



Best Practice in
Climate Change
Programming

Norwegian Church Aid Kenya



Together for a Just World





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Norwegian Church Aid Kenya

**Norwegian Church Aid
PO Box 52802 - City Square
Nairobi 00200, Kenya**

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About NCA

NORWEGIAN CHURCH AID (NCA) is an independent, ecumenical organization working for people's basic rights, with active operations in more than 70 countries. Based on the Christian faith, NCA aims to benefit the poor, destitute and oppressed regardless of race, gender, political opinion or religion. NCA always works together with local partners to create change. Emergency preparedness and assistance, long-term development assistance, and advocacy are our three main working approaches. Every year NCA distributes NOK640 million to projects worldwide. The funds are collected from thousands of private donors, other organizations and the Norwegian government.

We have chosen to prioritize five working areas in particular:

- Civil society for accountable governance
- Faith communities address HIV and AIDS
- Communities for fresh water and safe sanitation
- Men and women address gender-based violence
- Religions for conflict transformation and peace-building

NCA is a member of ACT International (Action by Churches Together), a network of individual churches and organizations affiliated with the World Council of Churches and the Lutheran World Federation. ACT coordinates emergency preparedness and assistance all over the world.

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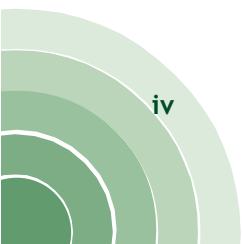
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The earth dries up and withers,
The world languishes and withers,
The exalted of the earth languish.
The earth is defiled by its people;
they have disobeyed the laws,
violated the statutes
and broken the everlasting covenant.
Therefore a curse consumes the earth;
its people must bear their guilt.

Isaiah 24: 4-6





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Abbreviations

AACC	All Africa Conference of Churches	JI	Joint Implementation
AfDB	African Development Bank	LATF	Local Authority Transfer Fund
APRODEV	Association of WCC Related Development Organizations in Europe	LG CIA	Lamu Cotton Growers and Industrial Association
ASAL	Arid and semi-arid lands	LTBAC	Lamu Tana Bio-energy and Agro-processing Company
CAP	Community action plan	MCF	Mully Children's Family Home Project
CDF	Constituency Development Fund	MDGs	Millennium Development Goals
CDM	Clean Development Mechanism	MFP	Multifunctional platform
CH ₄	Methane	MKEPP	Mount Kenya East Pilot Project
CO ₂	Carbon dioxide	MP	Member of Parliament
COP	Conference of the Parties	MT	Metric tonne
CSO	Civil society organization	N ₂ O	Nitrous oxide
ESDA	Energy for Sustainable Development Africa	NCA	Norwegian Church Aid
ESMAP	Energy Sector Management Assistance Programme	NCC	Nairobi City Council
EUREP GAP	The Global Partnership for Safe and Sustainable Agriculture	NGO	Non-government organization
FDA	Focal development areas	ODA	Official development assistance
GDP	Gross domestic product	PACJA	Pan-African Climate Justice Alliance
GDR	Greenhouse Development Rights	PRA	Participatory rural appraisal
GHGs	Greenhouse gases	RACIDA	Rural Agency for Community Development and Assistance
IEA	International Energy Association	REP	Rural Electrification Programme
IPCC	United Nations Intergovernmental Panel on Climate Change	UNEP	United Nations Environment Programme
		UNFCCC	United Nations Framework Convention on Climate Change
		WCC	World Council of Churches

Preface and Thank You

Norwegian Church Aid would like to thank the many people who have contributed to the development of NCA's climate programme in Kenya. I would like to make a special mention of the communities where NCA works, our partners and the different individuals who have participated in the programmes described herein.

To start working on climate issues here was not an easy task, as Kenya is not a priority country for Norway's official development assistance. But climate change, on the other hand, is now a global priority of the Norwegian Government, our main donor, and NCA, too, has identified it as one of its priority areas. We therefore felt that the concern about climate would outweigh the concern about the country. Thus in 2007 NCA Kenya made the decision to focus on climate change because we realized that it was affecting the life of the peoples we were working with. We also hoped that this would enhance our resource mobilization efforts so that we could expand the programming.

Another rationale for such a programme in Kenya was that Kenya and Kenyans are increasingly more aware of

climate change with the accelerating melting of the glaciers on both Mt. Kenya and Mt. Kilimanjaro. Nairobi is, moreover, a hub for the Eastern Africa region, the regional UN agencies are situated here and UNEP has its global headquarters in Nairobi. Therefore many seminars and conferences on climate are held in the capital. It took quite a bit of lobbying at NCA's Head Office to get them to buy in to the idea, but in the end Kenya was selected as one of NCA's pilot countries on climate change.

This document reflects the achievements made by the Kenya programme during the two last years, and it is my hope that this account will inspire the other country and regional offices to work on this important issue. NCA Kenya will continue to focus on the climate issue and to maintain Kenya as a "laboratory" for learning on climate within NCA. I am personally very excited at the prospect for further growth in the area of climate control and the prospect of Kenya continuing to serve as an organizational laboratory for NCA.

None of these developments would have been possible without the leadership of Paul Mbole as Programme Coordinator for Kenya/Uganda, who never gave up. The success of the

climate programme is due largely to his services, as well as the support of Therese Vangstad and Isaiah Kipyegon on advocacy issues. It is thanks to their hard work and strong commitment that we have come this far. A special thanks also goes to Therese for coordinating the preparation of this document and to Margaret Crouch, who edited and designed the publication.

The larger message, however, is that we must ensure that whatever the advocacy issue we are taking on, it is “rooted” in poverty eradication among the populations that are most affected. It is my strong belief that high level

advocacy in NCA will have little meaning if we are not in a position to establish a clear synergy between what we are concretely promoting with our partnership organizations and what we are advocating at the higher level. In other words, our moral imperative must be to fight poverty exacerbated by climate change in both deed and action if we are to be truly credible.

Kirsten Engebak

Area Representative for Kenya, Somalia and Uganda
Norwegian Church Aid

1. Introduction: Why This Booklet

Global warming and climate change are on everyone's lips. They have become the new buzzwords in international development policy and development strategies. And with good reason.

Climate change threatens the entire planet. Furthermore, it is projected to have a more detrimental effect on the poorest countries and population groups than on rich countries, despite the former being a only minor contributor to the problem. Thus climate change, global warming and environmental degradation constitute a grave threat to the fulfilment of human rights.

Being poor makes people more vulnerable to environmental challenges, including changing climate. This is one of the reasons the Millennium Development Goals (MDGs) include environmental issues. Moreover, the bulk of the world's poorest communities are located in places more likely to be affected by the worst the climate has to offer. Africa - and Kenya - is characterized as very vulnerable to climate change for geographic and geological reasons and because of high dependence on natural resources and very large poor populations concentrated in marginal lands. In addition, many African countries'

capacity to act and adapt to climate change is likely to be limited by a lack of resources, inadequate human capacity, poor institutions and lax policy.

Environmental issues have always been central to Norwegian Church Aid's values. But as climate change created ever greater challenges for the world's poor, and for those who are involved in work to fight poverty, NCA's Board in 2006 approved a motion to strengthen the organization's competence within environment and climate change-related issues and to anchor this in its development work around the world.

This booklet is one of the first steps towards documenting this work. Three main objectives guide our presentation of best practices in climate, environment and sustainable development in Kenya: One is to illustrate that NCA's approach to poverty reduction and climate change is integrated - that grassroots interventions are linked and reflected in national, regional and international advocacy work. As the reader will explore, NCA works with small-scale sustainable energy projects in Lamu District while at the same time supporting advocacy for climate justice and the right to sustainable energy in international climate negotiations.

The second objective is to document the specific strategy used: the promotion of the linkages among constituency, knowledge and authority. The “Knowledge to Constituency” approach has been a prerequisite for results achieved in Kenya. Broad-based and faith-based civil society organizations (CSOs) and professional/technical actors, for example Zero Foundation and Energy for Sustainable Development Africa (ESDA), have together enabled local communities to secure bio fuel supplies to meet their own energy needs. And third, NCA intends that the documentation will serve as a vehicle for facilitating learning and sharing of experiences internally, within NCA, and externally, with its partners.

This report documents NCA’s climate change initiatives so as to outline the key inter-relation between sustainable development and climate change; share lessons learnt and challenges faced through the design and implementation of these projects; and highlight best practices.

The booklet illustrates how the Kenya programme has approached environmental and climate related issues. The approach was not to “create” new projects or programmes, but mainly to integrate these issues into existing interventions and work. NCA’s support to Koch-FM, a community radio station in Korogocho, a slum area of Nairobi, illustrates this well. Through the use of community radio to educate and mobilize the residents of this congested informal settlement, community members living in the slum and its environs were empowered to participate actively in local governance via dialogue forums organized to address local development concerns from security to sanitation, crime to youth mobilization.

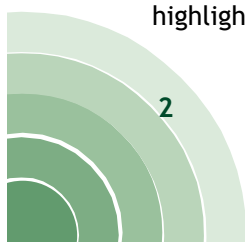
Today the radio station also highlights issues related to sustainable

development and climate change. It is, as well, a key stakeholder in the planning of how to handle the dumpsite located in the neighbourhood. This broadening of concerns underlines an important aspect of how NCA works and further illustrates that the issue of climate change should be treated as an issue of development that is relevant to all sectors of society.

The booklet captures a wide range of community-based climate change initiatives in Kenya focusing on a sustainable development approach to climate change adaptation and mitigation. These initiatives are spread across the country. They cover rural (Embu, Lamu and Yatta) and urban (Korogocho) areas, along with different climatic zones - arid (Mandera), semi-arid, coastal and highland areas. A broad range of climate change adaptation and mitigation themes inform a variety of approaches: rainwater harvesting, sustainable livelihoods, participatory community development, reforestation and afforestation. In addition, the booklet captures NCA’s involvement in climate change advocacy at national, regional and global levels. Through its advocacy work, NCA’s aim is to influence the outcome of any post Kyoto agreement in favour of the poor by emphasizing social justice and equity, increased adaptation support for developing countries, and matching of any substantive emission commitments on the part of developing countries with financial and technical support from developed countries.

Paul Mbole
Programme Coordinator

Therese Vangstad
Policy Officer



2. Why Climate Change Is an Issue

A growing body of research conducted over the last two decades has produced definitive evidence that the Earth's climate is growing warmer, and that the change is due to human activity.¹ The primary cause of the phenomenon is the emission of what are known as greenhouse gases (GHGs) because their concentration in the atmosphere retards the normal energy exchange and results in a warming or "greenhouse" effect. These emissions have grown since pre-industrial times, by 70% between 1970 and 2004 alone.

GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and others. Over the last 250 years, 66% of carbon dioxide emissions has resulted from burning fossil fuel for power generation, industrial processes and transportation. Another 33% is the result of changes in land use, primarily

Sub-Saharan Africa has contributed very little to the causes of climate change, but will bear the brunt of the impacts.

deforestation, which not only reduces the amount of carbon dioxide absorbed by deforested regions but also releases greenhouse gases directly through the biomass burning that frequently accompanies it. Emissions by the world's trillions of livestock contribute about 18% of the methane.

The impacts of climate change will impose net annual costs with global temperature increases greater than 2-3°C. While developing countries are expected to experience larger percentage losses, global mean losses could be 1-5% of GDP for 4°C of warming. The Stern Report estimates that immediate action in the form of an annual expenditure of 1-2% of global GDP is required in order to thwart the possibility of damages amounting to as much as 20% of GDP if business continues as usual. Regionally, changes in temperatures have had and will continue to have discernible impacts on many natural, physical, biological and human systems. Key impacts will vary by

¹ See, for example, the Fourth Assessment Report of Working Group II (WG II - AR4) of the United Nations Intergovernmental Panel on Climate Change (IPCC), Sir Nicholas Stern's 2006 report to the UK House of Lords, *The Economics of Climate Change*, and the call to action by the UK's Royal Society in 2007. Most of the data in this booklet are drawn from the IPCC's WG II - AR4.

Climate Change in Africa

In its most recent assessment, the Intergovernmental Panel on Climate Change (IPCC) reported that all of Africa is likely to warm during this century, with the drier subtropical regions warming more than the moist tropics. Annual rainfall is likely to decrease throughout most of the region, with the exception of Eastern Africa, where annual rainfall is projected to increase. These changes in the physical environment are expected to have an adverse effect on agricultural production, including staple crops such as millet and maize. The areas suitable for agriculture, the length of growing seasons and yield potentials (particularly along the margins of semi-arid and arid areas) are expected to decrease. Diminishing fishery resources in large lakes as a result of rising water temperatures are expected to further limit local food supplies. As a result of the overall drying of the continent, between 75 million and 250 million people are projected to be exposed to additional water stress by 2020. Towards the end of the 21st century, projected sea level rise will affect low-lying coastal areas with large populations; the associated costs are estimated to be at least 5–10% of GDP. (IPCC, 2007)

extent of adaptation, rate of temperature change and socioeconomic pathway.

Global environmental change “raises the issue of fairness and equity”, according to Shah et al. (2009): “Developing countries have thus far contributed relatively little to the causes of climate change. Sub-Saharan Africa accounted for just 2.0% of the world’s total cumulative CO₂ emissions from fossil fuels over the period 1951 to 2004, and at present, SSA with 9.7% of the world’s total population only contributes 2.4% of the world’s total CO₂ emissions”.

Notable achievements of the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol are the establishment of a global response to the climate problem, stimulation of an array of national policies, the creation of an international carbon market, and the establishment of new institutional mechanisms that may provide the foundation for future mitigation and adaptation efforts.

The Protocol is intended to achieve “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the

climate system”. It establishes legally binding commitments for the reduction of four greenhouse gases produced by “Annex I” (“industrialized”) nations, as well as general commitments for all member countries. Under Kyoto, industrialized countries agreed to reduce their collective GHG emissions by 5.2% compared with the year 1990 by 2012.

Kyoto includes defined “flexible mechanisms” such as Emissions Trading, the Clean Development Mechanism (CDM) and Joint Implementation (JI) to allow Annex I economies to meet their GHG emission limitations by purchasing GHG emission reduction credits from elsewhere, i.e., projects that reduce emissions in non-Annex I economies, from other Annex I countries or from Annex I countries with excess allowances. In practice this means that Non-Annex I economies have no GHG emission restrictions, but have financial incentives to develop GHG emission reduction projects to receive “carbon credits” that can then be sold to Annex I buyers, encouraging sustainable development. In addition, the flexible mechanisms allow Annex I nations with efficient, low GHG-emitting industries,

and high prevailing environmental standards to purchase carbon credits on the world market instead of reducing GHG emissions domestically. This is often referred to as the compliance market.

The CDM is currently the main formal channel for supporting low-carbon investment in developing countries (Odingo, 2001). It allows both governments and the private sector to invest in projects that reduce emissions in non-Annex I countries (emerging economies), and provides one way to support links between different regional emissions trading schemes. To date, CDM investment in Africa has been minimal.

Ongoing efforts are not sufficient, however, as indicated by the observed rapid changes already taking place. With current climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow over the next few decades. Non-mitigation scenarios project an increase of baseline global GHG emissions by a range of 25-90% between 2000 and 2030. Fossil fuels are projected to maintain their dominant position in the global energy mix until 2030 and beyond, and between 2000 and 2030 energy-related CO₂ emissions are projected to grow by 40-110%. Two-thirds to three-quarters of this increase is projected to come from non-Annex I regions, whose average per capita energy CO₂ emissions are projected to remain essentially three times lower than those in Annex I regions by 2030.

Therefore, for effective mitigation, long-term emission reduction targets will have to be adopted in a "post Kyoto" (post 2012) climate deal that will achieve 25-40% reduction of 1990 levels by 2020. This cannot be achieved without emission reduction commitments from developing countries (non-Annex I countries). But what does

this mean in terms of development priorities for developing countries? The usual path from poverty to prosperity has been via a process that entails dramatic increase in the per capita use of fossil fuel energy.

Add to this the fact that even the most stringent mitigation efforts cannot avoid further impacts of climate change

The Evolving Focus on Climate Change

Since 1990, the UN has been the home of international climate talks. Its first global earth summit, held in Rio de Janeiro in 1992, signed the UN Framework Convention on Climate Change, which has now been ratified by 192 countries and so is a legally binding agreement. Missing from the UNFCCC, however, were any numeric targets. This gap has since been addressed in the following way:

- ◆ In 1997, the Kyoto Protocol was agreed as an amendment to the UNFCCC to give industrialized (Annex I) countries binding emissions reduction targets.
- ◆ Kyoto came into legal force in 2008, with its first commitment period (set of binding emissions reduction targets) running until 2012.
- ◆ Since Kyoto was first agreed, emissions have continued to increase dramatically, even in Annex I countries with reduction targets.
- ◆ The breakthrough at the annual UN climate summit in Bali, Indonesia, in 2007 opened the way for new negotiations on tougher targets for these countries after 2012.
- ◆ Developing countries are also being pressured to take on binding targets to reduce emissions which, while necessary, is unfair unless these are financed by the industrialized world.

in the next few decades (IPCC, WG II-AR4). This makes adaptation - i.e., initiatives and measures to reduce the vulnerability of natural and human systems to actual or expected climate change effects - unavoidable. However, the ability of human systems to adapt to and cope with climate change generally depends on such factors as wealth, technology, education, information, skills, infrastructure, access to resources, management capabilities and sociopolitical will.

The climate scenario puts developing countries, especially those in Africa, in a very difficult position. These countries will be under pressure to focus their limited resources on directing their

development along an often expensive (though sustainable) low carbon path; at the same time, they are the most vulnerable to climate change impacts because they have fewer resources (social, technological and financial) to adapt, further exacerbated by existing developmental challenges such as endemic poverty, complex governance and institutional dimensions; limited access to capital, including markets, infrastructure and technology; the impact of the HIV and AIDS epidemic; ecosystem degradation; and complex disasters and conflicts.

People's capacities to adapt and mitigate are driven by similar sets of factors. These factors represent a

The Voluntary Carbon Market

Alongside the compliance market resulting from the Kyoto Protocol, a voluntary market has emerged. This brings together some very different players (e.g., from companies to local governments, NGOs, individuals and cities) who have a range of reasons for participating in the market. Players in this market engage voluntarily in emissions reduction schemes because they have either set their own GHG emission reduction targets or wish to reduce or net off their GHG footprint. Strategic reasons why companies buy offsets include addressing climate change, generating goodwill amongst customers and employees, learning by doing, or corporate social responsibility (CSR) interest or obligations.

This segment includes the so-called "retail" carbon market, targeted at companies and individuals that usually have relatively small direct emissions, and wish to reduce their carbon footprint through offsetting. They often purchase small quantities of emissions reduction credits, which could either be verified or be part of a non-verification standard. This market is commonly referred to as the carbon offset market.

In the voluntary sector, offsets are mainly sourced from small-scale projects located in developing countries. This is for two main reasons. First, small-scale projects typically benefit local and rural communities providing sustainable development and/or social benefits. These benefits are sought by buyers who not only want to reduce their carbon footprint, but also want to use offsets as a way to promote corporate social responsibility. The second reason is an economic one. In the majority of cases, small-scale projects are still economically unattractive for the compliance market (owing to the high transaction costs involved in developing these projects under compliance market rules), but they are a viable source of credits for the voluntary market where the burdens of verification are often much lower.

generalized response capacity that can be mobilized for both adaptation and mitigation. Response capacity, in turn, depends on the societal development path chosen. Enhancing society's response capacity through the pursuit of sustainable development is therefore one way of promoting both adaptation and mitigation. This would facilitate the effective implementation of both options, as well as their mainstreaming into sectoral planning and development. If climate policy and sustainable development are to be pursued in an integrated way, then it will be important not simply to evaluate specific policy options that might accomplish both goals but also to explore the determinants of response capacity that underpin those options as they relate to fundamental socioeconomic and technological development paths.

In the past decade, Kenya has experienced increasingly erratic and extreme weather patterns such as severe droughts and floods that can be attributed at least in part to the effects of climate change experienced world over. But misguided policies have combined with climate change to disastrous effect. The phenomenon of Kenya's drying "water towers" – the Aberdares, the Chereng'any Hills, the Mau Complex, Mt. Kenya and Mt. Elgon – which are essential to Kenya's hydropower system, farming, water needs and wildlife, can no longer be ignored. The drying of the water towers has come about as a result of the increasing illegal logging, cultivation, grazing, encroachment and poaching that have destroyed the forest cover, thus affecting precipitation and therefore river flows both locally and beyond. Despite the degradation, it has long been taken for granted that the water towers will continue to fill the rivers that flow from them and that

The bulk of the world's poorest communities are located in places more likely to be affected by the worst the climate has to offer.

rains will fall to meet community needs for water for farming and other essential domestic uses. The verdict is now in - rains in Kenya are erratic, unpredictable and often late. Or they are too light or too heavy. Droughts and flash floods have become frequent in many parts of the country and for many communities, age-old livelihoods are becoming less and less viable.

The NCA Climate Change initiative - as you will get to know in the following chapters - focuses in part on a specific river system that emanates from the slopes of Mt. Kenya - River Kapingazi, which flows into River Thiba and then into the Tana River. The flow of the Tana is the mainstay of Kenya's hydroelectric generation capacity. Thus, by targeting communities living along and around the river system, NCA hopes to address the climate vulnerability of the communities as they endeavour to secure their livelihoods whilst helping to mitigate the adverse effects of climate change.

NCA is not alone in recognizing that the drying of the water towers has already had extensive negative effects on the environment and by extension the lives of poor and marginalized communities in Kenya. It is imperative, on the one hand, to reverse the trend, and on the other to take remedial measures to enable communities to cope with the changing demands. Indeed, the vulnerability of the poor to climate shocks, including increasing water scarcity, threats to their livelihoods, and dependence on unsustainable - and often unaffordable - sources of energy, undermines any attempts to realize the MDGs.

3. Lamu and Tana Districts: Developing an Integrated Jatropha Energy System

Access to energy is severely constrained in sub-Saharan Africa, where an estimated 51% of urban populations and only about 8% of rural populations having access to electricity. By comparison, nearly all urban populations and about 80% of rural populations have access in northern Africa (IEA, 2002). Further challenges from urbanization, rising energy demands and volatile oil prices compound energy issues in Africa (ESMAP, 2005).

Less than 5% of rural households in Kenya have access to electricity, and 95% of the rural population depend on firewood or other biomass for cooking and heating (CBS et al., 2004). For Kenya and other developing countries, expanding energy services to marginalized households, while simultaneously addressing the environmental effects of energy production and use, is one of the most pressing of today's development challenges.

There is a great correlation between socio-economic growth and the availability of modern energy sources, in particular electricity infrastructure. Access to sustainable and affordable energy has a positive impact on a wide range of factors influencing rural

communities, from improved health to changes in the division of labour, to better educational facilities, economic prosperity and increased social mobility.

The Government of Kenya recognized this fact and in 1973 embarked on an ambitious rural electrification programme (REP) by grid extension. However, even with an REP fund based on proceeds from a levy of up to 5% on all electricity consumed in the country, the programme had managed only 110,742 rural connections by 30 June 2006. As a result of political pressure, this number almost doubled in 2006/07, but the expansion strained Kenya's already limited generating capacity and will likely result in introduction of diesel-based emergency generators and consequently an increase in electricity tariffs because of fuel adjustments - and more carbon emissions.

Electricity access through grid extension is not viable for remote communities and the government often has to resort to decentralized options for rural electrification. Decentralized options based on renewable energy (like solar, wind or small hydroelectric plants) are often not economically feasible, especially for providing energy for productive use and income-generating

activities. This leaves diesel generation as the most viable alternative.

In addition, the increasing over-dependence on fossil fuels to power small- and medium-scale electrical and mechanical applications (e.g., water pumping, agro processing and transportation) means that most off-grid communities suffer when faced with high and volatile fuel prices - further lowering their agricultural and overall economic productivity.

3.1 Background and Rationale

Pure jatropha oil, derived from the seeds of *Jatropha curcas*, makes a suitable diesel substitute for use in a wide range of stationary engines like those in common use in rural Africa (such as irrigation pumps, mills and generators) the engines requiring only

minor modifications. Jatropha oil also functions as a replacement for kerosene (which can be used in the household as a fuel for oil lamps and cooking stoves). Manual pressing of the seeds results in a seed-cake that can be used as an excellent organic fertilizer. The residue from the sedimentation of the oil during the purification process in the tank is suitable for soap production.

The establishment of a jatropha-based energy system consists of building a reliable source of jatropha seeds, modifying diesel engines for various applications to run off pure jatropha or a diesel/jatropha blend, and introducing multifunctional platforms² (MFPs) that run off crude jatropha oil. Other

² A multifunctional platform is built around a simple diesel engine, which can also run off pure jatropha oil. It can power various tools, such as a cereal mill, husker, generator, battery charger, pump, welding and carpentry equipment, etc.

Jatropha Curcas

Biomass from dedicated energy crops can be an important bio-energy feedstock, but its contribution to mitigation depends on demand for bio-energy from energy supply, on water availability, and on requirements of land for food and fibre production. Widespread use of agricultural land for biomass production for energy may compete with other land uses and can have positive or negative environmental impacts and implications. Bio-energy plantations can lead to restoration of degraded land, manage water runoff, retain soil carbon and benefit rural economies, but could compete with land for food production and may be negative for biodiversity, if not properly designed.

One such potential crop, *Jatropha curcas*, grows on low grade surface or marginal locations that are unsuitable for food crops. It can be grown over a wide range of arid or semi-arid climatic conditions and cultivated in waste lands in order to prevent soil erosion and inhibit desertification. Jatropha can stand long periods of drought by shedding most of its leaves to reduce the transpiration loss. Its oils are often toxic to human beings.

Jatropha can be propagated from seeds as well as cuttings. The seedlings germinate within a week's time and will be ready for transplanting in 45 days. Seedlings start bearing from 2-4 years. Cuttings also may be used for planting. Grown jatropha plants yield 4-6 kg dried seeds per plant with an estimated yield of 8-10MT of seeds per hectare per annum from the sixth year onwards.

and vegetables, as well as cotton as a major cash crop. Access to markets for their produce and access to affordable energy remain their most critical demand.

The project concept is based on the development of a jatropha outgrowers scheme. Action includes setting up appropriate institutional arrangements and establishing suitable technical and financial infrastructure for seed collection, oil processing, and distribution of jatropha oil and its by-products. It also involves retrofitting diesel engines for both mechanical and electrical applications in target locations and the introduction of MFPs. The initial platform, for example, is built around a simple, old model Lister diesel engine; it can run off pure jatropha oil and can power various tools via pulleys.

3.2 Project Partners

Entry into the project area was through by the Lamu Cotton Growers and Industrial Association (LGCIA). The association played the role of facilitating introduction of the project to the communities in Mpeketoni and further acted as the project anchor organization while the project framework organization, the Lamu Tana Bio-energy and Agro-processing Company (LTBAC), was being established.

LGCIA is a farmer association based in Mpeketoni Division. It was formed by local farmers and registered with the aim of reducing poverty by encouraging better farming practices and adding value to farm produce to secure better returns for farmers. The association currently has 400 members.

Following the mobilization of farmers around the integrated jatropha initiative, over 200 farmers registered

their intention of participating in the project and since then, with more awareness training, many others have also expressed their interest. A total of 2,500 acres has been committed to date for the planting of jatropha. To facilitate coordination of project activities, the farmers were organized into 52 localities, all linked to eight committees at the zonal level who are then represented in the umbrella organization, i.e., LTBAC.

Technical partners include the group, Energy for Sustainable Development (offering overall technical support and strategy), the ZERO Foundation (specializing in bio fuels), the Green Africa Foundation, the Kenya Forestry Research Institute (KEFRI; offering technical support for jatropha silvicultural practices) and MicroDers Consult (providing institutional capacity building).

3.3 Objective and Strategies

The project has two key objectives. The first is to provide access to affordable, clean and sustainable energy by using pure plant oil from jatropha and its by products (seed cake) as fuel. Second, the project aims to



A fisherman from Kipini expects that access to reliable energy will add to his income.

Use of bio-fuels in diesel engines

There are two approaches to using bio-fuels in diesel engines:

- ♦ Retrofitting the engines to use straight vegetable oil: For most engines without electronic fuel injection, retrofitting is simply to preheat the oil to allow for proper atomization of fuel. Otherwise, incomplete combustion and carbon build up will ultimately damage the engine. Preheating is typically done by using waste heat from the engine. Older generation engines like the hand cranked Lister, which are very common in most rural areas in Africa, require only an additional fuel tank to allow the generator to be started and shut down with diesel while the vegetable oil is used for running the engine.
- ♦ Modifying the oil through an esterification process: This produces bio-diesel, which can be used in most diesel engines without modification. The process involves reacting vegetable oils catalytically with methanol or ethanol and in addition to bio-diesel produces crude glycerol. This process is more complicated than retrofitting and involves significant capital investment and regular amounts of methanol or ethanol for the process.

develop small- and medium-scale agro-processing industries to allow farmers in the project area to derive maximum benefit from their agricultural produce (mangoes, cashewnuts, jatropha and cotton) through value addition, processing, packaging, bulking and directly accessing markets

In order to achieve these objectives, the project sought to facilitate:

- ♦ Electricity generation and distribution in targeted towns in the project area.
- ♦ Supply and distribution of jatropha oil and by-products to meet household energy requirements: oil for lighting and cooking, briquettes from jatropha seed cake for cooking. This also includes provision of affordable cooking and lighting appliances that can use jatropha products.
- ♦ Supply and distribution of jatropha oil to be used in mechanical and electrical applications in the project area that are currently powered by diesel (e.g., privately owned diesel powered boats, irrigation pumps, grain mills and electrical

generators). These include the fuel switch for:

- A diesel powered mini-grid serving 150 connections (households, businesses, and institutions).
- 300 small- and medium-scale diesel-powered generation units used to supply mechanical and electrical energy in the project area such as cereal mills, huskers, alternators/electricity generators, battery chargers, pumps for irrigation and water distribution, welding and carpentry equipment, etc.
- National utility diesel-powered generating stations in two towns in the project. This project also targets the provision of retrofitting services to enable these generators to run on pure plant oil.

In the first phase of the project (September 2007 - February 2008), the focus of activities was on:

- ♦ Creating awareness and securing buy-in of the project among local

farmers and key project actors and players through a series of consultations culminating in a stakeholder workshop held in Mpeketoni.

- ◆ Conducting a baseline study to establish the extent of existing jatropha plants in the project area and creating an inventory of fossil fuel-powered engines that could be targeted in the fuel substitution initiative.
- ◆ Mobilizing, registering and organizing 1,500 interested farmers - who collectively pledged over 2,000 acres - into groups to facilitate implementation and coordination of project activities.
- ◆ Developing and implementing the trial phase of the project by training nursery managers, establishing trial nurseries and preparing the quarter-acre trial plots selected in the project area.
- ◆ Setting up a 3-kilometre electricity mini-grid in Kipini town to serve over 150 households. Presently, the Kipini community power generator is running on diesel, but the arrangement with NCA is that this will be converted to use jatropha oil and/or bio-diesel, thus serving as the project's first jatropha fuel

substitution demonstration initiative.

The key impacts of these activities included:

- ◆ Renewed enthusiasm in farming amongst farmer groups given the improved livelihood scenario the current initiatives portend. It was noted that although it was a challenge in the beginning, farmers are now increasingly opting for the project's focus of producing jatropha for own consumption rather than for sale as seed or semi-processed oil. This indeed has been a key factor that has informed the government's identification of the project as a model smallholder jatropha initiative in Kenya.
- ◆ Enhanced cooperation and collaboration amongst a broad spectrum of community groups and households through their active participation in the project's institutional arrangements, i.e., LTBAC, the project's framework organization.
- ◆ Strengthened linkages with critical stakeholders including local administration, the resident agricultural extension officers and the government agricultural training centre.
 - ◆ Securing collective goodwill from a diversity of players towards ensuring the successful implementation of the project. Although there were often incidents where conflict was imminent, project structures in place and proactive intervention by key players effectively addressed the underlying issues



Above: *Jatropha* intercropped with sunflower; right: *jatropha* fruit and seeds

and allowed for unhampered implementation.

The second phase of the project (March 2008 to March 2009) included activities that focused on:

- ♦ Commencing the trial phase - building capacity of the farmer groups participating in the trials, transplanting jatropha seedlings and managing the jatropha trial plots.
- ♦ Monitoring and evaluating the trials.
- ♦ Facilitating an exposure visit by project actors and stakeholders to related jatropha initiative in Arusha, Tanzania. The aim of the visit was to:
 - Draw learnings from the Tanzanian experience with jatropha energy farming.
 - Gain practical tips on adaptation of diesel engines operating at community level to use vegetable oil through a visit to an operational community-based MFP in Mt. Meru, Tanzania.
 - Observe the use of jatropha oil for cooking, household lighting and soap making, as well as the use of its by-products for biogas generation.
 - Inform the development of a suitable retro-fitting strategy for

the NCA bio-fuels initiative in Lamu/Tana. (i.e., identification of suitable engine makes/ accessories, technical support organizations, etc.).

- Assess sustainability measures undertaken in the Tanzanian initiatives (if any) and devise appropriate measures for the NCA bio-fuels initiative.

Among others, these activities:

- ♦ Reduced resistance by the visiting community representatives and local technicians to the use of jatropha bio-oil in powering local equipment and machinery.
- ♦ Enhanced awareness of the technical and economic viability of the use of jatropha oil and strengthened awareness of the environmental benefits thereof.
- ♦ Improved confidence amongst the participating government extension officers and project resource persons as to the appropriate measures and agricultural practices that would support effective integration of jatropha into food crop farming.
- ♦ Identification of suitable resource organizations in Tanzania that can be tapped to provide technical

Jatropha Economics

Upon maturity in six years, 1ha of jatropha will yield 8-10MT of seed. The market value for this, based on prices in Tanzania, is US\$880/ha. At this price it would be more financially beneficial to plant other crops. However, significant benefit can be accrued by adding value through seed pressing and oil filtering for use in community electricity generation, powering agro processing equipment, water pumping for irrigation, soap making, and replacing kerosene for household lighting and cooking at local level. About 1,500 litres of oil can be extracted from 6,600kg of seed; at three-quarters the current price of diesel in the project area this can be sold for a total of US\$1,350. Additional income/benefits could come from electricity generation. It is therefore imperative that jatropha farmers own and manage facilities for processing jatropha oil and most importantly, use the oil to power their activities. This is the only way of maximizing benefits to the farmers.



Multi-functional platform with oil press, alternator and maize mill run by Lister type diesel engine. The bucket above the engine is the additional tank needed to contain the jatropha oil.

inputs to support the effective transfer of the MFP technology to the NCA project.

3.4 Challenges and Lessons

Inherent suspicion between indigenous and settler communities rooted in cultural differences has sometimes cause tensions amongst the different community groupings, although the establishment of strong, all-inclusive institutional structures has sought to redress this.

Given that there is little or no benefit to the farmer in selling jatropha seeds and/or raw processed oil, it is critical that farmers be encouraged to utilize the oil they produce from

processing their seed in supporting local energy needs - value addition and agro-processing, local electricity generation, etc. Sustained community engagement and sensitization have been required to secure their commitment to this delayed benefit scenario.

Even though a majority of farmers have 3-5 acres of unused land, some project farmers tended to use cultivated land for the demonstration plots instead of preparing the unused land. This remains a challenge as some of the farmers are either not enthusiastic to spend more energy and resources to open up unused land or would rather take the shortcut to access quick benefits. Through local supervisory committees at locational level, the project has sought to establish a mechanism to maintain peer pressure on participating local farmers. It is still too early to assess the success of this strategy.

3.5 Way Forward

As a means of consolidating the key learnings generated so far, the project has prepared a *Handbook on an Integrated Jatropha Energy System*. Designed to guide project developers in setting up similar projects elsewhere, the handbook presents relevant information for specific actors and stakeholders that can be used in capacity building. It consolidates the lessons learnt from the NCA project and experiences gleaned from other projects in the region.

It is envisaged that the project will introduce the first MFP in Mpeketoni

The project is pursuing registration as a Gold Standard project so as to target available carbon finance.

during 2009 and further facilitate the retrofitting of the Kipini Community Power Project's 40kVA generator for initial jatropha oil trials. Related to this, the project will endeavour to develop or strengthen small- and medium-scale agro-processing industries to allow farmers in the project area to derive maximum benefit from their jatropha oil by adding value to their agricultural produce (mangoes, cashewnuts, jatropha and cotton).

During the course of 2009, the project will step up its institutional

capacity building efforts to further consolidate the LTBAC, which is co-owned and co-managed by farmers in the project area. The objective of this institution is to ensure the long-term institutional, financial, environmental and social sustainability of the project.

In conclusion, the project is pursuing registration as a Gold Standard project so as to target carbon finance available through the voluntary carbon market to support its consolidation/expansion.

4. Yatta: Large-Scale Propagation of Indigenous and Exotic Tree Seedlings for Forestation Projects

Mully Children's Family Home Project (MCF) was founded in 1989 with the principle aim of providing rehabilitation for neglected children in Kenya. MCF is a non-denominational, not-for-profit Christian organization, headquartered in Nairobi, that has six homes in Kenya. Since its founding MCF has positively affected the lives of 4,000 children. The homes not only offer refuge for homeless children, they also provide an environment to build them up and create opportunities for their reintegration into society, through training and education.

The MCF homes are located in several towns across Kenya - Eldoret, Kitale, Kangundo, Ndalani, Vipingo and Yatta. They had a population of over 1,500 children by the end of 2008. A further 3,500 were targeted in the internally displaced persons camps that came up following the post-election violence experienced in Kenya in early 2008. The homes house street children and orphans, and abandoned, abused, desperate and neglected children who have nowhere to call home and no one to care for them.

MCF has been carrying out sustainable agricultural practices in

semi-arid Yatta and Ndalani districts in Eastern Province, with the past seven years experiencing a more or less exponential growth at the Ndalani site. MCF agricultural production is currently focused on horticultural products (French beans) for export markets and is certified by the EU through EUREP GAP to export its produce to Europe. MCF has one greenhouse in Ndalani and is constructing another at the MCF facility in Yatta. Production of horticultural crops under greenhouse conditions allows for more than four harvests per year. Approximately 40% of the funding is derived from MCF's own activities, including sale of the horticultural produce in export markets, fish farming, chicken and cattle.

4.1 Objectives and Strategy

To ensure a sustainable supply of tree seedlings to meet the afforestation needs of communities targeted in the NCA climate initiative in Kenya, (i.e., Mt Kenya, Embu, Lamu, Tana, Nairobi and other requesting communities), NCA is

supporting the MCF facility in Yatta to propagate tree seedlings under greenhouse conditions. Seeds collected from several sources will be planted in the nursery bed waiting transplanting to planting troughs and thereafter into polythene bags. Once the trees attain a suitable height, they will be distributed to requesting community groups for planting. The target production capacity of the propagation greenhouse is 1 million tree seedlings per year

Targeted tree species include exotics like *Grevillea robusta*, *Leucaena* spp., *Jatropha* and *Sycamor* spp., as well as *Acacia* spp., *Casuarina* spp., and an assortment of other indigenous trees.

In light of the semi-arid nature of Yatta, NCA supports rainwater harvesting through the development of a 70-million litre earth dam to facilitate collection of rainwater from the over 4ha of greenhouse roofing area. This water is to be used for the seedling propagation as well as other horticultural crops.

4.2 Way Forward

MCF has acquired 300 acres of land next to its facility in Yatta. The operation's vision was to develop an agricultural institute there that would build on its agricultural experience, commercial farming and environmental conservation and transfer this knowledge to the local community. NCA sees this as a possible opportunity for partnership for setting up an Energy Institute - a training and demonstration facility modelled around the Norwegian Energy Farm concept - that would focus on bio-energy and other renewable energy sources. Since MCF is a partner NCA has previously worked with, the availability of adequate land to set up the institute and demonstration activities and the interesting possible

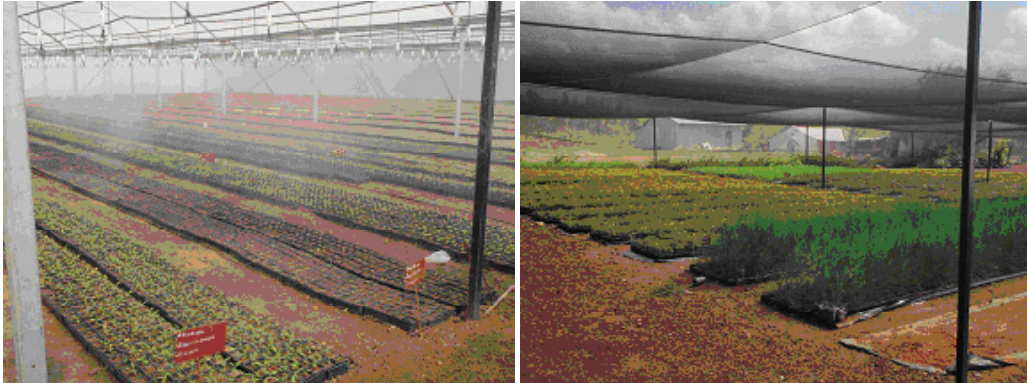
The proposed Energy Institute would develop and propagate suitable organizational models through which the energy aspirations of targeted communities can be sustainably addressed in a financially viable manner.

overlaps between energy and agriculture make this a venture worth exploring.

The overall goal of the Energy Institute would be to demonstrate the use of renewable technologies and promote the adaptation of sustainable energy options by energy-poor communities that are economically underprivileged and particularly vulnerable to the negative effects of climate change. The Institute would achieve this through technology demonstration, training and adaptation support, promotion and support of energy entrepreneurship, and institutional development support to energy entrepreneurs, amongst other inputs.

Of particular importance would be the provision of institutional development support to facilitate the creation or adaptation of community organizations to fulfil the role of energy entrepreneurs. To this end, the institute would develop and propagate suitable organizational models through which the energy aspirations of targeted communities can be sustainably addressed in a financially viable manner.

To broaden the impact of the institute, learning, research and policy advocacy through informed engagement of state actors and other players will be necessary in both the medium and long term. This is particularly necessary in the area of energy from biomass sources, on which 80% of the Kenyan population depends. The ultimate goal is for the institute to have a regional



Tree seedling propagation greenhouse supported by NCA in Yatta

reach that focuses on the promotion and adaptation of sustainable energy options by energy poor communities and individuals.

Key cross cutting themes that inform the type and nature of the institute's proposed activities would include:

- ♦ **Integration:** Clear attempts should be made to integrate energy provisioning into the lifeways and aspirations of targeted communities and must in one way or another respond to the challenges of climate change - whether existing or anticipated. Further, initiatives should be integrated into existing activities of the communities and/or households and should not necessarily be separate activities.
- ♦ **Value chain approach:** An end-to-end view of sustainable energy production, transmission and utilization for the different

technologies should be adopted. Thus, it is not sufficient to develop "perfect" technologies for utilization, e.g., energy efficient cookstoves, and fail to respond to the challenges of sustainable production and transportation, e.g., of charcoal.

- ♦ **Energy entrepreneurship:** To secure long-term sustainability it is critical that the technologies advanced be promoted through a commercially viable and attractive model that can enhance outreach and adoption.

It is suggested that in the formative stages, the proposed institution be anchored within the framework of the ongoing NCA climate change initiative. At a later stage, it can be de-linked to operate on a more semi-autonomous basis.

5. Mandera: Rainwater Harvesting and Water Resource Management

Pastoral groups have historically been amongst the most resilient communities in adapting to recurrent drought and other extreme climate events. Coping mechanisms include moving to reserved sites during dry seasons, thus allowing land to recover from grazing, migration to neighbouring areas in search of pasture and water depending on negotiated rights of access to such resources, and distribution of livestock among relatives and friends in other areas to ensure they are not all wiped out during drought. Other measures are switching between capital assets and migrating to other areas to look for work until a drought has passed, such as casual labour, brick making and handicraft production, as well as collecting honey and charcoal burning.

These traditional coping mechanisms have been undermined by years of political and economic marginalization, inappropriate development policies, high population growth, and ever greater competition for resources. The growing frequency of abnormal climatic events has become an increasingly important factor in reducing the ability of some pastoralists to maintain a sustainable livelihood. Whether increasing climate

change will see a worsening of their current situation or whether pastoralists will be able to adapt and even take advantage of the opportunities it may bring will depend on how these environmental and developmental challenges are tackled by both national governments and international donors, and the extent to which pastoralists themselves are involved in the process.

5.1 Background and Rationale

Mandera District is at the extreme end of North Eastern Province, bordering Ethiopia. It covers an area of 26,470 km² and has approximately 325,000 inhabitants. The district has three dominant livelihood zones: Pastoral (all species), accounting for the 28% of the population who are mostly livestock keepers; agropastoral in the western flank, accounting for the 40% who practise both livestock keeping and some farming; and the irrigated cropping zone along the River Daua in the north, accounting for the 32% of the population who are involved in small-scale farming along the river. About 80%

of households in the larger Manderla District derive their livelihoods directly or indirectly from livestock and livestock products - camels, cattle, sheep, goats and donkeys. In 2005, there were about 1.2 million livestock in the district: 350,000 goats, 325,000 sheep, 208,000 cattle, 184,000 camels and 8,640 donkeys used primarily as "burden" animals. About 20-30% of the population is assumed to have dropped out of pastoralism. Since October 2004 the district has been under emergency food aid targeting 240,000 beneficiaries.

Water supply is an almost constant problem. There are about 20 functional boreholes in the whole of the district, but Western Manderla has no boreholes at all and depends almost exclusively on water trucking by the Kenyan government and local NGOs. Boreholes are run by diesel generators, which operate for 16-18 hours per day, leading to frequent breakdowns.

Fourteen water tankers (browsers) truck water in Manderla District. Households receive about 3-5 litres of water per person per day, well below the required standards for consumption and hygiene. This water is normally also shared with livestock, although it is only meant for households. Water is also being trucked to dispensaries, but the demand far exceeds the supply.

Grazing resources are depleted in areas around the boreholes and at trucking points because of the high concentration of pastoralists and livestock. In addition, unplanned settlements have increased around watering points.

Absence of clean water in sufficient amounts threatens the health and welfare of pastoral households and livestock. Worsening drought will accentuate water scarcity.

There are 76 water pans distributed across all settlement areas. Over 70% of these are silted, however, and high seepage rates are reported. Of late, the majority impounded little water during the short rains and are now dry. Absence of clean water in sufficient amounts threatens the health and welfare of pastoral households and their livestock. Worsening drought will accentuate water scarcity.

Sorghum, maize, beans, fruits and vegetables are the key crops grown in the north and west of Manderla District. Of the potential arable land of 10,500ha, only 4,500ha are actually cultivated. The low acreage under crop production is attributed to poorly distributed rains, unavailability of certified seeds, poor crop husbandry practices and - in the last growing season - army worm infestation. Flooding resulting from heavy rains in the Ethiopian highlands sometimes destroys dykes along the river, causing serious crop losses.

Pasture, browse and water are often severely depleted by poor rains. Livestock prices have declined by margins ranging between 30% and 60% (mostly among cattle). Low livestock prices, attributed to a glut in supply, have compounded already low purchasing capacities. Moreover, a significant proportion of the livestock is unsellable because of poor physical condition. Financial considerations aside, pastoralists have a sentimental attachment to livestock and usually hold on to their animals even as conditions deteriorate precariously.

Many of the coping strategies now being applied are increasingly undesirable and compromise human welfare and the viability of the livelihood. These include:

- ♦ Killing of calves, to reduce the vulnerability of cattle.

- ♦ Heavy dependence on relief food and widespread sharing of food among non-targeted community members.
- ♦ Kinship support and remittances, which are declining as wealth disparities narrow.
- ♦ Movement to population centres, leading to the proliferation of new settlements.
- ♦ Sending children to live with relatives and increased child labour.
- ♦ Distress sale and slaughter of animals.
- ♦ Substantial migration of pastoralists and livestock to other districts and to Somalia and Ethiopia.
- ♦ Consumption of wild food and tubers.
- ♦ Unsustainable charcoal production.
- ♦ Selling firewood.

5.2 Project Partners

NCA has partnered with Rural Agency for Community Development and Assistance (RACIDA) to implement its climate change programme in Mandera. RACIDA is an NGO formed in Mandera in 2001 with the objective of empowering the pastoral community and promoting sustainable development for pastoralists. It has worked with communities in over 30 settlements in the district on programmes related to water, sanitation, food security and drought coping mechanisms. RACIDA has also undertaken various humanitarian responses to natural disasters and conflicts.

Meeting with Malkamari women's group, Mandera District



5.3 Objectives and Strategies

Water is a precious and costly commodity in Mandera. A combination of strategic water reserves, efficient use of water resources and good water governance (through community-based water use associations) is the most sustainable way of managing water resources. Two rainwater harvesting technologies were applied by NCA:

- ♦ **Underground water tanks (berkads):** NCA supported the construction of a 400,000-cubic-metre berkad in Hullo location. This tank can serve the community for three months of the dry period. The water harvested is rationed and used only for drinking. Tank construction took a holistic approach - members of the community were involved in the actual construction process and local masons were trained to repair and maintain the facilities. This means that in the long run communities will be able to build similar structures without external support. Communities such as Hullo used to spend over US\$2,400 per season for water tankering, funds can now be freed for investment within the communities

Community needs in Mandera District are significant and varied, therefore a participatory approach is critical, with collaboration on setting priorities and developing synergies with government and other agencies active in the area.

for more productive purposes. With the berkads, communities can also gain from the sale of their own water (a berkad that has a capacity of 400,000 litres is equivalent to 50 water tankers).

- ♦ **Roof catchments:** Two primary schools, Hullo and Ashabito, have benefited from 30-cubic-metre roof catchment tanks from NCA, giving an estimated 800 school pupils access to clean drinking water. This programme will be expanded to other schools.

5.4 Challenges and Lessons

- ♦ Mandera is large, remote and poorly served by road and communications infrastructure, making project implementation complicated.
- ♦ Community needs are significant and varied, therefore a participatory approach is critical, with collaboration on setting priorities and developing synergies with government and other agencies active in the area.
- ♦ Insecurity often hinders project operations.
- ♦ Illiteracy levels are high and therefore a gradual process of introducing and implementing new ideas is required.

5.5 Way Forward

- ♦ **Livelihood diversification:** Among others, this involves increasing agricultural production and the introduction of bee keeping. Increased agricultural yields can be achieved by training communities and providing tools for dry land farmers. Bee keeping and drip irrigation using water collected in earth pans for farming groups, e.g., women's groups, are other approaches that NCA is targeting through RACIDA. Additional areas for potential future support include sustainable charcoal production and silk farming.
- ♦ **Land reclamation:** NCA is commencing the establishment of a forestation and fodder production pilot project to establish appropriate land reclamation techniques to reverse land degradation for communities. This would involve planting of a variety of indigenous dry land grass seeds (i.e., pasture regeneration) and tree species.
- ♦ **Access to clean, affordable energy:** Among the options here are solar, wind and other renewable energy applications to reduce/ substitute the use of fossil fuels for water pumping and to provide lighting for schools, homes and institutions. Centralized solar systems, for example, can provide household lighting.

6. Embu: Reforestation, Water Resource Management and Agricultural Diversification

About 65% of the total potential for mitigating the impact of climate change is located in the tropics, and about 50% of the total could be achieved by reducing emissions resulting from the effects of deforestation (IPCC, WG II, AR4). Forest mitigation options include reducing deforestation and forest degradation, enhancing the sequestration rate in existing and new forests, substituting wood fuels for fossil fuels, and providing wood products as substitutes for more energy-intensive materials. Properly designed and implemented, forestry mitigation options can have substantial co-benefits in terms of employment and income-generation opportunities, biodiversity, watershed conservation, and provision of timber and fibre, as well as aesthetic and recreational services.

Poverty and the lack of access to other fuels in sub-Saharan Africa has resulted in high dependency on biomass. Biomass as a fuel source supplies more than 80% of the energy consumed in the region. In Kenya, nearly all rural households use wood for cooking and nearly half of urban households use charcoal (generally produced through unsustainable processes). This

dependence on biomass for energy purposes promotes the pervasive destruction of natural forests, especially in areas where farm forestry and agro forestry are not practised. Further, it should be noted that biomass as a primary energy source does not provide a cost-effective energy supply to support industrialization, which sub-Saharan Africa sees as key to its fight against poverty.

It is ironic that measures needed to reduce the dependence on biomass may have potential to increase GHG emissions from other sources as SSA moves on an industrialization path. A sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fibre or energy from the forest, will generate the largest sustained mitigation benefit.

Nearly 80% of East Africa's population depends on agriculture for a

It is ironic that measures needed to reduce the dependence on biomass may have potential to increase GHG emissions from other sources as SSA moves on an industrialization path.

living, and agriculture contributes 40% of the region's GDP (IFPRI, 2004²). Agriculture in the region is highly vulnerable to climate variability and long-term climate change, which could result in higher food prices, lower domestic revenues, lower export earnings and increased external indebtedness, along with food insecurity and the resultant nutritional deficiencies (30% of Kenya's children are already stunted - Kigotho, 2009). Such changes will only compound the difficulties faced by a region where agricultural yields and per capita food production have been steadily declining and where population growth will double demand for food, water and livestock forage in the next 30 years (Davidson et al., 2003). Countries in East Africa are already among the most food insecure in the world (Devereux and Edward, 2004), and climate change will only aggravate falling harvests.

Issues like globalization, trade and equity, especially with reference to agriculture, serve to heighten vulnerability to climate variability and change across a range of scales in Africa. Most small-scale tea and coffee farmers dedicate 70-80% of their land to these crops and depend on them for a substantial portion of their incomes, but the prices of these crops are determined on the global market. As experienced with the coffee market, a price collapse would leave them destitute.

Climate change and variability also have the potential to impose additional pressures on water availability, water accessibility and water demand in Africa. Even in the absence of climate change, present population trends and patterns of water use indicate that more African countries will exceed the limits of their "economically usable, land-based water resources before 2025" (Ashton, 2002: 2366).

6.1 Background and Rationale

Mount Kenya is one of the five water towers in Kenya. Climatic conditions and vegetation in the mountain's catchment are diverse and follow altitude lines. The upper and middle areas of the catchment contain human settlements, with the latter forming the high potential agricultural land for growing valuable crops such as tea, coffee, cotton and tobacco. The lower parts of the middle catchment and lower catchment comprise the arid and semi-arid lands (ASAL) regions used predominantly for livestock keeping and sorghum/millet cultivation.

The Mount Kenya water yield contributes to 49% of the flow of the Tana River, which is strategic to Kenya's economic development. The Tana supports almost 50% of hydropower generated in Kenya, as well as irrigated agriculture, fisheries, livestock production and biodiversity conservation in the lower Tana River Basin. Because of environmental degradation within the upper and middle parts of the river, these life supporting functions are being systematically lost.

Increased destruction of forest cover, inappropriate land use practices in the farmlands and overgrazing in the pastoral lowlands have triggered increasing soil erosion, which contributes a high sediment load for the Tana and its tributaries. Land productivity has declined with the increasing soil erosion, causing more vulnerable areas like wetlands and river frontage to be used for cultivation. In addition, the ability of the land to hold rainwater has been undermined, thus increasing fluctuations in the river regime, i.e., flood flow during the rainy season and depressed base flows and

water shortage in the dry season.

Ultimately, the allocation of water resources has become a sensitive issue, one that holds potential for conflict. In 2002, for example, the River

Kapingazi, which at the time supplied Embu town, dried up.

Farmers in the upper catchment had dammed the river to store water for themselves at the expense of those downstream, and the provincial administration had to patrol the river to remove the dams.

Embu District, Eastern Province, is an area with high agricultural potential where over half the population is classified as poor. The lands around Embu town have traditionally been densely populated - Embu District has one of the highest population densities in Kenya - and are intensively farmed. The dominant crops produced in this area include tea, coffee, mixed fruits and horticultural products. Recent fluctuations in coffee prices have contributed significantly to increased poverty levels in this region.

The upper elevations of Embu District (1,500-4,500m) are covered by the Mount Kenya forest. The middle parts (1,200-1,500m) spread across the ridges of Mount Kenya. Irangi Forest in Embu is part of the larger Mount Kenya Forest and is an important catchment



Typical landscape in the middle catchment tea zone; most of the land is covered by tea and tree cover is sparse. Sometimes referred to as the "green desert" since tea farmers do not have sufficient land for subsistence food crops and have to use their income from tea to purchase food.

area for streams draining into the Tana, Rupingazi and Kapingazi rivers. The forest consists of plantations of both indigenous and exotic species, totalling 18,393 ha, and plays a big role in the livelihoods of the local community. Degradation first occurred

between 1950 and 1974, ostensibly to clear room for plantation establishment, which failed because of wildlife damage. Non-residential cultivation then began (known locally as the "shamba system"), but this led to encroachment on catchment areas and subsequent degradation of 1,600 ha of the forest.

In the middle and lower catchment areas human activities have resulted in degradation in the form of:

- **Biodiversity erosion and siltation:** Especially in the coffee zone, poor maintenance of bench terraces in the coffee farms following collapse of the coffee industry resulted in neglect of maintenance in coffee plantations.
- **Reclamation of wetlands and cultivation of river frontage:** A large percentage of wetlands has been drained and converted to agricultural use mainly for growing maize, beans, tomatoes, cabbages and other crops. Cultivation of river frontage has contributed to the

destruction of indigenous tree species and has also led to increased siltation and eutrophication.

- **Charcoal production and destruction of farm forestry and agro forestry systems:** In the cotton and tobacco zone, charcoal production is an important income-generating activity and a coping mechanism in times of food scarcity during periods of prolonged drought. Trees are also exploited to supply fuel for curing tobacco.

To reverse this cycle the Kenya government initiated the Mount Kenya East Pilot Project (MKEPP) on Natural Resource Management. The project targets are to:

- Introduce on- and off-farm environmental conservation and rehabilitation practices in the areas adjacent to rivers.
- Bring about improvements in river water management to increase dry season base flow and reduce sediment loads and pollution of rivers.
- Raise household income through improved marketing of agricultural and natural resource-based products.
- Strengthen governance at local level for better land use and water management.

The project covers three priority sub-basins: Kathita River, Mutonga River and Kapingazi. The sub-basins are divided into localities, called focal development areas (FDA), in which community-based planning is concentrated for the implementation of the project. Through a participatory approach to planning (i.e., a participatory rural appraisal - PRA - held in each FDA), communities were

empowered to take part in planning, implementation and monitoring activities and owning the development process. The key output of the PRA exercise was a community action plan (CAP) that provides the basis for project interventions and through which communities intend to mobilize resources to address their identified problems and constraints.

6.2 Project Partners

NCA's entry point was through MKEPP. In its Mount Kenya initiative, NCA targeted the Kapingazi basin and, in particular, two FDAs in the upper to middle catchment areas, i.e., Kithunguriri and Kiriari. Through the community action plans developed earlier, NCA aligned its support to activities that had been already been prioritized by communities in the respective FDAs.

6.3 Interventions

Although the area receives generally high precipitation, especially at the upper and middle catchments, it is estimated that 70% is lost through run-off or flood flow resulting from poor catchment management. Technologies that could be applied to respond to this include roof catchments and dams to hold rainwater during the wet seasons that can be gradually released during the dry seasons.

In the first phase of NCA intervention in the Mount Kenya/Embu region, the project sought to establish a dialogue with the respective communities by engaging in limited support interventions in each location.

This support was centred around climate project priorities - rainwater harvesting and afforestation - that were aligned to the communities prioritized needs.

To date NCA has supported the installation of two 150-cubic-metre roof catchments at primary schools in the Kiriari and Kithunguriri FDAs. Taking advantage of the large roofing area available in the schools given the number of classrooms, these make water accessible both to students and to members of the community.

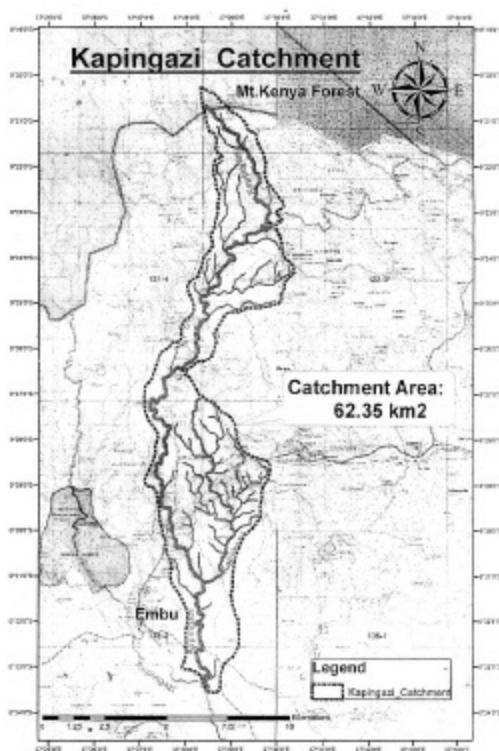
NCA further engaged in deliberations with MKEPP to assess the option of supporting the construction of a dam on River Kapingazi at the edge of the forest line. This is seen as a critical intervention to regulate flows on the Kapingazi as a way of reducing run-off and stabilizing flows.

For the afforestation component,

the programme aims to fill gaps in the existing MKEPP efforts. MKEPP is working to build the capacity of community-based organizations to establish tree nurseries, but their approach has not been sufficient to meet the demand. This is because of the limited land and labour (voluntary) available, as well as the difficulty in raising appropriate agroforestry species.³ The seedling propagation project NCA supports in Yatta provides a source to provide adequate seedlings to the FDAs for reforestation activities.

6.4 Challenges and Lessons

- ◆ Identification of suitable community-based partners who adequately represent project beneficiaries is often a challenge when commencing new project activities. Good partners can make the difference between project success and failure.
- ◆ Partnerships and information sharing avoid duplication of efforts and maximize use of resources. MKEPP's participatory rural appraisals and subsequent community action plans enabled NCA to "hit the ground running" and quickly identify initiatives it could support through its climate change programme.



Map showing project area

³ Eucalypts are common in Embu, but they are unsuitable for the area as they tend to destroy local biodiversity. *Grevillea robusta*, however, and some other exotics are more suitable as they are fast growing, less invasive and have a wide range of uses - they can be coppiced for firewood and the leaves can be used for mulch, for green manure and as a fodder supplement.

6.5 Way Forward

The FDAs are looking at activities such as diversifying incomes away from tea and coffee through livestock (e.g., dairy cows and goats) and poultry rearing, planting of tissue culture bananas and horticultural crops, and fish farming (e.g., trout). The project also helps to:

- ♦ Set up group-run tree nurseries and school nurseries to provide indigenous seedlings for rehabilitation of wetlands and river banks, for stabilization of road embankments, and for various on-farm usage.
- ♦ Encourage energy conservation through use of improved stoves.
- ♦ Add value and improve the marketing of farm produce.

Through the FDAs, NCA has also identified a potential future partner, the Runga Self-Help Group. Started in 1998, the group was inspired by a sermon in the area Catholic Church following the arrest of farmers who had illegally tapped into the water pipeline in search of water for irrigation.

The group intends to set up an irrigation scheme that ultimately supports over 1,000 registered members residing in the Kapingazi catchment. With support from the Ministry of Agriculture (Irrigation Department) and the Constituency Development Fund (CDF), plus member contributions, the group has managed to design the scheme, undertake the environmental impact assessment and constructed the water intake, including laying 4km of the proposed pipeline.



An NCA-funded rainwater catchment system in Gichugu Primary School, Kiriari

Crop production under irrigation has gained importance in the area because low rainfall makes it impossible to sustain rain-fed agriculture in the lower zone. Moreover, the collapse of coffee has prompted crop diversification in the coffee zone, while the necessity of maximizing the very small plots for food production is the motive in the densely populated tea zone. NCA is assessing the option of supporting the completion of the Runga Self-Help Irrigation Scheme.

In addition, there is a number of potential options for electricity generation from micro-hydro within the Kapingazi catchment. Such schemes can be set up to be community owned and run and provide affordable renewable energy for productive use (e.g., agro processing and business) as well as to substitute for kerosene for household lighting. NCA will undertake a micro-hydro feasibility study in 2009 to form the basis of further planning and action.

7. Korogocho: Community Radio - A Participatory Approach to Planning and an Integrated Approach to Waste Management

Throughout most of sub-Saharan Africa, urban development has not kept pace with urbanization, as people have flocked to cities to escape poverty and deprivation in the rural areas. The massive rural-urban migration has strained already poor urban infrastructure, resulting in informal and unplanned urban settlements, appalling sanitation, and inefficient use of resources (UNFPA/AU, 2009). Pressure on existing urban infrastructure (roads, water, sewerage and waste management systems) and resources (energy and water) contributes to avoidable GHG emissions resulting from inefficient road and transport systems, poor waste management practices, and inefficient use of electricity.

Urban planning “after the fact” is a significant challenge and can have serious implications, especially in terms of displacement of people and disruption of livelihoods. Clearly, action must be taken to clean up slums and provide proper water, sanitation, transport and housing, but it is often the case that the most economically disadvantaged pay the highest price for change. Participatory processes can help to create dialogues that link and

Urban planning “after the fact” can have serious implications in terms of displacement of people and disruption of livelihoods.

mutually instruct researchers, practitioners, communities and governments. These processes can be used to facilitate the integration of aspects such as economics, gender, social equity and employment generation, while giving due emphasis to climate change, into the planning process by creating opportunities for shared experiences in learning, problem definition and design of potential solutions.

7.1 Background

Waste generation is related to urbanization, population and affluence. Global rates of post-consumer waste generation are currently estimated at 900–1,300 MT/yr. Rates have been increasing in recent years, especially in developing countries with rapid population growth, economic growth and urbanization. Post-consumer waste is a contributor to global GHG

emissions (<5%), with landfill methane accounting for >50% of current emissions. Secondary sources of emissions are wastewater methane and minor emissions resulting from incineration of waste containing fossil carbon (IPCC, WG II-AR4).



Nairobi's beautiful blue sky forms an ironic backdrop for the Dandora dumpsite

decentralized waste management can significantly reduce the mass of waste that requires more centralized solutions. Studies indicate that low technology recycling activities can also generate significant employment through creative

The energy content of post-consumer waste can be efficiently exploited using thermal processes: during combustion, energy is obtained directly from biomass (paper products, wood, natural textiles, food) and from fossil carbon sources (plastics, synthetic textiles). The recovery of landfill methane as a source of renewable energy was commercialized more than 30 years ago. Along with thermal processes, landfill gas and anaerobic digester gas can provide important local sources of supplemental energy.

Recycling, re-use and waste minimization initiatives, both public and private, can indirectly reduce GHG emissions by decreasing the mass of waste requiring disposal. In developing countries, waste scavenging and informal recycling are common practices. Through various diversion and small-scale recycling activities, those who make their living from

Effective solid waste management integrates opportunities for waste reduction, recycling and reuse, coupled with a safe means of disposal.

microfinance and other small-scale investments. The challenge is to provide safer, healthier working conditions than currently experienced by waste scavengers at uncontrolled dumpsites.

Effective solid waste management should have an integrated approach, recognizing opportunities for waste reduction, recycling and reuse, coupled with a safe means of disposal. The overall aim should be to improve solid waste management and maximize employment creation in the process, with due regard for issues of cost, health and effectiveness to be considered. Those who work in this sector or live close to dumpsites or transfer stations should not be exposed to unnecessary health risks.

Korogocho is one of a number informal settlements found within the Nairobi City Council (NCC) jurisdiction. Its high-density population (currently estimated at over 200,000 people) is characterized by diverse cultural and religious backgrounds. According to the Government's *Economic Survey of 2007/08*, the poverty level among the population stands at 64%, compared with the national average of 52%.

The population of this slum area faces several challenges, including poor

Recovery of landfill methane as a source of renewable energy was commercialized more than 30 years ago. Recycling, re-use and waste minimization initiatives, both public and private, can indirectly reduce GHG emissions by decreasing the mass of waste requiring disposal.

environmental sanitation, poor housing, and poor water supply services and access roads. Household incomes are low, unemployment among the youth is high, and insecurity is rife.

Korogocho is immediately adjacent to Nairobi's only official dumpsite. The site is now full and NCC has given notice of its closure and the intention to turn over the site to a private developer. In the meantime, however, the existing site will continue to be used during the transition period until the new landfill site is ready for operation.

Scavenging is a predominant phenomenon at the dumpsite in Dandora and many of the scavengers are inhabitants of Korogocho. They earn their living by collecting and trading recyclable waste. The markets for recovered items do exist, but links between the collectors and the recycling industries are poor and are exploited by middlemen. In addition, the prices of the recovered materials are governed by the industries. NCC has no specific policies towards the scavenging community. Lack of awareness of the important role it plays in the recycling industry is attributed to insufficient documentation on this activity.

Experience in Korogocho has shown that solid waste collection and management in low income areas and informal settlements is generally extremely poor. This is likely to get even worse, given the high rates of population growth in informal

settlements with serious impacts on the environment and public health. These impacts include the breeding of pests and scavengers, noxious odours, smoke from burning, and contamination of the water table.

7.2 Project Partner

Koch-FM is a community radio station based within Korogocho whose air waves cover a radius of 5 km from the base station. The station was initiated by a group of youth who wanted to use radio as a mobilization and education tool. Their dream was to make a small contribution towards enhancing the participation of the local community in issues of governance and decision making that affects their well-being. The group was registered in 2006 as a community-based organization and is mandated to broadcast on the 99.9 frequency within Nairobi. NCA co-supported the establishment of the radio station and supports its operations.

The station's programming highlights issues affecting the Korogocho community and showcases local talent. Issues tackled on air include:

- ♦ **Gender:** Women's empowerment (e.g., encouraging women to form/join self-help groups and set up income-generating activities to contribute to household income), domestic violence, rape, family planning.
- ♦ **Community resources:** Entrepreneurship opportunities, starting a business, where/how to source for finance, produce and/or markets.
- ♦ **Environment:** Coping with the impact of living near the dumpsite.

- ♦ **Health and hygiene:** Healthy practices for maintaining good physical condition.

7.3 Objectives and Strategies

NCA works with Koch-FM, to promote community involvement in governance issues at the local level using a two pronged approach - community radio and community mobilization. Activities include the following:

- ♦ **Mobilizing village-based forums:** These forums provide a platform for the community to not only get information on the devolved funds and especially CDF and the Local Authority Transfer Fund (LATF), but also to identify ways to participate in the management, use and monitoring of the funds. Eight forums have been held, and NCA has

also supported the training of 15 members of Koch-FM as community facilitators and mobilizers in its outreach activities within the target community.

- ♦ **Community notice boards:** This is a novel communications strategy that is gaining ground in many types of community-based programmes, including the Ministry of Health's Community Strategy. The notice boards basically take information closer to the people. The boards are also used to focus group discussion and information dissemination.
- ♦ **Talking about climate change:** Creating awareness on climate change and organizing forums through which climate change issues can be incorporated into policies at both national and local level.

As the Nairobi City Council plans to close the dumpsite, NCA is looking at

The Constituency Development Fund and Local Authority Transfer Fund

- ♦ The Constituency Development Fund (CDF) targets all constituency-level development projects, particularly those aiming to combat poverty at the grassroots. The fund comprises an annual budgetary allocation equivalent to 7.5% of the government's ordinary revenue. Three-quarters of the fund is allocated equally amongst all 210 of Kenya's constituencies; the remaining 25% is allocated according to constituency poverty levels. In 2005-2006, the budget was Ksh7.25 billion (US\$100 million). The sitting MP in each constituency convenes a committee that is responsible for identifying projects and monitoring their implementation.
- ♦ The Local Authority Transfer Fund (LATF) was established with the objective of improving service delivery, improving financial management, and reducing the outstanding debt of local authorities (LAs). The fund amounts to 5% of the national income tax collection in any year. The 2005-2006 budget was Ksh5 billion (US\$73 million). The fund is shared among the country's 175 local authorities with consideration given to the relative urban population density. LATF monies are combined with local authority revenues to implement local priorities.

supporting the community in Korogocho to explore the possibility of developing a model integrated waste management scheme within the settlement.

This proposed intervention is geared at demonstrating innovative measures by households and communities to better manage their waste, including contributing to reduced pollution of the neighbouring Nairobi River and maximizing other potential benefits from the integrated management of waste. If successful, it is hoped that such an approach will provide a model for community-based solid waste management for Kenyan towns and cities.

7.4 Lessons and Challenges

- ◆ Increased awareness within the target community of issues involving the working of local committees on devolved funds.
- ◆ Increased advocacy for participatory planning and implementation of activities relating to devolved funds.
- ◆ Networking and close collaboration with the local leadership, especially the local Member of Parliament.
- ◆ Continuing tensions within the community following the post-election violence in January 2008.
- ◆ Prevalent poverty in the project area.

8. Advocacy: NCA's National, Regional and Global Advocacy Work

Combustion of fossil fuels (oil, natural gas and coal) is a major source of the greenhouse gases that are causing global warming. The IPCC is clear in its recommendations: In order to avoid non-reversible climate change we must reduce the world's total GHG emissions by approximately 80% in the course of a few decades. This requires global solutions and immediate action. Despite the dire warnings, incomprehensibly little has been done - particularly by developed countries - to reduce emissions. A corollary challenge is that developing countries will soon be accountable for half of all the GHG emissions. China is illustrative of this complex problem as the country has surpassed the USA as the world's biggest total source of GHGs. (On a per capita basis, however, the USA is by far still in the lead.)

Economic growth has so far proved to be indispensably linked to increased GHG emissions. There is a potential contradiction between counteracting the effects of climate change, on the one hand, and promoting economic growth and poverty reduction, on the other. That approximately one-third of the world's population lacks access to

electricity, while at the same time the world's GHG emissions must be drastically reduced over the next few decades, presents a great challenge. The willingness (and ability) of developing countries to participate in binding agreements depends on rich countries, such as Norway, assuming an economic and technological responsibility for the climate problems the industrialized world created. Increased consumption in poor countries must be combined with reduced consumption in rich countries. The rich countries must assume responsibility for investing in renewable energy sources and for allowing developing countries to be able to benefit from climate-friendly energy. In this respect, Norway holds a special responsibility. Norway earns a great

The Kyoto Protocol is the international agreement that intends to limit GHG emissions in rich countries. NCA believes that it is an absolute necessity to influence the UNFCCC negotiation process for a global climate change agreement to ensure that any agreement has development at its core.

amount of money on high oil prices, whereas poor oil-importing countries are the losers. The African Development Bank (AfDB) refers to 28 African countries that presently spend more than 10% of their total import expenses on oil (Official Norwegian Reports, 2008). A coordinated international effort is necessary in order to start a global turnaround within the energy sector. Poor countries are at risk for being deprived of their possibility for development if the world does not get a transition to clean energy into place.

8.1 Strategies, Partnerships and Objectives

Climate change advocacy in Kenya dates back to 2006. With support from NCA, Caritas and the All Africa Conference of Churches (AACC) - working closely with knowledge-based organizations - formed an Ecumenical

Platform to prepare for the UNFCCC meeting that took place in Nairobi in November 2006. The platform was in the forefront of mobilizing communities and churches all over Africa and advocating for strong action against climate change, with a particular focus on the need for deep emission reductions in the North and binding commitments on financing adaptation measures in the most vulnerable communities. The same platform worked together during the World Social Forum in Nairobi in 2007.

NCA's advocacy work was strengthened in 2007 when agencies in the Association of WCC Related Development Organizations in Europe (APRODEV) made climate change the main priority in its global ecumenical network. Through this advocacy work NCA's aim is to influence the UNFCCC negotiation process to ensure that a global climate change agreement has development at its core. The initiative consists of popular mobilization in the South and North, to strengthen southern governments' positions in the

The Bali Road Map

In Bali on 15 December 2007 - almost a full day after the 13th Conference of the Parties (COP - signatory countries to the UNFCCC) was scheduled to have finished - the world's climate negotiators finally reached agreement to launch new talks aimed at the "... full, effective and sustained implementation of the convention...". The precise significance of this decision is important. The negotiations, which will be completed in 2009 in Copenhagen, aim to ensure that countries meet existing obligations and make further commitments to fulfil the core aim of the UNFCCC - to prevent anthropogenic climate change. A last-minute change to the Bali decision opened the way for the involvement of developing countries. Pressure from India, supported by other developing countries, ensured that mention of future emission cuts by developing countries was placed carefully in the context of action by industrialized countries. (And the USA was told in no uncertain terms to either get on board or get out of the way.)

Increased consumption in poor countries must be combined with reduced consumption in rich countries.

The Birth of a Pan-African Climate Justice Movement

On 19-20 August 2008, the APRODEV group facilitated a meeting of African civil society organizations (CSOs) working for climate change and sustainable development. The aim of the meeting was to address concerns about the low level of African CSO participation in the UNFCCC process.

Held at the sidelines of the highly-regarded convergence of key movers in governments across the world (Accra Climate Change Talks, which took place on 21-27 August), the *African Civil Society Climate Justice Strategy Meeting* not only moved towards the birth of a new network, known as Pan African Climate Justice Alliance (PACJA). In addition, cognisant of the task ahead and the flight of time on the countdown to Copenhagen, the participants agreed on a plan of action to ensure that African civil society is effectively facilitated to participate actively in the Bali Roadmap.

PACJA is today hosted by the AACC in Nairobi.

international climate talks and resolve and pressure northern governments to accept an equitable deal. The Greenhouse Development Rights (GDR) framework (Baer et al. 2007) is used as an intellectual underpinning for climate change negotiations.

NCA's climate change advocacy approach includes adoption of the Greenhouse Development Rights Framework and taking part in a multi-faceted initiative to form a coordinated advocacy approach with sister ecumenical agencies, southern global alliances, and partners and churches around the world based on the conviction that the right to development must be reflected in any international climate change deal. These partners include:

- ◆ The Caritas-AACC Ecumenical Platform.
- ◆ The Pan-African Climate Justice Alliance (PACJA).
- ◆ The Kenya Climate Change Working Group.
- ◆ Strategic global partners such as Third World Network, facilitating their involvement in the process at the UN, but also in the development

of focused advocacy in key developing nations.

- ◆ US counterparts, including Church World Service, and other like-minded ecumenical and church-related organizations.
- ◆ Partners and networks across the world in collaboration with national and regional programmes to link in and equip them to engage in the UNFCCC process both directly and through national advocacy to influence the negotiating positions of their governments, as well as actual adoption of measures for clean development.

NCA's vision for an urgent and equitable outcome of the UNFCCC negotiations rests on three main pillars: commitment, financing and access. Action in these areas is described below.

- ◆ ***Urgency and commitment to staying below 2°C***
 1. There must be recognition of the urgency of staying below a 2°C global temperature rise, and of the need to decarbonize the global economy.

The Greenhouse Development Rights Framework

One way to break the international deadlock is for countries to agree to a new means of sharing out the cuts that must be made to keep global warming below 2°C. NCA supports a framework called Greenhouse Development Rights (GDR), which shows exactly how this could be done.

- ◆ GDR uses the UNFCCC's core principles of common but differentiated responsibility and capability to work out how much each country should contribute towards the global effort.
- ◆ It combines the per person running total of each country's emissions since 1990 (responsibility) with its per person wealth (capability).
- ◆ Using these data, GDR places all 192 nations in the UNFCCC in an index of responsibility and capability to show what share of the effort each should accept.

GDR exposes the need for countries high on the index - those that have contributed most to the problem and have the greatest wealth - to contribute to the cost of cuts in emissions overseas as well as cutting at home, thereby freeing up the poorest countries who are least responsible for climate change to channel money into anti-poverty initiatives.

On the basis of this model, with 0.07% of the world's population, Norway should take on approximately 0.4% of the global obligations.

2. Each country must recognize its own responsibility for global warming, and capacity for responding to the urgency of climate change.
3. Annex I (industrialized) countries must commit to cuts in their carbon emissions of 40% by 2020 and at least 80% by 2050, with all reductions to be achieved *within* those countries, not through carbon offsetting.
4. In addition, each industrialized country must support, through substantial financing and technology transfer, the equivalent emissions reductions in developing countries.
 - ◆ **Financial support for climate change action in developing countries**
5. Wealthy nations must support developing countries in achieving sustainable low-carbon development and implementing effective, pro-poor adaptation measures to counter climate change impacts.
6. Finance for developing countries must come from sources that are substantial, reliable, predictable and sustainable, and are additional to official development assistance (ODA).
 - ◆ **Equitable access for poorer nations**
7. Technology that may help low carbon development and adaptation must be shared with poorer nations.
8. The developing world must be supported by the delivery of low-carbon sustainable development.
9. Adaptation measures must be provided in a way that prioritizes the empowerment of vulnerable people to take charge of their future, reduce their vulnerability to

disasters and realize their fundamental human rights (food, housing, health, security).

8.2 Lessons and Challenges

Notably, these advocacy activities showed some results in the Bali conference, which paved the way for post-2012 negotiations and saw the emergence of the social justice movement on the issue of climate change. This movement's engagement not only changed the content of the negotiations because of the emphasis on social equity and justice, it also increased the confidence of developing countries. The new confidence led to a Bali Action Plan that provides developing countries with a clearly worded anchor for financial and technical support, strengthening the formulations already embodied in the UNFCCC. Any

substantive commitments on their part will have to be matched by "measurable, reportable and verifiable" support from developed countries. Moving the words "measurable, reportable and verifiable" away from developing countries' mitigation actions to the technological and financial support testifies to the enhanced importance of the emerging economies in the climate change negotiations.

The decision furthermore indicates some willingness on the part of developing countries to engage in differentiation, because it moves away from the historical division between Annex I and non-Annex I countries. This decision opens the door for new combinations and grades of commitments for developing countries. The post-2012 negotiations can thus take into account the different stages of economic development, emissions and mitigation potential in which developing countries find themselves. Developing



Participants in an NCA/Caritas/AACC rally demand climate justice.

appropriate indicators and ways for differentiating between developing countries will be one of the most difficult tasks in the year ahead.

The main challenges are:

- ♦ Time is limited - since the coordinated ecumenical initiative was started, it was less than two year-window of opportunity to influence the outcome in favour of poor people.
- ♦ Many attempts have been made to bring African civil society into a single formidable voice capable of influencing positions in the UNFCCC process, but the visibility of African civil society, to say the least, has been insignificant. This has been attributed to the isolated manner in which different organizations work - both in the North and in the South - pulling their energies in different directions.
- ♦ Until recently, climate change had remained an abstract subject that interested only environmental practitioners and scholars at high scientific levels of governments.

Until recently, climate change had remained an abstract subject that interested only environmental practitioners and scholars at high scientific levels of governments.

- ♦ **Linking faith-based partners with knowledge-based networks:** Combining both perspectives increases the leverage capacities of each towards securing greater advocacy gains.

On the immediate agenda for the Kenya programme are plans to:

- ♦ Audit the performance of the Kenyan government in the ongoing international dialogue on a post-2012 climate change treaty, and particularly the Bali Roadmap.
- ♦ Explore common areas of mobilization among the Kenyan civil society to influence policy change.
- ♦ Discuss the Hon. Franklin Bett bill on global warming and the opportunities it provides for CSOs to contribute.

8.3 Best Practice

- ♦ **Advocating on climate change and the right to development at all levels:** Government officials, religious leaders and resource partners at national and international levels, as well as in communities, are brought on board in the multifaceted advocacy work.
- ♦ **Applying empirical evidence:** Documenting "energy poverty" and the impacts of climate change and using this information directly in dialogue with government officials, politicians and negotiators.

8.4 Youth Engagement

In November 2008, NCA held a Youth Climate Change Conference for 86 participants from seven of Kenya's eight provinces.⁴ Meeting in Yatta, the conference drew young people from religious youth groups and other youth associations. The objective of the conference was to educate and engage the youth on climate change so as to mobilize them to participate actively in advocacy.

The youth were targeted because they are the future of the country. They

⁴ The exception was North Eastern Province.

should embrace the responsibility of influencing legislators to make laws that will protect future generations from impacts of climate change, they can make impact as they can easily be mobilized and are flexible, and they also control behavioural trends.

8.4.1 Lessons and Challenges

The major lesson of this component of NCA's activities is that it demonstrates that a well informed and motivated youth can make a significant contribution to the climate change discourse. Their role as advocates is crucial, since they are the ones who are most likely to be affected.

Among other activities, participants at the conference launched a country-wide movement to lead national and international youth advocacy campaigns and disseminate information and practices on adaptation to climate change in Kenya. The movement intends to expand and recruit individual members and groups in every corner of the country. Regional forums were also developed to contribute to the national movement by spearheading local mobilization and campaigns.

The participants also recommended the production and distribution of an authoritative, well-illustrated book to inform the youth and general population on climate change. The vocabulary and subject of climate change are new, which prevents learning about and internalizing the scope of its impacts, hence limiting the effectiveness of action that can be realized. The proposed book would provide a simplified but technically accurate view of climate change and would be used for:

- ♦ Sensitizing the youth on climate change.
- ♦ Emancipating affected groups through information and guidelines.

- ♦ Mobilizing groups to take actions that mitigate the impacts of climate change.
- ♦ Educating youth on conservation.
- ♦ Offering options on mitigation against climate change to various sectors and stakeholders.
- ♦ Inspiring debate and discussion on climate change in the country.
- ♦ Providing analyses of effects of climate change in the country.

The book would serve as a reference guide on climate change for students, instructors and extensionists and as an advocacy tool for leadership by various groups.

In addition to advocacy, action is important and the youth should identify the mitigation and adaptation actions they can take in their homes, schools and communities.

8.4.2 Way Forward

The conference was keen to mobilize the youth to:

- ♦ Prepare messages and share them with country negotiating teams, governments and negotiators. Information instruments (e.g., awareness raising campaigns) may positively affect environmental quality by promoting informed choices and possibly contributing to behaviour change.
- ♦ Define specific advocacy actions, mobilize participation in the proposed youth network and inform ongoing advocacy processes.
- ♦ Engage with family and colleagues, and lead the management of community affairs.
- ♦ Engage with government and civil society.
- ♦ Lead resource mobilization for their efforts.

- ◆ Understand communities, their issues and possible solutions.

NCA is also keen to establish a Change Maker youth movement in Kenya.

8.5 Phase I Activities: Key Lessons

Among the key lessons learnt through implementation of the phase I activities outlined above is the importance of identifying and selecting well-grounded local partners that adequately represent a broad spectrum of the project's target groups and are committed to securing meaningful development objectives. Other important lessons include the following:

- ◆ Involvement of beneficiaries is key to ensuring broad and active stakeholder participation. Indeed, failure to address this effectively at the onset of a project severely undermines project ownership and thus the successful implementation of the project and project sustainability prospects.
- ◆ Effective mobilization to strengthen participation and sustained institutional capacity building of the partner organizations is a prerequisite.
- ◆ Application of low or zero carbon technologies is a specialized field, therefore strategic partnerships with technical resource organizations with relevant experience and expertise is essential.
- ◆ In the start up phase of activities, it is critical that a flexible approach to project development and budgeting be adopted to allow for incorporation or omission of project activities during implementation as changing realities on the ground dictate and as critical stakeholder inputs are absorbed. The more common approach of a fixed budget for fixed activities leaves little room to adjust to changes midstream.
- ◆ The adoption of a renewable energy approach that is primarily focused on local production for local consumption and possible sale of any surpluses not only has great promise for ensuring lower clean energy prices. It also enhances integration into local development processes and improved livelihood options.
- ◆ Strategic use of exposure visits and study tours enhances appreciation of new project ideas and can enable critical linkages with resource partners to support development of the project. A case in point is the proposed engagement of TATEDO of Tanzania to support the technology transfer process for the introduction of the MFP in Mpeketoni, Lamu District. This was a direct outcome of the visit facilitated by the project of farmer representative and technicians in 2008.
- ◆ A multi-pronged advocacy strategy on climate change must be articulated that emphasizes the right to development and engages government officials, religious leaders, youth and resource partners at national, international and community levels.

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