Nordic Climate Facility

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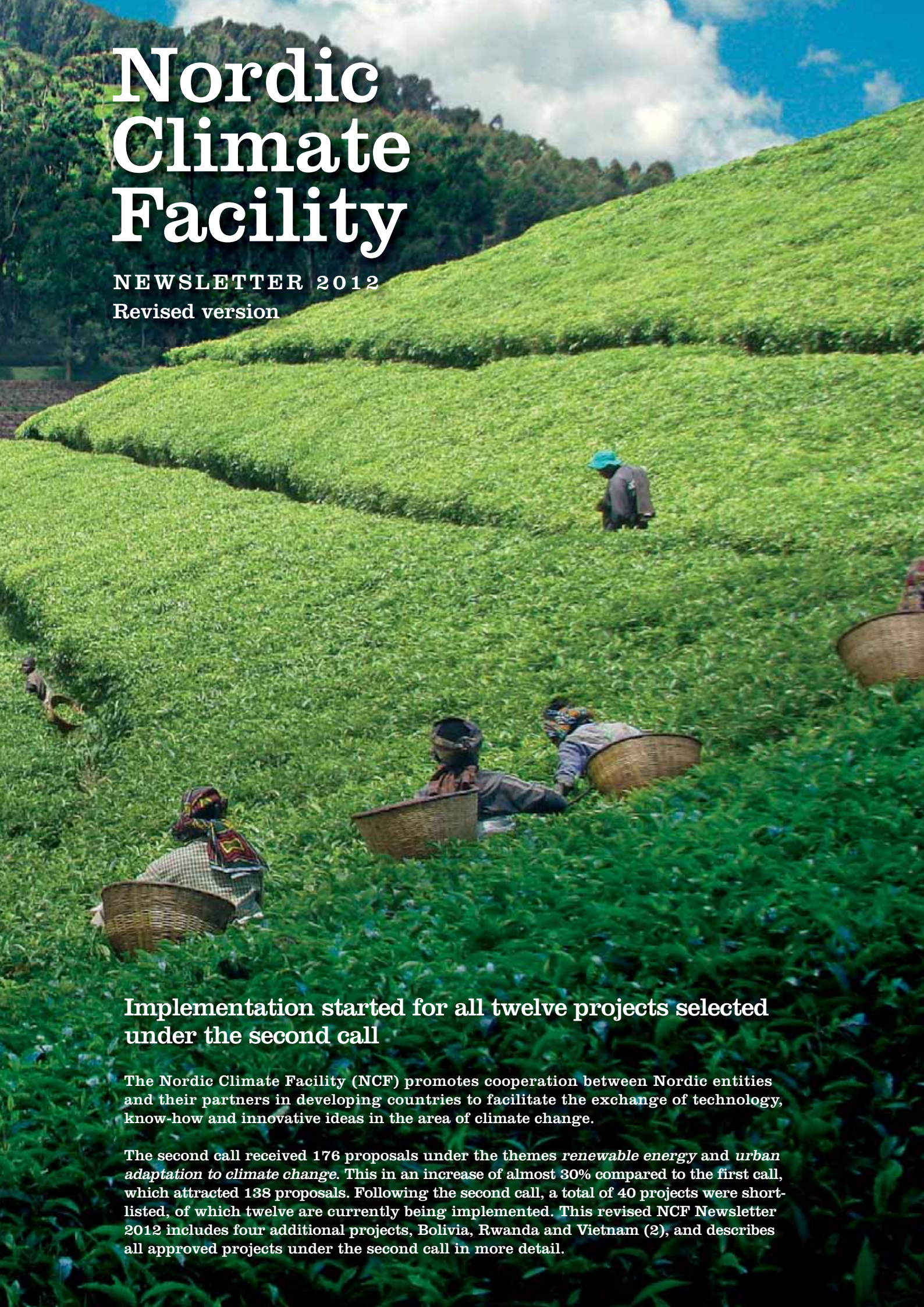
Revised version



Implementation started for all twelve projects selected under the second call

The Nordic Climate Facility (NCF) promotes cooperation between Nordic entities and their partners in developing countries to facilitate the exchange of technology, know-how and innovative ideas in the area of climate change.

The second call received 176 proposals under the themes *renewable energy* and *urban adaptation to climate change*. This in an increase of almost 30% compared to the first call, which attracted 138 proposals. Following the second call, a total of 40 projects were short-listed, of which twelve are currently being implemented. This revised NCF Newsletter 2012 includes four additional projects, Bolivia, Rwanda and Vietnam (2), and describes all approved projects under the second call in more detail.

Rwanda and Uganda
Sustainable energy supply for tea factories

There are approximately 120 tea factories in the East African Community (EAC) region. EAC comprises five countries- Burundi, Kenya, Rwanda, Tanzania and Uganda. Due to favourable weather conditions, the tea industry in the region has long traditions and is an important source for employment and export earnings. However, many of the tea factories have major energy concerns, mainly due to inefficient energy use and unsustainable fuel supply for the wood- and/or oil-fired boilers needed for tea processing. **Pöyry Management Consulting Oy** from Finland, **Rwanda Mountain Tea Ltd**, **Uganda Tea Development Agency Ltd**, **EnCatalyze Ltd**, **RAcell Uganda Ltd** and **MCI-Micro Carbon Interwood Ltd** are implementing a project that aim to tackle these problems.

The project intends to improve the energy efficiency of six tea factories in Rwanda and Uganda and furthermore, help the factories obtain a sustainable biomass supply, using forest plantation wood.


Photo: Juhani Ahnanpalo

The wood-fired boiler at Mata tea factory in Rwanda is used for tea processing.

The project will assess the viability of new and efficient renewable energy supply options (solar and wind) for the tea factories as well as small-scale biomass-fuelled combined heat and power for rural electrification around the factories. Moreover, sustainable forest plantation management practices will be enhanced to save the natural forests, decrease deforestation and reduce fuel wood transportation costs. The main project outputs will be individual Action Plans for each plantation/factory and a common Sustainable Energy Supply Manual for Tea Factories. The manual will be based on the project results, and will be used to disseminate the outcomes to other tea-producing EAC countries.

In the long run, the project will enforce Rwanda's and Uganda's abilities to mitigate to climate change and contribute to sustainable development. The project can decrease greenhouse gas emissions and ensure that the emissions in tea industry will not increase in the medium and long term. In addition, the project will help to eliminate the use of natural forests for energy use.

Rwanda
Geothermal exploration

Geothermal energy is a renewable energy source that has not been as widely explored as wind and solar energy, despite its potential to reduce energy costs and CO_2 emissions. This is largely due to the fact that most of the resources are located in the developing world, and investors have been reluctant to commit the considerable start-up capital required in less familiar locations. The Government of Rwanda is eager to explore the country's geothermal resources. They have already collected preliminary geothermal exploration data, which indicate that the country may have viable geothermal resources. However, the geothermal potential of Rwanda stills needs to be proved.

Reykjavik Geothermal from Iceland and the **Rwanda Ministry of Infrastructure** are implementing a geothermal exploration project in Rwanda. The project's goal is to prove the existence of a geothermal energy source in the Karisimbi prospect that is environmentally friendly as well as economically and technically feasible to harness. The NCF project covers the integrated project management of the drilling phase. A geothermal power plant can be installed in the next phase, should the source be proven during the project.

The objective is to provide the population of Rwanda with clean renewable low-cost energy solutions, either in the form of electricity or direct applications such as industrial heat and cooling. Geothermal energy has the potential to lower Rwanda's dependency on imported fossil fuel-based power generation and thus reduce the country's greenhouse gas emission. As the project would be first of a kind in Rwanda, it is seen innovative in the host country context.


Photo: Kari Hämekoski

Volcanic rocks near Karisimbi Mountain

Ethiopia
Locally produced ethanol for household cooking

Stockholm Environment Institute from Sweden in co-operation with **Gaia Association** in Ethiopia, the **Former Women Fuel Wood Carriers Association** and the **Ethiopian Environmental Protection Authority** will be implementing a pilot project that will supply ethanol and ethanol-fuelled cooking stoves to 1000 low and middle income households in the Keranio community on the outskirts of Addis Ababa.

The purpose of the project is to demonstrate the feasibility of locally produced ethanol for household cooking. A small-scale, community-owned and driven ethanol micro distillery will be commissioned. It will be the first ethanol micro distillery of this scale in Ethiopia and the first ethanol distillery in Ethiopia producing ethanol exclusively for household cooking. The feedstock for the distillery will be fruit and vegetable waste products from the local food markets and molasses from small and medium scale sugar producers. To ensure community ownership and long term sustainability of the scheme the distillery will be run as a business by a local women's cooperative, the Former Women Fuel Wood Carriers Association. Ethanol fuelled CleanCook stoves, which have been tailor made to suit cooking practices in Ethiopia, will be sold to the participating households. To facilitate access to the stoves for poorer households, a micro loan facility will be established. The project will give households access to clean, safe, renewable and locally produced cooking fuels, thus reducing the traditional use of biomass for cooking, improving indoor air quality and mitigating CO_2 emissions.

The Ethiopian Government is driving small-scale ethanol production as one possible solution to the household energy crisis in Ethiopia. If successful, this project may be used as model for replication in other parts of the country.

Photo: Gaia Association

The Swedish-designed ethanol-fuelled cooking stoves will be tailored to suit Ethiopian cooking practices.

Photo: Hansueli Krapf

The city of Maputo

Mozambique
Development of a risk assessment tool for flood prevention

The city of Maputo in Mozambique has been subject to severe floods in recent years. Currently, there are no adequate action plans or appropriate disaster risk reduction measures in place. **COWI A/S** from Denmark, together with the **Ministry for the Coordination of Environmental Action (MICOA)** in Mozambique and **INGC**, will implement a project that will increase MICOA' s and other local authorities' competence in urban planning and flood risk prevention.

The project will develop a Geographic Information System (GIS) based climate change risk assessment tool, which will be implemented in flood-prone areas of the central and western part of Maputo. In order to develop plans and actions to combat flooding, there is a need for reliable data and information on topography. Therefore, new technologies for acquiring accurate topography data will be developed and combined with the GIS tool. The tool will assist the authorities in getting a precise view of potential flood patterns. Thus, the authorities will able to identify prioritised city areas and propose feasible adaptation measures to reduce urban flood risk. Furthermore, the GIS 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.

The GIS tool will be developed in close cooperation with the local authorities so that they will, after project completion, have the knowledge to apply the GIS tool and replicate the application of the tool in other flood-prone areas of Mozambique.

Nepal
Promotion of renewable energy technologies

The far and mid-west regions in Nepal, due to their remote mountainous location, have little or no access to energy from the grid. The area is also among the poorest in Nepal and several of the districts suffer from food deficits. Through the implementation of three different innovative renewable energy technologies, the NCF project in Nepal intends to increase the use of renewable energy, thus reducing greenhouse gas emissions, whilst improving living conditions, food security and the economic situation for the rural popuation.

Traditionally in Nepal, women grind grain by hand or use water mills that are slow and inefficient. The project aims to upgrade the traditional water mills to more efficient types. The purpose is to provide better local business to mill operators and reduce manual grinding and thus labour burden for women and girls.

Cooking is another activity usually carried out by women. Most cooking is done on inefficient traditional stoves that burn firewood. They lead to wasteful consumption of firewood, deforestation and an unhealthy smoky household environment. The project intends to expand the use of improved cooking stoves which have the potential of increasing energy efficiency, through firewood saving, by 30% to 50 % compared to the traditional cooking stoves. Each improved cooking stove can reduce CO_2 emissions by approximately one tonne per year.

Furthermore, the project will support the introduction of hydraulic ram pumps for small-scale irrigation in upland areas. This improvement will benefit farmers who are not able to use gravity-fed irrigation and thus are only able to grow crops during the rainy season.

The expectation is that after the project ends, the mill operators, stove promoters and hydraulic ram pump users will have the skills to operate and maintain the technologies without external support. The **FCG Finnish Consulting Group** and the **Centre for Rural Technology**, **Nepal** will plan, implement and monitor the project.

Photo: RWWRMP

Improved water mills are mostly used for grinding wheat and maize.

Photo: Charmalee Jayasinghe, UN-HABITAT Sri Lanka

In Sri Lanka, 70% of the urban population and 80% of the economic infrastructure are concentrated in the coastal cities.

Sri Lanka
Action plans to increase coastal cities' resilience to climate change

The **Norwegian Institute for Water Research**, together with the **University of Moratuwa** in Sri Lanka, **Batticaloa Municipal Council**, **Negombo Municipal Council** and **United Nations Human Settlements Programme,** have initiated a project that intends to enhance Sri Lankan coastal cities' resilience to climate change.

Sri Lanka's coastal cities are highly vulnerable to climate change impacts such as sea-level rise, flooding, salinisation of water resources, storm surges, cyclones and droughts. These impacts disproportionately affect urban poor communities, who are forced to live in the most vulnerable areas.

Batticaloa and Negombo, two coastal cities, will be the focal areas. The project will support key stakeholders in the two cites in developing and implementing the first Climate-Resilient Adaptation Strategies and Supporting Action Plans for coastal urban areas in Sri Lanka. Among other things, the project will focus on better water resource management, specifically looking at the drainage and sanitation impacts from intense rainfall events. The design of the multi-purpose green belt along the coast of Batticaloa will be improved to protect the lagoon and coastal areas. The re-design can restore mangrove eco-systems and coastal bio-diversity, taking into account different user interests. A climate change disaster response system will also be established in both cities and communities living in vulnerable areas will receive adaptation training.

Stakeholder involvement is an important aspect of the project as it will help to increase the local competence at all levels; local, provincial and national. During the implementation the project experiences will be documented and the knowledge gained will be shared with other coastal cities.

Vietnam
Integrating climate change consideration into urban planning

There is an urgent need to climate-proof urban development planning and construction in Vietnam. The **Danish Centre for Environmental Assessment (DCEA)** at **the Department of Planning** at **Aalborg University** in Denmark, together with the **Centre for Research and Planning on Urban and Rural Environment** at the **Vietnam Institute for Architecture and Urban-Rural Planning**, and **Integra Consulting Services**, are implementing a project that aims to integrate climate change adaptation into urban planning through the use of a Strategic Environmental Assessment (SEA) approach. SEA is an analytical and participatory approach that aims to integrate environmental considerations into policies, plans and programs and evaluate the interlinkages with economic and social considerations.

In 2005, a SEA system was established in Vietnam. However, the existing SEA guidelines for urban planning do not incorporate climate change concerns. Therefore, the project intends to build capacity for mainstreaming climate change concerns into urban planning processes. This will be achieved through the integration of climate change in the SEA system. This is a relatively new approach, and core tools, such as guidance, training materials and demonstration studies, will be provided to explain how climate change issues can be addressed in forthcoming SEAs. Seven demonstration SEAs that consider climate change issues for urban planning in different regions in Vietnam are planned to be implemented during the project. Capacity-building and awareness-raising for stakeholders, such as the Ministry of Construction, are fundamental project outputs that will help ensure that climate change assessments are specifically accounted for in Vietnam's urban planning.

Flooded road in the city of Hanoi.

Vietnam
Urban flood forecasting

Vietnamese urban centres, such as Hanoi and Ho Chi Minh City, are more and more frequently hit by floods and inundation, which cause severe damages and losses. To date, urban flood and inundation forecasting relating to heavy rain, has never been implemented in Vietnam. The country needs to improve the national operational early warning system, so that the authorities have the ability to respond in a timely and effective manner.

The scope of the NCF project is to build, test and implement an urban flood forecasting and climate-based flooding adaptation system for a selected zone of Hanoi City. A sound and innovative technology will be introduced to the flood forecasting sector in Vietnam. The technology will facilitate better planning for infrastructure development and better preparedness for flood disaster prevention in the coming years. A selected area of Hanoi City is expected to prove the technology, which then can be scaled-up and replicated in latter phases to other cities nationwide. Project activities include: technology transfer, training, flood risk mapping, implementation of an early warning system and dissemination of project results.

The project will be jointly carried out by the **DHI Group** from Denmark and the **National Hydro-Meteorological Service of Vietnam (NHMS).**

Bolivia
Financing sustainable energy through remittance flows

Remittance is a transfer of money by a foreign worker to his or her home country. **Gaia Consulting Oy** from Finland, together with a Bolivian-Spanish migrant organisation **ACOBE/AMIBE**, the **Basel Agency for Sustainable Energy (BASE)** and **Arc Finance**, aim to develop an innovative business model that links remittances with the financing of renewable energy and energy efficiency. The project aims to encourage Bolivian migrants living in Spain or Argentina to use part of their remittance flows to purchase renewable energy products or more energy-efficient appliances for their relatives in Bolivia. The families will receive these appliances through a supply chain set up by the project. A financial mechanism will be provided for the migrant workers residing abroad to help channel the financing of the products.

The target group is low-income families in Bolivia that receive remittances from Spain or Argentina. The goal is to enable the purchase of a minimum of 5,000 energy-efficient or renewable energy-based appliances over the two-year project period. The project will benefit approximately 25,000 people and lead to CO_2 reductions. As the project will build capacity and raise awareness, the number of appliances is expected to grow even after the project has been completed. If the pilot project is successful, the business models can be disseminated to other countries with similar immigrant situations.

Bolivia
Waste to energy strategy

The energy demand in Bolivia is continuously growing, increasing the country's fossil fuel dependency. At the same time, urban areas face problems with waste management and water contamination due to leaking landfills and direct wastewater discharges from the industry.

The Division of Energy and Climate Studies at the **Royal Institute of Technology** in Sweden, together with their Bolivian partner the **Centre for the Promotion of Sustainable Technologies (CPTS)** and two Swedish organisations **Mälardalen University** and **Vafabmiljö**, will conduct a study in Bolivia. The purpose of the study is to develop a strategy that will facilitate biogas generation from organic waste in the two cities of La Paz and El Alto in Bolivia. The waste management guidelines and policy suggestions for waste management practices that will be developed during the study are novelties for the country. They will be based on experiences from Sweden, but will be adapted for the Bolivian context. Thus, the project will transfer technological know-how from Sweden to Bolivia. At completion, the strategy will be delivered to relevant local authorities and will serve as a guideline for efficient biogas generation from waste in the two cities.

The project will, through the promotion of renewable energy sourced from waste, mitigate greenhouse gas emissions. In addition, there are adaptation benefits as the project outcomes may alleviate water contamination.

Photo: CPTS, Bolivia, 2011

A pilot biogas plant in La Paz under construction, built by the local partner CPTS.

Photo: Aage Jørgensen

The project will strengthen the local Red Cross Societies capacity to manage climate risks.

Malawi and Mozambique
Strengthening resilience of urban informal settlements

The **Finnish Red Cross**, the **Malawi Red Cross Society**, the **Mozambique Red Cross Society** and the **Finnish Meteorological Institute** aim to increase urban residents' resilience to climate change-related disasters. The project will focus on informal settlements of cities located along the coastline or in lakeshore areas. Beira in Mozambique and Salima-Boma in Malawi are the target areas. Informal communities in these areas are particularly vulnerable to extreme events such as flash floods, riverine floods and cyclones, and in the case of Beira also sea level rise.

The National Meteorological Services (NMS) will provide early warning information to the communities. Among other things, the NMS will explore the possibility of sending early warning text messages to communities at risk. Disaster risk reduction committees will be created and community risk reduction plans will be developed, which will give the communities the tools and knowledge to react correctly when they receive an early warning. Disaster risk reduction micro-projects that focus on the use of low-technology solutions will furthermore be identified and implemented by the communities themselves. The project will increase the targeted communities' capacity to prepare and respond to climate-related disasters. There will be specific focus on women and children and it is expected that the project will have positive impacts on this target group with respect to food security and disaster preparedness.

Uganda
Supporting renewable energy companies

In Uganda, an NCF project will support the development of local renewable energy companies. The project consists of three parallel activities which are closely connected to increase synergy. The first activity is based on an open call, welcoming ideas from young entrepreneurs who will receive assistance in establishing companies that develop renewable energy projects. The second activity aims to support existing small and medium-sized companies to develop renewable energy projects. The third activity consists of a sustainable energy pilot project, where a renewable energy business model on electrification using biomass will be piloted. There are also crossover activities, such as annual networking events and workshops, to ensure that knowledge gained and lessons learned within the different activities are shared.

The project will be implemented by **Norges Vel** from Norway and the local partner College of Engineering, Design, Art and Technology at **Makerere University** in Uganda, in cooperation with three other partners: **Husk Power Systems Private Ltd** from India, the private sector program **Uganda - Confederation of Norwegian Enterprises** and the Department of Industrial Economics and Technology Management at the **Norwegian University of Science and Technology**. The NCF project will be the first of its kind at the College of Engineering, Design, Art and Technology at Makerere University. The cooperation aims to promote the transfer of renewable energy technologies and business models and encourage businesses to develop renewable energy projects. It is estimated that thirty renewable energy project can be developed during the two-year project period, leading to a reduction of CO_2 emissions.

Photo: Reinaart Pretorius

Demonstration of energy-efficient bio stoves, which are specially designed for households with low income. The stoves only need minimal biomass to create a high output of heat.

NCF second call projects under implementation*

Country	Nordic Partner
1. Bolivia	Royal Institute of Technology - KTH (Sweden)
2. Bolivia	Gaia Consulting Oy (Finland)
3. Ethiopia	Stockholm Environment Institute (Sweden)
4. Malawi & Mozambique	Finnish Red Cross (Finland)
5. Mozambique	COWI A/S (Denmark)
6. Nepal	FCG Finnish Consulting Group (Finland)
7. Rwanda	Reykjavik Geothermal ehf (Iceland)
8. Rwanda & Uganda	Pöyry Management Consulting Oy (Finland)
9. Sri Lanka	Norwegian Institute for Water Research (Norway)
10. Uganda	Norges Vel (Norway)
11. Vietnam	DHI (Denmark)
12. Vietnam	The Danish Centre for Environmental Assessment, Aalborg University (Denmark)

* As of September 2012.

Outcome of the second call*

NORDIC COUNTRY	Total Proposals	Short-listed Proposals	Projects under implementation
Denmark	44	11	3
Finland	35	9	4
Iceland	4	2	1
Norway	35	11	2
Sweden	49	7	2
Missing Nordic Partner	9	0	0
TOTAL	176	40	12

* As of September 2012.

The Nordic Climate Facility (NCF) aim is to provide support to challenging and innovative projects that will increase low-income countries' abilities to mitigate and adapt to climate change. The facility is based on calls for proposals. Nordic entities with a local partner in a low-income country can apply for NCF funding. NCF is financed by the Nordic Development Fund (NDF) and implemented jointly with the Nordic Environment Finance Corporation (NEFCO).

NDF is a multilateral development finance institution established by the five Nordic countries. NDF provides grant financing for climate change interventions in low-income countries.

NEFCO is an international finance institution established by the five Nordic countries. NEFCO finances cost-effective environmental projects in Russia, Ukraine, Estonia, Latvia, Lithuania and Belarus as well as climate change projects across the world.

For more information about NCF visit:
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