for gas consumption monitoring and automation devices.

The contract for this coke-oven gas utilisation project was signed in 2017 and was the first Emission Reduction Purchase Agreement signed by NEFCO on behalf of TGF for a project in the Russian Federation. The total verified emissions reductions from this project amounted to 245,000 Emission Reduction Units and were transferred to the TGF in 2013.

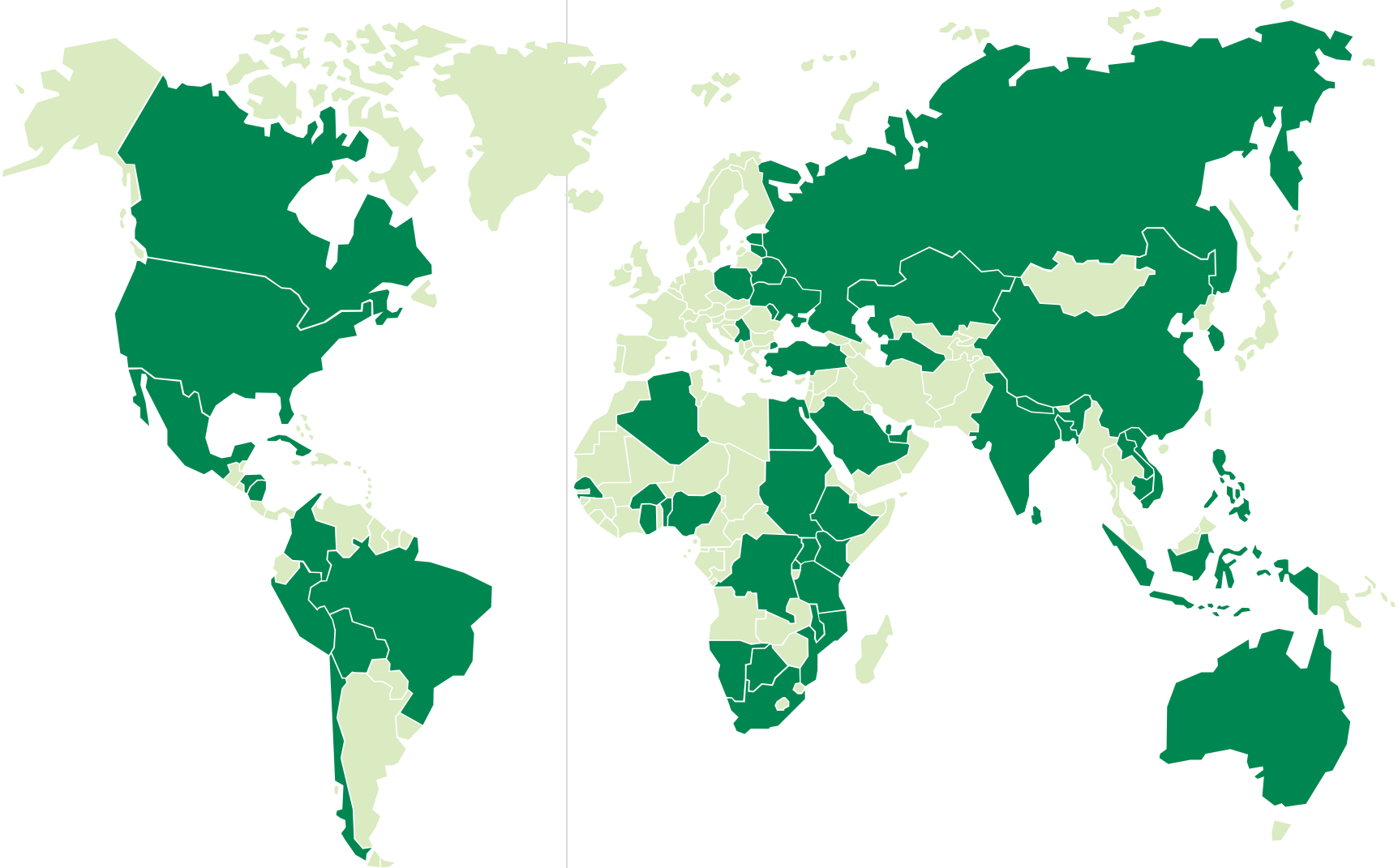


...the funds from ERU sales allowed the introduction of other energy savings and environmental projects at the enterprise aimed at a reduction of emissions and increase in production efficiency.

I.Y. Kazantsev
Director General
LLC PA Khimprom

Geographic distribution of NEFCO's project portfolio

Country	
Algeria	Mexico
Australia	Moldova
Bangladesh	Mozambique
Belarus	Myanmar
Benin	Namibia
Bolivia	Nepal
Botswana	Nicaragua
Brazil	Nigeria
Burkina Faso	Peru
Cambodia	Philippines
Canada	Poland
Chile	Qatar
China	Russia
Colombia	Rwanda
Congo	Saudi Arabia
Cuba	Senegal
Egypt	Serbia
Estonia	Singapore
Ethiopia	South Africa
Georgia	South Korea
Ghana	Sri Lanka
Honduras	Sudan
India	Tanzania
Indonesia	Turkey
Kazakhstan	U.S.
Kenya	Uganda
Laos	Ukraine
Latvia	United Arab Emirates
Lithuania	Vietnam
Malawi	



Energy efficiency and renewable energy finance

It is well acknowledged that enhancement of energy efficiency and continued growth of renewable energy in our energy system will play a key role in mitigating the impacts of climate change. NEFCO has long experience of developing small and medium-sized projects (SMPs) in these two areas. It regards SMPs as the 'engines of green growth', offering innovation and job creation in addition to climate and environmental outcomes.

NEFCO has developed and implemented financial products, notably the Cleaner Production Facility (CPF) for private sector and Energy Savings Credits (ESC) for the public sector under its Nordic Environmental Development Fund, aimed at serving energy efficiency, both as regards demand and supply side, in Eastern Europe. This work often involves institutional reforms and capacity building to ensure sustainability. It has also financed numerous renewable energy projects using biogas, solid biomass, wind and solar resources in Eastern Europe. Outside Europe, over two-thirds of its carbon finance projects are related to energy efficiency or renewable energy investments.

NEFCO has also used on a case by case basis incentives and financial tools dependent on the result of the project, including the Energy Savings Company type models. In addition, NEFCO tries with its extensive body of



Enhancement of energy efficiency and continued growth of renewable energy in our energy system play a key role in mitigating the impacts of climate change.

work in the field of energy efficiency projects to create a financing structure that captures inherent profitability in the projects. The use of blending instruments consisting of public grant funds in combination with NEFCO loans, such as the Swedish co-financed Demo-UkrainaDH initiative in the district heating sector is, for example, used together as leverage in an effort to lower the barriers for implementation.

Within the multilateral environment, NEFCO has long-standing energy alliances in Eastern Europe through the Eastern Europe Energy Efficiency and Environment Partnership (E5P) and Northern Dimension Environmental Partnership (NDEP), where NEFCO as Implementing Agency and co-financier complement the work of larger International Financial Institutions such as the EBRD and the World Bank with its ability and experience of executing smaller projects and its local presence in Ukraine and Russia.

PHOTO: PATRIK RASTENBERGER



Case study

DemoUkrainaDH

Upgrading district heating systems in Ukraine

The DemoUkrainaDH Funding Program, launched in 2012, offers Ukrainian district heating companies the opportunity to modernise their systems by developing a demonstration project. The project has to comply with state-of-the-art technology requirements and design principles, resulting in energy savings of at least 30 % and significant reductions of CO₂ emissions. Until now, the programme has successfully developed a total of sixteen projects, which are at various stages of implementation, including five that have been completed. Beyond realising the 'physical' results on the ground, the involved companies achieve a most important result by acquiring the skills, capacity and experience to work with International Financing Institutions (IFIs), which prepares them to engage in more exten-

sive investment projects. The development takes place in a complex reality. European and Ukrainian standards and norms often conflict with each other and, in these cases, solutions have to be found to make it work. The present difficult political and economic circumstances in Ukraine have also had an impact on the development of these projects.

Preliminary results for the current sixteen projects under development and implementation show that the reduction of fossil fuels is estimated at 95 GWh/year and the reduction of CO₂ emissions at 19,600 tonnes per year. Another four demonstration projects are going to be selected for implementation, which will lead to further reductions in heat consumption and CO₂ emissions.



PHOTO: NICO VAN DER WOUDE

District heating modernisation offers an important emission reduction opportunity.

Other climate funds

NCF Themes for the first four Calls for Proposals

- NCF1: Water resources and energy efficiency (2009)
- NCF2: Renewable energy and urban adaptation (2010)
- NCF3: Innovative low-cost climate solutions with the focus on local business development (2011)
- NCF4: Inclusive green growth projects contributing to private sector development (2013)

The Nordic Climate Facility (NCF)

NCF finances projects that have a potential to combat and/or adapt to climate change and reduce poverty in low-income countries. NCF is a grant programme - with co-financing requirements - financed by the Nordic Development Fund and administered by NEFCO (as regards projects selected under the first four NCF Calls for Proposals). It was established in 2009 and aims to promote the transfer of Nordic climate-friendly technology, expertise and innovative ideas to low-income countries within areas susceptible to climate change, such as energy, transport, water and sanitation, health, agriculture, forestry and natural resource management. NCF's purpose and objective is also to encourage testing of concrete concepts relating to climate change and, especially, to facilitate partnerships between the private sector in the Nordic countries and the private sector in developing countries. Therefore all of NCF projects are located and implemented in close cooperation with one or more local partners in developing countries. NCF encompasses both mitigation and adaptation or combinations thereof.

The NCF operates on a thematic Call for Proposals basis, with each Call focusing on a specific climate change as shown beside.

During the four Calls administered by NEFCO, 51 projects have been undertaken in

20 least developed and low income countries. NEFCO will continue to administer these projects until the end of 2017.

More than half of the projects have been completed successfully and replication is ongoing. Many of the implemented NCF projects have already demonstrated positive and concrete results, including for future local business development. The projects represent valuable up-scaling potential and a lessons-learned tool relevant to swifter implementation of the needed paradigm shift to low-carbon development. NCF has also shown that it is possible to mobilise private climate funding, as the total value of the project activity of some EUR 34 million includes 41% own co-financing, of which 77% stems from private co-investments.

In December 2015 at COP21 in Paris, three NCF supported activities were among the 16 projects awarded the United Nations Momentum for Change Award, which is given to innovative and replicable climate projects.

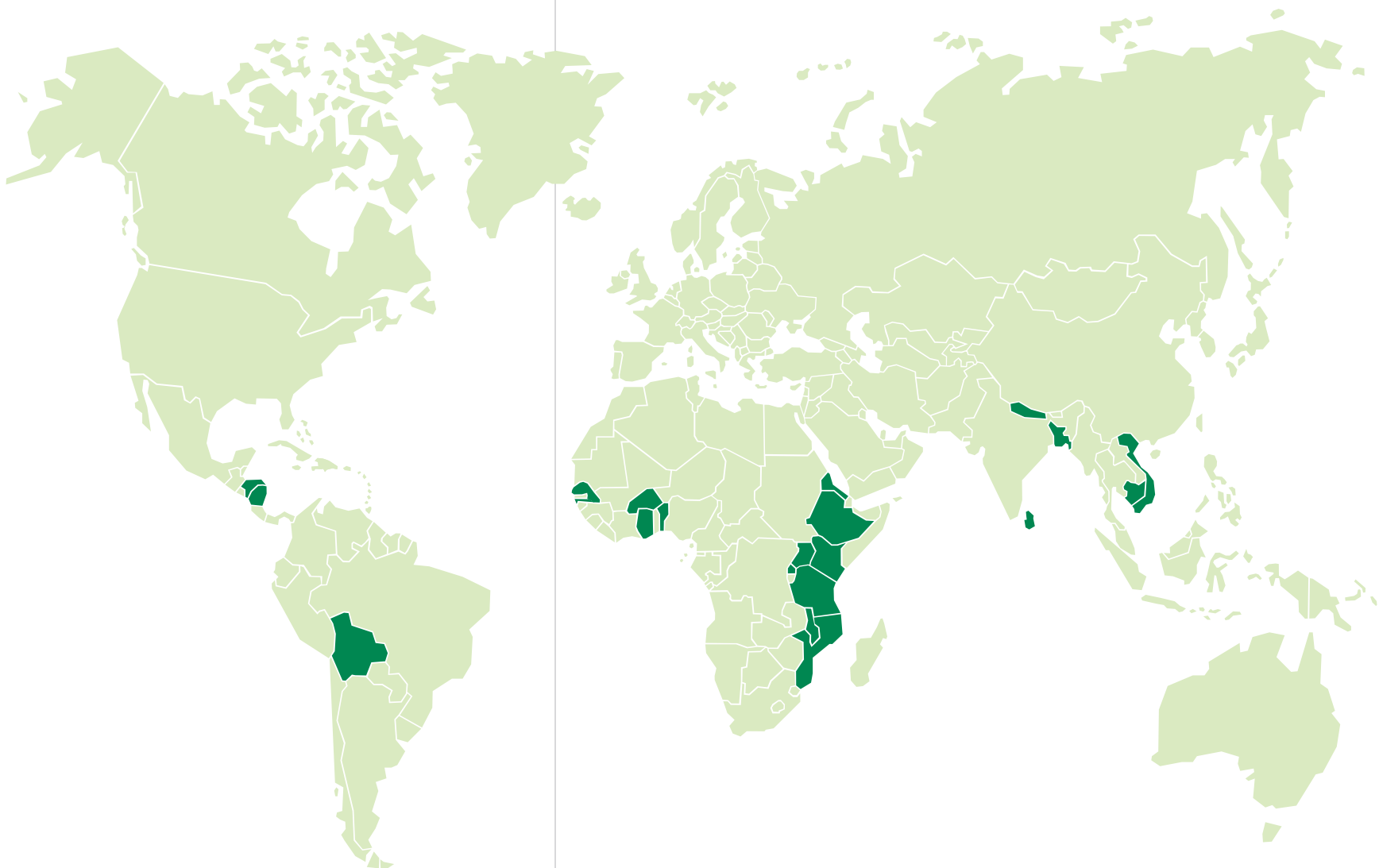
Geographic distribution of NCF projects (NCF1-4)

Of the 51 projects, 20 were related to mitigation of climate change impacts, 14 were directed at adaptation activities and 17 had a combination of mitigation and adaptation elements.

Country

Bangladesh	1
Benin	1
Bolivia	4
Burkina Faso	1
Cambodia	2*
Ethiopia	4
Ghana	5
Honduras	1*
Kenya	12*
Laos	1*
Malawi	2
Mozambique	2
Nepal	2
Nicaragua	2*
Rwanda	4*
Senegal	1
Sri Lanka	1
Tanzania	5*
Uganda	7*
Vietnam	2

* Includes regional project(s)



Case study

NCF

Prolonged droughts in the Isiolo district in Kenya put great stress on the communities' water supplies, reduce livestock production – resulting in food insecurity – and increase the incidence of water-borne diseases.

'The Community based adaptation to climate change through environmentally sustainable water resource management project' implemented in Isiolo has installed nine modern and innovative Grundfos LIFELINK water systems in co-operation with Danish Red Cross and Kenya Red Cross Society. As a result, more than 15,000 people living in the area have improved access to safe water, and 90% of them have better knowledge on hygiene and sanitation issues. At the same time, the project has reduced emissions of greenhouse gases by replacing the previously used diesel pumps.

Combining business with climate mitigation, adaptation and development

The heart of the system is a submersible pump driven by solar panels. The water pump includes a satellite link to a computer-based system with an integrated communication and surveillance module. Performance can be monitored remotely and in case it breaks down, a local service partner will provide the necessary maintenance. The communities pay for their water via mobile telephones using a 'water key'. The user fees are used to cover the operating and maintenance costs.

In this NCF project, the private sector business incentive combined with a clear technology transfer component has led to adaptation impacts alongside mitigation and development benefits. It has also generated scaling-up activities elsewhere.



Sustainable water management is best practiced at a community level.

Barents Hot Spots Facility (BHSF)

NEFCO works with environmental issues and projects in the Arctic and the Barents Region (that encompasses the northernmost parts of the Nordic countries Norway, Sweden and Finland, as well as European Russia). NEFCO and the Arctic Monitoring and Assessment Programme (AMAP) have mapped out 42 environmental 'hot spots' that require measures of protection and action. Several of these 'hot spots' have severe climate implications, for instance from burning fossil fuels at power plants or releasing methane from northern coal mines.

The BHSF is managed by NEFCO on behalf of the Governments of Denmark, Finland, Iceland, Norway and Sweden. The fund provides grants to finance technical assistance to projects, which typically include key pre-feasibility and feasibility studies, business and financing plans, or environmental impact assessments. The BSHF assets amount to EUR 6.7 million, and over 70 projects or other initiatives have been funded to date. The fund also co-finances an adviser on climate, environment and 'hot spots' at the International Barents Secretariat in Kirkenes, Norway.

On the climate side, in the early years, the BHSF funded studies related to the Joint Implementation (JI) in Russia on how to ap-

ply such climate funding for environmental investment projects, including bundling of smaller projects, and it also looked at using the voluntary carbon markets for such projects. Although JI as such no longer applies, the climate issues and their financial aspects are important in all projects that NEFCO contemplates funding. Today, there is particular focus on short-lived climate pollutants (SLCPs) in the Arctic. NEFCO co-operates closely with the relevant organs within the Arctic Council (AC) and the Barents Euro-Arctic Council (BEAC), not least related to the development of measures to curb emissions of black carbon from a number of different kinds of sources in Russia, including diesel stations, gas flaring and open burning in agriculture.



The Barents Euro-Arctic Council (BEAC) is the forum for intergovernmental and interregional co-operation in the Barents region.

Case study

Agricultural open burning

One of the major pollutants having a negative impact on the Arctic Region is “black carbon”, i.e. particle pollution and soot from combustion processes. Black carbon can be carried in the upper atmosphere thousands of kilometres to eventually deposit, cover and decrease the reflectivity of the snow and ice surface in the Arctic and other snow and ice-covered areas. The majority of black carbon originates from open burning of fields, forests, rain forests and savannahs. Recent studies show that the biggest contributors to black carbon emissions reaching the Arctic region by wind are the agricultural sectors in Russia and Ukraine due to uncontrolled field and forest burning. The Arctic Council estimates that as much as 30% of the accelerating melting in the Arctic region is caused by black carbon, making it the single biggest contributor to temperature change. To turn the negative trend of black

carbon emissions, large transition processes are needed in policy and operational practices in various countries and sectors. Mobilising the necessary investments for such transition processes is challenging to many governments, due to a lack of competence, experience and funding.

NEFCO, supported by Sweden works with the International Cryosphere Climate Initiative (ICCI) on different initiatives to launch feasible, diversified and relevant investments and actions with the ultimate aim to reduce agricultural open burning in Russia, Ukraine and Belarus to European Union levels. In extension, this should significantly reduce emissions with negative impact on climate, air and soil quality, as well as on human health in and beyond the target countries, while at same time improving the farmers’ physical, financial and human, and social capital resources. —

Open burning accounts for a significant proportion of black carbon emissions in the Arctic region.

PHOTO: SHUTTERSTOCK





Nordic Project Fund (Nopef)

Nopef was established by the Nordic countries in 1982, with the aim of to strengthening the competitiveness of Nordic companies through supporting feasibility studies who are aimed at internationalisation. Today Nopef finances feasibility studies for small and medium-sized companies related to green growth and sustainable development. Nopef currently administers a portfolio with 150 active projects. The fund is financed through the Nordic Council of Ministers.

To date, Nopef has financed more than 2,800 projects globally. Over the years, Nopef's focus on project countries has shifted from financing feasibility studies in Eastern Europe to new developing economies such as Brazil, Russia, India and China. Today, the Nordic SMEs are investing to a greater extent in Africa, the Middle East and North America. Of the current portfolio, Asia accounts for 32%, Africa 10% and South and Central America 24%.

There is broad variation among the sectors represented in the project portfolio, encompassing projects within renewable energy, energy efficiency, cleaner industry and the cleantech sectors. Of the projects, 30% have a climate focus, and are either mitigation and/or adaptation projects. For example biogas, waste management, solar and wind

power projects, and small-scale hydro power projects on the mitigation side, and agriculture, construction, forestry and water sector on the adaptation side. Furthermore the portfolio includes energy-efficient and environmentally friendly technology as well as, for example, technology solutions for fighting oil spills and technology for charging electrical cars.

According to surveys of the supported companies, the foreign businesses established have contributed to positive economic effects through increased turnover and employment as well as strengthened competitiveness and increased opportunities, or technology and knowledge transfer. On average, the projects have resulted in approximately EUR 1 million in direct investments and EUR 3 million in sales over a three-year period after the business start-up in the project country. This is expected to contribute to EUR 30 million annually in foreign investments and EUR 90 million in sales, as some 30 projects annually lead to actual business establishments.

Case study

Nopef

Clean water for India using solar power



PHOTO: PUREH₂O A/S

PureH₂O offers clean drinking water based on solar energy.

The Danish company PureH₂O A/S manufactures mobile clean water solutions in sparsely-populated areas. The company has created solutions for clean drinking water with its BlueBox concept. The company can supply drinking water systems in most weather conditions and to most geographical areas, where access to water is either entirely lacking or where water quality is poor.

The company was founded in the early 2000s after the company's current owners, Ellegaard A/S, purchased a small company that had developed the product. Ellegaard A/S specialises in manufacturing and maintaining conveyor belts, but the corporate acquisition was conducted with a desire to contribute to sustainable development and with a vision for the future in respect of the need for clean drinking water around the world. Development of the product was able to make use of the knowledge attained by the parent company in over five decades within the metal industry.

The company currently offers six different products, all based on the same principle, and they include a filtration system with cooling and UV lighting to eliminate bacteria, discolouration and odours in the polluted water. The product is designed so that it can be operated using solar power or using a dedicated generator. It is therefore suitable for areas where electricity provision is poor. The product can filter the water regardless of the water source, and can filter both fresh water, brackish water and salt water.

When the company was granted support for a pilot study on the Indian market, the company had primarily supplied to civil emergency response organisations, as well as to UNDP, UNICEF and the Red Cross in Denmark – partly as the product is easy to transport and set up in refugee camps or disaster areas. This water solution had been supplied to almost 30 countries in the first 10 years, but the company's long-term plan was also to grow internationally and establish itself on markets with a considerable need for clean drinking water.

The pilot study resulted in PureH₂O creating a partnership with an Indian company within production and expertise. Together they developed products for organisations such as UNICEF and WHO, and the partnership contributed to PureH₂O now being able to supply a wider product range. For now, PureH₂O is developing a financial model designed for the Indian market. The aim is to offer the ability to pay for the usage and not for the equipment.

Further information

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Printed matter



NEFCO's Board of Directors has decided to compensate for all carbon emissions created by the NEFCO's business travel and energy consumption. According to calculations made by the corporation's Environmental Department, NEFCO emits an average of some 195 tonnes of carbon dioxide annually from business travel and energy consumption at its offices.

This means that NEFCO has emitted some 4,875 tonnes of CO₂ since it was established 25 years ago. Through its carbon fund activities, NEFCO has acquired 84,443 carbon credits for its own account. Of these carbon credits, 9,800 has been used to compensate for NEFCO's emissions over 50 years, i.e. from when it was established in 1990 until 2040.

The remainder of these carbon credits was end of 2015 cancelled voluntarily on behalf of NEFCO's owners, namely the Nordic Governments, in line with each country's financial contribution to NEFCO's paid-in capital.