NORDIC CLIMATE FACILITY

Nordic Development Fund • Nordic Environment Finance Corporation

Nordic Climate Facility (NCF)
Annual Review 2014

NEFCO, Helsinki, 10/04/2015
Final

TABLE OF CONTENTS

Cover photo by Kari Hämekoski: An Okelo Kuc stove in Lira, Northern Uganda. The name means 'peace-bringer', as meals can be cooked faster.

1. INTRODUCTION

The Nordic Climate Facility (NCF) provides grants with co-financing requirements to encourage and promote technological innovations in areas susceptible to climate change in low-income countries. NCF is financed by the Nordic Development Fund (NDF) and administered by the Nordic Environment Finance Corporation (NEFCO). The facility is targeting private and public organisations with relevant experience which are registered in Denmark, Finland, Iceland, Norway or Sweden and which are in a partnership with a local partner will undertake to implement projects in one or more eligible countries. To date, NCF has launched five calls for proposals for innovative ideas, each focusing on specific themes relating to climate change and development.

This review has been prepared by NEFCO. It summarises and analyses the progress of NCF in 2014. The report is divided into six main sections. After the introduction and executive summary, section three discusses the progress towards the achievement of NCF's objectives on a general level and section four summarises the implementation status of each NCF call at the end of 2014. The fifth section focuses on the institutional aspects of NCF administration as well as co-operation and division of responsibilities between NEFCO and NDF. The last section contains the discussion and conclusions. Results of projects completed in 2014 are presented in Annex 1.

2. EXECUTIVE SUMMARY

The year 2014 was the fifth full year of operations since the NCF facility was launched in late 2009. Activities during the year focused on the selection and contracting of NCF4 projects, the day-to-day management of NCF1-3 projects, as well as the planning and launch of NCF5. At the end of 2014, NCF had 50 projects in various stages of implementation. As of 31 December 2014, the cumulative funding for five NCF calls for proposals was EUR 26.37 million. The total value of the programme was approximately EUR 39.5 million (including the co-financing share for the projects).

In 2014, a total of nine projects selected under NCF1 and NCF2 were completed, bringing the total number of completed projects to 16. Two NCF1 projects continued to face delays and the conditions for continuing one of the two projects were assessed. All 14 NCF3 projects have been implemented and are well underway, with the first projects due for completion in 2015.

Negotiations with shortlisted NCF4 projects started in the autumn of 2014 and by the end of the year, grant agreements had been signed for three projects. In December 2014, the fifth call for proposals (NCF5) was launched with the theme *Climate Resilience in Urban and Private Sector Contexts*. The deadline for prequalification applications was 30 January 2015.

The results and progress of the completed and ongoing NCF projects have, during 2014, contributed to the achievement of key NCF objectives. These objectives are: (i) facilitating exchange of technology, knowledge, know-how and innovative ideas between the Nordic countries and low-income countries in the field of climate change; (ii) increasing the low-income countries' capacity to mitigate and adapt to climate change; and (iii) contributing to sustainable development and the reduction of poverty.

Amongst the development impacts of NCF projects completed during 2014 are direct improvements in access to safe water and sanitation to reduce the incidence of water-borne diseases. Projects related to urban adaptation have increased the preparedness of target communities to impact of climate change and hydro-meteorological disasters as well as increased the capacity of local municipal and governmental authorities to address issues related to climate change adaptation and to take them into account in urban planning. Projects have also increased the income of the beneficiaries and created employment and business opportunities.

The business development aspects of NCF projects are expected to increase further, since projects selected under NCF3 and NCF4 are increasingly expected to support the involvement of private sector in climate change mitigation and adaptation actions. Concrete business development projects have the potential to leverage more private funds for climate actions after the completion of the NCF financed project. NCF financing has increasingly strengthened its role as seed money for innovative climate change related business ideas rather than support for business as usual activities.

3. PROGRESS ASSESSMENT

3.1. Progress towards achieving the overall NCF objectives

The main objectives of NCF are to: (i) facilitate the exchange of technology, knowledge, know-how and innovative ideas between the Nordic countries and low-income countries in the field of climate change; (ii) increase the low-income countries' capacity to mitigate and adapt to climate change; and (iii) to contribute to sustainable development and the reduction of poverty. NCF's purpose and objective is also to encourage testing of concrete concepts relating to climate change and, more specifically, to facilitate partnerships.

For NCF1 and NCF2 the expected results included the financing for feasibility studies, demonstration and pilot projects as well as development of strategies for showcasing and adopting suitable technologies as viable alternatives to develop business-oriented initiatives related to climate change mitigation and adaptation. For NCF3, the expected results are similar with the exception of pre-feasibility and feasibility studies, as it was decided to give priority to concrete investment projects based on the lessons learned from NCF1 and NCF2.

NCF4 and NCF5 continue along the lines of NCF3. In NCF4, the focus was shifted towards various direct and indirect ways of supporting private sector development, promoting economic activity and facilitating the private sector's participation in climate-related development efforts. NCF4 projects are expected to promote green growth that stimulates low carbon development, alleviates poverty and/or reduces vulnerability and increases resilience to climate change. Projects to be financed under NCF5 - approved by the NDF Board of Directors on 25 November 2014 and opened in December 2014 - are expected to support climate solutions which are implemented by public and private sector actors through a diversity of partnerships under the theme *Climate Resilience in Urban and Private Sector Contexts.* NCF5 projects are also expected to have even stronger gender impacts as compared to previous NCF calls.

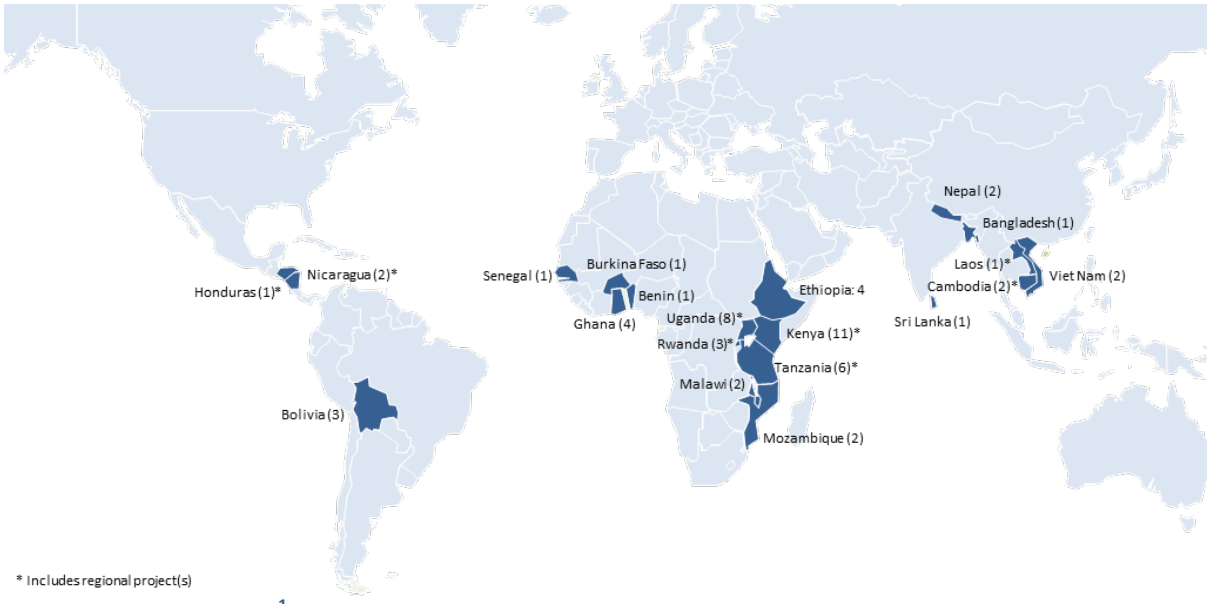

Figure 1. NCF projects.[1]

[1] Due to some regional projects, the total amount of NCF projects that are completed or under implementation is 50.

3.2. Mitigation and adaptation impacts

All NCF projects increase the host countries' capacity to mitigate and adapt to climate change[2] and facilitate the exchange of technology, knowledge, know-how and innovative ideas between the Nordic countries and the host countries related to climate change. NCF projects are almost equally divided between mitigation and adaptation.

The total estimated CO_{2e} reductions for the whole NCF portfolio is a somewhat challenging task to calculate and estimate in isolation to the direct impacts linked to completed projects. More than 50% of the projects are ongoing, and expected emission reductions are sometimes optimistically calculated. While mitigation impacts are of key consideration for NCF, it has never been the only selection criteria as adaptation, innovativeness and development impacts are similarly crucial. Most projects combine mitigation and adaptation and are classified as combination projects. Some projects are classified as mitigation only even though there typically are some adaptation impacts as well. The multifactor criteria used in project evaluation and selection leads to NCF projects not being comparable as far as their impacts are concerned.

The annual direct CO_{2e} reductions in mitigation projects are characteristically quite modest, given the small scale of the projects. The annual direct reductions typically vary from 100 t/a to 4000 t/a. In some cases, as in FCG's Nepalese project, externally assessed emissions reductions are 16,500 t/a from the improved cookstoves. In some cases considerably more emission reductions will be generated and there are also indirect reduction opportunities identified via scaling-up and replication potential. For adaptation projects the results typically vary from comprehensive studies, climate modelling, adaptation strategy work to concrete water harvesting, sustainable agricultural, safe water access, tree planting and erosion control activities – typically closely linked with development impacts.

[2] All NCF2-NCF4 projects have passed the NCF's climate screening criteria for mitigation and/or adaptation. NCF1 projects were also assessed later, after the introduction of the NDF Climate Screening tool to meet the criteria.

Table 1. Impacts of completed NCF mitigation and combination projects

Grantee	Name of project	Actual direct mitigation impacts, tCO_{2e}/a	Expected lifetime	Actual total direct mitigation impacts, tCO_{2e}	Scaling-up potential	Status as of 31.12.2014	Assessment/comments
Gaia Consulting Oy	GHG Mitigation and Sustainable Development through the Promotion of Energy Efficient Cooking in Social Institutions in Ethiopia	1,280	5	6,400	Potential exists, funding pending	Completed in 2012	
Hifab Oy	Demand Side Management for Climate Change Adaptation for the Ethiopian Power Sector	-	-	-	Approx. 1000 t/a if the recommendations implemented; considerably more if the saved energy is assumed to be exported to the neighbouring countries with high EF	Completed in 2012	Study. Also adaptation related.
Raw Materials Group AB	Energy efficient recycling of electric and electronic scrap, e -scrap, Ghana	95	10	950	Considerable potential, up to 100,000 t/a in Ghana, and more elsewhere in Africa	Completed in 2013	Mainly a study and capacity building project
Danish Red Cross	Community based adaptation to climate change through environmentally sustainable water resource management in Isiolo District in Kenya	2,670	15	40,050	Notable scaling-up potential, and replication on-going	Completed in 2014	Also adaptation impacts
Solvatten AB	Enhancing capacity for adaptation to and mitigation of climate change in Kibera, Nairobi	5,700	7	39,900	Good scaling-up potential, and replication on-going	Completed in 2012	Also adaptation impacts
Motiva Services Oy	Strengthening National Capacities on Energy Efficiency, Nicaragua	-	-	-	4,000 t/a of direct potential if the suggested measures will be implemented	Completed in 2013	Study and capacity building project
Norges Vel, Norway	Sustainable renewable energy businesses in Uganda	538	10	5,380	43,540 t/a up to 30 years	Completed in practice in 2014	Replication continuing
FCG Finnish Consulting Group Ltd, Finland	Promoting Renewable Energy Technologies for Enhanced Rural Livelihoods, Nepal	16,500	6	99,000	Some continuation possible (linked to other on-going activities)	Completed in 2014	Lifetime could be longer, also adaptation impacts
Reykjavik Geothermal ehf, Iceland	Karisimbi Geothermal Prospect, Rwanda	-	-	-	Should the drilling be successful, a 10 MW pilot plant could reduce up to 60,000 t /a over a lifetime of up to 25 year	Completed early in 2014	Management support and capacity building project
Royal Institute of Technology (KTH), Sweden	Urban and industrial waste to energy-promoting sustainable development in Bolivia	-	-	-	Potentially up to approximately 50,000 t/a CO_{2e} (indirect) if the key recommendations can be implemented with additional potential identified.	Completed in practice in 2014	Mainly a study, also adaptation related

For adaptation, defining concrete results and/or adaptation indicators is still somewhat challenging. The impacts of climate change on social and developmental issues, such as health, livelihoods, food and water, education and security, are expected to increase and could lead to water shortages and droughts, increased risk of food shortages, the expansion of aridity as well as impacts on crops as a result of increased difficulty to predict weather patterns. Adaptation impacts are hence typically closely linked to development impacts.

The key adaptation benefits of NCF projects are linked for example to ensuring access to safe and affordable water for the beneficiaries, capacity building of the communities and partners involved, understanding potential adaptation measures that are crucial to the management of climate-related disasters, facilitating better planning for infrastructure development and improving preparedness for flood disaster prevention. Particularly in NCF2, the projects that focused on *Urban Adaptation* have provided local and national authorities with the relevant tools to address the risk of floods in urban areas and establish early warning systems. Each NCF call has also included projects that are implemented in rural areas where adaptation measures are necessary to secure the farmers' livelihoods as a result of unpredictable weather events. This entails often the introduction of new 'climate smart' farming techniques such as the use of cover crops to prevent erosion of the soil during harvest or combining agriculture with forestry.

Please see Annex 1 for a detailed description of climate change impacts of NCF projects completed during 2014.

3.3. Development impacts

NCF projects aim to tackle climate change issues through a diversity of measures. However more emphasis is being put on concrete investment projects that encourage the private sector's involvement also in development efforts. Already in NCF1, only two out of the fourteen projects were studies but the remaining twelve projects were investment projects or combinations of some concrete activities with studies, capacity building and strategy work. In NCF3 and NCF4, all projects are expected to generate tangible results whereby stand-alone studies or capacity building activities are no longer accepted unless they result in concrete business development and investments.

NCF projects are required to result in defined development impacts, which, in most cases, are closely linked to adaptation and sometimes also to mitigation impacts. Again, the magnitude of these impacts varies due to the multifactor criteria used for project selection. Some typical development impacts are income creation and employment, improvements in nutrition and health and access to safe water.

NCF projects completed during 2014 were expected to lead to savings in energy costs in low-income communities, reduced exposure to indoor air pollution especially for women and children; new employment opportunities, and reduction of poverty. Many projects have also built the local capacity to address issues related to climate change adaptation. Adaptation projects can protect vulnerable developing societies, promote stability and contribute to environmentally sustainable urban development. While not a prominent feature of projects, a few of them also have placed particular emphasis on cross-cutting issues such as gender equality. For example, improved cook stoves have diminished women's time in collecting fuel wood and thanks to the vicinity of solar powered water pumps; time spent on fetching water has equally diminished. Attention to gender aspects is likely to increase in the future since upcoming NCF5 projects are expected to have even stronger gender considerations as compared to previous NCF calls.

The number of final beneficiaries in NCF projects varies and is dependent on the type of project. Some NCF projects completed during 2014 have enhanced the capacity of entire municipalities whereby the number of direct beneficiaries of the project may have been only tens or hundreds of people but the indirect beneficiaries, i.e. inhabitants of those municipalities, may rise up to millions. This is the case of KTH's waste management project in Bolivia which could potentially benefit over 2 million inhabitants of the cities of La Paz and El Alto, if the waste management and biogas strategy developed by the project is implemented. Projects which have aimed at improving livelihoods of local people have typically reached from few thousands to some 15,000 direct beneficiaries. This is the case of the NCF1 Danish Red Cross project in Kenya which secured access to safe water to 15,000 people in the Isiolo district or the NCF2 Finnish Red Cross project in Malawi where 15,000 people living in areas prone to floods now get early weather warnings.

Please see Annex 1 for a detailed description of development impacts of NCF projects completed during 2014.

3.4. Innovativeness, partnerships and Nordic interest

As discussed in previous NCF Annual Reports, innovativeness and partnerships between Nordic and local partners are key NCF objectives and these, together with Nordic interest, are to varying degrees present in all NCF projects. What comes to innovativeness, the projects completed during 2014 have, among others, promoted the transfer of innovative technologies into a new environment or combined existing methods and technologies in a way that is new to the local context.

The majority of projects completed during 2014 have been selected through the second call for proposals. Five out of twelve NCF2 projects focused on increasing resilience to climate change in urban environments under the theme of *Urban Adaptation*. These projects have, for example, enhanced the host countries' capacity to predict and respond to extreme weather events or to integrate climate change issues to urban planning procedures. For example, COWI's project in Mozambique combined new and existing data on climate change with local development issues whereas Aalborg University integrated climate change considerations into Strategic Environmental Assessment in Viet Nam.

The other theme in NCF2 was *Renewable energy.* The Norges Vel project introduced a holistic view on renewable energy business development in Uganda and Reykjavik Geothermal's geothermal development support project in Rwanda is an example of a project, which is the first of kind in the host countries. The FCG International's project provided for example improved water mills that were based on traditional technology but were new to the remote areas in far west Nepal where they were installed. In terms of learning, the local partners' capacities increased to also allow for smooth promotion of the technology after the end of the project.

As many urban adaptation projects of NCF2 have been targeted at increasing the host countries' resilience and capacity to adapt to climate change, the projects have interacted with a rather high number of stakeholders, especially from the public sector. Common to COWI's and NIVA's projects is the large number of other public stakeholders, who may not have been directly involved in the project implementation as local partners but have either been direct beneficiaries through capacity building activities or implementing new tools to enhance preparedness or resilience. COWI's project for example has interacted with five Mozambican governmental institutions in addition to the two local partners of the project. NIVA's project reached a handful of other municipalities in Sri Lanka and 16 ministries or governmental authorities, among others.

Co-operation between Nordic and local partners has appeared to function well in most projects. Some signs of challenges may be apparent in setting up actual business in some NCF3 projects but as of today, there are no reported issues between the Nordic and local partners. Please see Annex 1 for a summary of innovativeness, learning and partnership aspects for completed projects.

Local ownership of projects has been partly secured through the co-financing requirement, which has been gradually tightened since NCF1 which did not apply any co-finance criteria directly but higher co-financing gained more scoring points. Despite that, and as shown in Table 2 below, the share of co-financing in NCF1 was as high as 39% which increased to a reported share of 41% as the projects came to their end. In NCF2 the share of co-financing in selected projects is 30%. Since NCF3 the co-financing criteria has been raised to 20% and in NCF4 10% of total budget must be local. In NCF3 the estimated share of co-financing will be 49% whereas in NCF4, the share of co-financing counted on the basis of the signed grant agreements and final applications is as high as 62%. More issues regarding securing the co-financing have however been encountered during the NCF4 negotiation phase as compared to previous rounds which could ultimately result in a lower share of co-financing than predicted.[3] As NCF projects are typically pilot projects with scaling-up potential, NCF funding is likely to leverage additional finance in the longer term.[4]

Table 2. NCF grants and co-financing, NCF1-4[5]

	Total project budget	NCF grants		Total co-finance	
	EUR	EUR	*share of total project budget*	EUR	*share of total project budget*
NCF1	8,491,675	5,047,414	59%	3,444,261	41%
NCF2	7,287,578	5,125,673	70%	2,161,905	30%
NCF3	11,120,754	5,653,473	51%	5,467,281	49%
NCF4	12,620,192	4,834,084	38%	7,786,108	62%
TOTAL	**39,520,199**	**20,660,644**	**52%**	**18,859,555**	**48%**

To assess the Nordic countries' and the private sector's role in NCF, some useful indicators are the co-financing originating from the Nordic countries and from the private sector in general. As can be seen in Table 3 below, the share of co-financing originating from Nordic countries (both public and private sector) is fairly modest and it has also diminished since NCF1 being only 4% of total project budget for NCF4. The co-financing originating from Nordic countries could be higher so that NCF could act also as a mechanism to leverage Nordic funds for climate change efforts.

[3] In January 2015 it seems likely that grant agreements will not be signed for three projects with a high share of co-financing.
[4] Some scaling-up/replication activities are on-going.
[5] Figures for NCF1-2 are based on financial reports and agreed budgets, for NCF3-4 figures are based on agreed budgets and final applications. For example, NCF1's co-financing share has increased from the originally calculated share.

Table 3. Nordic co-financing, NCF1-4[6]

	Nordic co-financing		
	EUR	*Share of total project budget (including NCF grants)*	*Share of total co-financing*
NCF1	1,501,692	18%	44%
NCF2	850,824	12%	39%
NCF3	854,543	8%	16%
NCF4	545,702	4%	7%
TOTAL	**3,752,762**	**9%**	**20%**

The table 4 below shows the share of private sector co-financing, i.e. all co-financing originating from private sector actors in the Nordic countries, host countries or internationally. The share of private sector co-financing, however, has been more stable being the highest for NCF3 which is most likely due to the strong emphasis on private sector development of the call.

Table 4. Private sector co-financing, NCF1-4[7]

	Co-financing originating from private sector		
	EUR	*Share of total project budget (including NCF grant)*	*Share of total co-financing*
NCF1	2,684,431	32%	78%
NCF2	1,156,525	16%	53%
NCF3	5,280,321	47%	97%
NCF4	4,926,496	39%	63%
TOTAL	**14,047,773**	**36%**	**74%**

3.5. Continuation and scaling-up

Continuation, replication and scaling-up activities are of key importance for NCF. As no official system has been built into NCF in order to follow-up projects once NCF financing is over, information on these aspects are still somewhat scattered and not fully studied. It can be, however, noted the NCF's support for Solvatten in early phase of deployment of the novel technology has likely supported company's continuing activities. Likewise, a project centred in Kenya around Grundfos' LIFELINK leapfrogging technology with the Danish Red Cross is being replicated elsewhere in Eastern-Africa. Another IFI is following-up Pöyry Management Consulting's charcoal project in Ghana with possible replication considerations.

[6] As above.
[7] As above.

4. IMPLEMENTATION OF NCF PROJECTS

4.1. NCF1

NCF1 was launched in October 2009 with the focus on water resources and energy efficiency. The implementation of NCF commenced in late 2010 with the original closing dates scheduled for late 2012 and early 2013. By the end of 2014, eleven NCF1 projects had been fully completed. One project was terminated in an early phase.

While the progress of NCF1 projects has generally been good, two projects have continued to face delays and challenges during 2014. Four charcoal kilns have been commissioned for Green Resource's project in Ghana, and another extension has recently been granted to allow sufficient time to install the remaining eight kilns. Continuation is being discussed as sustainably produced charcoal apparently cannot compete in the market with typically unsustainably produced cheaper charcoal. The Uganda Carbon Bureau (originally also with CARE Denmark) cook-stove project has successfully completed the first issuance of carbon credits after continuous delays. Four additional cook-stove activities are still being added to the programme before the NCF components are completed. The results of completed NCF1 projects are presented in Annex 1.

4.2. NCF2

NCF2 was launched in 2010 and the Grant Agreements were signed in 2011 with most of the original closing dates scheduled for the end of 2013. Three out of 12 NCF2 projects are concrete investment projects, five are mainly studies and four combine concrete activities with studies, capacity building and strategy work. Four projects, the Gaia Consulting project in Bolivia, the Stockholm Environment Institute project in Ethiopia, Norges Vel project in Uganda and DHI project in Vietnam were visited in 2014 in conjunction with other site visits or activities in the region.

Three NCF2 projects were under implementation by the end of 2014 with four fully completed projects of which Pöyry Management Consulting project was completed in 2013. Aalborg University, COWI and FCG International were fully completed in 2014. Four more projects were completed in practice (Finnish Red Cross, KTH, NIVA and Norges Vel) but some final documentation was still pending at year end. Furthermore, Reykjavik Geothermal's project in Rwanda was completed early (with reduced disbursement) due to reasons beyond Grantee's control.

As discussed in last year's annual report, more challenges have been observed in general in the implementation of NCF2 as compared to NCF1. These are mainly linked to implementation delays with no direct cost implication for NCF. It should be noted that a short implementation period of 2 years was also commented by the NCF external evaluation leading to 2.5 year implementation periods for NCF4-5.

Eight out of 12 projects have been extended in order to obtain the planned climate and development benefits. At the end of 2014 the DHI project in Vietnam had not yet received any disbursements[8]. It is, however, likely that most NCF2 projects can be completed substantially as planned despite of the delays. The results of completed NCF2 projects are presented in Annex 1.

[8] The first disbursement was finally effected in March 2015.

4.3. NCF3

NCF3 was launched in 2011 and most of the NCF3 grant agreements were signed in spring 2013 with closing dates in most projects agreed for 2015. All projects were implemented and well underway by the end of 2014. Delays, however, may be observed and it is likely that the implementation period in many projects will need to be prolonged. The delays are mostly linked to the challenging business development and investment requirements of the call. By the end of 2014 six projects had already been extended, typically by six to twelve months.

4.4. NCF4

For NCF4, launched in December 2013, the pre-qualification selection criteria were already discussed in the 2013 Annual Report. The deadline for submitting pre-qualification proposals was 31 January 2014 whereby 94 proposals were received. As expected, using the on-line application platform decreased the amount of ineligible proposals as the platform did not allow submission if the key minimum requirements were not met. A total of 79 submitted pre-qualification proposals were accepted for evaluation. In comparison with previous Calls, the number of eligible prequalifications was similar in comparison with the average number of eligible proposals in the previous calls. Based on the recommendation of the NCF external evaluation, the proposals were scored by an evaluation team without NEFCO representatives in order to keep selection of the projects and project management separate. The evaluation team consisted of two NDF representatives, one international consultant and one African representative.

Based on the scoring of pre-qualification proposals, 26 applicants were invited to submit final applications, and 24 were finally received. On 18 June 2014 the NCF Management Committee approved a short-list of 12 applicants/projects with which NEFCO commenced the detailed due diligence and the grant agreement negotiations. By the end of 2014, due diligence site visits had been conducted for 11 out of 12 projects and Grant Agreements had been signed with Gaia Consulting Oy (Finland), Matis (Iceland) and Orgut Consulting AB (Sweden). In a few of the shortlisted projects, securing the co-financing has been a challenge that has delayed the conclusion of grant agreement negotiations.

4.5. NCF5

NCF5 was approved by the NDF Board of Directors on 25 November 2014 and the call for proposals was opened in December 2014 with the theme *Climate resilience in urban and private sector contexts*. The deadline for submitting pre-qualification proposals is 30 January 2015. As in NCF4, pre-qualification proposals must be sent via an online application platform, where some fine-tuning has been made based on lessons learned from NCF4. Applicants can submit questions related to the call until 9 January 2015. As in NCF4, both pre-qualification proposals as well as final applications will be scored by an evaluation team composed of both external and NDF representatives. The evaluation will be made using the on-line platform.

In NCF5, all countries will be treated equally. A clear change to previous NCF calls is also the focus on increasing resilience to climate change. Potential project types under NCF5 include:

- People-oriented cities, smart cities, green planning, urban agriculture, waste and sanitation, food and water security;
- Renewable energy generation for densely populated areas, energy efficiency through development of smart grids and energy-efficient buildings that reduce costs, energy demand and emissions;
- Transportation, low-carbon transport systems, modal switch, fuel switching, vehicle efficiency, improving conditions for public transportation, pedestrians and cycling;
- Empowerment of women in climate actions and related business development; and
- Identification of business opportunities related to climate change adaptation and mitigation, resilience solutions that can be replicated and disseminated globally.

4.6. Disbursement process

NCF disbursements are based on substantially met milestones (or in case of advance payments, on bank guarantees). Typically, the grant agreements specify several sub-milestones of an agreed main milestone, which is the basis for the payment. In some cases, partial payments have been made for the achieved sub-milestones when those have been clearly identifiable. This approach has allowed smooth continued support for the projects without the need to amend the agreements. At the end of 2014, the NCF1 disbursement rate was 96%.

Table 5. Cumulative NCF1 disbursements by project by the end of 2014 (EUR)

Grantee	NDF code	Project	Disbursed amount	Value of the Agreement
Naps Systems Oy (Finland)	NDF C3 b11	Scaling the Solar Market Garden, Benin	415,000	415,000
Diakonia (Sweden)	NDF C3 b12	Adapting to Climate Change in Bolivian Andean Community Depending on Tropical Glaciers	496,951	496,951
Uganda Carbon Bureau (CARE Denmark)	NDF C3 b13	Fuel Efficient Stoves in East Africa: Reducing Emissions and Improving Livelihoods	275,074	343,842
Gaia Consulting Oy (Finland)	NDF C3 b14	GHG Mitigation and Sustainable Development through the Promotion of Energy Efficient Cooking in Social Institutions in Ethiopia	212,000	212,000
Hifab Oy (Finland)	NDF C3 b15	Demand Side Management for Climate Change Adaption for the Ethiopian Power Sector, Ethiopia	407,300	407,300
DHI Water Policy (Denmark)	NDF C3 b16	Climate-Proofed Water Conservation Strategies in Northern Ghana	44,005	44,005
Raw Materials Group AB (Sweden)	NDF C3 b17	Energy efficient recycling of electric and electronic scrap, e-scrap, Ghana	480,033	480,033
Danish Red Cross (Denmark)	NDF C3 b18	Community based adaptation to climate change through environmentally sustainable water resource management in Isiolo District in Kenya	391,446	395,372
ORGUT Consulting AB (Sweden)	NDF C3 b19	Building Adaptive Capacity to Climate Change in Kenya	496,750	496,750
Niras (Ramboll) Natura AB (Sweden)	NDF C3 b110	Providing Assistance for Design and Management of Appropriate Water Harvesting Technologies in Arid Lands of Kenya	500,000	500,000

Grantee	NDF code	Project	Disbursed amount	Value of the Agreement
Solvatten AB (Sweden)	NDF C3 b111	Enhancing Capacity for Adaptation to, and mitigation of, climate change in Kibera, Nairobi	301,290	301,290
Vi-Skogen (Sweden)	NDF C3 b112	Mount Elgon Integrated Watershed Management Project, Kenya	227,751	227,751
Motiva Services Oy (Finland)	NDF C3 b113	Strengthening National Capacities on Energy Efficiency, Nicaragua	381,046	381,046
Green Resources AS (Norway)	NDF C3 b114	The Bukaleba Charcoal Project, Uganda	220,000	350,000
Total			**4,848,646**	**5,047,414**

For NCF2, the total cumulative grant disbursements were 78% of the amended contracted amount of EUR 5,125,673.

Table 6. Cumulative NCF2 disbursements by project by the end of 2014 (EUR)

Grantee	NDF code	Project	Disbursed amount	Value of agreement
Gaia Consulting Oy (Finland)	NDF C3 c12	Financing sustainable energy through remittances flows, Bolivia	356,513	489,550
KTH Royal Institute of Technology (Sweden)	NDF C3 c11	Urban and industrial waste to energy – promoting sustainable development in Bolivia	350,241	472,157
Stockholm Environment Institute (Sweden)	NDF C3 c13	Demonstrating the Feasibility of Locally Produced Ethanol for Household Cooking, Ethiopia	124,975	346,059
Finnish Red Cross	NDF C3 c14	Strengthening the resilience of people living in high risk urban and semi urban areas to weather-related disasters, Malawi	333,000	499,500
COWI A/S (Denmark)	NDF C3 c15	GIS tool for urban adaptation to climate change and flood risk, Mozambique	499,236	499,236
Finnish Consulting Group	NDF C3 c16	Promoting Renewable Energy Technologies for Enhanced Rural Livelihoods, Nepal	341,505	341,505
Pöyry Management Consulting Oy (Finland)	NDF C3 c17	Enhancing sustainable energy supply for tea factories in Rwanda and Uganda	280,000	280,000
Reykjavik Geothermal EHF (Iceland)	NDF C3 c18	Karisimbi Geothermal Prospect, Rwanda	449,584	449,584
Norwegian Institute for Water Research	NDF C3 c19	Climate Resilient Action Plans for Coastal Urban Areas, Sri Lanka	378,308	455,000
The Royal Norwegian Society for Development	NDF C3 c20	Sustainable renewable energy businesses in Uganda	400,000	500,000
DCEA, Aalborg University (Denmark)	NDF C3 c22	Adapting Urban Construction Plans to Climate Change in Vietnam by the use of Strategic Environmental Assessment, Viet Nam	468,130	468,130
DHI Water and Environment (Denmark)	NDF C3 c21	Building technology in urban flood & inundation forecasting to be applied for operational early warning system in the Ha Noi City, Viet Nam	-[9]	324,950
Total			**3,981,494**	**5,125,673**

[9] The first disbursement was finally effected in March 2015.

As for NCF1 and NCF2, disbursement for NCF3 projects are made against achieved milestones or, if agreed, against an advance payment bank guarantee. The table below summarises the disbursement status of NCF3 projects. The cumulative disbursements at year end were EUR 2,052,152 out of the contracted amount of EUR 5,653,473, i.e. the disbursement rate was 36%.

Table 7. Cumulative NCF3 disbursements by project by the end of 2014 (EUR)

Grantee	NDF code	Project	Disbursed amount	Value of agreement
Viegand & Maagøe A/S (Denmark)	NDF C3 d1	NAMA and Innovative Energy Optimisation in the steel sector in Bangladesh	70,899	299,340
University of Copenhagen – Department of Plant and Environmental Sciences (Denmark)	NDF C3 d3	Promoting cañahua in the Andean highland: a highly nutritive crop with a great market potential, adapted to extreme climate conditions	92,715	269,952
Danish Technological Institute (Denmark)	NDF C3 d4	Ecological Food Processing Unit	134,425	393,941
Nordic Foundation for Development and Ecology, NORDECO (Denmark)	NDF C3 d5	Cambodian Farmland Carbon (CAFACA) Project	148,360	386,130
Finland Futures Research Centre (Finland)	NDF C3 d5	Scaling up low carbon household water purification technologies in the Mekong Sub Region	260,613	495,349
C.F. Nielsen A/S (Denmark)	NDF C3 d7	Biomass Green Briquette Fuel (GBF) Production (BidiePa) under Kitchen Efficiency Programme	256,810	494,790
Pöyry Management Consulting Oy (Finland)	NDF C3 d8	Pilot Project: Efficiency Enhancement and Entrepreneurship Development in Sustainable Biomass Charcoaling in Ghana	106,458	500,000
SINTEF (Norway)	NDF C3 d9	Rain Water Harvesting (RWH) for resilience to climate change impact on water availability in Ghana	179,821	400,000
Niras Natura AB (Sweden)	NDF C3 c17	Business Development Closing the Rural-Urban Nutrient and Carbon Dioxide Cycles	50,000	499,220
Vi-Skogen, The Foundation Vi Planterar Träd (Sweden)	NDF C3 d11	ADAPTea: Climate Change Adaptation for FAIRTRADE Tea Producers in East Africa	161,379	444,936
DanChurchAid, DCA (Denmark)	NDF C3 d12	Mainstreaming climate-smart agriculture in solar irrigation schemes for sustainable local business development	106,945	350,000
Danish Forestry Extension (Denmark)	NDF C3 d13	Developing low community based innovative solutions to mitigate and adapt with climate change while creating viable local business solutions	262,170	360,565
Norges Vel, The Royal Norwegian Society for Development (Norway)	NDF C3 d14	From Waste to Local Business Development and Vigorous Soil	163,213	500,000
Gaia Consulting Oy (Finland)	NDF C3 d15	Sustainable charcoal business development	58,345	259,250
Total			**2,052,152**	**5,653,273**

5. ORGANISATION AND ADMINISTRATION

5.1. Financial administration

The Funds Administration Agreement between NEFCO and NDF had been amended twice since the launch of the NCF programme. In December 2013 a Restated and Amended Funds Administration Agreement was signed and amended again in January 2015 bringing the total funding for five calls to EUR 26.37 million (including some interest earned). The amended agreement covers all five calls.

5.2. Management

In accordance with the Funds Administration Agreement, as amended, the bulk of the implementation, administration and monitoring work related to NCF have been carried out by NEFCO with a budget for NCF Running Costs. In addition, a budget for External Expert Services is allocated.

As before, all final decisions and approvals related to NCF programme have been taken by the NCF Management Committee chaired by NDF.

5.3. Reporting

As before, NEFCO prepared all NCF reports including the public Annual Review) covering the year 2014.

Project reporting was based on the progress and financial reports by the grantees linked to milestones. In addition, the grantees prepared a brief NCF Project Summary Report in connection with the final reporting of the project. The project specific key results have also been published on the respective project web pages[10], and more material and updates are being added to the project descriptions. For NCF4, log frame based reporting will be strengthened and new templates for Progress and Final Reporting have been prepared. Marketing and dissemination

The progress of NCF projects was mainly disseminated via the respective, regularly updated websites including specific material linked to completed projects. In October, a newsletter on NCF was published featuring three Kenyan water sector projects financed under NCF1 and some topical news on the NCF. NCF was also introduced at various meetings and through presentations by NDF and NEFCO staff including the Carbon Expo in Cologne and the Climate Finance and Investment Forum in East and Southern Africa in Kampala.

NCF was also highlighted in NEFCO's Carbon Finance and Fund 2014 Annual review with a case study on the FCG International's project in Nepal and Danish Church Aid project in Malawi.

In 2014 NCF has also been subject to some studies and awards. In June 2014, the Nordic Working Group for Global Climate Negotiations (NOAK) launched a tender for an assignment called "Nordic Climate Finance Opportunities – the NCF Case Study" that is yet to be published. The selected consultants commenced their work in August. The objective of this study is, using NCF projects as an example, to analyse how Nordic experiences could be further utilised in the general on-going negotiations on pre- and post-2020 climate finance and to explore possibilities for further climate

[10] http://www.ndf.fi/project/nordic-climate-facility-ncf

finance co-operation and partnerships between the Nordic countries and relevant developing countries as well as replication and up-scaling possibilities.

In October 2014, the CDM programme of activities, Improved Cook Stoves for East Africa (ICSEA) has been awarded with the 2014 Innovative Energy Project of the year, International Award. The award is distributed by the Association of Energy Engineers (AEE), USA. The programme, implemented by the Uganda Carbon Bureau, has received financing from NCF1. The ICSEA programme makes improved and energy efficient cook stoves more accessible to low income households by providing distributors access to carbon finance. By making the cook stoves affordable and available to all households across Africa and by supporting the replacement of traditional stoves, the greenhouse gas (GHG) emissions are lowered and deforestation reduced.

The launch of the fifth call was advertised through the usual communication channels of NDF and NEFCO, their respective websites, electronic newsletters and social media channels, the climate-l email list, and previous NCF applicants. In addition, Nordic cleantech networks, urbanisation and adaptation actors and other relevant stakeholders were especially targeted in order to attract new potential applicants for NCF for a niche Call. A small flyer/postcard on the call was also printed and distributed by NDF and NEFCO staff at different events, including the COP held in Lima in early December 2014.

6. CONCLUSIONS

By the end of 2014, the NCF programme had been implemented as planned with some delays and challenges. Completed NCF1 projects do show tangible climate and development benefits, albeit typically small in absolute terms. Some have more development and/or climate impacts and some projects are more innovative than others. While in many projects targets are practically fully met, there is some underperformance in few projects. This is not untypical for development projects with innovative nature.

For mitigation projects the annual direct CO_{2e} reductions vary from 100 to 5,700 t/a. One project reduces emissions by 16,500 t/a. In addition considerable indirect reduction opportunities have been identified via potential scaling-up and replication potential. In some cases overestimation of the expected CO_{2e} reductions have been noted. For adaptation the results vary from comprehensive studies, climate modelling, adaptation strategy work to concrete water harvesting, sustainable agricultural, safe water access, tree planting and erosion control activities – typically closely linked with development impacts.

It is very evident that the multiple criteria used in project selection lead to very different outcomes, and the projects are not directly comparable. There is major diversity at the portfolio level - a key feature and strength of the NCF programme.

NCF has shown that it is possible to implement projects in some cases in two years in developing countries. In most cases, however, 2.5-3 years are more feasible as indicated by delays especially in NCF2 and also in NCF3. This was also noted by NCF external evaluation, and the implementation period for NCF4 and NCF5 has been extended up to 2.5 years.

Taking into account the short implementation period, the innovative nature of the programme, the challenging project countries, and new partnerships, some delays, further challenges and underperformance can be expected in the continued implementation of the NCF programme. Especially NCF3 is likely to be challenging, and the concrete results are yet to be assessed how

successfully business ideas can be combined with direct climate and development benefits in developing countries.

NEFCO's administrative costs are reasonable as confirmed by the external evaluation. Some further streamlining will, however be needed, as the future administration budget for running costs will be somewhat reduced in absolute terms. Monitoring and reporting of the projects by the grantees need also some more focusing and the reporting templates have been revised to take this into account. In general, however, no major needs to change the administrative processes as such have been identified. While dissemination activities have been continuously augmented, further dissemination and increased NCF visibility are still suggested in order to support replication of NCF project ideas and to attract new stakeholders to apply for NCF funding.

NCF does continue to provide additionality to existing climate financing through supporting new projects and concepts and leveraging co-financing – including private – to the NDF grant funding. Balanced portfolio between mitigation and adaptation is a special feature for NCF considering that most of the climate finance is still geared towards mitigation.

NCF has also improved Nordic visibility evidenced by continued interest for NCF funding. NCF has provided new business opportunities to Nordic companies and institutions, and created new North-South as well as some south-south partnerships via partnership projects.

Annex 1. Projects completed during 2014

Project Name:	Community based adaptation to climate change through environmentally sustainable water resource management in Isiolo District in Kenya (NCF1)		
Country:	Kenya	**Financing:**	
Nordic Partner:	Danish Red Cross (DRC) (Denmark)	EUR 46,573	6.86%
Local Partner:	Kenya Red Cross Society (KRCS)	-	0%
Other Partner:	Grundfos Holding A/S (Denmark)	EUR 240,750	35.47%
	NCF	EUR 391,447	57.67%
	Total	**EUR 678,770**	**100.00%**
Classification:	Water resources (adaptation)		
Project cycle:	Contracted 15 October 2010, ended 16.5.2014[11]		
Project description:	Prolonged droughts in the Isiolo District have put great stress on the communities' water supplies, sharply reducing livestock production and thus creating food insecurity (90% of the people in the area are dependent on food aid), and increasing the incidence of water-borne diseases. The project has increased access to safe water and promoted hygiene awareness for selected vulnerable communities while at the same time, through the use of modern and innovative technology (LIFELINK), it has reduced emissions of greenhouse gases. The project activities included the rehabilitation and drilling as well as equipping nine boreholes fitted with a Lifelink water system developed by Grundfos, which is operated on solar energy and the water released to consumers through a mobile telecom system. The project also emphasised hygiene and sanitation awareness in relation to improved access to safe water. In addition the project enhanced food security through the introduction of irrigation techniques and green houses to supplement the staple foods with more greens.		
Main outputs:	The main outputs of the project are: • Increased access to safe water for 15,285 people living in vulnerable communities in Isiolo district • Promotion of positive behavioural change in the target community concerning hygiene and sanitation practices with focus on the prevention of water borne diseases • Increased capacity of the KRCS and selected communities in climate change adaptation measures		
Final beneficiaries:	Community members of nine communities in Isiolo district, in total 15,285 people (7,422 male, 7,843 female)		
Climate change impacts:	The project has built capacity in the drought-prone Isiolo District so that the communities are better equipped to adapt to the changing climate. In total 9 Lifelink water systems have been established providing solar driven water pumps. In addition, the project has improved the local Kenyan Red Cross Society's (KRCS) capacity on climate change adaptation measures by training 30 KRCS members on the basics of climate change, on the ways of adapting to it and on how to mainstream climate change into development programs. The project has mitigation impacts by replacing the diesel pumps. Approximately a total of 40,000 tonnes of CO_2 can be reduced over a 15-year lifetime of the LIFELINK technology.		
Development impacts:	The project has ensured that 15,285 people living in the target area of four divisions of Isiolo district have improved access to safe water and knowledge on hygiene and sanitation issues. As a result of the project, access to safe water increased from 29% to 75% and water consumption rose from 20 litres a day per person to 24 litres a day. Furthermore, the incidence of water borne diseases such		

[11] The end date means the date of the final disbursement of NCF grant.

	as diarrhoea and cholera reduced from 29% to 15 % during the project period. The project has enhanced gender equality as women and girls now find water closer to home and spend less time on fetching water. Men and women have been equally encouraged to work as volunteers and to engage in the water committees established during the project.
Innovation, technology and learning:	The project introduced a new and innovative technology known as the LIFELINK system to deliver sustainable access to safe drinking water. The system consists of solar driven pumps and service platform with a payment system via mobile phones and remote surveillance. The technology mitigates challenges such as water shortage, mismanagement of energy and natural resources, inefficient infrastructure and increasing CO_2 emissions.
Partnership:	The project is subject to the Red Cross Movement modality of operation meaning that the National Society (KRCS) is responsible for carrying out the actual implementation of the project activities whereas the Partner National Society (DRC) is responsible for technical back-stopping, quality assurance of the technical approach, management and the narrative and financial reporting to NCF.
Sustainability and replicability:	The intervention is expected to be long-lasting and sustainable. Operation and maintenance are guaranteed by Grundfos LIFELINK entering into a 10 year service and maintenance contract with all nine target communities. The project could be easily replicated in other parts of Kenya or Africa but it would require additional funds due to the heavy investment costs of the LIFELINK system.

Project name	Adapting Urban Construction Plans to Climate Change in Vietnam by the use of Strategic Environmental Assessment		
Country:	Viet Nam	**Financing:**	
Nordic partner:	The Danish Centre for Environmental Assessment (DCEA), Aalborg University (Denmark)	-	0%
Local partner:	Centre for Research and Planning on Urban and Rural Environment (CRURE), Vietnam Institute for Architecture and Urban-Rural Planning	EUR 52,760	10%
Other partner:	Integra Consulting Services Ltd (Czech Republic)	-	0%
	NCF grant	EUR 468,130	90%
	Total project budget	**EUR 520,891**	**100%**
Classification:	Urban Adaptation		
Project cycle:	Contracted 20.12.2011, ended 26.6.2014		
Project description:	The overall objective of the project was to start integrating climate change considerations into urban planning in Vietnam using Strategic Environmental Assessment (SEA). Integration of climate change in SEA is a relatively new approach showing significant potential for mainstreaming climate change concerns into various planning processes. Through guidance development, pilots, capacity building and awareness rising of central stakeholders, the project has built capacity for mainstreaming climate change adaptation into urban planning processes in Vietnam and contributed to the general international knowledge base on adaptation through environmental assessment.		
Main outputs:	The main outputs of the project are: • Formal technical guidance on addressing climate change adaptation concerns in SEA of urban plans • Seven demonstration projects on inclusion of climate change in SEA processes for urban plans in representative urban settings in Vietnam • Training materials on inclusion of climate change issues in SEA processes tested and improved through trainings at the pilot sites • Awareness rising materials, including documentation of lesson learned and two national workshops on integration of climate change into SEAs for urban plans aiming to generate wider support among the relevant stakeholders, especially decision-makers at provincial levels, for using formalised SEA processes for proper consideration of climate change issues in urban plans in Vietnam		
Final beneficiaries:	The Ministry of Construction (MOC), the Ministry of Environment and Natural Resources (MONRE)		
Climate change impacts:	Vietnam has experienced a rapid urbanisation, which puts pressure on environment and urban infrastructure, causing pollution and resource degradation. In this context, climate change and sea level rises will likely have negative impacts on urban development and infrastructure construction if there are no responses or adaptations to climate change in order to protect urban environment and urban sustainable development. Vietnam with its highly dense cities located in low elevation areas would be at risk of land loss to urban development due to sea level rise; more serious urban inundation in relation to sea level rise, tides and extreme rainfalls as well as inadequate drainage and sewage systems; water supply resources affected by salt intrusion. Furthermore, more storm surges, floods, flash floods, landslides, coastal erosion and extreme natural disasters also bring Vietnam urban systems (ranging from mountains to coastal areas) in a vulnerable state. Temperature increases associated with urban heat island could be the reason of extreme heat waves in urban areas affecting human activities. By integrating CC considerations into urban planning in Vietnam the project responds to the needs for a proactive and holistic assessment of the potential CC impacts on urban areas, infrastructure and communities.		

	The project's key climate change impacts have included increased awareness and knowledge of climate change adaptation options amongst government officials, mainstreaming of climate change in seven pilot plans, revisions to planning policies contained in the pilot study plans to incorporate climate change mitigation and adaptation considerations leading to reductions in the vulnerability of population and infrastructure.
Development impacts:	Climate change may affect every aspect of urban living as citizens may be paralysed by the heat waves, cyclones, sea level changes, and more severe droughts and flood events. These risks will be growing with the increased population density and poorly planned urban developments that may further exacerbate the climate change risks. These development issues cannot be addressed without considering resilience and climate change adaptation in the mainstream urban planning processes. In addition to increasing awareness of climate change in urban planning, the project has also supported the identification and promotion of climate change adaptation options that simultaneously had also ecological, social and health benefits. SEA is also a tool that supports good governance and environmental protection. The guidance suggests how climate change impacts affect different social groups.
Innovation, technology and learning:	SEA offers one of the most promising tools for mainstreaming climate change issues into planning processes in Vietnam because the SEA has a well-established legal framework, which is being gradually put into practice. SEA can consider possible climate change risks and check whether the proposed irrigation plan is resilient enough for these risks and whether it integrates all relevant climate change adaptation issues, objectives and targets.
Partnership:	The project was headed by The Danish Centre for Environmental Assessment at the Department of Planning at Aalborg University, in close cooperation with the Vietnam Institute for Architecture and Urban-Rural Planning (local partner in Vietnam) and Integra Consulting Services (other partner). The project had a continuous dialogue with both the Ministry of Construction (MOC) and the Ministry of Natural Resources and Environment (MONRE). The project outcomes have also been endorsed by Vietnam Urban Planning and Development Association (VUPDA) which agreed to disseminate the technical guidance amongst its 4,000 members. Other entities that have expressed interest in using the guidelines have included UN-HABITAT, the Asian Cities Climate Resilience Network (ACCCRN), Faculty of Architecture and Plans in the University of Construction, Academy of Urban Learning and the Ha Noi Construction Planning Institution. The project provided also policy recommendations related to information sharing between agencies and enhanced consultations with various agencies and stakeholders that are concerned with climate change issues.
Sustainability and replicability:	SEA system for urban plans is being already put into practice and the Ministry of Construction regards SEA as one its main environmental mainstreaming tools. The project has developed guidance on addressing climate change concerns in SEA for urban planning, which will become part of a formalised system of strategic environmental assessment developed in Vietnam. This context and the project focus together ensure that the project outcomes will continue being used in practice after the end of the project. The project outcomes may be also relevant for other lower-income or transitional countries that start using the SEA system for considering climate change issues.

Project Name:	**Increasing climate resilience in Maputo, Mozambique – GIS tool for urban adaptation to climate change and flood risk**		
Country:	Mozambique	**Financing:**	
Nordic partner:	COWI (Denmark)	EUR 18,555.00	3.2%
Local partners:	Ministry for the Coordination of Environmental Action (MICOA)	EUR 69,066.00	11.86%
	National Institute of Disaster Management (INGC)		
	NCF	EUR 499,236.45	85.07%
	Total:	**EUR 586,857.45**	**100%**
Classification:	Urban adaptation		
Project cycle:	Contracted 30.9.2011, ended 26.6.2014		
Project description:	The overall objective of the project was to increase the capacity and preparedness of the local partners Ministry for the Coordination of Environmental Action (MICOA), National Institute of Disaster Management (INGC) and local stakeholders with regard to urban adaptation to climate change. The specific objective of the project was to develop and implement a GIS based tool to be used for planning purposes in the context of urban adaptation to climate change in the flood prone area of Maputo. The tool was developed in partnership with and handed over to the local partners. The operational objective of the project was to enable the local partners to apply a developed GIS tool for present and future development and climate conditions as well as to be able to replicate the application of the tool in other flood prone areas of Mozambique. The GIS based climate change risk assessment tool was developed and implemented for the central and western part of Maputo corresponding to an area of approximately 230 km^2. The tool integrates topographical information and flood inundation assessment with areal maps of economic value of properties and urban development plans into flood risk maps. The tool will be used to screen the feasibility of a number of planning options for climate change adaptation, thus linking existing urban development plans and national climate change strategies together.		
Main outputs:	The main outcome of the project is enhanced local capacity to adapt to climate change in urban areas on city planning and on preparedness level. The main outputs of the project are: • High resolution Digital Terrain Model (DTM) covering the project area • High resolution images (ortophotos) of parts of the project area • GIS based tool containing DTM, flood inundation maps, economic value maps, urban development plans for existing situation and development options • Flood risk assessment for existing situation and for development options • Enhanced capacity of the beneficiaries to undertake measures against the impacts of urban flooding.		
Final beneficiaries:	Ministry for the Coordination of Environmental Action (MICOA) and National Institute of Disaster Management (INGC)		
Climate change impacts:	According to risk profiles of Mozambique, the country ranks third amongst the African countries most exposed to risks from multiple weather-related hazards related to climate change. Mozambique is suffering from periodic floods, cyclones and droughts, and as much as 25% of the population is at risk from natural hazards. Floods, epidemics and cyclones are the most frequent disasters, although drought affects by far the largest number of people. The city of Maputo has been subject to severe floods in recent years. This GIS tool aimed at providing the local and national authorities with the relevant tools to address the risk of floods in urban areas. The tool enables decision makers to select the most feasible strategy and priority areas for climate change adaptation and for sustainable urban development in areas that are less prone to damages from extreme weather events. This has		

	improved the conditions for the authorities, urban planners, and local inhabitants to prioritise and take precautionary measures against the impacts of flooding at the most important and economical most feasible locations. It has also contributed to increased awareness and preparedness to floods from heavy rain and storm surge from the sea. This knowledge, awareness and preparedness will reduce or avoid costs of damages and nuisance from floods.
Development impacts:	Preventing disasters and their consequences is crucial to protect vulnerable developing societies and promote stability. Reliable information is essential for better disaster prevention and preparedness. Natural disasters are one of the main risks to the achievement of Mozambique's poverty reduction strategy. Adaptation to climate change and disaster risk management are thus central issues to economic development in Mozambique, and are expected to continue to grow in importance. In particular hazards in villages and urban centres in the coastal zone are major priorities for future disaster risk assessments (INGC, 2008). The urban environment has the potential to benefit from the project, since both poor local livelihoods as well as areas of high economic value will be protected through the adaptation measures. It may thus contribute inter alia to better decision making and identification of measures concerning better urban planning or even relocations, prevention of existing drinking water resources, measures to ensure the water quality despite flooding and prevention of wide-ranging consequences for human health.
Innovation, technology and learning:	The project combines state-of-the-art methods for terrain data collection with advanced knowledge of flooding mechanisms and local economic value maps and development plans. The innovation of the project lies in the integration of new and existing data and information in an easily comprehendible manner used for testing scenarios that relates climate change to local development issues. The prioritisation and recommendation of some examples of most efficient adaptation measures is carried out as part of the project. The knowledge transfer carried out during the project has consisted of dedicated training, meetings and workshops with the project beneficiaries. The local partners were also involved in the data and information collection. The developed tool and the project results have been transferred to the local partners via a dedicated training programme. The tool will assist the local partners MICOA and INGC in implementing the National Action Plan for Adaptation and the National Master Plan for Prevention and Mitigation of Natural Calamities.
Partnership:	The management of the project consisted of a project management unit which included a Project Manager from COWI and representatives from the MICOA and INGC. The local partners were heavily involved in carrying out the pilot project in order for the local partners to gain valuable experiences from hands on training on a day-to-day basis. Other stakeholders who were involved in the project were the World Bank office in Maputo, and local organisations such as the National Directorate of Water/Direcção Nacional de Águas (DNA), Water and Sanitation Infrastructure Management Unit/Administração de Infra-estruturas de Abastecimento de Água e Saneamento (AIAS), National Cartography and Remote Sensing Cenre/O Centro Nacional de Cartografia e Teledetecção (CENACARTA), The National Institute of Hydrography and Navigation/Instituto Nacional de Hidrografia e Navegação (INAHINA), Institute of Meteorology/Instituto Nacional de Meteorologia (INAM), Universidad Eduardo Monlane (UEM) and UN-HABITAT.
Sustainability and replicability:	The GIS tool itself is sustainable, replicable, and scalable to all other areas of Mozambique affected by flooding. The lead partner MICOA is interested in using the GIS tool principles in other parts of Mozambique but scaling-up and replication depend on additional funding. Especially the LIDAR scanning is expensive.

Project name	Promoting renewable energy technologies for enhanced rural livelihoods		
Country:	Nepal	**Financing:**	
Nordic partner:	FCG International (Finland)	EUR 31,111	6.09%
Local partner:	Centre For Rural Technology, Nepal (CRT/N)	EUR 14,437	2.83%
Other financiers:	The Rural Villages Water Resources Management Project (RVWRMP) (Funded by MFA of Finland)	EUR 42,455	8.32%
	District Development Committees (DDC)/ Village Development Committees (VDC)	EUR 4,637	0.91%
	Local beneficiaries/users	EUR 76,437	14.97%
	NCF	EUR 341,506	66.89%
	Total	**EUR 510,582**	**100%**
Classification:	Renewable energy (combination)		
Project cycle:	Contracted 4.11.2011, ended 22.9.2014		
Project description:	The objective of the project was to reduce greenhouse gas emissions and to improve living conditions, food security and the economic situation of rural people living in 5 remote districts of Mid and Far West Nepal via application of renewable energy technologies. The Project involved the installation of 149 improved water mills (IWM) that are used in grain grinding, husking, oil extraction and electricity production, as well as training and support for the promotion, testing and expanded use of improved cooking stoves that over 6,000 households now use daily. The project also supported the introduction of 6 hydraulic ram pumps (Hydram) for small-scale irrigation in upland areas. All these renewable technologies have supported improved living conditions of rural people, especially traditional water mill operators, farmers, women and girls.		
Main outputs:	The main outputs of the project are: • 121 short shaft and 23 long shaft, energy efficient improved water mills (IWM) operating in 4 districts with appropriate local support • Improved cooking stoves (ICS) in daily use in 6,073 households in project area. In addition, 85 promoters of ICS have been trained, 62 of which were actively providing services at the end of the project • 6 hydrams installed and in use in 3 districts providing water for irrigation and drinking. Hydrams save energy and permit off-season crop production in remote areas. Increased production of paddy and wheat at the end of the project. • Promotion of renewable rural energy technologies and capacity building of stakeholders has resulted in local village development committees (VDCs) to make plans for further investments in ICS, IWM and hydrams.		
Final beneficiaries:	6,089 households installed ICS, 85 promoters of ICS employed out of which 62 continue to provide their services at the end of the project. IWMs benefit altogether 6,716 households. 14 IWM owners trained in minor repairs and maintenance. 6 installed hydrams are operated by user groups benefitting 66 households (estimation). Average household size in Far West Nepal is 5.43[12], *i.e.* the total number of beneficiaries is around the 70 000.		
Climate change impacts:	The project addressed the key mitigation (and also adaptation) needs of Nepal where land-use change and the forestry sector contribute the largest share of Nepal's CO_2 emissions and 77 % of the energy demand in Nepal is met by fuel wood. Nepal has a potential to 43,000 MW of economically and technically feasible power production. However, only about 563 MW has been harnessed and mainly consumed in urban areas. The goal of the Rural Energy Policy (2006) of Nepal		

[12] National Population and Housing Census 2011, Central Bureau of Statistics, National Planning Commission Secretariat, Government of Nepal.

	is to reduce dependency on traditional energy sources (fuel wood, agricultural residues) by increasing access to clean and cost effective energy in the rural areas. These include micro and small hydro power, improved water mills as well as technology transfer and dissemination of improved cook stoves. Switching from a diesel-powered mill to IWM reduces CO_2 emissions by 491 tonnes per year. The ICS reduces non-renewable fuel wood use in the households by some 40% and reduces 2.7 tCO_2/a. The total CO_2 reductions are 16,500 per year. The project has also been an adaptation project improving the food security and availability of drinking and irrigation water for the beneficiaries and we as providing income to the families.
Development impacts:	Use of renewable energy and appropriate technology has increased local income and employment, local infrastructure development, as well as a reduction in drudgery, all of which ultimately will lead to enhancement of the livelihoods of the local communities. Improvement of water mills has helped to increase incomes for their owners, who are now self-employed and can sustain their business with better income. Hydraulic ram pumps permit irrigation of crops in remote areas, without the use of diesel pumps. A total of 85 promoters of ICS were trained during the project (60% women). The average total income earned by a promoter was NPR 50,200 providing a good source of income locally. 62 of the promoters will continue their activities in future as well. In gender and social aspects, the main beneficiaries of the project were women, in economically very poor and remote communities. ICS has saved two full working days a month of women's time used for collecting fire wood allowing them to spend time in agricultural activities such as kitchen gardening or expanding vegetable farming. ICS has also saved 50% of women's time spent on cooking. Also the IWMs have reduced the workload and saved especially women's and girls' time. ICS have also decreased the indoor pollution contributing to better indoor air quality.
Innovation, technology and learning:	Improved Water Mills are an innovative method to provide a sustainable source of energy to remote areas. On top of this, with the diversified end use options, the most appropriate equipment was installed to support end-uses that are preferred by local communities. The project utilised already existing traditional water mills, a technology that local people are familiar with, and improves the efficiency of use. Local partners' capacities are increased for smooth promotion of the technology. Hydram is an innovation that had only recently arrived to Nepal. The project staff had not seen one before and the project engineers were keen to see one, in the hope of extending their use elsewhere.
Partnership:	The project has helped CRT/N to develop a useful working relationship with The Rural Villages Water Resources Management Project, which is the overall programme implemented by FCG. Cooperation with RVWRMP has permitted good information sharing for CRT/N as well as coordination with national and district level government representatives and stakeholders. Not many organisations promote renewable energy technologies in the far west of Nepal however the CRT/N has started a similar project with SNV, a Dutch NGO.
Sustainability and replicability:	RVWRMP and FCG are committed to continue to support and replicate these renewable energy technologies within the project area. RVWRMP plans to continue to support ICS construction. Hydrams will most likely also be trialled elsewhere in the project area. The hydrams are very low maintenance as there are very few moving parts and it is simple and durable in construction. It is also important that the ICS – as with traditional stoves – are regularly maintained in order to maximise their lifespan and their efficiency. Based on the literature review, the projected lifetime of the clay ICS is six years. If it is properly maintained (including cleaning the chimney, adding further layers of clay, etc. each 2 weeks or so) it will last much longer. Re-investment costs are very low and 66% of it is local materials and labour of the household. The lifetime of the IWMs is uncertain as this relies very much on their location. As they are built on the edge of fast moving rivers, they are at a risk of damage from serious floods. However, they are estimated to last for at least 10 years.

Project name	Karisimbi Geothermal Prospect, Rwanda		
Country:	Rwanda	**Financing:**	
Nordic partner:	Reykjavík Geothermal ehf (Iceland)	EUR 231,839	34%
Local partners:	Rwanda Ministry of Infrastructure (MININFRA)[13]	-	0%
	NCF	EUR 449,584	66%
	Total	**EUR 681,423**	**100%**
Classification:	Renewable Energy (mitigation)		
Project cycle:	Contracted 4.11.2011, ended (early) on 14.4.2014		
Project description:	The objective of the project was to provide support for the population of Rwanda with indigenous clean renewable low cost energy either in the form of electricity or direct applications such as industrial heat and cooling. Further objectives were the conceptualisation and harnessing of the geothermal resource by surface exploration studies and selecting optimal exploration well locations and lower dependency on foreign import of fossil fuel and reducing the GHG emissions. The initial project objective as described in the final application was the utilisation of geothermal resources and to provide the population of Rwanda with indigenous clean renewable low cost energy either in the form of electricity or direct applications such as industrial heat and cooling. This was to be done by conceptualising and harnessing the geothermal resource by surface exploration studies and selecting optimal exploration well locations. Reaching these objectives would have resulted in a lower dependency on foreign import of fossil fuel and reduction of GHG emissions. Based on an addendum in May 2012 the project's objectives did not change but RG's role did. Instead of leading the project management of the surface exploration and deep drilling RG's role was reduced to provide drilling engineering services to monitor drilling operations and to ensure that they meet the technical specifications and to prevent damages. The other key focus was the review of previously generated data.		
Main outputs:	Review of Surface Exploration & Emergency Response Plan (ERP). Environmental and Social Impact Assessment leading to issuance of EIA certificate. Rig Mobilisation Commencement Notice (expert consultation on the development of road, well pad and water supply). Drilling supervision services and continuous monitoring. Well Evaluation Report summarising the activities performed during the 5 month drilling of the first well with lessons learned and suggests how additional drilling can be done better and more efficient.		
Final beneficiaries:	Final beneficiaries are the population of Rwanda, with improved quality of life, through the direct access to renewable geothermal energy (if eventually successful).		
Climate change impacts:	Geothermal energy is a clean energy source that combines low emissions with economics that are superior to most other sources of energy where the best resources are available. Despite this, growth in geothermal energy has not kept up with that of wind and solar energy, largely due to the fact that most of the resources are located in the developing world, and investors have been unwilling to commit the considerable start-up capital required in less familiar locations. A successful private-sector led geothermal power project in Rwanda/East Africa has the potential to start a snowball effect of growth in utility-scale investment in geothermal power across the developing and emerging markets. As each project will have a target capacity of at least 100 MW and in some cases as much as 500 MW+, this could have an important impact on climate change mitigation. A 10 MW plant could potentially generate up to 60,000 t CO_2/a (direct) over a lifetime of up to 25 years should the source be eventually proven.		
Development	The project is Rwanda's first geothermal energy development project, potentially opening up a new		

[13] There was a major contribution form Rwandan Government for geothermal development outside of the NCF project boundaries.

impacts:	low-cost energy source in a country desperate for lower cost power while the NCF project has mainly increased the local capacity in geothermal energy. An initial 5-10 MW project would increase Rwanda's power supply by anywhere from 6-12%, paving the way for bankable large-scale expansion. An eventual 100 MW geothermal power plant would represent an increase over current power available to Rwanda by 117% (current installation around 85 MW, according to the Ministry of Infrastructure). In addition, the project would lower the cost of 60% of all current (diesel-generated) electricity production in Rwanda by 50%+. Potential multiplication effects are also considerable. Access to low cost power can render previously uncompetitive economic sectors viable. Increased stability in the electric grid (*i.e.* reduction of brownouts and blackouts) can vastly increase efficiency and lower cost. In addition, geothermal energy has given rise to various symbiotic industries in most countries where it is exploited; examples include flower growing in Kenya, district cooling in Abu Dhabi, industrial heat applications in the US, and food processing, greenhouses, balneology and tourism in Iceland.
Innovation, technology and learning:	Geothermal power production is based on established and proven technology that was first used in Italy in 1904. Geothermal power production is a clean, stable and low cost power source that has been highly successful where implemented. However, investor appetite for application outside the developed world has been very limited. Africa, for example, is currently using just 1-2% of its estimated geothermal power potential, mainly in Kenya. This is problematic, as • The vast majority of the world's resources are located in developing and emerging markets, and • These markets are in many cases exactly those most in need of clean, stable and low cost power – as is the case with Rwanda. This project was also first of a kind in Rwanda. Reykjavik Geothermal aims to become the first major geothermal developer focused exclusively on the developing and emerging markets. The company believes opportunities are plentiful, and believes that efforts will lead to other developers following in our footsteps, causing a snowball effect of geothermal development in emerging and developing countries.
Partnership:	RG's role in the project is integrated project management as Rwandan government (GoR) has limited experience of geothermal projects. The Local Partner is Rwandan Government through MININFRA (Ministry of Infrastructure) and EWSA (Energy, Water and Sanitation Authority) on a practical level.
Sustainability and replicability:	Geothermal energy has the potential to be one of the least-cost energy sources in Rwanda. Expectations for geothermal potential in Rwanda, however, proved to be optimistically estimated at least for the time being, but this as such was a useful outcome of the first drilling exercise. This remains as a theory, however, until financing can be found for developing the resources. With proper reservoir management, geothermal resources can be managed to produce energy sustainably for decades, as demonstrated by multiple projects the RG team has worked on in Iceland and abroad. In a worst case scenario, production can be halted to allow a resource to recover naturally. Successful private-sector led geothermal power projects have the potential to prove that a concept that has had great success in Iceland, Italy, Japan, New Zealand and USA. This could be replicated in developing countries that have significant geothermal potential, including a number of countries on the East African Rift. Given geothermal energy's status as least-cost energy source, and East Africa's conservatively estimated 14,000 MW of geothermal potential, the opportunities for replication and their subsequent impact could be very significant.

Project name	Urban and Industrial Waste to Energy – Promoting Sustainable Development in Bolivia		
Country:	Bolivia	**Financing:**[14]	
Nordic partner:	KTH Royal Institute of Technology (Sweden)	EUR 91,350	14.20%
Local partners:	Gobierno Autónomo Municipal de La Paz (GAMLP)	EUR 15,748	2.45%
	Centro de Promoción de Tecnologias Sostenibies (CPTL) (until 30.5.2013)	-	-
	Nur University (from 1.6.2013 onwards)	-	-
Other partners:	Mälardalen University, Västerås, Sweden (MDU)	EUR 40,551	6.31%
	The Swedish Municipal company VafabMiljö (Vafab)	EUR 58,957	9.17%
	NCF	EUR 436,495	67.87%
	Total	**EUR 643,101**	**100%**
Classification:	Renewable energy (mitigation)		
Project cycle:	Contracted 28.10.2011, ended in practice 31.5.2014[15]		
Project description:	The objective of the project was to develop a strategy for generation of renewable energy from organic waste in the city of La Paz in Bolivia. The strategy shall promote and facilitate the implementation of biogas generation from waste in La Paz, and also serve as reference for replication in other cities of Bolivia.		
Main outputs:	The main output of the project is a strategy for waste to energy in El Alto and La Paz. The strategy incorporates: • Technical and economic feasibility studies for biogas generation from waste. • Guidelines for waste management for El Alto and La Paz. • Guidelines for the transfer of knowledge and know-how regarding biogas technology and waste management, and for the adaptation of technology for local conditions. • Policy recommendations and analysis of institutional framework for a realisation of urban and industrial waste to energy.		
Final beneficiaries:	Municipalities of La Paz and El Alto		
Climate change impacts:	The analysis indicates that there is an enormous amount of lifecycle GHG emissions released into the atmosphere from the existing landfill site. In its present form, the uncontrolled passive landfill emits approximately 1.83 million tCO_{2e} (over a 100 year period) if a partial biogas flaring of 20% is considered. As the biogas collection improves and its utilisation for energy production increases with the use of active gas extraction in the landfill, net emissions can be reduced. At the best management practice scenario for the active gas extraction, *i.e.* 70% biogas collection efficiency and 80% biogas utilisation for electricity generation, the net lifecycle emissions savings would be 545,329 tCO_{2eq} during the waste acceptance lifetime of the landfill *i.e.* until 2022. If the Alpacoma landfill is considered as a carbon abatement project, the total net emissions reductions would be 565,166 tonnes of CO_{2e} in 10 years' reporting period (2015-2024). The study also evaluated the climate benefits resulting from the introduction of an anaerobic digestion (AD) plant and active landfill facility simultaneously. When considering the sorting of 25% and 50% of municipal solid waste by 2015 and 2020 respectively, diverting the collected organic waste into anaerobic digestion (AD) plant for the production of biogas and biofertiliser. The net lifecycle GHG emission savings with a combination of active biogas extraction and AD plant is 524,920 tCO_{2e} if the biogas is used for power generation and 539,507 tCO_{2e} if the biogas is used as fuel in transport. Biofertiliser contributes 18,191 tCO_{2e} GHG emissions savings while carbon sequestration would be 17,412 tCO_{2e}, considering that 10% of carbon is stored in the biodigestate.		

[14] Does not include estimated cost of USD 5,000 for translation into Spanish of the final reports
[15] Final disbursement of NCF grant was still pending at year end, effected in 2015.

	The net lifecycle GHG emission savings occur due to avoided landfill emissions, replacement of fossil fuel with biogas and reduction in the use of synthetic fossil based fertiliser.
Development impacts:	The strategy proposes to incorporate local communities engaged in waste management activities in new models and practices for improved waste management in La Paz and El Alto. The informal sector is largely comprised of women and children, and these could profit from an improved model combining multiple actors in waste management.
Innovation, technology and learning:	The project was innovative in the context of Bolivia. Only small scale biogas technologies have been tested in Bolivia so far. By showing that the country is well poised to implement these technologies, the project has contributed to show how biogas can be a competitive alternative for waste management in La Paz and El Alto. The Swedish experience has been used to benchmark the analysis thus indicating concrete options while also considering the specific context of Bolivia and the present conditions in La Paz and El Alto.
Partnership:	The project partners in Sweden were KTH, MDH and VAFAB. The relations between these three were excellent and strengthened after the project. The initial local partner was CPTS. Although their participation in the project worked very well in the first year, they chose to leave the project. The collaboration with NUR, which joined the project in the second half, was very good as was the collaboration with the municipality as well. The window remains open for further cooperation in the future among the partners. This also includes the municipality of El Alto which had a less prominent role in the second half of the project mainly because La Paz was not in favour of the cooperation. Apart from the municipal authorities linked to waste management (GAMLP and EMALT) the project has also interacted with the universities, local private companies, and national authorities during the period such as TREBOL and TERSA (two private companies involved in waste management), National Chamber of Industry (CNI), UMSA (local university – supported in the characterisation study) and Ministerio de Hidrocarburos y Energia (Ministry of Hydrocarbons and Energy).
Sustainability and replicability:	The municipalities of La Paz and El Alto now have a good base to further evaluate options to improve waste management in their jurisdictions. The process needs to be driven by the municipality. The possibility to take steps towards implementation is certainly strengthened through the new information added. The window remains open for further engagement of all partners in the future. Once translated, KTH will disseminate the executive summary and final reports among those who participate in the workshop held early in La Paz and the stakeholders that contributed time and participated in interviews. However, neither KTH nor the other Swedish partners have resources to continue engagement in the project in the same way. We will need new project funding if a new phase is to start.

Project Name:	Climate Resilient Action Plans for costal urban areas, Sri Lanka		
Country:	Sri Lanka	**Financing:**	
Nordic partner:	Norwegian Institute for Water Research (NIVA) (Norway)	EUR 10,550	2 %
Local partner:	Faculty of Architecture, University of Moratuwa	EUR 17,220	3 %
Other partner:	UN-HABITAT, Regional Office for Asia and the Pacific	EUR 145,418	25 %
	Batticaloa Municipal Council (BMC)	EUR 0	0 %
	Negombo Municipal Council (NMC)	EUR 0	0 %
Other financiers:	Other organisations	EUR 0	0 %
	NCF	EUR 410,307	70 %
	Total:	EUR 583,495[16]	**100%**
Classification:	Urban Adaptation		
Project cycle:	Contracted 20.9.2011, ended in practice 31.10.2013[17]		
Project description:	The main objective of the project was to enhance the overall resilience of stakeholders to climate change in coastal Sri Lankan cities. The project combined scientific and technical components, spatial planning approaches, training and education modules, and used a broad variety of participatory methods – from focus groups meetings to national consultations. Thus it raised the awareness of stakeholders on likely climate change impacts at all governmental levels (communal, provincial and national) as well as within vulnerable population groups.		
Main outputs:	The main outputs of the project are: • Development and implementation, through a participatory approach, of Climate Resilient Adaptation Strategies and supporting Action Plans (CRASAP) for Batticaloa Municipal Council and Negonbo Municipal Council. • Documentation of the CRASAPs, validation of the experiences with stakeholders in BMC and NMC and then sharing the experiences on provincial and national level. • Preparation of a National Statement on Climate Resilient Cities (NSCRS) with recommendations that were broadly disseminated and mainstreamed into local and national level within Sri Lanka as well as internationally by using the UN-Habitat network and international conferences. • Development and implementation of CRASAP Training of Trainers to build capacity in 7 replication cities.		
Final beneficiaries:	Public administration on municipal, district, provincial and national level working with climate change related issues in Sri Lanka, stakeholders directly affected by climate change impacts.		
Climate change impacts:	As many coastal cities experience devastating climate related impacts during recent years, this project focused on the most urgent and immediate needs of the Sri Lankan coastal cities in adapting to climate change and mitigating the risk and severity of impacts through disaster risk management. The project has addressed special local problems such as the flat terrain in BMC where innovative solutions for the drainage of excess rainwater are needed. To ensure effective planning processes for climate change adaptation on communal level the project has disseminated the gained results to provincial and national level to raise awareness and make sure that on the long run relevant national policies, plans and strategies are in-line with the local climate change adaptation needs.		
Development	The project has met its overall objective to enhance the resilience of multiple stakeholders to climate change in coastal Sri Lankan Cities. Based on the local specification of climate change		

[16] The eligible final budget and NCF financing is likely still to reduce. Some clarifications on eligibility of co-financing are still being sought.

[17] Exceptionally long delay due to lengthy process of completing the local audit.

impacts:	problems in the case study areas BMC and NMC it developed solutions and generated important knowledge how to better adapt to climate change. The project had largest impact on the target group of communal, provincial and national administration, as technical and non-technical solutions were tailored to climate change related problems in BMC and NMC and municipal officers were the main group to be addressed by the developed training units. The project also raised awareness for climate change related problems among the vulnerable population. Some activities (e.g. school competition on post disaster health hazards and disaster safe home/school) have the potential to directly increase the resilience of vulnerable population, if they are implemented. The project took into consideration the opinions of all relevant stakeholder groups for the different activities. In the school competition girls and boys and teachers of both gender participated. For training sessions (e.g. GIS-training in the replication stage), national and provincial meetings people were invited due to their expertise and relevant position without considering their gender, religion or population group.
Innovation, technology and learning:	The project supported the development and implementation of the first detailed CRASAPs in Sri Lanka. In addition, the participatory approach to vulnerability and adaptation assessments and subsequent strategy development increased local stakeholders' awareness about climate change in coastal Sri Lanka. Capacity building of local stakeholders at all levels (communal, provincial and national) also increased community resilience and helped create sustainable solutions in the long-run. Technical innovations for Sri Lanka include the watershed wide planning tool for storm water management and the rainwater harvesting planning tools, which take into account the special problems of BMC (low elevation, flat terrain).
Partnership:	The project was collaboration between NIVA and UN-Habitat. NIVA had the overall administrative responsibility and UN-HABITAT was responsible for the national project coordination. Technical coordination was the responsibility of University of Moratuwa which also, together with UN-Habitat, facilitated all contacts between NIVA and local authorities in Sri Lanka. The project developed direct working relationships with the municipal councils of Batticaloa and Negombo. For the replication training contacts were established with Moratuwa Municipal Council (western province), Matara Municipal Council (Southern province), Galle Municipal Council (Southern province), Hambantota Municipal Council (Southern province), Trincomalee Urban Council (Eastern province), Puttalam Urban Council (North Western province) and Chilaw Urban council (North Western province). Some state authorities participated in dissemination activities: Ministry of Local Government & Provincial Councils, Ministry of Environment, Ministry of Education, Road Development Authority, Forest Department, Central Environmental Authority, Disaster Management Centre, and Department of Wildlife Conservation. The following state authorities were members of the steering committee: Ministries of Finance, Education, Environment, Disaster Management, Local Government and Provincial Council and Ministry of Health, National Chamber of Commerce and the Sri Lanka National Commission for UNESCO. The role of Norwegian embassy during official meetings was also helpful. The project also generated synergies with related projects running under the umbrella of UN-Habitat such as Sharing of strategies and action planning from other CCCI cities, Japan Sanitation Support Project (ROAP) in BMC and Disaster Resilient City Development Strategies for Sri Lankan Cities. A direct follow-up of the CCSL-project is the AUSAID funded project for the implementation of the green belt design in Thiruchchendur (BMC).
Sustainability and replicability:	To enhance economic and financial sustainability of the project, all activities were formulated and done in a way that they could be replicated in a similar way in other Sri Lankan cities, but also in other coastal cities abroad. The selected replication cities received training and information material for conducting a Vulnerability and Adaptation Assessments (V&AA) at city level, include participatory approaches in decision making (multi-criteria-approach and participatory mapping), prepare and accomplish school competitions, run GIS-trainings and establish knowledge management centres in their municipalities. Some of the other municipalities that considered the project results valuable are already involved in activities which are comparatively costly and complicated. However, even if most approaches and developed training components used in the

	project can be considered as low-cost measures, only additional funding can assure a continuation of the project and a direct re-use of its results.		
Project Name:	**Sustainable renewable energy businesses in Uganda**		
Country:	Uganda	**Financing:**	
Nordic partner:	Norges Vel	EUR 85,789	11.88%
Local partner:	The Department of Electrical and Computer Engineering, College of Engineering, Design, Art and Technology (CEDAT), Makerere University	EUR 15,547	2.15%
Other partners:	Husk Power Systems Private Limited	-	0%
	Private sector program Uganda, Confederation of Norwegian Enterprise (NHO)	-	0%
	Department of Industrial Economics and Technology Management (IØT), The Norwegian University of Science and Technology (NTNU)	-	0%
Other financing:	Local contribution	EUR 88,299	12.23%
	Other	EUR 32,578	4.51%
	NCF	EUR 500,000[18]	69.23%
	Total:	**EUR 670,680**	**100%**
Classification:	Renewable energy (mitigation)		
Project cycle:	Contracted 31.9.2011, ended in practice 31.3.2014		
Project description:	The objective of the project was to support the development of local Renewable Energy (RE) companies to utilise renewable energy in a sustainable and financially beneficial manner. To achieve this, a Renewable Energy Incubator was established at the Makerere University. The development of the companies will be driven by locals with competence and motivation, reflecting African realities and priorities. Technology transfer will be central, and demonstrated in pilot projects. This NCF-project established a sustainable energy incubator (SE-incubator) for young entrepreneurs, support services to existing renewable energy SMEs and sustainable energy pilot projects. Through these innovative mechanisms the project has supported the development of new enterprises as well as existing enterprises developing actual sustainable renewable energy projects.		
Main outputs:	The main outputs of the project are: There will be three NCF project activities in parallel. The activities will be closely connected, to stimulate synergy effects: • SE-incubator: Sustainable energy incubator where 9 companies were selected out of 29 applications is focusing on hydropower (3), solar energy (2) briquettes (2) and biogas (2). Four business ideas have received NCF investment support. In addition, 2 M.Sc. thesis and 3 undergraduate student thesis have been prepared on the companies' challenges; • SE-support: Business support services to renewable energy SMEs; and • SE-pilot: Sustainable energy pilot projects: first husk power system pilot operational, sites for three more systems have been identified.		
Final beneficiaries:	The project has benefited altogether 1,140 people. This includes 55 households that have access to electricity from the pilot gasifier plant and 60 households that are connected to the grid from		

[18] The final disbursement was effected in 2015.

	the gasifier plant. 2 persons are employed as full time plant operators, and 2 as part time staff (Operations Manager and CEO). 11 entrepreneurs have been incubated to start and run renewable energy companies. (3 companies have fully established their businesses).
Climate change impacts:	The project has fostered businesses developing renewable energy projects. These RE projects will reduce GHG emissions, since most of the consumers getting access to electricity would otherwise be supplied by diesel-based electricity. Most of the RE projects resulting from the NCF project will be developed after project has ended, since business and project development often is a long process. The climate change mitigation impact is, however, in total 5,740 tCO_{2e}/a from the SE-incubator, 37,800 tCO_{2e}/a from two hydropower projects that have received SE-support and 538 tCO_{2e}/a from the four husk power systems in SE-pilot.
Development impacts:	Referring to the Uganda's Poverty Alleviation Strategy, there is a shortage of specialised technical and entrepreneurial skills in Uganda. In addition there is a need for enterprise start-up business clinics, including techno-entrepreneurs' park and SME business incubation programme and seed capital for young enterprises. The local entrepreneurs and SMEs within the renewable energy sector are the beneficiaries/target groups in the project. Through the activities, local companies have increased their knowledge, network and possibilities to become sustainable and profitable companies. They produce energy which is valuable for Uganda – a country where a large part of the population does not have access to electricity.
Innovation, technology and learning:	The NCF project has established a sustainable energy incubator for entrepreneurs, a support service to existing renewable SMEs and sustainable energy pilot projects. Through these innovative mechanisms the project has supported the development of new enterprises as well as existing enterprises developing actual sustainable renewable energy projects in a financially beneficial manner. There are not many other initiatives assisting these local companies, which have given the renewable energy Incubator great attention in Uganda among entrepreneurs and stakeholders.
Partnership:	Norges Vel is the owner of the project, the overall project manager, and responsible to Nordic Climate Facility. The responsibility for monitoring, control and advice is in Norway. Makerere University is managing the project on local level. The Incubator will have a daily manager, which will work closely together with the main staff at Makerere University.
Sustainability and replicability:	The entrepreneurs and SMEs have developed sustainable economies through their business plans. Positive economic results will motivate the current entrepreneurs and SMEs to continue their operations as well as motivating more people from the community to participate in developing the companies. The Renewable Energy Incubator will continue its activities supporting the development of renewable energy companies. The activities are funded by Norad and the partners are also looking into other funding possibilities to assure the sustainability of the project. The activities are scaling up, and there are now 5 Incubator staff members, compared to 2 initially.

Project Name:	Strengthening the resilience of people living in high risk urban and semi-urban areas to weather related disasters in Malawi		
Country:	Malawi	**Financing:**[19]	
Nordic partner:	Finnish Red Cross (FRC) (Finland)	EUR 111,217	18.21%
Local partner:	Malawi Red Cross Society (MRCS)	-	0%
Other partner:	Finnish Meteorological Institute (FMI)	-	0%
	NCF	EUR 499,500[20]	81.79%
	Total:	**EUR 610,717**	**100%**
Classification:	Urban adaptation		
Project cycle:	Contracted 21.9.2011, ended in practice 31.5.2014		
Project description:	The objective of the project was to strengthen the resilience of people living in high-risk urban and semi-urban areas of Lilongwe and Salima Districts (Malawi) for climate change-related disasters, by ensuring that the information produced by the national meteorological services is available and practical for the use of target communities and enhancing preparedness and risk reduction for climate change-related disasters. The project has established an Early Warning System through the improvement of early warning services with the support of the Finnish Meteorological Institute (FMI), in close cooperation with the National Meteorological Service (NMS), government and other main stakeholders at various levels. Early warning messages produced at NMS are being disseminated in time to communities at risk through SMS services (text messages to specific cell phones), not previously used in these countries in this context. Additionally, the Red Cross Society has helped the communities to create disaster risk reduction local committees, and, with the advice of the Red Cross/Red Crescent Climate Center (RCCC), community risk reduction plans have been developed (including hazard maps, contingency plans and simulation exercises, using the Early Warning -> Early Action approach to ensure that once the message reaches the community, people will know how to react. The Red Cross Societies with the support of the FMI and RCCC have used use the International Federation of Red Cross and Crescent Societies (IFRC) VCA tool (Vulnerability and Capacity Assessment) to identify the vulnerabilities and prioritise actions through climate change adaptation micro-projects focused on the use of low-technology solutions implemented by the communities themselves.		
Main outputs:	The main outputs of the project are: • Strengthened capacity of the Red Cross, authorities and other stakeholders at national and local level to manage the climate risks • Enhanced early warning systems in place • Communities knowledge and capacity to reduce the risk of, prepare for and respond to weather-related disasters improved		
Final beneficiaries	3,000 households or 15,000 people living in high-risk urban and semi-urban areas of Salima Township and Lilongwe City in Malawi.		
Climate Change impacts:	Floods in Malawi have been associated with heavy upstream rainfall resulting in too much water downstream that leads to the breaking up of river banks. Malawi has also experienced flash floods due to prolonged torrential rains. Salima is exposed to hazards of which floods and drought are the most frequent. These have been frequent especially along the flooding rivers that come from the upland catchment areas flowing into Lake Malawi. The project's contribution to increased resilience among the targeted population to manage		

[19] Does not include fees for the final audit.
[20] The final disbursement was made in January 2015.

	climate risks derived from a strengthened EWS mechanism and climate change adaptation measures. Receiving, understanding and acting upon weather information and early warning is essential in protecting lives and property in a context of greater intensity and frequency of weather related disasters induced by climate change. According to the final evaluation of the project, the risk knowledge has increased at all levels of the society: communities, districts and national among men, women, boys and girls.
Development impacts:	The project has strengthened the overall resilience and capacity to adapt to climate change in the target areas. One indication of improved self-resilience to climate change impacts and hydro-meteorological disasters is the increased level of preparedness of the target population. According to the final evaluation, 49% of the respondents in Salima and 53% in Lilongwe reported that they are very prepared, prepared or have recently started to prepare for disasters as compared to the 16% in Lilongwe in the baseline. Increased resilience and better preparedness will in the long term decrease loss of income and livelihoods, decrease flood-caused illnesses and diminish child mortality, maternal health and absences from school due to illness hence improve the universal education.
Innovation, technology and learning:	The main innovation of the project is that this is the first experience of working on climate change adaptation in urban areas for the Malawi National Societies of Red Cross. Technological innovativeness lies in the defining and implementing a commonly agreed set of warnings that have value for the recipient regarding the changing climate. The project also promoted new ways of communicating early warning information through SMS messages, as mobile telephones are already widely used throughout the countries; developing s specific awareness tools for urban areas based on existing ones targeted to rural areas and implementing climate change adaptation micro-projects using low-technology like elevating floors to improve houses, promoting domestic rainwater harvesting reservoirs, using and sustainably procuring locally available materials, organising clean-up campaigns, rehabilitating sanitation facilities or repairing and maintaining the drainage system.
Partnership:	MRCS, FRC, FMI and RCCC were able to capitalise on each other's expertise in a complementary manner and maximise the knowledge to add value for the project. The cooperation between FMI and FRC started before the project and is foreseen to expand in the future. The FRC, MRCS and RCCC are all members of the Red Cross movement with shared values and vision. The cooperation continues and has been strengthened through the project. Other most important stakeholders included the District Civil Protection Committee (DCPC) who worked with MRCS to establish and revitalise Village CPCs (VCPCs) in the target areas; the Department of Education and headmasters in the schools where climate change clubs were formed, the Department of Health with which health awareness campaigns were organised in the target areas as well as the Department of Disaster Management Affair and the Department of Climate Change and Meteorological Services.
Sustainability and replicability:	The project applied low-cost solutions that combine resources provided through the project and contributions from the stakeholders and the people in the project area. The technical knowledge transfer between FMI and NMS applied an "on-the-job" coaching approach through forecaster-to-forecaster and the result of the trainings is improved documented procedures and routines for weather forecasting that dot not require any extra financial resources and continue after this project. The EWS communication was replicated to Nsanje district and continues in Salima through text messages. In Lilongwe, activities continue under the umbrella of IFRC's partnership in the GFCS implemented in consortia with FAO, WFP and other organisations. The Grantee and partners are actively looking for funding to scale-up the project into new areas.