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Climate change screening of Danish development cooperation with Kenya

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Preface

The Climate Screening of the Danish Development Cooperation with Kenya has been prepared at the request by the Ministry of Foreign Affairs of Denmark (Danida) and the Embassy of Denmark in Nairobi. The consultant team included Stephen Mutimba (Energy for Sustainable Development Africa and colleagues from ESD), Jan Borg (health specialist) and Michael Linddal (environmental specialist, team leader). Jens Fugl (TAS, Danida) participated in the assignment.

The team carried out the climate screening in Kenya from October 22 to November 2, 2007. The assignment of the team is outlined in the Terms of Reference (ToR) dated September 30, 2007. Documents and further information are available at: <http://ccs-kenya.linddal.net>.

The report was prepared by Michael Linddal and Stephen Mutimba with contributions from the team. The views and opinions expressed in the report are those of the consultants and are not necessarily shared by the Embassy of Denmark or Danida in any other way.

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Abbreviations

ACTS	: African Centre for Technology Studies
AfDB	: African Development Bank
ALRMP	: Arid Lands and Resource Management Project (World Bank)
ASAL	: Arid and Semi-Arid Lands (in Kenya)
ASPS	: Agricultural Sector Programme Support (of Danida)
B2B	: Business to Business programme (of Danida)
CCA	: Climate Change Adaptation
CCS	: Climate Change Screening
CCX	: Chicago Carbon Exchange
CDM	: Clean Development Mechanism
CDTF	: Community Development Trust Fund
CEF	: Community Environmental Fund (of CDTF)
CER	: Certified Emission Reductions (of CO ₂ e in CDM)
CFW	: Cash For Work (of Oxfam)
CGIAR	: Consultative Group on International Agricultural Research
COP	: Conference of the Parties (of UNFCCC)
CSO	: Civil Society Organisation
Danida	: Danish International Development Assistance
DASS	: Decentralised Agricultural Support Services (of ASPs)
DfID	: Department for International Development Cooperation (of UK)
DNA	: Designated National Authority (for CDM in Kyoto protocol)
DRR	: Disaster Risk Reduction
EDK	: Embassy of Denmark (Nairobi)
EMCA	: Environmental Management and Coordination Act (of 1999)
ENSO	: El Niño Southern Oscillation
EPS	: Environmental Programme Support (of Danida)
ERS	: Economic Recovery Strategy for Wealth and Employment Creation (of GoK)
ESD	: Energy for Sustainable Development (Africa)
EU	: European Union
FAN	: Forest Action Network
FAO	: Food and Agriculture Organisation (of UN)
GDP	: Gross Domestic Product
GEF	: Global Environmental Facility
GHG	: Green Houses Gases
GOK	: Government of Kenya
HAC	: Harmonization, Alignment and Coordination (of the KJAS)
HASP	: Health Sector Programme Support (of Danida)
HQ	: Head Quarter (of donor agencies)
ILRI	: International Livestock Research Institute
IMCE	: Inter-Ministerial Committee on Environment
IPCC	: Intergovernmental Panel on Climate Change

KACCAL	: Kenya Adaptation to Climate Change in Arid Lands Project (of the World Bank)
KFWG	: Kenya Forest Working Group
KJAS	: Kenya Joint Assistance Strategy
KMD	: Kenya Meteorological Department
KSH	: Kenyan Shillings
KTDA	: Kenya Tea Development Agency
LDC	: Least Developed Country
LGP	: Length of Growing Period
LULUCF	: Land Use, Land Use Changes and Forest
MDG	: Millennium Development Goals
MENR	: Ministry of Environment and Natural Resources
MFA	: Ministry of Foreign Affairs (of Denmark)
MW	: Mega Watt
NAPA	: National Action Plan of Adaptation
NCCACC	: National Climate Change Activities Coordination Committee
NEMA	: National Environmental Management Agency (of MENR)
NESC	: National Economic and Social Council
NGO	: Non-Government Organisation
NOC	: National Disaster Operations Centre (of GOK)
NRM	: Natural Resource Management
ODA	: Official Development Assistance
OTC	: Over-The-Counter (sale of VCM emission reductions)
PANERECC	: Parliamentary Network on Renewable Energy Climate Change
PAP	: Process Action Plan
RWSS	: Rural Water Supply and Sanitation (of WSPS)
SEA	: Strategic Environmental Assessment
SoE	: State of Environment Report
TAS	: Technical Advisory Service (of Danida)
ToR	: Terms of Reference
UN	: United Nations
UNDP	: UN Development Programme
UNEP	: UN Environment Programme
UNFCCC	: United Nations Framework Convention for Climate Change
UNISDR	: UN International Strategy for Disaster Reduction
URC	: UNEP Risø Centre (on Energy, Climate and Sustainable Development)
USD	: United States Dollars
VCM	: Voluntary Carbon Markets
WHO	: World Health Organisation
WMO	: World Meteorological Organisation
WTO	: World Trade Organisation
WRM	: Water Resource Management (of WSPS)
WSB	: Water Services Board
WSPS	: Water Sector Programme Support (of Danida)

Executive Summary

Danida Climate Change Screening

The climate screening of the Danish development cooperation with Kenya is part of the implementation of the Danish Climate and Development Action Programme (August 2005). The purpose of the climate screening is to ‘climate proof’ the Danish development programme with Kenya, i.e. a ‘climate change due diligence’.

The approach is to integrate risks of climate change and opportunities for adaptation into the development programme rather than as stand-alone ‘climate adaptation / mitigation projects’. The climate proofing differs from environmental impact assessment by addressing the impacts of the environment (due to climate change) on development programme effectiveness. The climate change screening includes three key elements:

- a) Assessment of the risks of climate change in achieving the outcomes of the Danida development programmes, i.e. losses due to risks from climate related impacts previously not addressed.
- b) Identification of opportunities for reduced vulnerability, i.e. further adaptation to climate change issues in Danish development cooperation.
- c) A process action plan for further activities identified in the screening to achieve ‘a climate proofing’ of the Danish development programme.

The climate change screening is harmonised with activities planned under the Danida Action Programme for Disaster Risk Reduction (Draft, September, 2007).

Kenya climate change scenarios and adaptation

Over the coming decades, global climate change will have significant, but yet uncertain impacts on food production and security, water availability, land use, health and energy supply. Developing countries can face substantial consequences due to the vulnerability, risks and impacts of climate change. While mitigation of the emissions of greenhouse gasses has been attempted in industrialised countries it has been deemed insufficient to avoid looming climate change impacts. With the potential risks from climate change on economic growth and poverty reduction in developing countries, adaptation to climate change has become a key issue in development planning.

Kenya is already experiencing short run impacts from an erratic climate with floods and droughts. Current impacts on development and livelihoods from weather events in Kenya may be extrapolated into even more extreme scenarios with the future impacts of human induced climate change. The models for climate scenarios for Eastern Africa provide some direction but not robust scenarios on their magnitude, variability or direct impacts. The general longer term climate change scenario for Kenya is expected to include:

- Higher temperatures and resulting increase in evaporation
- Increased precipitation except along the coast that may be drier
- An erratic weather pattern resulting in flash floods and recurrent droughts (models are not addressing long-term climate variability)
- Sea level rise in the coastal zone (e.g. from polar ice cap melting)

- Tropical storms are not common with five degrees on each side of equator, i.e. including most of Kenya and no change is foreseen.

The direct impacts of future climate change on the agriculture, forest and water sectors are uncertain but may have further consequences on food security, access to water, health and power supply. Although climate change may also provide new opportunities by reducing water scarcity and occurrence of frost in the highlands, it is already demonstrated in Kenya with current climate variability that the poor and the marginal arid and semi-arid lands and the Western Kenya flood prone lands may be particularly vulnerable to the expected climate variability and change.

Adaptation strategies and policy responses

The drought and flood related impacts and adaptations to climate variation are a reality in Kenya. The impacts of climate variations are already present and may escalate with future climate change. The El Niño/ La Niña floods and droughts cycles occur at higher frequency and perhaps with more extremes. This variation may not yet be linked directly to climate change, but the impacts are part of everyday struggle at local level. The policy attention in particular emerged with the El Niño related floods in 1997, however, with emphasis on emergency response rather than prevention of the climate related impacts.

There is an emerging interest in the public and private sectors to address climate change impacts in Kenya but the potential impacts of climate change are not yet articulated in the development plans. The organisation of climate change coordination in National Environmental Management Authority (NEMA) addresses the awareness of climate change impacts, available data to document trends in current weather regimes and resource utilisation, and improved policy level action.

The Government of Kenya's Vision 2030 is the planned framework for future development planning. The Vision 2030 outlines the development goals for 2012. The Vision 2030 notes under Environment (p.13) on the social pillar that "*Kenya will ... enhance disaster preparedness in all disaster prone areas and improve the capacity for adaptation to global climatic change*". The National Development Plan (NDP) 2002-2008 recognizes that 56 per cent of the Kenyan population is afflicted by poverty and that disasters accelerated by climate change can push more people further below the poverty line. The next five-year Development Plan based on the Vision 2030 is expected by June 2008.

Adaptation strategies and policy responses are required to reduce the risks of climate change impacts and climate related disasters. Future climate change impacts are uncertain and the adaptation to climate change is not yet articulated as policy interventions. There is a need for a translation of the policy implications of climate change into a more practical description of the likely impacts of climate change on poverty reduction and economic growth. This will also be relevant in order to make 'home-grown' climate change adaptations that are feasible and relevant for Kenya.

Mitigation of climate change

The scope for mitigation of fossil fuel emissions without impeding energy consumption and economic growth in Kenya is limited. The emissions in Kenya and Sub-Saharan Africa are less than 0.5 tonnes of CO₂ per capita per year. The emission of CO₂ is on average ca. 4 tonnes per capita globally, ca. 1 tonnes per capita in low income countries, and ca. 12 tonnes per capita in high

income countries. The annual emission of CO₂ per capita is 9 tonnes for UK and Denmark and 20 tonnes for USA.

But there is scope in Kenya for improved and affordable energy efficiency, land use management and reforestation, and support for a 'low carbon development path'. These actions require finances and transfer of technology, e.g. for renewable energy options. The Nairobi Framework for CDM (Clean Development Mechanism) is one attempt to enhance the access of developing countries to CDM finance. So far Kenya had limited success with only a few CDM projects in the pipeline, and some progress with Voluntary Carbon Markets.

Donor coordination and harmonisation

Climate change and development is mainly addressed by the environment donor coordination group. The challenge is to infuse awareness and discussion on climate change in other donor coordination groups as a cross-cutting theme. This vertical awareness raising can be done at each donor representation and by addressing the topic as part of the Kenya Joint Assistance Strategy (KJAS).

According to the KJAS (p.16) the "*KJAS partners will begin to raise the awareness of the effects of global warming through joint analytical work, and actively tackle climate issues in their programs*". It is further noted in the KJAS that "*The challenge for the government is to ensure that climate change is not seen as just an environmental problem, but as an issue cutting to the very heart of economic and social development with profound impact on the activities for all the key ministries ranging from health and agriculture to energy, water resources and irrigation, transport, and public works*".

Key findings from the climate change screening

The development cooperation aimed at reducing poverty may directly contribute to the reduction of vulnerability to climate risks. Objectives and expected outcomes of development cooperation are largely by default complementary to climate change adaptation and reduction of vulnerability. The climate change screening will further mainstream the adaptation to climate change in the development programmes by design. The emphasis is on improving the outcome of the development cooperation to reduce poverty and vulnerability to climate change and other risks rather than stand-alone adaptation projects or climate change programmes.

There are limited risks from climate change and variability in the current Danida programme portfolio. The water and agriculture programmes support some infrastructure investments that may be threatened by flooding and heavy rainfall events even under the current climatic regimes. The risk to these facilities can be addressed within the sector programmes. There may be a *case-by-case* assessment of the risk of climate change impacts in the 'Business to Business' programme and the Mixed Credit lending. A first step would be a future application of the national regulation for environmental impact assessment of these investments.

The current sector programmes that have been 'climate screened' are: Environment, Water, Agriculture, Health and Private Sector Programme Support. It is noted that there is already some inclusion of climate change adaptation related activities in the sector programmes. For example:

- The ongoing formulation of the new Environmental Policy in the Environmental Programme Support includes climate change as one of the thematic areas.

- The water resources management component of the Water Sector Programme supports rehabilitation of the water resources information system (ground and surface water monitoring) and the establishment of a framework for water resources management, development and investments. These are potential adaptations to future climate change and disaster risks.
- The Agricultural Sector Programme Support includes small scale water conservation, water harvesting and supplementary irrigation projects to level out the impacts of rainfall variability in selected districts in the arid and semi-arid lands (ASAL).
- The Health Sector Programme Support includes delivery of moveable health services that are targeted to nomadic pastoralist. It supports the current coping strategies already developed among pastoralist and improves their coping capacity for extreme climate events.

There are opportunities for additional adaptation in the ongoing Danida sector programmes although the main opportunities emerge when the next phases of the priority sector programmes in Natural Resource Management, Health and Private sector are formulated. Firstly, the scope for redesign is limited and moreover other complexities in the implementation do not allow for new focus areas. Secondly, impacts of climate change are on a medium to long term time horizon.

Key recommendations

Donor awareness and coordination: Address climate change impacts as a cross-cutting theme at a forthcoming donor coordination (HAC) meeting with reference to the observations on climate change in the KJAS. Coordinate with DfID on their ongoing climate screening and especially the possibility for joint donor funded follow-up activities as recommended in the forthcoming DfID climate screening report expected in February 2008. Coordination continues at the environmental donor coordination group but in addition the aim is to include climate change impacts in other sectors through awareness raising of other donor sector representative

The on-going sector programmes: Prepare a brief ‘climate change plan of prioritised actions’ for each ongoing Danida supported sector programmes based on inputs from the climate change screening. These action plans with the climate change screening notes could form a ‘paper trail’ for forthcoming Sector Reviews.

- In the **Environmental Programme Support** the emphasis could be on the follow-up on the Environmental Policy Formulation and in particular related to inclusion of climate change in the guidelines and applications of **Strategic Environmental Assessment (SEA)**.
- In the **Water SPS** the emphasis could be on water resource management and the data collection and cross-sector linkages with land-use and environmental health. This is also a preparation for the continuation in the Natural Resource Management (NRM) programme.
- In the **Agricultural SPS** the emphasis could be on a continuation and expansion of the small scale rural infrastructure for water harvesting and storage and rural roads as means of adaptation to climate change. This is also a preparation for the continuation in the NRM programme.
- In the **Private sector programme** the emphasis in addition to awareness on the practical implications of climate change, could be on the use of the business instruments to support a **low carbon development path**, e.g. with renewable energy supply from wind turbines and biofuel.
- In the **Health SPS** the emphasis could be on further integration of climate change in the monitoring systems and delivery of health care systems in rural areas building on the experiences with the pastoralists in Northern Kenya.

Design of future sector programmes: Include climate change and disaster risk reduction in the preparation of future sector programmes and as part of the risk assessment and focus areas in the concept paper. This is in particular relevant for the NRM sector programme (identification to be initiated from end of 2008) where the climate change screening may inform the strategic choices for geographic and thematic focus areas.

- **Prepare a Strategic Environmental Assessment** (preferably using the forthcoming NEMA SEA guidelines) for the three priority sector programme support (NRM, Health and Private Sector) prior to an appraisal to address climate change risks and adaptation.
- **Concept paper:** Include a climate screening and disaster risk reduction as part of any forthcoming sector programme concept paper development and to be initiated with the mandatory environmental screening.

Recommendation on the climate Change activities with additional costs: Danida HQ has allocated a climate change project budget for the Embassy of Denmark in 2008. As a principle in line with KJAS coordinated multi-donor activities will be prioritised. No specific projects have been identified but a number of options emerge for further consideration:

- **Action programme for climate change adaptation in Kenya:** Option to support an Adaptation Action Plan for Kenya (a tailored NAPA for Kenya) as part of a strategy for climate change adaptation and as follow-up on the expected inclusion of climate change in the forthcoming Environmental Policy. This is a suggestion from the Climate Change focal point at the Ministry of Environment and Natural Resources for further discussion with the Embassy of Denmark.
- **Impacts of climate change on the economy of Kenya.** Prepare a joint donor concept paper for an assessment of the impacts of climate change to the economy of Kenya including the distributional consequences and costs of no action.
- **Identify options to leverage donor and government funding for climate change adaptation and awareness:** Explore co-financing options for possible additional climate relevant activities mainly lead by other donors (several identified in the report)

Danida procedures for aid management: Include the climate screening sector note in forthcoming sector reviews for status assessment and possibly revision. Make use of the entry-points for addressing climate change already outlined in the Danish Climate and Development Action Programme.

A climate change and disaster risk reduction focal person: Designate a focal person at the Embassy on climate change and disaster risk reduction. Prepare Terms of Reference for the job function. The focal person will represent the Embassy in relevant climate change and disaster risk reduction donor coordination, and act as a cross-cutting resource person on climate change and disaster risk reduction, e.g. for sector reviews and sector programme support formulations.

A Process Action Plan (see Annex 1) has been outlined for the climate proofing of the Danish development cooperation with Kenya.

1. Introduction to Climate Change Screening

The climate change screening approach of the Danish development cooperation with Kenya is presented with a brief overview of the Danish 'Climate and Development Action Programme' (August 2005). The climate screening is followed by a climate proofing of the development cooperation programs addressing the risks of climate change and climate related disasters and integrating adaptation measures in the design and implementation. The outcomes of the 'climate proofed' development cooperation contribute to the reduction of the vulnerability to climate change and disaster risks.

1.1 Why Climate Change Screening of the development portfolio?

Climate change is expected to alter the conditions for the global economy and local livelihoods in the forthcoming decades. The developing countries are at particular risks due to exposure and vulnerability to climate change impacts. Adaptation to the realities of expected climate change has become a key issue in development planning. The purpose of the *Climate Change Screening (CCS)* is to make the development programme portfolio relevant and prepared for a climate change scenario by addressing the risks of and vulnerability to climate change impacts.

A conventional approach to environmental risks in Official Development Assistance (ODA) is to screen and assess the impacts of projects and programme on the environment. With a future scenario of climate change it also has to be considered how the environment (through climate change impacts) might affect the implementation and outcome of ODA. The impacts of climate change may have influence on the effectiveness and ODA performance in different ways (van Alst, 2006):

- **Direct risk to ODA** programmes and deliverables, e.g. as a result of extreme weather events or other changes not properly factored into the programme design. An example could be undersized culverts in a road project that lead to road erosion and damage during excessive rains. This will be an exception for Danida supported programmes in Kenya.
- **Underperformance of ODA programme and the deliverables**, e.g. the expected outcome of ODA investment are reduced (loss of effectiveness) due to external impacts like changes in rainfall patterns and health impacts, i.e. by altering the enabling conditions for economic growth and poverty reduction. This may cover the most likely events of climate change risks to Danida supported programmes in Kenya.
- **Direct and indirect impacts on the target population for ODA** due to their vulnerability to climate change, e.g. a rural population targeted in a social sector programme may have changed needs and priorities if their crops are at risk or they migrate longer distances with their livestock.

Infrastructure investment with a longer life-span should be considered with the expected future climate in mind, e.g. options for water storage, dimension of culverts and bridges in road building and location of health clinics.

Though a development cooperation programme may not be at particular risk from climate change, there may be options in the programme design and implementation to contribute to a reduction in the overall vulnerability within a sector to climate change.

1.2 Danida Climate Change Screening

The Embassy of Denmark (EDK) in Kenya has initiated a *climate change screening* (CCS) of the Danish International Development Assistance (Danida) development cooperation with Kenya to address the risks and possibly impacts of climate change. It is part of the implementation of the *Danish Action Programme for Climate and Development* (August 2005) and the *Disaster Risk Reduction Guidelines and Action Programme* (Draft September, 2007) (see Annex 3).

The CCS is a first step in a process of identification and management of the risks of climate change for Danish development cooperation in Kenya, and the identification and implementation of *climate change adaptation* (CCA) and *disaster risk reduction* (DRR) opportunities. The purpose of the CCS of the Danida development cooperation with Kenya is a brief assessment of the current Danida programme portfolio regarding potential climate change risks and identification of potential adaptation options. The combined process of climate risk management and adaptation is referred to as a *climate proofing* of the development cooperation, i.e. a climate change ‘*due diligence*’ (see Box 1).

Box 1: A climate change ‘due diligence’

The climate change screening with subsequent climate proofing and reduction of disaster risks is aiming at an adaptation to the risks, impacts and vulnerability of climate change in the design and implementation.

<i>Now</i>	=	The development programme portfolio (current and planned)
	+	Climate change screening (identification of climate change risks and adaptation options)
	+	Reducing risks of climate change (risk management, e.g., location of infrastructure and building codes)
	+	Additional adaptation (further reduction of vulnerability, e.g. water harvesting and farming systems)
<i>Future</i>	=	A ‘climate proofed’ development programme portfolio (improved aid effectiveness)

The CCS will address the future Danida priority sector programmes (Natural Resource Management, Health and Private sectors). The identification of these programmes is expected to be initiated end of 2008. The purpose of the CCS is also to identify optional joint donor activities and improved coordination on climate change adaptation and mitigation.

1.3 Climate Change Screening Approach

The outcome of the climate proofing is improved effectiveness of the development cooperation programme by factoring in the risks and vulnerability due to climate change and climate related disasters. The climate change screening includes three key elements:

- **Climate Change Risk Assessment:** Assessment of the risks of climate change in achieving the outcomes of the Danida development programmes, i.e. losses due to risks from climate related impacts currently not addressed. Risk management is to ensure effective use of scarce development finance. The CCS is also a screening for disaster risks reduction especially in the case of Kenya where disasters are predominantly associated with droughts and floods. Danida has identified Kenya as one of the six pilot countries for DDR.
- **Climate Change Adaptation Options:** Identification of opportunities for adaptation measures, i.e. further adaptation to climate change issues into the existing Danish development cooperation portfolio to reduce *ad-hoc* and stand alone activities.

- **A Process Action Plan** for follow-up identified during the CCS screening to achieve ‘a climate proofing’ of the Danish development programme.

The adaptation to climate change risks and related disasters are partially already captured in the objectives and outcomes of ODA. In the climate proofed development cooperation programmes, the identified additional risks and impacts of climate change are addressed and additional adaptation results in a reduction of vulnerability to climate related impacts. The approach is to integrate risks of climate change and opportunities for adaptation into the development programme rather than as stand-alone ‘climate change adaptation projects’ (see Box 2).

Box 2: A development approach to climate change adaptation

The risk analysis and vulnerability reduction of development cooperation is a *development approach* to climate change adaptation. It differs from a *convention approach* where a development programme is complemented with climate change adaptation projects. The mainstreaming of climate change impacts into ODA may entail an efficient and effective use of financial and human resources compared with the design, implementation and managing climate change and adaptation projects separately from the development cooperation portfolio (Klein et al., 2007).

The adaptation to climate change and reduction of vulnerability to climate disasters is largely addressed in the objectives and outcomes of development cooperation programmes, e.g. the objective of Danish development cooperation is to reduce poverty and promote sustainable development. The adaptation to the impacts of climate change is thus addressed as part of the development cooperation programme and not through separate climate change projects. It is not the purpose of the CCS to develop a climate change project portfolio of specific adaptation or mitigation projects. These may follow but the main purpose of the CCS is to address climate change risks, impacts, vulnerability and adaptation within the development programme portfolio.

With a mainstreaming of the climate change the adaptation may become similar to a cross-cutting theme in development cooperation. On the up-side this may enable the inclusion of ‘climate change’ in other sectors but on the down-side ‘climate change’ may become yet another item on the checklist that may not yield the priority that the potential risks may require. Like other cross-cutting themes and thematic issues such as gender equality, governance and HIV/AIDS these are addressed as part of the development planning and not as separate climate change topics.

2. Climate Change Impacts, Vulnerability and Adaptation

The section is a brief introduction to possible climate change scenarios, impacts of climate change, vulnerability and adaptation measures. Since much of the available information is dispersed this information has been compiled to provide some of the relevant background information. However, such assessment should not be required for future donor specific climate proofing since the compiled information will be more readily available, e.g. in the forthcoming 2nd National Communication from Kenya to UNFCCC.

2.1 Climate change scenarios for Kenya

There is growing scientific consensus and evidence that global climate change is going to happen and will influence the future of the global economy, ecosystems and livelihoods of the rich and poor (IPPC, 2007). The global warming with higher temperatures will result in changing weather patterns, but it is yet uncertain when this will happen and how it will influence the economy, the environment and the people of Kenya.

In general, it is expected that with global climate change, areas that currently are dry may become dryer and areas that receive much rain will become wetter. A down-scaling of the East Africa regional climate predictions, however, suggests that there could be a more complex change in the climate pattern locally even with some of the current dry lands becoming wetter. Apart for the potential risks of climate change, the changing weather patterns could also provide new potentials for the Arid and Semi-Arid Lands (ASAL) in Kenya if properly managed.

Box 3: IPCC on climate risks and adaptation in Africa

The IPCC Fourth Assessment Report (June 2007) noted that “*recent climate changes and climate variations beginning to have effects on many other natural and human systems*” like the drought and uncertain rainfall in Sub-Saharan Africa are already prompting adaptation measures. But “*these impacts have yet to become established trends*”. The IPCC concerns scientific evidence mainly of future climate change and impacts. The IPCC further notes that “*Africa is one of the most vulnerable continents to climate variability and change, because of multiple stresses and low adaptive capacity. Some adaptation to current climate variability is taking place; however, this may be insufficient for future changes in climate*”.

By 2020 between 75 and 250 million people in Africa will be at risk of increased water shortage with a temperature increase of one degree and 350 to 600 million with a two degree increase. Tropical and Eastern Africa may experience rainfall increase of seven per cent, while Southern and Northern Africa may experience reductions of between 20 and 40 per cent. These are long term impacts from 2080 and to the end of the century. Water harvesting in the dry and semi-dry lands is already an adaptation strategy for climate variation and will also be relevant as adaptation to climate change. Sea level rise especially along the East African coast will increase flooding and with an adaptation costs of 5 to 10 per cent of GDP, while no adaptation may cost up to 14 per cent of GDP in East Africa. Tourism may be affected with 25 to 40 per cent of animal species in Sub-Saharan becoming endangered due to climate change.

Crops may also come under influence especially in Southern Africa with subsequent impacts on food security. Adaptation measures must address food security, access to credit and insurance and farming practices. Reduced frost in alpine zones of Mount Kenya may make it possible to expand the area of more temperate crops like apples, pears and barley. IPCC notes that “*climate change is expected to have some mixed effects, such as the decrease or increase of the range of transmission potential of malaria in Africa*”. An additional 80 million people could be at risk from malaria including the high lands of Kenya although the actual impacts are disputed among health experts.

Source: UNEP press release on IPCC IV Working Group II report and the IPCC Working Group IV summary report for Policy Makers.

The future climate scenario for Kenya is uncertain but the climate may become volatile as a result of climate change.¹ The climate change models provide some rough scenarios for Eastern Africa with some direction but little on scale of magnitude or related direct impacts. However, the longer term climate change scenario for Kenya is expected to include:²

- A higher mean average temperature and resulting increase in evaporation
- Increased precipitation except along the coast that may be drier
- An erratic weather pattern resulting in flash floods and recurrent droughts (climate models do not capture the long-term climate variability)
- Sea level rise in the coastal zone (e.g. from polar ice cap melting)

There is already a climate variation in Kenya and impacts resulting from cycles of droughts and floods (*see* Box 4). These events are in extreme cases associated with the El Niño Southern Oscillation (ENSO). It is the perception that the drought and flood cycle have turned into erratic weather patterns with more extreme climate variation, but the evidence is not yet firm.

Box 4: Current impacts of climate variability in Njoro division, Nakuru district

Njoro division is in the Mau forest complex and there unpredictable rains have been experienced in recent years as documented by climate data from the Egerton University weather station. Some of the direct impacts are:

- “The unpredictable rain patterns have discouraged people from investing in farming with the result that the former farm workers have now moved into Njoro town where they make a meagre living carrying out petty trading activities.
- The drying up of boreholes has encouraged the population to move to areas where water might be more available.
- The reduction in the levels of River Enjoro has curtailed cattle keeping with some cattle keepers switching to sheep rearing.
- Cattle keepers who zero-grazed their animals by buying grass ferried from the forest neighbouring Njoro do not get as much grass as they used to because of the increased demand on grass from the forest.
- Cattle keepers are travelling farther in their search for pastures.
- These days anyone putting up a new house includes a water harvesting facility, in the hope of collecting water when it rains.”

These impacts are compounded by the impacts of land use changes and deforestation at the Mau complex. Future climate change may intensify the climate related impacts on livelihoods, and conflicts on water access and grazing rights already experienced.

Source: Based on Forest Action Network (FAN) survey prepared for IIED in April 2007. The study is forthcoming as part of an IIED publication with cases of adaptation to climate change in Africa (Kenya, Malawi and Benin).

The challenge of assessing the scientific basis for climate change scenarios in Kenya and elsewhere is that the climate may be predicted up to 3 to 6 months and then with long term climate models from 2020 and onwards. In between there is uncertainty. The IPCC assessment concerns likely future impacts from 2020 and towards the end of the Century but do not address current and medium term climate variability.

¹ The forthcoming DfID initiated climate screening in Kenya includes a comprehensive scientific assessment and modelling of climate change in Kenya. This can be a reference for the Danida climate change screening.

² With the location at the equator (+/- 5° North and South) Kenya is not directly exposed to extreme weather event related with tropical storms. Connections between weather systems North and South of the Equator may influence the weather and rainfall in Western Kenya according to KMD.

Climate models are not yet able to predict future climate variability. This is a critical factor as it might be the changes in climate variability rather than the shift in the average climate that enhances vulnerability to the impacts of climate change. It can be observed that the different climate models even with the same assumptions about increase in atmospheric greenhouse gasses (GHG) provide different results regarding impacts on precipitation and derived impacts such as the *Length of Growing Period* (LGP) (ILRI, 2006). The transformation of climate change into physical impacts is also uncertain. Finally, the climate models will require downscaling to be more accurate on the local impacts of climate change, for example in Kenya. So far the climate models only provide a bigger picture.

There is a 'natural' climate variability with a frequency of droughts and floods. The 1997/98 *El Niño* related flooding in Kenya is one example. The climate change is in addition to already occurring climate variation. Since the climate change is counterfactual it may be difficult to estimate what can be ascribed to climate change or to 'natural' climate variability. But to the farmer on the ground the impacts are felt the same.

The climate change can be monitored and compared with historical data to identify changes and trends, e.g. in rainfall and temperature. One lesson that may be supported from improved data collection is that the use of historical data for rainfall (floods and droughts) and extreme weather event will be insufficient for future planning, e.g. of infrastructure projects and food security. Planning needs additional information to factor in possible climate change and cannot rely only on information from past events. The flooding in Western Kenya reveals a recurrent problem that may only get compounded with climate change (*see* Box 5).

Box 5: Flooding in the Budalangi region of Western Kenya

The flooding in Budalang'i region of western Kenya is as old as River Nzioa owing to its location as low lying with flat terrain, which finds the river in its senile stage. The flooding hazard is an unavoidable perennial problem. Major construction of the dykes on either side of the Nzioa River was undertaken between 1980 and 1982 covering a total of 19.3 km. Currently the dykes cover a total length of 32.8 km. In addition to loss of property and lives, the floods bring about diseases like malaria, bilharzia and typhoid, which lead to health impacts.

The present arrangements for disseminating flood warning information are inadequate. Flood forecasts are not disseminated immediately they are received from the forecast formulation team. The response teams on the ground get the information late and it does not reach a wide audience. There is no proper co-ordination and control of activities in the hydrological stations. Despite efforts made by the GoK to deal with the floods through construction of dykes, the problem still persists.

Population growth, destruction of wetlands to expand crop cultivation and reported increases in rainfall in the upper catchment areas has led to more water entering River Nzoia and water receding slower after flood events. Possible solutions to the flood problem include: i) Dyke re-design, catchment management, observation of environmental rules in road construction and possible relocation, ii) Planting of vegetation in catchment areas to reduce run-off volumes and rates, and iii) Upstream dam construction / electricity generation project. The government is conducting a study to establish a 10-year donor-funded project to help control the flooding and improve the livelihoods of local residents.

Source: www.reliefweb.int/rw/rwb.nsf, www.grif.umontreal.ca/page/MAKHANU_Sibilike_2.pdf

The direct impacts from climate change on the agriculture, forest and water sectors might have further consequences on food security, access to water, health and power supply. Although climate change may also provide new opportunities by reducing water scarcity and frost in the highlands, it is already demonstrated in Kenya with current climate variability that the poor and the marginal ASAL and Western Kenya flood prone lands may be particular vulnerable to climate variability and change.

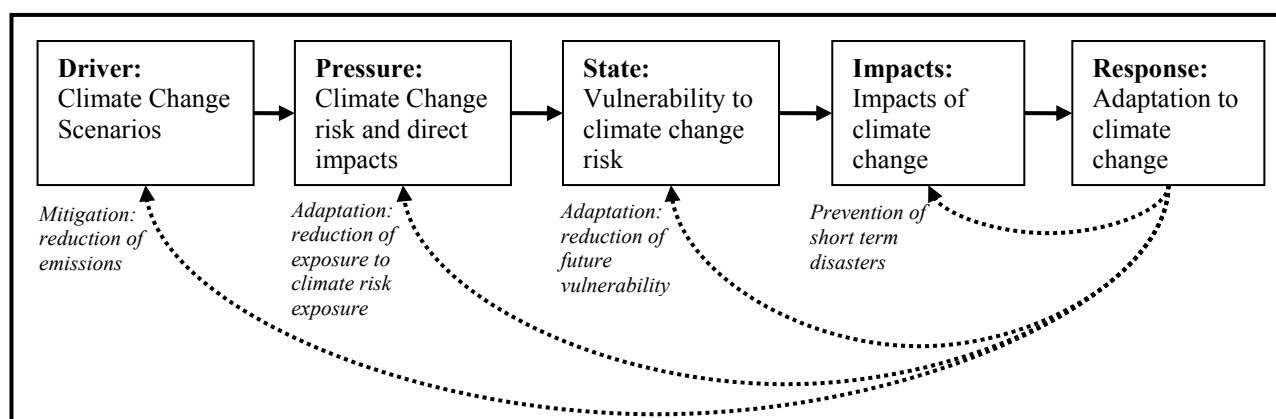
2.2 Impacts, vulnerability and adaptation

In Kenya the socio-economic development and improved livelihoods of the poor depend on the state of and access to environmental and natural resources. Scarcity of water resources is, for example, one critical constraint for economic growth and poverty reduction in Kenya.

In the absence of sustainable management of natural resources and planning capacity, the vulnerability to the impacts of climate change events may be exacerbated from a combined effect of deforestation, governance failures, absence of health services *and* climate change, for example, on water resources. Climate change may amplify the already existing constraints on economic growth and poverty reduction from ‘natural’ climate variability, depletion of natural resources, governance and not least a growing population.

The linkage between climate change, direct impacts, vulnerability and adaptation is illustrated below (*see* Table 1). Climate change (driver) may result in periods of drought (pressure) which for vulnerable communities and ecosystems (state)³ may result in food in-security (impacts). To reduce the impacts the adaptation (response) can address both the risk and vulnerability to reduce the impacts. Mitigation will have limited direct effect unless it is globally coordinated and activated.

Table 1: A Driver-Pressure-State-Impact-Response approach to climate change



Prepared by the authors

Some of the identified linkages in Kenya between climate change risk, vulnerability and adaptation are addressed in Annex 5. It is a qualitative assessment since the linkage between climate change and its impacts is non-linear.

Because the direction and magnitude of climate change risks are not yet known there is not yet a complete picture of the vulnerability and potential impacts of climate change in Kenya. There is no comprehensive assessment of the possible quantitative impacts of climate change and the optimal level of adaptation that may be required. Some of the effects are of third and fourth order where the causal link with climate is at best indicative. This is for example the case with health impacts and livestock diseases (*see* Box 6) and the coastal zone (*see* Box 7).

³ It is discussed in the literature whether ‘vulnerability’ is a ‘starting point’ or an ‘end point’ (ILRI, 2006). In the former case the vulnerability also determines the adaptive capacity while in the latter case vulnerability is viewed as a residual of climate change less the adaptation. In both cases vulnerability is a ‘state’ influenced by factors other than climate change and there will thus be several entry points for interventions.

Box 6: Epidemics and climate change - the case of Rift Valley Fever

Rift Valley fever is most common in the livestock-raising regions of Eastern and Southern Africa. The disease is also found in most countries of sub-Saharan Africa and in Madagascar. The cause of an outbreak is unusually heavy rains, which create ponds and lakes where mosquitoes can breed in an area that is normally dry. All known Rift Valley fever virus outbreaks in East Africa from 1950 to 2007 followed periods of abnormally high rainfall. Ultimately, what stops the outbreak may be what started it (the weather). When the floodwaters dry up, so will the mosquitoes, and the disease. UN agencies have warned that climate change with successive droughts and floods, some of it human-caused, could increase the disease's 5-15 year cyclical frequency. There is no specific treatment for the disease, and no human vaccine for it. The only means of prevention is to avoid mosquito bites and contact with infected animals including raw meat or milk. Because the virus is carried by mosquitoes, the disease has the potential to spread far and wide. Outbreaks can have substantial economic impact if they lead to international quarantines and restrictions on livestock sales.

Analysis of satellite imagery shows that prediction of Rift Valley fever outbreaks may be made up to 5 months in advance of outbreaks in East Africa. Since 1998, the UN Food and Agriculture Organization (FAO) has been working to demarcate the areas in sub-Saharan Africa at greatest risk and pinpoint hot spots across East and West Africa to forecast where the next outbreaks will occur and put adequate response strategies in place. The UN World Health Organization (WHO) has been working with other UN agencies, Kenyan Government ministries and non-governmental organization (NGO) partners to develop key public health messages that have been disseminated in the local community in an effort to curb the viral haemorrhagic disease. The challenge remains co-ordinating risk assessments that incorporate a combination of climate, ecology and human elements.

Source: <http://www.mediasfrance.org/Reseau/Lettre/12/en/autres/emercase.html>, www.who.int/csr/don/2006, www.dhpe.org/infect/rift.html, www.iht.com/articles/2007, www.un.org/apps/news/story

Box 7: Environmental Sensitivity of the Coastal Area of Kenya

The coastal area of Kenya is an important ecosystem and development zone for tourism and other economic activities such as fisheries and extraction of natural resources. Impacts on the coast from development of the tourism infrastructure are already experienced from the pollution pressure from untreated sewage released direct into to ocean.

Climate change influence the coral reefs and the impacts are bleaching of the reefs. Sea level rise may result in flooding in vulnerable coastal areas and damage to infrastructure. Tropical storms are not expected to cause major impacts in coastal zones in Kenya. The IPCC estimates that the economic cost of adaptation to climate change along the coast of Eastern Africa can be substantial but less the potential economic loss of no adaptation to climate change impacts. The development of a coastal zone policy and local spatial planning are among the instruments to address future climate change impacts. But then climate change risks have to be merged into policy and planning. The Danida supported Environmental Programme Support (EPS) includes a sub-component addressing integrated coastal zone management. The application of for example Strategic Environmental Assessment (SEA) – which is also part of EPS – may be one approach to address climate change impacts.

Spatial modelling of sea level rise can reveal what areas are of particular risk and thus inform both present and future actions. It can also be a tool to effectively guide and prioritise adaptation measures. The KENSEA project has already developed maps for environmental sensitivity of oil spills in the coastal zone. It is a GIS based electronic atlas with other possible application. Similar mapping of the sensitivity to climate change could be developed as well as for other disaster risk reduction applications. The KENSEA project is funded by UNDP Danish consultancy fund and implemented by the Geological Survey of Denmark and Greenland (GEUS).

Source: *Environmental Programme Support (EPS) component 2.3; IPCC fourth assessment report; and Tychsen, J. 2006 (ed.): KenSea. Environmental Sensitivity Atlas for Coastal Area of Kenya, 76 pp. Copenhagen; Geological Survey of Denmark and Greenland (GEUS).*

The challenge and uncertainty of translating second and third impacts of climate change is further illustrated in the case of malaria (*see* Box 8).

Box 8: The case of ‘highland malaria’ in Nairobi, Kenya

Malaria is the most common disease in Africa's largest slum, Kibera, in Nairobi, say health workers. At a cool altitude of about 1,700m, the capital city has long been considered a non-malarial zone. The incidence of malaria in Nairobi and the resurgence of ‘highland malaria’ in several African countries have become controversial issues in debates about health and climate change. Although Nairobi experienced some malaria epidemics in the early 1900’s this was blamed on the importation of infected individuals, like the first sizeable epidemic (1918-19) which was attributed to the return of local soldiers from Tanzania. The third IPCC assessment report (2001) paid special attention to highland malaria. The report states that due to the life-cycle of the mosquito and its role as host of the malaria parasite, “*at low temperatures, a small increase in temperature can greatly increase the risk of malaria transmission*” and “*future climate change may increase transmission in some highland regions, such as in East Africa*”. The “Roll back malaria” program has set up a Malaria Early Warning Sentinel site in Eldoret (at a height of 2040 m. above sea level) to study the further development of specific epidemiology of highland malaria. Malaria morbidity data in Kenya is part of the complex of climate change early warning systems, especially where the parasite is introduced in previously ‘immune naïve’ populations like the highlands of Kenya.

But the theory is not universally accepted and some scientists have sought to debunk any causal link between malaria and global warming, blaming the increase on changes in human behaviour and the dynamics of the spread of the disease. It has been suggested that the main factor for the increased spread is an increased resistance to anti malarial drugs, as well as the unsupervised use of ineffective medications, but the picture is not entirely clear. Whatever the cause, the history of multiple epidemics in the earlier part of the century, including many at higher altitudes, makes it un-necessary to infer climate change as a contributory factor. Moreover, a set of well maintained meteorological records shows no significant change in temperature over recent decades. Indeed, in a detailed report to the World Health Organization, a group of malaria specialists based in Nairobi dismissed those who claim a global warming link to increased highland malaria.

2.3 The climate change adaptation scenarios

While mitigation (the reduction of the emissions of GHG) is an attempt to avoid the unmanageable then adaptation is an attempt to manage the unavoidable. The direction and magnitude of climate change is uncertain which constitutes part of the problem of preparing an adequate response. The uncertainty is due to the complexities of the weather systems, e.g. the role of the ocean currents in reducing or enhancing the climate changes. The process of screening and proofing includes an additional adaptation to climate change risks. The IPCC distinguishes among different types of adaptation divided between natural and socio-economic systems (*see* Table 2).⁴

Table 2: Adaptation responses to climate change

	Reactive	Proactive
Social and economic systems	<p>Adjusted (‘natural’) adaptation - after the impacts of climate change has occurred.</p> <p>Spontaneous adaptation - not conscious response but triggered by responses of ecological, social and economic systems</p>	<p>Anticipatory adaptation - before the impacts of climate change are observed.</p> <p>Planned adaptation - Adaptation as a result of a deliberate policy decision.</p>
Natural systems	Adjusted adaptation after the impacts of climate change has occurred	[Probably none]

Source: Adapted from IPCC and OECD 2006

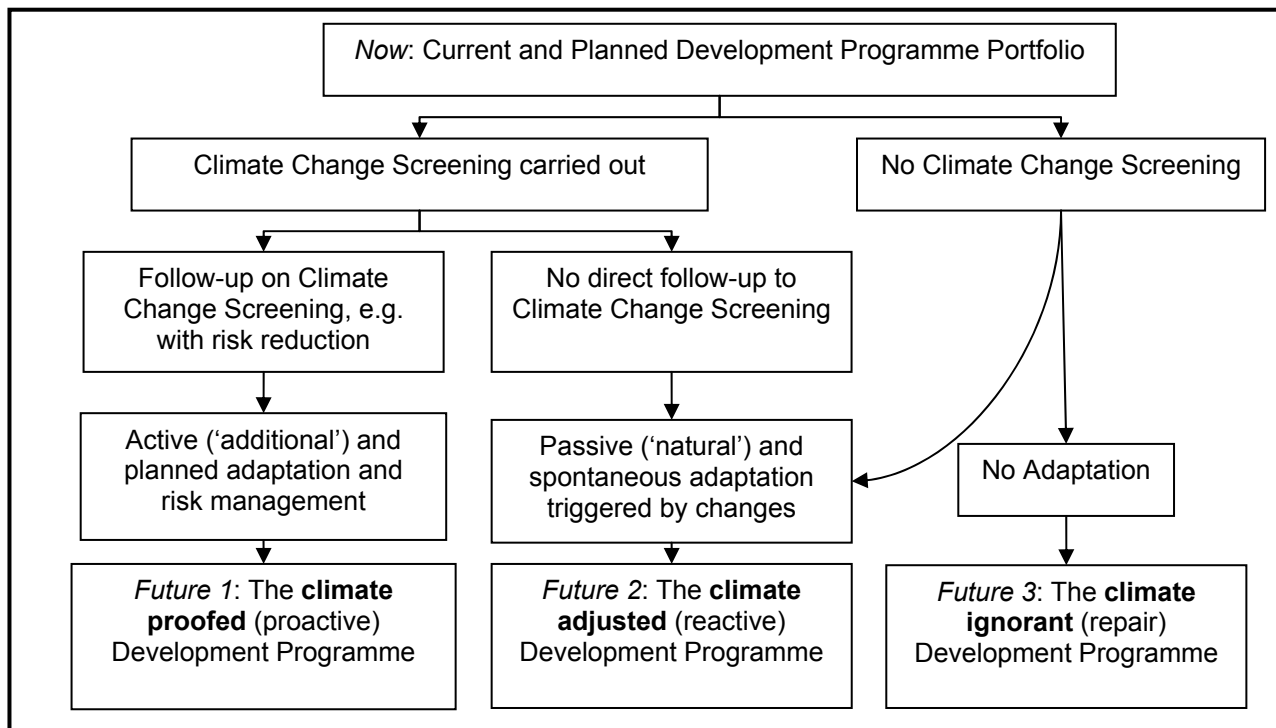
⁴ See the Danish Climate and Development Action Programme (2005, p.48-50) and OECD (2006) for an explanation of the terminology applied to climate change adaptation.

In Kenya the ‘natural’ adaptation to climate variability is already widespread as a result of years of learning from climate variability. The added element is an improved understanding of the climate change risks that may result in a proactive adaptation. The climate proofing of Danish development cooperation is to ensure an *anticipatory* adaptation to reduce vulnerability and facilitate adaptation that is *planned* and *spontaneous* as well as *adjusted* adaptation when required.

There are different possible outcomes of the screening and response to climate change risks and how the adaptation is addressed:

- The ‘worst case scenario’ is the ‘**climate ignorant**’ scenario where no adaptation is made to climate changes. This is for example, when a prescriptive approach is followed year by year to crop selection, flood dike construction and building standards that just keep on failing with changes to climate.
- In the ‘**climate adjusted**’ scenario there is a passive adjustment based on the failures (‘learning by failure’) that are experienced. This is for example, a change in crops after successive failures, abandoning of increasingly marginal crop lands, or changes in health care responding to problems as they emerge. The responses are to impacts rather than causes, and the response does not consider the causes.
- In the ‘**climate proofed**’ scenario potential climate change risks are addressed prior to the emergence of the impacts. This can be based on improved knowledge, early warning systems and planning taking the potential impacts of climate change into account. The response also concerns the causes in addition to the impacts.

Table 3: Climate Change Screening and Adaptation Scenarios



An additional added benefit from natural resource management is the combined mitigation options, i.e. capturing and sequestering carbon in soils and biomass. Sustainable forest management and reforestation, improved soil management and quality, and agricultural practice with less reliance on 'slash and burn' may all contribute to adaptation as well as the sequestration of organic carbon.⁵

2.4 Vulnerability to climate change

Vulnerability to climate change is a product of exposure to risks of climate change impacts and the adaptation capability. Enhancing the adaptation to expected climate change risks is one approach to reduce vulnerability. Vulnerability is also reduced through poverty alleviation and economic development, diversification of agricultural production systems, and awareness including early warning systems.

There are few attempts to assess vulnerability to climate change in Kenya and Sub-Saharan Africa. ILRI in collaboration with ACTS published the report '*Mapping climate vulnerability and poverty in Africa*' in 2006 during the COP 12 meeting in Nairobi with funding from DfID. The report linked poverty and climate change risk and concluded that the poor and dry lands are mainly going to be vulnerable to climate change.

In Kenya the vulnerable to climate change are mainly:

- The poor who have few means to cope with climate change and are vulnerable because they live on the marginal lands exposed to climate change risks.
- The agricultural sector including crops and livestock is vulnerable all over Kenya to climate change. By how much depends on the efficiency of the adaptation capacity, which may differ between *cash crops* such as coffee, tea and sugar, and *food crops* such as sweet potatoes, beans and cassava.
- The 80 per cent of the land area in the ASAL in Kenya is marginal lands for production vulnerable to climate change. Within the ASAL there will be variations to vulnerability, e.g. with different adaptation strategies already available.

With future climate change and increased climate variation the uncertainty and possibly vulnerability increases compared to what the 'known' and adjusted climate variations in the past. The current situation is perhaps not an optimal but it is what is known and thus has been adapted to. Changes may increase the risks for farmers in the ASAL but they have other coping strategies than farmers in the productive zones with less experience in adaptation to drought periods.

There is a complex *cause-and-effect* relationship between climate change and its possible impacts on economic growth and poverty reduction in Kenya. The causal linkages and aggregated effects between future climate change and impacts for people in Kenya are explained by:

- Climate change is added to other impacts due to policy and market failures, e.g. governance and effects of non-sustainable land-use, and a growing population. At the current population growth

⁵ There are passive and active mitigation options through NRM are not depending on the occurrence of CDM or voluntary agreements. CDM and voluntary agreements are merely optional financing mechanism for active mitigation measures.

of 2.6 per cent the population of Kenya will have doubled by year 2035, i.e. at the time where the effects of climate change are expected to transpire and at the end-point of GoK Vision 2030.

- The economy of Kenya relies mainly on rain fed agriculture for production and subsistence as well as a few key income earning sectors (tea, tourism and horticulture) that are all particular vulnerable to climate change.
- Kenya is already under influence from small and medium sized disasters from floods or drought any given year somewhere in the country. Action is already pertinent although climate change may just be for the future. Local and regional conflicts emerge due to changes in availability of water resources and suitable rangeland for livestock.
- The cost of inaction and inadequate adaptation. A World Bank study⁶ has estimated that during the El Niño / La Niña period in 1997-2000 about 14 per cent of Kenya's GDP may have been lost, and that every year at least 0,5 per cent of GDP is lost due to water resources degradation. The loss could be reduced by investments in water resources infrastructure and improved management.
- A critical resource for development in Kenya in addition to people is water resources. Due to the already existing scarcity of water further reduction in water availability can be detrimental. This applies for the ASAL but also for droughts now occurring in the productive highlands.
- The large part of the country with 80 per cent of the land and 20 per cent of the population is in the semi-arid and arid lands (ASAL). These are already marginal areas and may be at further risks from climate change. Subject to the direction of future climate change there may also be new income potentials for parts of Kenya with an increase in available water.
- The direct impacts on the agriculture, forest and water sectors will have further consequences on food security, access to water, health and power supply. Although climate change may also provide new opportunities, it is already demonstrated in Kenya with current climate variability that the poor and the marginal ASAL and Western Kenya flood prone lands may be particular vulnerable to climate variability and change.
- In some sectors the response to climate change does not consider the direct causes, e.g. availability and cost of water and electricity for the industry and urban households. For example, the future development of Nairobi will depend on the impacts of climate change not only within the city limits but also outside due to the urban-rural interface, e.g. food production, employment and water supply.

⁶ Mogaka, H.; S. Gichere; R. Davis & R. Hirji (2006): "Climate variability and water resources degradation in Kenya – improving water resources development and management". World Bank Working Paper No. 69.

3. Institutions, policies and development plans related to climate change

Climate change may have wider sector implications and will be of relevance for a range of policy areas in order to address climate change impacts in Kenya. Impacts within specific sectors have repercussions within the economy as a whole, thus climate change considerations ought to reach to the higher levels of administration and be a feature in many aspects of national planning as well as local implementation and coordination. The inclusion of climate change in policies and plans, and the capacity of institutions to address climate change risks and impacts determine the level of planned adaptation.

3.1 Kenya and the climate change convention and the Kyoto protocol

In recent years, Kenya has played an increasingly prominent role in the climate change debate, culminating in hosting the Conference of the Parties (COP-12) of the UNFCCC and the Second Meeting of the Parties to the Kyoto Protocol in November 2006. The COP-12 meeting in Nairobi led to an increased attention on climate change in Kenya within Government and media. In the past year various donor agencies have also responded in particular on mitigation (CDM capacity development) as a response to the Nairobi Framework for CDM (*see* Box 10, p.17).

The First National Communication of Kenya (November 2002) to the UNFCCC covered the following items in accordance with the UNFCCC guidelines: National Circumstances, Sustainable Development, National GHG Inventory, Vulnerability and Adaptation to Climate Change, Mitigation Options, Research and Systematic Observation and Education Training and Public Awareness. An updated 2nd National Communication is in progress. The Least Developed Countries (LDCs) are expected to prepare a National Action Programme of Adaptation (NAPA) and will obtain funding from UNEP GEF for this purpose. Since Kenya is not a LDC it is not expected that a NAPA is prepared and funding is not made available to Kenya from GEF for this purpose.

3.2 National development plans and climate change

The Economic Recovery Strategy for Wealth and Employment Creation (ERS) for 2003-2007 did not specify climate change as an issue, through the ERS placed emphasis on the development in the ASAL partly in response to previous climate related floods and droughts.

The Vision 2030 is the planned framework for future development planning. The Vision 2030 outlines the development goals for 2012. The Vision 2030 notes under Environment (p.13) on the social pillars that “*Kenya will ... enhance disaster preparedness in all disaster-prone areas and improve the capacity for adaptation to global climatic change*”. The National Development Plan (NDP) 2002-2008 recognizes that 56 per cent of the Kenyan population is afflicted by poverty and that disasters accelerated by climate change can push more people into poverty. In the Environment section of the National Development Plan (2002-2008) it is expressed that; “*the Government in liaison with relevant agencies will formulate policies that minimize transport related environmental pollution from the different modes of transport*” (p.122). This point is however not captured in the sector transport and energy policy or across other policy documents.

3.3 National policies, strategies and regulation

The legal reference point for environmental concerns within Kenya is the Environmental Management and Coordination Act of 1999 (EMCA 1999). Of relevance are the energy policy sectional paper number 4 of Ministry of Energy and the Energy Act 2006 as well as the Forest Act 2005 of the Ministry of Environment and Natural Resources (MENR). An overview of selected national policies with relevance to climate change is included in Annex 6.

EMCA has minimal content relating explicitly to mitigation and adaptation to climate change. The most relevant reference is where it directs the ‘Standards and Enforcement Review Committee’ to “*recommend to the Authority guidelines to minimize emissions of green house gases and identify suitable technologies to minimize air pollution*”. There is no justification or explanation given for this clause on the basis of climate change, and the Act only includes one provision standing out in its own. It is perhaps a reflection of the time, as Climate Change information was less prevalent in 1999 than today. EMCA does institutionalise a structure, which could allow the issue of climate change to materialise within policy developments. This structure is the ‘National Environment Action Plan Committee’, which is mandated to produce annual National Environment Action Plans. Amongst other relevant functions, these reports are required to “*identify and recommend policy and legislative approaches for preventing, controlling or mitigating specific as well as general adverse impacts on the environment*”. Climate change could meet the criteria.

The most recent National Environment Action Plan is that of 1994 (which makes no reference to climate change) and further information regarding the activities of the National Environment Action Plan Committee is scant. The ‘Air quality standards’ to be set in place by the Standards and Enforcement Review Committee, to cover guidelines for air pollution control in general have since 1999 yet to materialise from NEMA. The department of Compliance and Enforcement on the NEMA website state that “*Various task forces have been set up to develop regulations, guidelines and standards on water quality, land use, waste management, chemicals and pesticides, biological and genetic resources, and economic instruments*” but emission standards are not mentioned.

The ongoing preparation of an Environmental Policy that will continue until June 2008 includes climate change as a thematic topic and as a cross-cutting issue. The effort may prove to be important in order to address climate change in national policies, strategies and plans. Within sector specific provisions of EMCA there is no specific mention of climate change, but there are provisions set in place that could allow for adaptation to be incorporated into policy. For example under EMCA (42.3) the Minister may issue regulations for “*measures for the prevention or control of coastal erosion*” and even more specifically, conservation of mangroves is a measure, which may assist in adapting to climate change.

3.4 Climate change institutional structures

Kenya has made attempt at increasing its capacity to cope with climate change, most notably through three institutions: i) the National Environmental Management Authority (NEMA), ii) advances in the ‘modelling’ technologies used by the Kenya Meteorological Department (KMD) to improve climate change forecasting, and iii) the National Disaster Operations Centre (NOC). An overview of selected institutional structures relevant to climate change is included in Annex 7.

3.4.1 National Environmental Management Authority (NEMA)

NEMA was established under the EMCA (1999) and is a government parastatal with seventeen core functions as stated in dissemination brochures and the NEMA website (www.nema.go.ke). Among the seventeen core functions, there are only two that relate more or less to climate change. These are core functions number one, which states that NEMA is “*mandated to exercise general supervision and coordination over all matters relating to the environment*” and core function number eight which states that NEMA shall “*advise the Government on regional and international conventions, treaties and agreements to which Kenya should be a party and follow up the implementation of such agreements.*”

It is on this basis that NEMA is the focal point for all national environmental issues. NEMA is the climate change focal point and the Designated National Authority (DNA) for CDM projects. The climate focal point is based at the Ministry of Environment and Natural Resources (MENR) due to the high priority to the topic given by MENR.

3.4.2 Kenya Meteorological Department (KMD)

The Kenya Meteorological Department (KMD) is a government institution within the Ministry of Transport responsible for issuing early warning information for the safety of life, protection of property and conservation of the natural environment. This is achieved through routine observations, fast exchange of the observed data, processing of the data and generation and dissemination of products to various users in timely manner. The KMD is therefore a custodian of useful weather and climate information critical for climate variability and change activities and studies. It operates a network of stations countrywide from which the data is observed, transmitted to the Headquarters and quality controlled and archived for subsequent analyses.

KMD is charged with the responsibility of providing meteorological information for regional as well as national socio-economic activities such as agriculture, energy, environment and marine. The KMD also hosts a Global Atmospheric Watch Station on Mount Kenya, which is one of 22 stations monitoring pollution, ozone depletion, and other changes in the global atmosphere.

3.4.3 Disaster Risk Management and Preparedness

The Office of the President hosts most institutions that deal with disaster management in Kenya. The National Disaster Operations Centre (NOC) is charged with the coordination of the response and relief during emergencies and disasters. If a major disaster situation is declared, an inter-ministerial committee at PS level is formed and the NOC functions as its secretariat. The NOC is also responsible for coordinating the disaster response preparedness, including the training and capacity building within the different institutions that have a role to play during disasters. Agencies responsible for early warning systems inform NOC in case of emerging disasters.

The Kenyan Food Security Structure is specifically charged with the coordination of the monitoring of the food security situation and the disaster relief distribution. It hosts monthly meetings on the food security situation with key national stakeholders as well as bilateral and multilateral donors involved in food security and relief issues. There is a contingency fund for drought response relief within the Office of the President with resources from WB, EU and GoK.

3.5 Climate change coordination and awareness

The day-to-day coordination of climate change policy and projects is by the climate change focal point in NEMA/MENR. The focal point is also the Designated National Authority (DNA) of the Kyoto Protocol. Faced with growing concern on climate change, the Kenyan Government established the National Climate Change Activities Coordinating Committee (NCCACC), with membership drawn from the Ministries of Agriculture, Environment, Energy, Planning, Finance, Industry, and Research and Technology, together with local authorities, universities, the private sector and NGOs.

The NCCACC coordinates the activities of the GoK on climate change. The climate change focal point in NEMA/MENR is the secretariat. The NCCACC has about 25 members and four technical working groups following the IPPC structure: a) GHG inventory, b) vulnerability and adaptation, c) mitigation, and d) education, training and public awareness.⁷

NEMA produced a magazine on climate change for the Environmental Day (June 5, 2007). NEMA is also in the process of preparing a State-of-Environment Report for year 2006 where the theme is climate change.

The COP12 in Kenya in 2006 has boosted much of the attention. A remarkable follow-up initiative is the Parliamentary Network on Renewable Energy and Climate Change (PANERECC) which both create awareness but also contributes to influence of policy making relevant for climate change and renewable energy.

Box 9: Parliamentary Network on Renewable and Energy Climate Change (PANERECC)

The Energy Act 2006 prioritizes renewable energy for promotion and development and also urges government through Parliament to set aside funding for renewable energy. However, the Act is quiet on climate change and its causative effect, notwithstanding the fact that the search for new and renewable energy technologies is important in the mitigation and long-term response to the threat of global climate change. PANERECC was established to champion the link between renewable energy and climate change. PANERECC is a network of cross-party politicians, mostly Parliamentarians, whose mission is to promote renewable energy and climate change issues in and outside Parliament. It is hosted by the Parliamentary Committee on Energy, Communications and Public Works (PC-ECPW). The goal of PANERECC is to tackle climate change and its negative impacts on development as well as to promote the accelerated development of sustainable energy from renewable sources to achieve social and economic equity, to reduce fuel imports and foreign exchange drain, to enhance Kenya's domestic and the global environment, and to promote private sector growth and employment generation in the renewable energy sector. The immediate objective of PANERECC is to ensure that parliamentarians are educated and better informed on the impact of climate change, and the need for improved policy instruments and legal frameworks that address climate change adaptation and mitigation. Other objectives include:

- To facilitate deeper understanding of climate change issues in particular Kyoto Protocol mechanisms and their relevance to national development.
- To strengthen understanding on new and renewable energy technologies, challenges and opportunities related to their increased uptake and their link to climate change.
- To provide information on available financial and investment opportunities for promoting adaptation to climate change.

⁷ The Inter-Ministerial Committee on Environment (IMCE) represents a wider set-up involving representation from key ministries/departments, academic and research institutions, NGOs and the private sector, and coordinates climate change issues. IMCE has further created eight technical sub-committees on priority areas, including a technical sub-committee on climate change called the National Climate Change Activities Coordination Committee (NCCACC).

4. Mitigation of Climate Change

The mitigation option has been included in the climate screening due to the potential it may have in Kenya both in terms of sustainable land-use and forest management but also in terms of energy solutions and investments in new technology. The Nairobi Framework for CDM launched at the COP12 in 2006 is an attempt to open the CDM for developing countries. Direct financing of emission reductions is not part of ODA but capacity development to harness the potential for carbon financing can be included. There are concerns that by engaging in CDM the developing countries in addition to the effects of climate change are also paying the price of a continuation of the energy consumption levels in the industrialised countries.

4.1 The Nairobi Framework for CDM

The mitigation of climate change has become attractive due to the options for carbon financing from the Clean Development Mechanism (CDM) for investment projects that results in reduced emissions compared to a baseline scenario. But the scope for mitigation is relative low in Africa with a relative low level of industrialisation. There are no low hanging fruits.

Mitigation is not directly part of the adaptation to climate change or inclusion in ODA. Some contribution can be made when development activities results in sequestration of carbon, e.g. for afforestation and sustainable forest management, and development of clean technology and renewable energy options. But the Nairobi framework has led to an increased interest from development partners to address CDM capacity development.

Box 10: The Nairobi Framework - catalysing the CDM in Africa

The Nairobi CDM Framework was initiated at COP12 (2006) by UNDP, UNEP, World Bank, AfDB and UNFCCC with the specific target of helping developing countries, especially those in Sub-Saharan Africa, to improve their level of participation in the CDM.

The Framework consists of five objectives, agreed to by the initiating agencies, considered to be key priority targets in order to move the CDM forward in the beneficiary countries:

- Build and enhance capacity of DNAs to become fully operational
- Build capacity in developing CDM project activities
- Promote investment opportunities for projects
- Improve information sharing, outreach, exchange of views on activities and education and training
- Inter-agency coordination.

Among the activities planned is a DNA Forum to be held in Africa and the establishment of a CDM bazaar (<http://www.cdmbazaar.net/>). Concerted efforts are expected by the agencies involved to support the access to and development of CDM in Africa. In Kenya a number of bilateral opportunities have emerged for assistance to develop capacity for CDM, e.g. Sida, Finland and Italy.

Source: http://cdm.unfccc.int/Nairobi_Framework/index.html

The carbon foot prints of Kenya may be size ‘small’ currently but could expand in the future to size ‘medium’ or ‘large’. It is therefore relevant to address options for a low carbon development path that does not impede access to energy and the development potential. In addition to potential carbon finance, there will also be gains from energy efficiency and fuel switching as the costs of imported fossil fuels increase.

4.2 Limited options for mitigation of fossil fuel emissions

Kenya like many other developing countries contributes only relative small amounts of greenhouse gas (GHG) emissions from fossil fuels and the potential for mitigation using CDM are small. There are few emissions to be offset. The estimated annual release of CO₂ from fossil fuel imports to Kenya is 6 Million tons (based on ACTS, 2007) with the largest share (2/3) attributed to the transport sector. This is not to claim that no ‘savings’ can be made, but what could be ‘saved’ will be needed for economic growth and an increasing population.

The emissions in Kenya and Sub-Saharan Africa are less than 0.5 tonnes of CO₂ per capita per year. The emission of CO₂ is on average ca. 4 tonnes per capita globally, ca. 1 tonnes per capita in low income countries, and ca. 12 tonnes per capita in high income countries. The annual emission of CO₂ per capita is 9 tonnes for UK and Denmark and 20 tonnes for USA.

The higher oil prices will create some incentives for energy efficiency and fuel switching towards renewable energy sources. Fuel switching driven by higher oil prices is happening in the tea sector (*see* Box 11). Other renewable energy options will also be feasible, e.g. windmills, solar panels, biofuels including biodiesel, and sustainable charcoal. The major share of the energy production in Kenya is already from hydropower, wood fuel and other non-fossil sources. The current effective electricity demand in Kenya is 923 MW (annual growth rate 5%) and the effective installed capacity is 1,051 MW. Hydropower capacity is ca. 680 MW (ca. 70 percent of grid production) and the rest is from thermal, geothermal and wind. Kenya has some wind turbine potential but the established capacity is so far limited (< 0.4 MW). It has been estimated that the potential for geothermal energy in the Rift Valley may be in the order of 2.000 MW. Current production capacity is 128 MW. The small hydropower potential could be as high as 6.000 MW on smaller rivers.⁸

Box 11: Kenya Tea fuel switch and Carbon Credits Project

Tea is an important cash crop in Kenya contributing 4 per cent to the national GDP, third only after tourism and horticulture. About 60 per cent of the total crop in the country is produced by the small holder growers who process and market their crop through their own management agency – the Kenya Tea Development Agency (KTDA) which in turn, is the largest single producer of tea in the world. Kenya contributes 10 per cent of total global tea production and commands a remarkable 21 per cent of all global tea exports outside producing countries. Over 3 Millions Kenyans, 10% of the population, are directly and indirectly employed by the tea industry which is the largest sub-sector in the agricultural sector.

The cost of tea processing has been escalating due to the soaring oil prices over the years and it has been an earnest endeavor of the tea factories to switch from the use of fuel oil (diesel) to sustainable fuel wood sources. Most factories have been able to switch partially, ranging from 20 – 70 per cent success rates but the lack of sustainable fuel wood sources is a constraint. The supply of fuel wood is mostly from small-scale land-owners adjacent to the tea factories.

Nevertheless, in these efforts to cut down the cost of production, the issue of sustainability has yet to be addressed exhaustively since the supply of fuel wood to the factories is implemented on an ad-hoc basis. ‘Kenya Tea Fuel Switch & Carbon Credit Project’ aims at assisting tea factories switch successfully from fuel oil to sustainable fuel wood sources by mobilizing carbon finance from the sale of carbon emission reduction (CER) units emanating from fuel switching. The first phase of the project carried out in 2005 was a feasibility study to ascertain the availability of land for trees within an economical radius to the factories and test the willingness among land owners to set aside land for trees as a commercial venture. The study found out that the potential of planting trees is high, especially if introduced as a cash crop. The challenges of tree planting for fuel wood are wood lot management and selecting of tree species that can co-exist with tea and other food crops.

⁸ Eng. James Muriithi (Ministry of Energy, Kenya): “Small Hydropower for today” (Conference, Hangzhou, China, April 2006)

4.3 Land use, forests and biomass

While developing countries do not release significant amount of GHG from fossil fuels there are often larger contributions from land use and forestry. In terms of mitigation, sustainable land management can avoid the emissions and stocks of carbon can be replenished, e.g. by reforestation. According to a Ministry of Energy study in 2002 as much as 70 per cent of final delivered energy to the economy is from biomass sources, i.e. fuel wood, charcoal and crop residues.

In the 1st national communication to UNFCCC (2002) it was noted that Kenya is a net sink of carbon due to an increase in forest cover. The release from the CO₂ from fossil fuels was estimated at ca. 5.5 Million tonnes of CO₂. While the uptake of CO₂ in forest cover and other trees was estimated at ca. 28.6 Million tonnes of CO₂, the net emission was a negative ca. 22.7 Million tonnes of CO₂. There is no forest inventory to substantiate what the net sequestration of carbon in forests is and whether there has in fact been a net up-take in the past five years compared with the release from deforestation despite the 1999 commercial logging ban.

Box 12: Sustainable charcoal production associated with emergency Cash for Work in Turkana district

Principle systems of livelihood productivity in Turkana are isolated from the country's main economic systems and are highly vulnerable to shocks such as the increasing weather related flooding and drought. A devastating drought affected Kenya from 1999 to 2002. In December 1999, the World Food Programme (WFP) estimated 4.4 million people to be in need of food aid in 19 districts. Oxfam GB distributed relief food to 370,000 people in Turkana and Wajir districts from December 1999.

A recovery programme began in September 2001, which included a cash for work programme for 70,000 vulnerable people.⁹ Oxfam's analysis indicates that habitually people resort to the production of charcoal as a first line coping strategy, with a significant proportion reliant on this as a regular means of securing household requirements through sale or exchange. Production of charcoal uses poorly developed, inefficient and unsafe methods, has negative impacts on the environment manifested in increasing rates of deforestation and derives a poor rate of return to the producer.

Oxfam has been working to implement interventions designed to buffer or mitigate the effects of drought induced food insecurity through its humanitarian programme, including cash for work. These are designed to increase people's access to cash (and hence food, services and livelihood investment opportunities) as well as to develop or rehabilitate community assets, which strengthen livelihoods at both individual and community levels. In the current project, Cash-For-Work (CFW) beneficiaries have identified charcoal production as an activity to be undertaken. Specialized technical inputs are required to support this initiative, which are in line with Government policy, and orientated to minimize environmental impacts for better market integration and returns for the producers.

The purpose is to increase Turkana community's access to cash income through the development of market opportunities for sustainable produced charcoal (*eco-charcoal*), which has little negative impact on the environment. Sustainable charcoal production which entails replenishing raw materials through tree replanting (or reforestation), efficient harvesting and use of improved kilns for carbonization has the potential to reduce carbon emission thereby rendering the charcoal produced carbon neutral. The project's long-term goal is to enhance livelihood of the Turkana community while mitigating the effects of drought induced food insecurity by ensuring a cash income stream and a forestry system (agro-forestry, woodlot, etc.) that ensures environmental sustainability.

Source: http://www.oxfam.org/en/programs/emergencies/eafricafoodcrisis/update_0610

The energy sources by choice by the rural and urban poor in Kenya are wood and charcoal respectively. It consists of a potential large source of CO₂ emission as well as a large potential for mitigation through a sustainable production of wood fuel. A national survey of charcoal (ESD, 2005) found that in Kenya 1.6 Million tons of charcoal is produced annually. This requires as much as 10-15 Million m³ of wood which could be sustainably produced. Most of the charcoal production has until recently been illegal but the subsidiary legislation on charcoal to the Forest Act (2005) is

⁹ http://www.oxfam.org.uk/resources/downloads/reports/cfw_case_studies.pdf

in progress. The value of the charcoal production is KSh 32 Billion (ca. USD 450 Million) generated in total annual income from charcoal (on average 20.000 KSh / ton). This is almost equal to the income generated from the tea industry. There are 200,000 charcoal producers, and 500,000 traders are involved in charcoal trade. Over 90 per cent of charcoal producers are using inefficient, traditional earth kilns with recovery rates as low as 10 per cent.

4.4 Carbon financing from mitigation of Green House Gases (GHG)

The attention on mitigation of climate change is on the optional financing mechanisms. The two main options relevant to Kenya for carbon financing for mitigating climate change are: i) Generation of Certified Emissions Reduction units (CER) under the Clean Development Mechanism (CDM), and ii) Verified Emission Reduction units (VER) under the voluntary carbon market (VCM). The CDM and VCM are financing mechanism to cover the opportunity costs of mitigation activities, but some mitigation activities can also be technically feasible and implemented even without the additional carbon financing if there are no opportunity costs, e.g. forest planting on idle land.

4.4.1 Status of CDM in Kenya

The Designated National Authority (DNA) is established in NEMA and located in the MENR. The role of the DNA is among others to assess the contribution of the proposed projects to sustainable development for the host country.

The CDM projects generate emissions credits called Certified Emissions Reductions (CERs) which can then be traded. One CER is equal to one ton CO₂ or equivalent amount of GHG with a similar warming potential. Issuance of CERs starts in January 2008 for the first commitment period of the Kyoto Protocol (2008-2012) and trade in those can commence immediately. Projects have to be developed under guidelines developed by the UNFCCC in order to qualify for CERs. CDM projects and methodologies for ascertaining the amount of CERs are developed by consultants, verified by the DNA, controlled by a Designated Operational Entity and approved by the CDM Executive Board. The CDM Executive Board registers all projects that comply with the approved methodologies.

CDM uptake has been very low in Africa in general. Globally there are more than 2,600 CDM projects in the pipeline that include about 2.3 Billion CERs (per November 1st, 2007). For sub-Saharan there are 34 projects (of which 21 are projects in South Africa) with 38.7 Million CERs (of which 22.9 Million CERs are in South Africa). The share of the Global CDM pipeline is about 1.5 per cent for Sub-Saharan Africa with 1 per cent for South Africa and about 0.5 per cent for the other nations. Kenya has three CDM projects at the early validation stage of the CDM pipeline, i.e. the Mumias Cogen, the KenGen geothermal energy projects, and the Kenya Greenbelt Movement Reforestation Biocarbon Project. Other projects which have been approved by the Kenyan DNA but are still under development include: Eburru Geothermal Project (production 21 GWh), Olkaria II Geothermal Expansion Project (276 GWh), Redevelopment of Tana Power Station Project (130.3 GWh), Optimization of Kiambere Power Project (60 GWh), Kipevu Combined Cycle Power Project (223 GWh) and Sondu Miriu Power Project (330 GWh). All these are KenGen's CDM projects under development with a total production of 1,040 GWh and an estimated potential CERs of annual 665,790 tons of displaced CO₂.

4.4.2 Potential CDM projects and barriers

Project developers in the private sector in Kenya have demonstrated enthusiasm to participate in CDM projects. Their interest primarily stems from the opportunity to access additional project financing, and they admit a limited knowledge of the CDM, its regulations and the project activity cycle.¹⁰ They have stated the need for ongoing assistance with respect to assessment of the financial viability of using carbon financing, baseline selection, and finally the development of CDM projects.

There is some potential for CDM projects within various sectors of the country:

- **Renewable energy and energy efficiency:** Large scale renewable projects with geothermal and wind turbines. Small-scale, off-grid projects, e.g. biogas, solar, wind-pumps, hybrid systems, micro-hydro, and energy efficiency.
- **Land-Use, Land-Use Change and Forestry (LULUCF):** Only 1.7 per cent of Kenya is officially with forest cover. There is a great potential for reforestation with increased popularity among civil society, government, donors and private sector investors. The importance concerns both local livelihoods, supply of wood and fiber and carbon sequestration. One example is the Green-Belt-Movement.¹¹ There is potential for large-scale CDM efforts by bundling smaller projects with combined social and livelihood benefits.
- **Land-fill and waste management:** Double benefit of CDM finance and waste management. Can also provide a source of energy from captured methane. Small scale biogas and large scale land-fills may be considered for emission reductions.
- **Biofuels and fuel switching:** There are potentials in ethanol and bio-diesel production especially where there is no competition with food production. Kenya has the capacity since there has formerly been a commercial production and use of bio-ethanol. There are potential economic benefits switching from fossil fuels to natural gas or bio-waste, for example, in the tea, horticulture and cement sectors. The financing is from reduced power expenditures, CDM and other carbon financing, and a potential for delivery of surplus energy to the grid.

There are several constraints to the development of CDM projects and securing carbon finance, e.g.: i) low awareness and experience in particular among policy makers, manufacturing industries and financial institutions, and ii) the difficulties in developing baselines and methodologies for some of the projects especially the land use based ones. There is progress towards solving these constraints as Kenya has motivated individuals and institutions that are capable of developing a 'learning by doing' capacity. There is also general recognition that the DNA office at MENR/NEMA could be strengthened to cope with the increasing inquiries and interest in CDM.

The Executive Board (EB) of UNFCCC in a recent report¹² outlines the following as barriers to private sector participation in CDM in Africa:

¹⁰ "Overview of status and industrial opportunities of CDM development within Kenya" paper presented by ESD during the IETS (International Emission Trading Scheme) meeting with private sector in Kenya (October 2007).

¹¹ The project of the Green Belt Movement with the World Bank Biocarbon Fund proposes to reforest 1,876 ha of degraded public land and private land with high community access in the Aberdare Range and Mount Kenya watersheds. The project is expected to sequester around 0.1 Mt CO₂e by 2012 and 0.38 Mt CO₂e by 2017 to be purchased by the World Bank BioCarbon on a forward contract.

¹² CDM Executive Board (EB 32, Annex 6): "Regional distribution of CDM project activities - Addressing the barrier", (<http://cdm.unfccc.int/EB/032/eb32annagan6.pdf>).

- Insufficient access to funds for technical assistance capacity building, project finance and risk management tools.
- Weak institutional and administrative capacity relating to the development of CDM project activities.
- Lack of CDM-related awareness and experience in relevant sectors.
- CDM facilities and procedures are not being in place, and lack of clarity with regard to the relationship of ODA involvement in the project cycle.
- Uncertainty on the role and format of CDM post 2012.

To solve the above, the CDM EB recommends financial facilities and tools to assist with start-up costs and capacity building specific activities for CDM. Exchange of experience and increase in co-operation at all levels, including regionally, bilaterally and among DNAs. Increase of DNA coverage and involvement of industry and financial institutions from host countries and regions as well as increased synergy between organizations providing CDM assistance.

4.4.3 Voluntary Carbon Market (VCM)

VCM originated from countries that have not ratified the Kyoto protocol, especially the USA and Australia. This market uses similar procedures to CDM, but these are more flexible and variations in procedure and methodology are accepted. In the US, it is dominated by the Chicago Carbon Exchange (CCX) and the 'Over-The-Counter' (OTC) markets. In Australia the market is dominated by the New South Wales Greenhouse Gas Abatement Scheme.

The voluntary market is growing and is receptive to urban and rural community type projects such as renewable energy, reforestation and fuel-switching. Carbon credits are also created in the voluntary market, but unlike the compliance market where credits are tradable (fungible) under the Kyoto flexible mechanisms, the credits in the VCM are generally non-fungible, i.e. there is no trade possible between the various schemes.

In Kenya, the VCM is developing independently of government policies and guidelines and is slowly attracting businesses, NGOs, and communities in the carbon offset market. There are now more than half a dozen carbon trading companies located in Kenya. They have registered over 50,000 tones of carbon from community projects such as tree planting, brick building, methane capture from slaughter houses and energy efficiency in hotel industry as of August 2007.¹³

¹³ Owino, T of Pioneer Carbon, Personal communications

5. Climate change screening of the Danida supported sector programmes

A climate change screening is carried out for five of the current Danida supported sector programmes in Kenya. The emphasis is on the assessment of the risks of climate change on the effectiveness of the programmes and scope for addressing additional adaptation to reduce vulnerability. The Danida climate change screening note has been revised and simplified. It is the finding that although there are few additional adaptation activities for the ongoing programmes there is already a substantial level of optional spontaneous adaptation possible within all programmes due to the emphasis on poverty reduction, support to improving the regulatory framework, and sustainable management of natural resources.

5.1 Findings from the Climate Change Screening

The current sector programmes that have been ‘climate screened’ are: Environment, Water, Agriculture, Health and Private Sector Programme Support. The climate change screening notes for each of the programmes are included in Annex 2. The screening notes address both the risk to the programmes from climate change and the opportunities for additional adaptation to further reduce vulnerability.

There are limited risks from climate change and variability in the current Danida programme portfolio. The water and agriculture programmes support some infrastructure investments that may be threatened by flooding and heavy rainfall events even under current climatic regime. The risk to these facilities can be addressed within the sector programmes. The impacts of climate change are on a longer time horizon and especially for current investments with an expected lifespan of several decades. There may be a case-by-case assessment of the risk of climate change impacts in the ‘Business to Business’ programme and the Mixed Credit lending.

There are limited opportunities for additional adaptation in the ongoing Danida sector programmes. The scope for mid-term programme redesign is little and the existing complexities in the current implementation may only allow for some additional focus areas. It is noted that there is already some inclusion of relevant climate change adaptation related activities in the sector programmes. For example:

- The ongoing formulation of the new Environmental Policy in the Environmental Programme Support includes climate change as one of the thematic areas.
- The Water Resources Management Component of the Water Sector Programme supports rehabilitation of the water resources information system (ground and surface water monitoring) and the establishment of a framework for water resources management, development and investments. These are potential adaptations to future climate change and disaster risks.
- The Agricultural Sector Programme Support includes small scale water conservation, water harvesting and supplementary irrigation projects that can level out rainfall variability in selected ASAL districts.
- The Health Sector Programme Support includes delivery of moveable health services that are targeted to nomadic pastoralist. It supports the current coping strategies already developed among pastoralist and improves their coping capacity for extreme climate events.

Decisions on additional activities related to adaptation to climate change and reduction of vulnerability will have to be made within the existing programme agreements and between the involved development partners. Below are some of the options identified within the current supported sector programmes.

5.1.1 Environmental Programme Support (EPS)

The EPS provides support to policy development in MENR, strategic implementation in NEMA and to community projects in CDTF/CEF. The activities in the components are not directly at risks from climate change.

With the climate change focal point and the DNA located in NEMA/MENR there is also an opportunity for additional collaboration in EPS with support to the inclusions and coordination of climate change related activities in GoK policies, strategies and plans.

Options for additional activities in the EPS regarding CCA and DDR are:

- A strategic follow-up on the inclusion of climate change in the new Environmental Policy, e.g. through support to a national action plan of adaptation.
- Inclusion of climate change impacts in the Strategic Environmental Assessment (SEA) guideline and pilot applications.
- Inclusion of climate related information in the environmental monitoring and subsequently communication in the State of the Environment Report (the forthcoming 2006 SoE has 'climate change impacts' as a theme).
- Inclusion of climate adaptation and mitigation related activities in the CDTF/CEF portfolio.
- Assessment of sea level rise impacts in the coastal zone and issues for local level planning.

5.1.2 Water Sector Programme Support (WSPS)

The WSPS has three components: rural water supply and sanitation (RWSS), water resources management (WRM), and support to water sector reform. The RWSS component supports increased access to water and sanitation in rural communities. These installations may potentially be at risk from extreme rainfall events and climate change. Collapse of latrines during floods and heavy rains under certain soil conditions is a known phenomenon that is already being addressed by a working group under the new National Environmental Sanitation Policy of the Ministry of Health.

Small dams and ponds are at risks from climate impacts and they have been washed away during floods. The Ministry of Water and Irrigation intends to study options for changed designs, construction standards and guidelines to mitigate this risk. Longer term changes to water availability through run-off and infiltration may demand adjustments to water supply infrastructure design and technology choices as well as catchment protection.

The integrated WRM component is relevant for reduction of vulnerability to climate change and disaster risk reduction. An adaptation option is to support water resources management, e.g. catchment rehabilitation, river bank protection, dams and other storage and flood mitigation infrastructure.

The water resources information system will provide information about actual flows in surface and groundwater systems, which is vital for sustainable and equitable management of the resource. Such a system is indispensable as a basis for informed decisions on water allocation and extractions, and to avoid conflicts over water access during shortage periods. The component also supports the

WRM institutions at basin and sub-basin level with an important role in planning, monitoring and management of the water resources, e.g. implementation of water resources storage and flood protection infrastructure.

Danida support to the programme will be phased out and no new activities are initiated at this point in time. Options for additional activities in the WSPS and beyond regarding CCA and DDR are:

- Support the proposed study on improved designs / construction standards and guidelines for water conservation infrastructure, and the on-going work on latrine design, and ensure that these new designs are applied in the programme activities.
- Initiate discussion with the key DRR institutions (National Disaster Operation Centre of the Ministry of Special Programmes within the office of the President) on “strategic public latrines” in areas prone to population concentration during floods and droughts.
- Continue and expand WRM activities during a new NRM programme and consider supporting investment in water conservation, storage and flood protection infrastructure.

5.1.3 Agricultural Sector Programme Support (ASPS)

The ASPS has three components: Agricultural Policy Support Facility, Agricultural Business Development Support, and Decentralised Agricultural Support Structures. The aim is to increase sustainable income of smallholder farmers and agricultural based micro and small entrepreneurs in semi-arid districts.

The climate change risks to the ASPS activities and outputs are relatively low. The activities related to agricultural advisory services could be an entry point for strengthening CCA and DRR considerations at the national level through the policy support component and among the district level farmers and stakeholders through the district component.

Decentralised Agricultural Support Structures (DASS) is mainly in the ASAL with improved agricultural advisory services and support to small scale infrastructure construction. Support is provided on sustainable land use, conservation of water, soil and vegetation, strategies for drought mitigation and food security. The support to small scale water resources infrastructure (sand dams, ponds and shallow wells) for supplementary small scale irrigation, livestock and other uses is relevant for reducing vulnerability to rainfall variability. These small scale water projects and the support to spot improvement of rural feeder roads function as adaptation to climate variations but are also at risk from heavy rainfall.

Danida support to the programme will be phased out by 2009 and no new activities are initiated at this point in time. Options for additional activities in the ASPS and beyond regarding CCA and DDR are:

- In relation to the next joint review of the ‘Roads 2000 strategy’ assess the design standards and guidelines for spot improvement of rural feeder roads in relation to risks posed by floods and heavy rains.
- Liaise with Ministry of Water and Irrigation on an assessment of water conservation infrastructure designs, and adapt design standards and guidelines if feasible and relevant.
- Consider an SEA or CCS of the medium term agricultural investment plan
- The CCA and DRR can be further developed for the small scale agricultural support structures when these are carried on in the forthcoming NRM programme support.

5.1.4 Private Sector Programme Support

The programme includes a Business Policy Sector Programme Support that facilitates the development of the business sector in Kenya through an improved business environment, increasing competitiveness of small and medium sized enterprises, and improved labour markets. Climate risks to ongoing programme activities have not been identified.

In addition Danida provides support to the Business to Business (B2B) programme for partnerships with Danish companies. This cooperation offers opportunities for technology transfer, e.g. in the renewable energy sector. Danida also has the option to provide mixed credits ('soft' lending) for larger investments, but this facility has not been used in Kenya.

Options for additional activities in the Private Sector Programme Support regarding CCA and DDR are:

- Awareness of the potential impacts of climate change for the private sector, for example with the involvement of the National Economic and Social Council (NESC)
- An assessment of the impacts of climate change on the company level profit and losses, e.g. due to increased costs of production factors and market risk management.
- Targeted support to a 'low carbon development path' through the B2B and mixed credit funding mechanisms, e.g. for wind turbines with mixed credit financing, energy efficiency in B2B projects and 2nd generation bio-fuels.

5.1.5 Health Sector Programme Support (HSPS)

The HSPS includes components on financing of recurrent primary health costs, strengthened support systems to deliver primary health care and funds for human resources. Longer term investments could be at risks from climate change impacts. The development of primary health capacity could support the control of health related impacts from short and medium term climate variations and disaster risks.

Delivery systems can be designed to further address impacts from climate change and disaster risks. Information gathering in the health sector is relevant for cross-sector early warning systems and disaster contingency planning. The information could be made available for coordinating adaptation to climate change and reduction of disaster risks.

Options for additional activities in the HSPS regarding CCA and DDR are:

- Monitoring and sharing of information with other sectors on disease patterns due to changes in environmental conditions, e.g. for vector borne diseases especially in 'fringe areas', i.e. geographic areas that demarcate high and low prevalence of certain climate related diseases (e.g. high land malaria). This could also be expanded to general health conditions in relation to food security. This information should be fed into other climate related information systems to contribute to a better formulation and understanding of the impact of the various climate scenarios.
- Ensure that the primary health care stations are located so they are protected and accessible in case of flooding and other disasters. The location should also take into account surrounding infrastructure (roads and bridges) to avoid isolation in cases of floods. Furthermore medium to long term planning of infrastructure should include contingencies for 'climate refugees'.

- Option for contributions of further environmental health improvements related to climate variability, e.g. sanitary improvements with the water and environmental sectors and food security.
- Functions of primary health in the responses to state of disasters, e.g. allocating localised reserves to enable the fast mobilisation of medical supplies for disaster preparedness and the role of health stations as emergency centres with increased capacity for contingency planning.

5.2 Timing of the climate change screening

The CCS is most efficiently carried out as part of a sector programme identification phase and of the concept note, and further during the design phase. At this stage the relevant risks can be identified and the relevant adaptation measures can be developed as an integrated part of the programme.

The CCS of the Danida programme cooperation with Kenya is probably too late to significantly address adaptation measures in the current sector programs and too early to address the specific climate risks of the future priority sector programmes. In the current circumstances the CCS of the sector programmes will have elements of a retrospective assessment ('screening in reverse') with relative few opportunities for additional adaptation.

5.3 The future Danida priority sector programmes

The Danida priority sectors in the future are Natural Resource Management, Health and Private Sector. An assessment of the climate change risks and design adaptation measures for the next phase of programmes requires additional information on the contents of the future programmes. The identification of these programmes is expected to begin end of 2008. Inclusion of climate change screening is relevant from the beginning of the identification and design phase.

The energy sector and in particular renewable energy and energy efficiency could be topics in the future NRM programme in relation to bio-fuels and renewable energy and the private sector programme in relation to wind turbines and other low carbon development path investments.

Whether there will be a separate climate change screening or it is included as part of the environmental screening and environmental impact assessment is subject to future procedures of Danida, joint funding partners and the GoK. The actual focus areas of the future priority sector programmes will be determined with development partners and outlined in a Danida concept paper. A preliminary assessment of the climate change impacts and adaptation responses of the future Danida portfolio is included in Annex 8.

6. Donor harmonisation and coordination of climate change activities

A brief overview of different donors and their support to climate change related activities. At the 'grass root' level there are several activities related directly or indirectly to climate change adaptation and mitigation. At the national level some activities are emerging that may shape the coordination and harmonisation of future donor funded activities. The DfID and Danida climate screenings may advance some improved coordination of the climate change related activities.

6.1 Donor projects related to climate change in Kenya

The climate screening and proofing is a donor procedure to secure the development programme against climate change impacts. The screening identifies possible interventions and the scope for donor coordination and harmonisation. In Kenya this is evident by Danida and DfID carrying out simultaneously climate change screenings.

The donor supported activities related to climate change have several formats: a) further mainstreaming climate change adaptation in the development programme, b) specific stand-alone adaptation projects, c) awareness raising and studies on climate change and development, d) capacity development in particular in relation to CDM, e) direct support to carbon mitigation and carbon trading activities, and f) projects in sectors of particular relevance for climate change adaptation and mitigation, e.g. water resource management and renewable energy.

An overview is included in Annex 9 of selected donor funded projects and activities related to climate change screening, adaptation and mitigation in Kenya.

6.1.1 Climate screening and proofing the development programme portfolio

Other than Danida it is only DfID that is in the process of preparing a climate screening of the bilateral development cooperation with Kenya. The DfID climate screening has similar objectives as the Danida climate screening. The DfID climate screening includes a comprehensive assessment of the scientific facts for climate change in Kenya, it will also include an assessment of the incremental adaptation costs.

The NGOs in particular with field level community activities have first-hand knowledge about the vulnerability, impacts and adaptation locally of an erratic climate. This knowledge may not be immediately perceived as relevant for climate change awareness but it is in fact a valuable source of information for screening and awareness of the impacts of climate change.

USAid have recently (August 2007) issued a climate change adaptation manual. USAid includes climate in the USAid representation's reporting and budget allocation for all sectors. This is a new reporting system that may facilitate getting 'climate out of environment' and mainstreamed into other sectors. Other agencies, like SIDA, address climate change issues as part of the mandatory environmental impact assessment. The climate screening of development cooperation with Kenya by Danida and DfID are also pilot projects to develop methodology for these donors. Several pilot projects have been carried out in other countries, and OECD/DAC has a mandate to compile and develop methodology for climate change screening and proofing.

6.1.1 Climate adaptation: reducing vulnerability

A large share of any development cooperation programme portfolio dealing with poverty reduction and sustainable development including water resource management, food security, disaster risk reduction, access to credit, good governance, access to primary health care and forest management is *de facto* also addressing adaptation to climate change by reducing overall vulnerability.

The World Bank is preparing the *Kenya Adaptation to Climate Change in Arid Lands (KACCAL)* Project for funding under the GEF Special Climate Change Fund. The KACCAL project is embedded in the World Bank Kenya *Arid Lands and Resource Management Project (ALRMP)* which has a focus on the reduction of the acute vulnerabilities. The KACCAL project also has a focus on the ASAL and will address the medium to long term implications of climate change and variability and enhance the capacity to reduce the vulnerability of rural livelihoods.

The approach by most donors and international NGOs is to mainstream adaptation into the development programme portfolio. CARE international is one exception with specific adaptation projects in high risk areas. Vulnerability assessments have been prepared or addressed in Kenya or Sub-Saharan Africa by various organisations including ILRI, ACTS, IUCN, IDRC, UNEP/GEF and CARE International.

6.1.2 Climate mitigation: capturing carbon finance

Project activities that sequester carbon in biomass and soils or substitute fuels with renewable energy will contribute to the mitigation of emission of GHG. The effective mitigation should be measured against a baseline.

Donor supported activities addressing forest management and afforestation, soil management and renewable energy have elements of both mitigation and adaptation. The emphasis in mitigation is on CDM and voluntary carbon markets (VCM) trade schemes although these are not mitigation *per se* but the potential financing of the mitigation activities.

The actual financing of projects through purchase of carbon emission reductions in CDM projects cannot be accounted for as ODA. But the CDM capacity development with the aim of being able to capturing carbon finance is eligible as ODA. Several private companies are involved in the potential for carbon trade. Several donors, e.g. Sweden, Finland and Italy, have expressed interest to support CDM capacity development in Kenya.

6.2 Multilateral organisation

The multi-lateral organisations and in particular the UN systems and CGIAR have a strong presence in Nairobi. UN and UNDP GEF funding is allocated for climate related adaptation and support to the climate change focal point.

The UN-ISDR has regional representation for East Africa in Nairobi that has supported the establishment of a National Platform for disaster risk reduction. The platform functions as an advisory body to the government, and focuses on other disasters than droughts and floods. Other multilateral organisations in Nairobi have supported DRR related activities, in particular capacity building on local and national disaster preparedness, community based disaster mitigation, risk zoning and vulnerability assessment.

6.3 Donor coordination and harmonisation

The explicit inclusion of climate change in development cooperation with adaptation but also mitigation is fairly recent. The attention on climate change and development has grown rapidly at HQ levels of donors and it is now followed at the representations and in the national programmes. There are few other themes like climate change at the moment that in ODA provides such an opportunity for shaping the future design of development programmes and instil cross-cutting sector relevance with the inclusion of the public and private sector as well as civil society.

Due to the upcoming of 'climate change' as a theme in ODA there is an apparent need for improved coordination and harmonisation on the donor side. The DfID and Danida climate screenings may advance some coordination of the climate change related activities. In the meantime in the absence of a national framework there may be less scope for alignment to a national framework on climate change. However, the forthcoming Environmental Policy and sector policy within water, energy, agriculture, forestry and disaster management will make up for such deficit.

Box 13: KJAS on climate change as a treat to economic growth and poverty reduction

Climate change is addressed in the Kenya Joint Assistance Strategy (KJAS, September 2007): "*KJAS partners will begin to raise the awareness of the effects of global warming through joint analytical work, and actively tackle climate issues in their programs, for example using drought resistant crop varieties, managing water better, designing infrastructure to withstand extreme weather events, and using seasonal forecasting to predict and plan for climate related diseases.*"

Moreover, it is noted in the KJAS that "*the challenge for the government is to ensure that climate change is not seen as just an environmental problem, but as an issue cutting to the very heart of economic and social development with profound impact on the activities for all the key ministries ranging from health and agriculture to energy, water resources and irrigation, transport, and public works. Hazards like flooding cannot be stopped, but they are intensified by insufficient planning, poorly-designed infrastructure, and destruction of natural resources such as riparian forests. Government policies and planning which do not take climate into account are at risk of failing.*"

Source: KJAS (2007, p.16)

As climate change is going to be mainstreamed into existing programmes the need for a specific donor coordination group on climate change may not be as relevant. It may further run the risk of isolating the climate change issue (as it has occurred partly in the GEF approach on climate change as a separate issue in addition to development) while the aim is to get it mainstreamed in development planning.

The donor coordination group on environment is a relevant starting point. The view point that 'climate' is larger than 'environment' and therefore needs to get out of the hands of the 'environment' sector is only partially true. The environment donor group will continue to be relevant for information exchange and coordination of joint activities.

In addition the challenge is to infuse the awareness of climate change into other sectors. This can be done in three ways: a) raising the issue as a cross-cutting theme at a HAC meeting; b) initiate horizontal information sharing and awareness in-house at each donor representation; and c) liaise directly with other donor coordination groups, e.g. joint meetings with water, health or energy.

DfID and Danida have the possibility to use the climate screenings proactively jointly with other donors:

- Coordinate efforts to support the GoK in capacity development, awareness and strategy formulation on climate change. Support to CDM capacity development may also be of relevance while the actual purchase of emission reductions are not permitted in ODA.
- Launch joint assessment with GoK on, for example the impacts of climate change on the economy of Kenya.
- Liaise closely with upcoming significant activities like the KACCAL.
- Address the evidence from the field across donor funded projects with NGOs and CSOs on climate change coping strategies and indigenous adaptation and early warning approaches as well as the impacts already documented from climate variability.

The recent attention on the carbon foot print of the Kenyan horticultural industry is one example of the vulnerability to external factors related to climate change concerns (*see* Box 14). In this case DfID made clarifications to enlighten the consumers in UK.

Box 14: The ‘carbon foot print’ of the high flying roses from Kenya

The flower industry in Kenya is the top earner of foreign exchange together with the tourism and tea sectors. The Kenya flower production produces about one third of world’s production. 60 per cent of all imported roses to the EU are from Kenya. The sector has grown 35 per cent annually since 1992 mainly in the area around Lake Naivasha. The estimated employment created in the sector is 135,000 jobs. The value of flower exports has risen from KSH 1.0 Billion in 1990 to KSH 22.8 Billion in 2005.

The flower exports and other horticulture crops like French beans from Kenya have become under pressure due to concerns from environmentally concerned Western consumers mainly in the UK about the climate impact of air freight. This has prompted a debate about the ‘carbon foot print’ of trade. One super market chain has labelled air transported products. A certifier of organic produce in UK (the Soil Association) considered abandoning organic labelling on all air transported products. It later has decided to maintain the certification for air transported products, but instead has further emphasised social and local environment impacts.

Although the carbon foot print may be larger from produce grown in heated green houses in Europe, the example also reveals the possible trade off between climate change and economic development through trade creating employment and foreign exchange for Kenya. Another discussion has concerned the logic of using scarce water resources for production of flowers for Western consumers. Shouldn’t the water be used for production of food for the poor in Kenya? This issue reveals another trade-off concerning water use. By using scarce water resources in the most economic way Kenya gets employments (for the poor in Kenya) and earns foreign exchange to purchase imports of products that may have otherwise consumed more water to produce.

Source: Various news paper clippings from September and October 2007.

7. Findings and Recommendations

The findings and recommendations are the outcome of the climate change screening. These are also the first steps in a forthcoming climate proofing of the Danish development cooperation with Kenya. Actions are determined by the further dialogue with GoK and development partners and should preferably be joint donor activities in coordination with the GoK and aligned with national policies and strategies regarding climate change impacts and adaptation. Further actions are also determined by what is feasible within the current and future sector programme support and whether the Embassy of Denmark has resources and capacity to engage in additional climate change related activities beyond the supported sector programmes.

7.1 Key findings and issues

- **Impacts of climate variations are already present in Kenya and may escalate with climate change.** The drought and flood related impacts and the adaptation to climate variation is the reality in Kenya. The El Niño/ La Niña floods and droughts cycles occur at higher frequency and perhaps with more extremes. This variation may not yet be linked directly to climate change, but the impacts are part of everyday struggle at local level. The policy attention in particular has emerged with the 1997 El Niño related floods, however, with emphasis on emergency response rather than prevention of the climate related impacts.
- **The policy attention to climate change in Kenya is not yet concurrent with the donor emphasis.** An improved awareness of the impacts of climate change is required to address climate change in other sectors than environment. This may also require a translation of climate change risks into more concrete impacts like droughts and floods and adaptation measures.
- **Constraints to effectively address climate change impacts in Kenya** are due to low awareness of climate change impacts, few available data to document trends in current weather regimes and resource utilisation, limited policy level attention so far, and the institutional organisation of climate change coordination in MENR/NEMA. The potential impacts of climate change are not yet articulated in the development plans. The next five-year Development Plan based on the Vision 2030 is expected by June 2008.
- **Objectives and expected outcomes of development cooperation are largely complementary to the reduction of climate change vulnerability.** The development cooperation aimed at reducing poverty (and to achieve the 2015 MDGs) may directly contribute to the reduction of vulnerability to climate risks. Several ongoing programme activities are indirectly addressing climate change adaptation. The emphasis may be on further improving the outcome of the development cooperation to reduce poverty and vulnerability to climate change and other risks rather than specific stand-alone adaptation projects or climate change programmes.

7.2 Findings from the screening of programmes

- **The current Danish development cooperation is at a low risk from climate change.** The CCS shows that the development cooperation programmes are not directly at risk from climate change impacts. There are potential future risks of losses to the economic sectors. The impacts of human induced climate change may only be forthcoming after the termination of the current

programme phases, but climate variation already is a significant factor for development effectiveness.

- **The current Danish development cooperation includes limited options for additional adaptation to climate change.** The adaptation to climate change is both in terms of active interventions on the ground and enabling the adaptation through policy and regulation. The scope for additional adaptation is in practice restricted with ongoing programmes. Some options are identified to further reduce vulnerability to climate change. The adaptation to climate change and reduced vulnerability are most evident in the water and agriculture sector programmes.
- **The available climate screening tool box is not used for programme review or programme design:** For example, during the formulation of the current HSPS II in 2006, climate proofing was not considered in the design phase. Although the Danish climate and development action programme was part of the Danida Aid Management Guidelines, the lack of clear guidance and specific 'toolbox' were attributing factors. This indicates that further efforts are needed to promulgate the action programme and to sensitise Danida staff involved in sector programmes on existing tools and guidelines.
- **Climate screening and proofing has most relevance and impact in a programme design phase.** Climate risk assessments and adaptation measures can be efficiently addressed during the identification and design phase. A retrospective climate screening of ongoing sector programmes is not efficient and provides few opportunities for revisions and adaptation. It is relevant to link CCS further with the Danida mandatory environmental screening.

7.3 Recommendations

The recommendations include opportunities for follow-up activities by the Embassy of Denmark (EDK) within the sector programmes, collaboration with development partners, and for Danida's aid management procedures.

There are a number of potential opportunities for Danida actions on climate change adaptation and mitigation. The feasibility of the recommendations takes into account strategic considerations:

- a) The relevance within the Danida sector focus in Kenya, e.g. limited attention on energy issues, and also considering the phasing out of the water and agricultural sectors.
- b) Existing capacity and assistance available, e.g. improved weather forecasting is relevant for all sectors but the KMD is already well supported and with good capacity.
- c) The limited scope for inclusion of additional activities in ongoing sector programmes (the 'screening in reverse' dilemma).
- d) The harmonisation and alignment within KJAS, e.g. other donors are addressing CDM capacity development and other carbon trading. There is already existing GoK capacity or expected sufficient donor support, e.g. for CDM capacity development.
- e) There are institutional absorption constraints due to lack of coordination among sectors and the policy commitments to climate change that only has begun to emerge. The technical capacity is not considered to be a key constraint.

The recommendations should be viewed in a context where there is already a substantial indirect adaptation to climate and reduction of disaster risk in the ongoing sector programme support, e.g. inclusion of climate change as a cross-cutting theme in the Environmental Policy development. The

recommendations will guide the attention towards more targeted adaptation and spearhead further mainstreaming of the climate change impacts and disaster risk reduction in development cooperation.

7.3.1 Recommendations on donor coordination

- 1) **Donor awareness and coordination:** Address climate change impacts as a cross-cutting theme at a forthcoming HAC meeting with reference to the observations on climate change in the KJAS. Encourage the inclusion of climate change as a cross-cutting issue rather than maintaining the emphasis only within the environment sector. (No additional costs).
 - **Sharing the climate screening and joint follow-up:** Coordinate with DfID on their ongoing climate screening and especially the possibility for joint donor funded follow-up activities as recommended in the forthcoming DfID climate screening report expected in February 2008. (Funding from additional Danida climate change funds or from EPS).
 - **Continue coordination in the environmental coordination group:** The aim should be to expand the attention of climate change impacts relevant for other sectors directly through contacts with other sector coordination groups and across sectors at each donor representation. It should be avoided to establish a separate donor coordination mechanism to deal only with climate change as this could isolate the topic and undercut the mainstreaming efforts. (no additional costs).

7.3.2 Recommendations on the ongoing sector programme support

- 2) **The on-going sector programmes:** Prepare a brief 'climate change plan of prioritised actions' for each ongoing Danida supported sector programmes based on inputs from the climate change screening, e.g. inclusion of climate change impacts in the Strategic Environmental Assessment (SEA) in the EPS. (Funding from within sector programme budgets). These action plans with the CCS notes could form a 'paper trail' for forthcoming Sector Reviews.
 - In the **Environmental Programme Support** the emphasis could be on the follow-up on the Environmental Policy Formulation and in particular related to inclusion of climate change in the guidelines and applications of Strategic Environmental Assessment (SEA).
 - In the **Water SPS** the emphasis could be on water resource management and the data collection and cross-sector linkages with land-use and health. This is also a preparation for the continuation in the NRM programme.
 - In the **Agricultural SPS** the emphasis could be on a continuation and expansion of the small scale rural infrastructure for water harvesting and storage and rural roads as means of adaptation to climate change. This is also a preparation for the continuation in the NRM programme.
 - In the **Private sector programme** the emphasis in addition to awareness on the practical implications of climate change could be on a medium to long term push for the use of the business instruments to support a 'low carbon development path', e.g. with renewable energy supply from wind turbines and 2nd generation biofuels.
 - In the **Health SPS** the emphasis could be on further integration of climate change in the monitoring systems and delivery capacity of health care systems in rural areas among

others building on the experiences with the pastoralists and addressing their coping strategies for disaster preparedness.

7.3.3 Recommendations on the future programme process

- 3) **Design of future sector programmes:** Include climate change and disaster risk reduction in the preparation of future sector programmes and as part of the risk assessment and focus areas in the concept paper. This is in particular relevant for the NRM sector programme (identification to be initiated from end of 2008) where the climate change screening may inform the strategic choices for geographic and thematic focus areas.
 - **Prepare a Strategic Environmental Assessment** (preferably using the forthcoming NEMA SEA guidelines) for the three priority sector programme support (NRM, Health and Private Sector) prior to an appraisal to address climate change risks and adaptation.
 - **Concept paper:** Include CCS and DRR as part of any forthcoming sector programme concept paper development. It could become an integral part of the mandatory environmental screening.

7.3.4 Recommendation on the climate Change activities with additional costs

Danida has allocated a climate change project budget for the EDK in 2008 and funding may also be available from budgets of the current sector programmes. As a principle in line with KJAS joint multi-donor activities will be prioritised. No specific projects have been developed but a number of options have emerged for further consideration:

- 4) **Action programme for climate change adaptation in Kenya:** Option to support an Adaptation Action Plan for Kenya (a tailored NAPA for Kenya) as part of a strategy for climate change adaptation and as follow-up on the expected inclusion of climate change in the forthcoming Environmental Policy. This is a suggestion from the NEMA/MENR Climate Change focal point for further discussion with the Embassy of Denmark. Full GoK control and joint donor support is encouraged. (Funding estimated at approximately USD 500.000 can be from EPS unallocated funds).
- 5) **Impacts of climate change on the economy of Kenya.** Prepare a joint donor concept paper on the assessment of the impacts of climate change on the economy of Kenya including the distributional consequences. The concept paper shall address the scope and terms of reference as well as the organisation, institutional anchoring of the analysis and partners involved. The concept paper is suggested to be prepared at the initiative of DfID and Danida for discussion and subsequent implementation with GoK and other development partners. (Funding from additional climate change budget in 2008).
- 6) **Identify options to leverage donor and government funding for climate change adaptation and awareness:** Explore co-financing options for possible additional climate relevant activities mainly lead by other donors. There are several options, e.g. with GtZ (next phase of PANEREEC), with World Bank (KACCAL), UNDP-GEF (small grants project), with USAid and Sida, or for strategic interventions such as policy and regulation (e.g. on biofuel regulation). (Funding from additional Danida climate change funds or from EPS).

7.3.5 Recommendation on the Danida procedures for aid management

- 7) **Include climate change in sector reviews:** Include the climate screening sector note in forthcoming sector reviews for status assessment and possibly revision. Make use of the

entry-points for addressing climate change already outlined in the Danish Climate and Development Action Programme. (No additional costs).

- 8) **A climate change and disaster risk reduction focal person:** Designate a focal person at the Embassy on climate change and disaster risk reduction. Prepare ToR for the job function. The focal person will represent the Embassy in relevant climate change and disaster risk reduction donor coordination, be up-to-date on Danida procedures regarding climate change, and act as a cross-cutting resource person on climate change and disaster risk reduction, e.g. for sector reviews and formulation of sector programme formulations. The intention is to improve coordination and information exchange across sectors and harmonise with other donors. Additional man-power may be drawn from the external resource base in Kenya.
- 9) **Danida climate change and DRR training course:** Host a regional or national training course on climate change and DRR to be organised with Danida's Centre for Competence Development (a regional climate change course was held in Accra for West Africa on October 24-25, 2007). The purpose is to enhance Embassy awareness and use options for regional coordination among Danish Embassy focal persons in Eastern Africa. Other donors, key GoK officials and resource persons could be invited.
- 10) **DRR linkage:** Merge all Danida policy initiatives on DRR and CCS/CCA whenever feasible at the Embassy regarding the reduction of risks and vulnerability to natural disasters and climate variability. Include the current CCS as a DRR activity when reporting on activities under the DRR Action Programme.

A Process Action Plan (*see* Annex 1) has been prepared for the follow-up by the Embassy of Denmark in Nairobi to proceed with the climate proofing of the Danish development cooperation with Kenya.

Annex 1: Process Action Plan for Climate Change Proofing

The PAP includes selected tasks from the recommendations to be initiated and completed by the Embassy of Denmark (EDK), Nairobi. The timing is indicative and should be confirmed by EDK.

Action	Completed by	Comments and documentation
[Rec. 8] Climate Change and DRR focal point nominated at the EDK. ^{o)}	January 31, 2008	Job function described in Terms of Reference. Documentation: Job function description in the organisational manual.
[Rec. 7] Make use of the entry-points for addressing climate change already outlined in the Danish Climate and Development Action Programme	Each programme review	Inclusion of CCS and DRR in each forthcoming programme review. Documentation: Programme review ToR.
[Rec. 10] Merge all Danida policy initiatives on DRR and CCS/CCA whenever feasible at the Embassy regarding the reduction of risks and vulnerability to natural disasters and climate variability	January 31, 2008	Clarity on follow-up on Danida DRR action programme in Kenya. Documentation: pilot country DRR action plan for Kenya.
[Rec. 1] Climate change and donor coordination discussed at a HAC meeting. ^{o)}	February 29, 2008	Aim is to address climate change across sectors and agree on coordination mechanism. Documentation: Outcome and decisions in minutes.
[Rec. 6] Consultation and agreement reached with DfID and other donors on joint funded activities on climate change. ^{#)}	February 29, 2008	Based on available funding allocation from additional Danida climate change funds. Documentation: Funding agreements signed.
[Rec. 5] Concept note on an economic analysis of climate change impacts developed. To be followed by the actual economic analysis. ^{#)}	February 29, 2008 (analysis expected to be launched March 2008 and completed by December 2008)	Clarification of ToR, organisation and ownership. The analysis should preferably be prepared in time for COP 15 (in 2009). Documentation: Concept paper
[Rec. 2] Brief sector action plans on climate change prepared for EPS, Health, Business, Water and Agriculture SPS (demand driven). ^{*)}	March 31, 2008	A simple clarification on what climate change related activities that will be prioritised in the remaining period of the sector programme if any. Documentation: Action plans to be attached to sector screening notes.
[Rec. 4] Terms of reference and agreement prepared for the development of a national action plan of adaptation. ^{*)}	April 30, 2008	Led by the climate change focal point with support from EPS. Documentation: ToR and funding agreement (EPS unallocated funding).
[Rec. 9] DCCD regional climate change and DRR course or similar internal capacity development event. ^{*)}	May 31, 2008	Repetition of Danida event in West Africa (October 2007) or similar. The aim is to broaden the sector perspectives. Documentation: course outline and evaluation.
[Rec. 3] Danida concept paper including climate change and disaster risk reduction prepared of each of the three priority sector programmes. ^{*)}	June 2009	The Danida Aid Management Guidelines including environmental screening has been applied to CCS and DDR. Documentation: Danida concept paper.

^{*)} Funding from ongoing sector programmes (EPS and others)

^{#)} Funding from additional Danida climate change funding

^{o)} No additional costs.

Annex 2: Sector Climate Change Screening Notes

Guidance for draft climate change screening note

The climate change screening note is a tool for the development programme portfolio screening. The purpose is to provide an overview of potential risks and opportunities for additional adaptation to climate change. The draft version was tested in the attached climate change screening notes for five Danida supported sector programmes in Kenya.

The first column in the table includes all the programme components and sub-components. If possible it would also be relevant to include programme budgets divided into sub-components.

The second and third columns are the risk assessments. In the second column the risks of climate change impacts on the development cooperation are assessed. The risks are here confined to the sensitivity of the development sector programme to climate change and will include elements of risks of climate change and sector vulnerability. The risk assessment is whether there is a loss of development effectiveness due to climate change, i.e. whether the objectives are not achieved as effectively as expected.

The ranking into 'low', 'medium' and 'high' are defined as follows:

- 'low' – less than 1 % of the development investment is at risk
- 'medium' – less than 10 % of the development investment is at risk
- 'high' – more than 10 % of the development investment is at risk

The climate change risk assessment is used for the identification of areas where an improved risk assessment and reduction could be required. Comments are included in the third column.

The fourth and fifth columns address opportunities for additional adaptation for reduction of the vulnerability to climate change. In the fourth column the ranking concerns the opportunities to address the reduction of climate change vulnerability:

- 'low' – less than 1 % of the development programme (budget and activity) is relevant for additional adaptation measures to reduce climate change vulnerability.
- 'medium' – less than 10 % of the development programme (budget and activity) is relevant for additional adaptation measures to reduce climate change vulnerability
- 'high' – more than 10 % of the development programme (budget and activity) is relevant for additional adaptation measures to reduce climate change vulnerability

The assessment of climate change adaptation opportunities is used to address areas where development effectiveness could be improved by addressing additional adaptation options and other measures to mainstream the potential risks of climate change in the sectors.

Climate Change Screening: Environmental Programme Support (EPS)

Components	Climate Risks	Comments: Risk Assessment	Options for Adaptation	Comments: Options for adaptation
1. Policy Development				
1.1: New environmental policy/strategy document prepared with broad stakeholder participation	Low	The implementation of the output is not at risk from climate change.	Low - Medium	Entry point to include climate risk management in the Environmental policy
1.2: Crosscutting environmental issues incorporated in selected sector plans and strategies	Low	The implementation of the output is not at risk from climate change	Medium	Entry point to include climate risk management including natural disaster risk management in sector plans.
1.3: MENR capacity to monitor and mainstream Poverty and Environment issues strengthened	Low	The implementation of the output is not at risk from climate change	Low - Medium	Relevant as part of vulnerability assessment of environmental risks including climate change
2. Strategic Management				
2.1: Strategic Environmental Assessment institutionalised in selected key lead agencies	Low	The implementation of the output is not at risk from climate change.	Medium	Integration of climate risks in SEA is relevant and can be effective
2.2: Decentralized environmental management capacitated in at least 20 districts	Low	The implementation of the output is not at risk from climate change.	Low	Option to focus on reduced vulnerability in particular in ASAL
2.3: ICZM Planning and Management Modalities	Low	The coastal zone may be subject to short and long term impacts. The implementation is not directly at risk.	Medium	Option to include future scenarios of climate risks, e.g. sea level rise, in current ICZM.
2.4. A capacitated NEMA, with appropriate management and financial systems	Low	The implementation of the output is not at risk from climate change	Low	Focus is on internal management of NEMA but reorganisation may improve coordination of climate change
3. Community and Civil Society				
3.1: Awareness and advocacy campaigns on poverty-environment linkages	Low	The implementation of the output is not at risk from climate change.	Medium	Possible to include activities to reduce overall vulnerability including awareness activities.
3.2 A programme of community projects implemented to address local environmental problems	Medium	Some of the supported field initiatives may be subject to climate risks.	Medium	Option to develop pilot models for mitigation projects (financing from CDM or voluntary)

Components	Climate Risks	Comments: Risk Assessment	Options for Adaptation	Comments: Options for adaptation
3.3 A package of training modules, planning tools and partnership models for community participation in decentralized environmental management	Low	The implementation of the output is not at risk from climate change.	Low	Climate risks and vulnerability may be one of several themes.

Climate Change Screening: Agricultural Support Programme Support

Components	Climate Risks	Comments: Risks Assessment	Options for Adaptation	Comments: Options for adaptation
1. Agricultural Policy Support Facility				
1.1: An APSF which is facilitating the implementation of the SRA by assisting stakeholders to prepare for and engage with the policy reform process.	Low	The implementation of the output is not direct at risk from impacts of climate change.	Low	
1.2 Essential agriculture sector reforms implemented	Low	The implementation of the output is not direct at risk from impacts of climate change.	Low	
1.3 Capacity of the public and private sectors to play their respective roles in the SRA improved	Low	The implementation of the output is not direct at risk from impacts of climate change.	Low	
1.4 Capacity for ASCU to drive the policy process in agriculture and rural development sector enhanced	Low	The implementation of the output is not direct at risk from impacts of climate change.	Low / medium	Entry point for CCA/DRR in agricultural policies and strategies.

Components	Climate Risks	Comments: Risks Assessment	Options for Adaptation	Comments: Options for adaptation
2. Agricultural Business Development				
2.1: 9,000 smallholder farmers organised, provided advisory services, market information and linked to markets.	Low	The implementation of the output is not direct at risk from impacts of climate change. CCA and DRR concerns in DASS.	Low	Option to promote practices and technologies that increases response and resilience to climatic variability and change
2.2: 650 micro & small agri-businesses add value to agricultural produce, and produce and process for defined markets.	Low	The implementation of the output is not direct at risk from impacts of climate change. CCA and DRR concerns in DASS.	Low	Entry point for promotion of practices and technologies that increases response and resilience to climatic variability and change
2.3: 18,000 agricultural production loans provided to farm enterprises and 500 asset financing loans to small enterprises	Low	The implementation of the output is not direct at risk from impacts of climate change. CCA and DRR concerns in DASS.	Low	Option to promote practices and technologies that increases response and resilience to climatic variability and change
3. Decentralised Agricultural Support Structures (DASS)				
3.1: Increased Efficiency of Agricultural Advisory Services	Low	The implementation of the output is not direct at risk from impacts of climate change.	Medium	Entry point for promotion of practices and technologies that increases response and resilience to climatic variability and change
3.2 Improved Rural Infrastructure Provision	Low - Medium	Certain infrastructures (roads, small scale water projects) may be at risk from flash floods.	Medium - High	Small scale water infrastructure relevant to reduce vulnerability to droughts and erratic rainfall.
3.3 Enhanced capacity & transparency of Delivery Services	Low	The implementation of the output is not direct at risk from impacts of climate change.	Medium	Entry point for promotion of practices and technologies that increases resilience to climatic variability and change
3.4 Enhanced Market Access and Linkages	Low	The implementation of the output is not direct at risk from impacts of climate change.	Low	Can contribute to improved livelihood and reduced vulnerability in ASAL

Climate Change Screening: Water and Sanitation Programme Support

Components	Climate Risks	Comments: Risks Assessment	Options for Adaptation	Comments: Options for adaptation
1. Rural water supply and sanitation				
1.1: Institutions supporting rural water supply and sanitation operating effectively and efficiently with a special focus on the poor, women and other disadvantaged groups	Low	The implementation of the output is not direct at risk from impacts of climate change.	Low	May contribute to improved livelihood and reduced vulnerability in ASAL
1.2: Increased access to safe and sustainable water supply in rural communities	Low / medium	Changes in water resources availability may require changes to technical designs and placing of infrastructure, etc in certain areas. Programme is already experiencing problems with small scale water conservation infrastructure being washed away by floods.	Medium	Contribute to improved livelihoods and reduced vulnerability in ASAL. Option to assess improved designs / construction standards and guidelines of water conservation infrastructure. In ASAL there is a strategy for reserved strategic boreholes for use during disaster situations.
1.3: Hygiene awareness and practices improved in rural communities	Low / medium	Collapsing latrines during floods and heavy rains associated with certain soils.	Medium	Contribute to reducing health risks in flood situations. Technical working group under the new Environmental Sanitation Policy Flood work on improved latrine standards for different soil conditions and flood protection. Strategy on strategic institutional latrines as part of disaster response system similar to WS could be considered.
2. Water Resources Management				
2.1: Water Resources Management Authority at national level functions effectively	Low	The implementation of the output is not direct at risk from impacts of climate change. Effective functions of institutions important for CCA and DRR.	High	Improved system for WR data management, modelling, assessment and WR information dissemination being supported essential for CCA and DRR

2.2: Water Resources Management Authority in six river drainage basins functions effectively	Low	The implementation of the output is not direct at risk from impacts of climate change. Effective functions of institutions important for CCA and DRR.	High	Effective basin / catchment level WR planning , monitoring and allocation and information dissemination essential in CCA / DRR.
2.3: Water Resources User Associations and Catchment Area Advisory Committees in the river drainage basins manage water effectively	Low	The implementation of the output is not direct at risk from impacts of climate change. Effective functions of institutions important for CCA and DRR.	High	Important institutions for implementing WRM measures, including improved storage, flood protection and other WC.
2.4. Water Appeal Board functions effectively	Low	The implementation of the output is not direct at risk from impacts of climate change	Low	No direct relevance for vulnerability.
3. Water Sector Reform Process				
3.1: The Water sector Reform secretariat enabled to complete its role by mid-2006	Low	The implementation of the output is not direct at risk from impacts of climate change	Low	No direct relevance for vulnerability.
3.2 A restructures MWRMD enabled to manage its new role in regards to RWSS and IWRM	Low	The implementation of the output is not direct at risk from impacts of climate change	Medium	Entry point to include CCA and DRR in IWRM policy and strategy development

Climate Change Screening: Private Business Sector and Mixed Credits

Components	Climate Risks	Comments: Risk Assessment	Options for Adaptation	Comments: Options for adaptation
1. Business Sector Policy Support				
1.1: Improving Business Environment: funding for advocacy and private-public partnerships, National Economic and Social Council (NESC)	Low	The implementation of the output is not direct at risk from impacts of climate change.	Low - Medium	Option to address to strategically to address economic impacts of climate change (e.g. impacts on water and energy costs, security of supply of production factors, cost of insurance, and extreme climate events)
1.2: Increasing competitiveness of Small and Medium Sized Enterprises (SME): business	Low	The implementation of the output is not direct at risk from impacts of climate change.	Low - Medium	Access to micro-finance for SME can provide diversification in the economy and a potential for

Components	Climate Risks	Comments: Risk Assessment	Options for Adaptation	Comments: Options for adaptation
development services and microfinance		Management of risks due to extreme and erratic weather is relevant to include in feasibility assessment and business plans		adaptation by reducing vulnerability. Option to address safeguarding from weather related risks in the feasibility assessment of new businesses.
1.3: Improving of labour markets: new labour laws and support to tripartite labour market planning	Low	The implementation of the output is not direct at risk from climate change impacts.	Low	None identified
2. Business to Business (B2B) programme				
2.1: Partnerships between Danish and Kenya companies	Low	The implementation of the output can be at risk if it is vulnerable to extreme climate events, e.g. infrastructure and supply of raw materials (crops).	Medium	New technology to increase energy efficiency and renewable energy. Options to include carbon financing (CDM and VER).
2.2: Public-private partnerships (PPP): promotion of Company Social Responsibility (CSR), innovation like Information and Communication Technology (ICT)	Low	The implementation of the output is not direct at risk.	Medium	Inclusion of awareness of adaptation to impacts of climate change on the business sector and economic development. ICT as integral part of early warning systems. Development of possibilities for carbon finance from CDM. Inclusion and reduction of 'carbon foot print' as part of CSR, e.g. to inform export markets about the real emission impacts of Kenyan production of export crops (flowers, vegetable, tea).
3. Mixed Credits				
3.1: Mixed Credit public loans up to \$ 10 Million with ten years fee of interest.	Medium	The implementation can be at risk (medium). The risk is subject to the assessment of environmental impacts in the feasibility assessment and inclusion of relevant climate data (extreme weather events)	Medium	Option to develop and implement climate change risk assessment tools and adaptation measures, e.g. through building codes. Possible to include activities to reduce overall vulnerability including awareness activities.

Climate Change Screening: Health Sector Programme Support (HSPS II)

Components	Climate Risks	Comments: Risks Assessment	Options for Adaptation	Comments: Options for adaptation
1. Provide financial resources for the recurrent costs of KEPH at primary levels				
1.1 In cooperation with the MOH and other DPs set up a Common Fund	Low	The implementation of the output is not direct at risk from impacts of climate change	Low/Medium	Entry point to include resource management and projection in financial allocation planning, opportunities for cross sectoral work
1.2 Provide financial resources to a Health Facility Fund and Essential Medicines and Medical Supplies Fund through the Common Fund	Low	The implementation of the output is not direct at risk from impacts of climate change	Medium	Entry point to include 'disaster reserves' into procurement and distribution of Medicines and Medical Supplies, opportunities for cross sectoral work
2. Strengthen support systems to deliver KEPH at primary levels				
2.1 Support capacity building in planning and budgeting to operationalise Health Facility Fund	Low	The implementation of the output is not direct at risk from impacts of climate change	Low/Medium	Localised planning of reserves for disaster preparedness to reduce vulnerability
2.2 Support capacity building in rolling out Essential Medicines and Medical Supplies, being properly used in all health facilities	Low	The implementation of the output is not direct at risk from impacts of climate change	Low/Medium	Localised planning of reserves for disaster preparedness to reduce vulnerability
2.3 Monitoring and Evaluation Framework strengthened and operationalised to inform the delivery of KEPH	Low	The implementation of the output is not direct at risk from impacts of climate change	Medium/High	Opportunities to use Monitoring and Evaluation Framework as an entry point for cross sector early warning systems
2.4 Targeted support to increase delivery of essential health services to pastoralist population, with a focus on NEP	Medium	The North Eastern Province is subject to short and long term impacts. Implementation of systems' building directly at risk from recurrent disasters and consequent interruption of the delivery of health services	High	Entry point to model and adapt delivery systems to the volatile climate variation.

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Components	Climate Risks	Comments: Risks Assessment	Options for Adaptation	Comments: Options for adaptation
2.5 Support the implementation of SWAp related activities through a (common) basket arrangement	Low	The implementation of the output is not at risk from climate change	Low	Opportunity to include climate change risks and vulnerability on the agenda for sustainable health support systems development
3. Provide funds for Human Resources for Health (HRH) to expand care and support for HIV/AIDS and other related diseases				
3.1 Provide funds for the employment of nurses and clinical officers for the public and private (not-for-profit) sector	Low	The implementation of the output is not at risk from climate change	Low	Focus is on addressing under staffing of the government health services

Annex 3: The Danish Climate and Development Action Programme

The Ministry of Foreign Affairs of Denmark (MFA) launched the “*Danish Climate and Development Action Programme – a tool kit for climate proofing Danish Development Cooperation*” in August 2005. A forthcoming merger with the *Danish Disaster Risk Reduction (DDR) Action Programme* (Draft September 2007) is planned. The Climate and Development Action Programme includes the following main elements with specific actions on:

- Raising the policy profile of climate change in multilateral and bilateral development cooperation.
- Integrating adaptation to climate change in development cooperation programmes
- Integrating climate change mitigation in the context of development cooperation
- Developing capacity to address climate change and take appropriate actions in development cooperation programmes and national programmes

Each of these elements is addressed within the following ‘entry-points’: i) Multilateral development cooperation, ii) Bilateral development cooperation: country programme level, iii) Bilateral development cooperation: sector programme support level, and iv) the Mixed Credit Scheme (soft loans).

As part of the implementation of the Danish Climate and Development Action Programme, Climate Change reports have been prepared by UNEP/Risø Center (URC) in seven Danida programme countries (Viet Nam, Tanzania, Mozambique, Bangladesh, Bolivia, Nicaragua and Uganda) in 2006 and 2007. Climate change screening is planned for 2008 in another nine programme countries. The emphasis of the climate change screening has shifted from initially the national capacity to address climate change towards a more specific climate change screening of the Danish development cooperation.

The Danish Climate and Development Action Programme was prepared as part of the national implementation of the “*EU Action Plan on Climate Change in the Context of Development Cooperation*” (November, 2004). The first bi-annual progress report on the implementation of the EU Action Plan concluded: “*Denmark’s Climate and Development Action Programme has set the stage to become an exemplary showcase of the integration of climate change into development cooperation, using a comprehensive, yet ultimately practical and flexible approach. In the first years of its implementation, Denmark’s initial experience will need to be closely followed by other Members States and the Commission, as they may provide valuable experience to be shared within the EU and with its partner countries.*”¹⁴

The Danida Aid Management Guidelines (AMG) on programme management makes reference to the Climate and Development Action Programme. The Danida priority themes also includes ‘climate’ (similar as HIV/Aids, youth and private sector) to be considered when relevant in the programme concept note, design or appraisal stage.

Risk to the programme from climate change is included as one the screening topics in the mandatory Danida Environmental Screening Note of development cooperation programmes and projects. For this purpose the Danish Climate and Development Action Programme includes a tool box with a climate change screening note for bilateral development cooperation that has a part (a) for country programme and part (b) for sector programme support.

Source: Danish Climate and Development Action Programme (Aug. 2005); Danish Disaster Risk Reduction Action Programme (Sept. 2007)

¹⁴ First bi-annual Progress Report on the Implementation by the EU of the Action Plan to accompany the EU Strategy on Climate Change in the Context of Development Cooperation (2007)

Annex 4: The overlapping agendas of Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA)

Examples	DRR	CCA
a) Disasters other than natural disasters, e.g. human disasters due to war or epidemics. These may have been triggered by nature events (e.g. access to water resources). DRR is part of the prevention.	✓	N/A
b) Natural disasters that are not related to weather events, e.g. earth quakes and tsunamis. DRR is part of reducing the vulnerability, e.g. early warning systems for disaster preparedness and contingency plans for disaster prevention.	✓	N/A
c) Some extreme weather events (drought and storms) may be ‘natural’ but frequency and strength exacerbated by climate change. The response is to an increased risk of extreme climate variability. DRR is part of the reduction of vulnerability but so is development planning and cooperation addressing vulnerability and risks.	✓	✓
d) Preparedness to respond to climate related disasters based on early warning systems, and capacity to plan in the short term is addressed by DRR. DRR is targeted to disaster prone areas.	✓	✓
e) The smaller and aggregated impacts of climate change on agriculture, health and infrastructure that are gradual (trends) may not be identified and addressed in DRR. These incremental impacts should be identified as part the CCS. The response is to the increased risks as well as to opportunities, and are addressed in the development planning.	N/A	✓

Annex 5: Linking climate change risk, vulnerability and adaptation

DRIVERS	PRESSURE	STATE	RESPONSE
Climate Change and Effects	Direct Climate Change Risk	Vulnerability to climate impacts	Adaptation measures
Increase in mean temperature			
<ul style="list-style-type: none"> Melting of mountain glaciers (Mt. Kenya) 	<ul style="list-style-type: none"> Loss of water reserve and potential all year supply flow. 	<ul style="list-style-type: none"> Reduced water flow to downstream agriculture and hydro-power 	<ul style="list-style-type: none"> Water resource management including storage. Few response options for prevention of glacier melting.
<ul style="list-style-type: none"> Reduced frost in highlands 	<ul style="list-style-type: none"> Increased length of growth period (LGP) 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Expanded potential growing area. Opportunities for other commercial crops, e.g. fruit crops like apple, pear and apricot
<ul style="list-style-type: none"> Increased evaporation 	<ul style="list-style-type: none"> A reduced annual length of growth period (LGP) Reduced water availability and water stress on crops and ecosystems. Transformation of ecosystems towards more water stress tolerant species. 	<ul style="list-style-type: none"> Expanding arid and semi-arid lands borders. Change in browsing opportunities 	<ul style="list-style-type: none"> Efficient water use and conservation Changes in livestock from cattle to sheeps and goats due to changing browsing opportunities (see under 'drought')
<ul style="list-style-type: none"> Occurrence of disease vectors due to expanded range (combination of increased temperature and precipitation) 	<ul style="list-style-type: none"> Expanded range of vectors for Malaria (e.g. the <i>Anopheles</i> mosquito now present in Nairobi and highlands) 	<ul style="list-style-type: none"> Population in areas not previously under influence of malaria. 	<ul style="list-style-type: none"> Malaria prevention (nets and profylaksis); mosquito population control Awareness to people with little prior experience with malaria
	<ul style="list-style-type: none"> Livestock diseases like Rift Valley Fever 	<ul style="list-style-type: none"> Rural-rural migration Loss of livestock 1 % of humans infected development the disease 	<ul style="list-style-type: none"> Livestock insurance Awareness of risk factors Livestock vaccination
<ul style="list-style-type: none"> Occurrences of agricultural pests (combination of increased temperature and precipitation) 	<ul style="list-style-type: none"> Loss of agricultural and horticultural production 	<ul style="list-style-type: none"> Farmers with inadequate access to extension and response. High-value horticulture crops. 	<ul style="list-style-type: none"> Early warning systems linked with integrated pest management. Changes in crops
<ul style="list-style-type: none"> Sea water temperature increase 	<ul style="list-style-type: none"> Increase frequency and intensity of El Niño (flooding in Eastern Africa) and El Niña (drought in Eastern Africa) 	<ul style="list-style-type: none"> Increased climate change impacts on 'natural' climate variability leading to increase in drought and flooding incidents. 	<ul style="list-style-type: none"> Early warning systems (see also under sections on drought and flooding)

Climate Change Screening of Danish Development Cooperation with Kenya

DRIVERS	PRESSURE	STATE	RESPONSE
Climate Change and Effects	Direct Climate Change Risk	Vulnerability to climate impacts	Adaptation measures
	<ul style="list-style-type: none"> ▪ Coral reef bleaching and changes in coastal fish stocks 	<ul style="list-style-type: none"> ▪ Local fisherman and tourism sector 	<ul style="list-style-type: none"> ▪ Coral reef protection and reduction of other pressures on coastal waters, e.g. release of untreated sewage.
Reduction in precipitation:			
<ul style="list-style-type: none"> ▪ Drought (longer periods, seasonal and localised) 	<ul style="list-style-type: none"> ▪ Reduction or loss of agricultural and horticulture crop production 	<ul style="list-style-type: none"> ▪ Reduced food security ▪ Loss of potential export markets 	<ul style="list-style-type: none"> ▪ Drought forecasting ▪ Changes in farming systems to more drought tolerant crops. ▪ Efficiency in water use (best economic use of a scarce resource) ▪ Efficient drip assuming access to water resources ▪ Water harvesting and conservation in small dams (e.g. Kitui sands dams) and larger reservoirs.
	<ul style="list-style-type: none"> ▪ Shifting border of semi-arid and arid lands. ▪ Changing browsing potential 	<ul style="list-style-type: none"> ▪ Pastoralists and their livestock 	<ul style="list-style-type: none"> ▪ Rural-rural migration of live stock herders (traditional adaptation)
	<ul style="list-style-type: none"> ▪ Changing livelihood potentials 	<ul style="list-style-type: none"> ▪ Farmers with limited knowledge and access to adaptation measures ▪ Increased pressure on scarce resources, e.g. charcoal production. 	<ul style="list-style-type: none"> ▪ Access to sustainable alternative income and credit/saving mechanisms. ▪ Management rules and tools for scarce natural resources
	<ul style="list-style-type: none"> ▪ Health impacts 	<ul style="list-style-type: none"> ▪ Reduced access to clean water results in health risks. 	<ul style="list-style-type: none"> ▪ Awareness on water diseases and prevention ▪ Access to primary health services
	<ul style="list-style-type: none"> ▪ Changes in wildlife migration and impacts on ecosystems, e.g. wetlands 	<ul style="list-style-type: none"> ▪ Vulnerable ecosystems ▪ National parks and tourism facilities 	<ul style="list-style-type: none"> ▪ Land management, e.g. protection and restoration of upstream forests.
	<ul style="list-style-type: none"> ▪ Water scarcity in cities (reduced access to safe water) 	<ul style="list-style-type: none"> ▪ Reduces access to water for public utility services 	<ul style="list-style-type: none"> ▪ Improved water efficiency in urban water supply, e.g. reducing system leaks.
Precipitation in excess			
<ul style="list-style-type: none"> ▪ Floods 	<ul style="list-style-type: none"> ▪ Damage to agricultural crops and soil erosion 	<ul style="list-style-type: none"> ▪ Farmers with inadequate soil protection against flash floods ▪ Siltation of water ways, e.g. reduced navigation and filling up hydropower dams. 	<ul style="list-style-type: none"> ▪ Early warning systems ▪ Adaptation of farming systems to risk of top soil erosion, e.g. contour farming and gully management.

Climate Change Screening of Danish Development Cooperation with Kenya

DRIVERS	PRESSURE	STATE	RESPONSE
Climate Change and Effects	Direct Climate Change Risk	Vulnerability to climate impacts	Adaptation measures
		<ul style="list-style-type: none"> Coastal zone and Lake Victoria with increased sedimentation load of rivers 	<ul style="list-style-type: none"> Reforestation to protect top soils and retain surface water.
	<ul style="list-style-type: none"> Reduced accessibility due to damage on infra-structure or inaccessibility 	<ul style="list-style-type: none"> Entire economy is vulnerable. People on flood prone lands 	<ul style="list-style-type: none"> Physical planning, e.g. based on expected rather than historical climate data. Revised building codes taking into account expected future weather events.
	<ul style="list-style-type: none"> Water borne diseases from polluted sources, e.g. flooding of wells and dams used for drinking water 	<ul style="list-style-type: none"> Vulnerable people with low access to safe water and preventive health care 	<ul style="list-style-type: none"> Protection of safe water sources Awareness on water resource management and sanitation
	<ul style="list-style-type: none"> Flooding in cities dues to undersized infra-structure 	<ul style="list-style-type: none"> Poor neighbourhoods with lack of infra-structure, e.g. slum areas in Nairobi (60 % of population) Lower-lying residential areas and roads 	<ul style="list-style-type: none"> Standards and maintenance of urban infrastructure, e.g. storm drains. Urban planning and regulation
Increased Climate variability			
<ul style="list-style-type: none"> Climate variations intensity in frequency and magnitudes (rainfall fluctuation and seasonal variations) 	<ul style="list-style-type: none"> Uncertainty in weather conditions and water availability 	<ul style="list-style-type: none"> Farmers and rural dwellers with little prior experience in large climate variation 	<ul style="list-style-type: none"> Risk reductions from: early warning systems (up to 3-6 months), income diversification, access to credit, savings and insurance schemes
Sea level rise			
<ul style="list-style-type: none"> Sea level rise (a result of global temperature rise and melting of polar ice caps) 	<ul style="list-style-type: none"> Flooding in coastal areas Salt water intrusion 	<ul style="list-style-type: none"> Roads, hotels and other infra-structure in coastal areas. People living on marginal land with flood potential 	<ul style="list-style-type: none"> Physical planning and building/constriction codes. Sea walls (in few extreme cases)

Annex 6: Policy and Regulations relevant for Climate Change

Document	Type	Objective	Remarks
EMCA 1999 (Environment management and co-ordination Act)	National Environmental Law	Management and regulation of the environment. Provides a framework for environmental management.	Few direct reference to climate change issues (mitigation and adaptation). One provision advocates for minimization of emissions of green house gases and suitable technologies to minimize air pollution but does not give any basis for this. There is room for incorporation of adaptation strategies under this Act.
ERS (Economic Recovery Strategy for Wealth and Employment Creation)	Strategy paper	To spur economic recovery and growth	Does not specify climate change as an issue but places emphasis on ASAL areas with regard to responses to climate related floods and droughts. The Vision 2030 is the follow-up from 2007.
NDP (National Development Plan)	Strategy paper	To forecast the country's development agenda's and priority policy areas	Recognizes that disasters accelerated by climate change can push people below the poverty line and increase impoverishment but does not capture this theme across its various sections.
Poverty Reduction Strategy Paper	Strategy paper	Gives a national agenda for poverty eradication.	Does not draw direct parallels between poverty reduction and climate change vulnerability.
Forest Act 2005	National law	Provides for the establishment, development and sustainable management of forest resources for socio-economic development of the country	Indicates the importance of forests in climate moderation by their role in absorbing GHGs, but does not outline a specific agenda for climate change mitigation or adaptation strategies.
Forest Policy 2005	National Policy	Gives a national agenda for managing declining forest and vegetation cover	The policy takes into consideration emerging climate related issues in the forestry sector and has a strong community stakeholder involvement agenda.
National Environmental Policy	National Policy	To provide guidelines specific to environmental issues and their application across national policies, strategies and plans.	Under preparation until June 2008. It will include climate change as a thematic topic and as a cross-cutting issue.
Water Policy	National Policy	Provides guidelines on issues pertaining to water resource	Formulated in 1999, it does not make specific reference to climate issues but indirectly provides for the facilitation of mitigation / adaptation

Document	Type	Objective	Remarks
		management, water and sewerage development, institutional framework and financing of the water sector.	interventions.
Water Act	National legislations	Sets out the legal implementation framework for the formulation of policy, regulating the use of water resources and financing activities within the water sector.	No direct climate mitigation or adaptation theme / reference, but it puts in place some structures that facilitate climate related mitigation or adaptation interventions. The Water Act separates water and sanitation from the management of resources. The provision of water and sanitation services was transferred to private companies as part of the decentralization process which makes carbon mitigation projects under the CDM or the voluntary market more feasible.
Sessional Paper number 4 on energy (2004)	National Policy	Provide a framework energy policies and strategies in which energy services can be sustainable supplied	Does not draw parallels between the energy agenda and how the climate agenda overlap.
Energy Act No. 12, 2006	National Legislation	Legal framework for strategies to deliver energy services countrywide	No direct climate agenda is outlined in this legislation but it makes provision for mitigation and adaptation of the effects of climate change.
HIV / AIDS Policy, 1997	National Policy	Provides a framework for strategies aimed at preventing and controlling HIV/AIDS in the country.	Does not make direct mention of climate change.

Annex 7: Key institutions relevant for Climate Change

Institution	Type	Objective	Remarks
NEMA	National Authority (Government Parastatal)	Operates as a focal point to supervise and co-ordinate matters relating to the environment	NEMA has 17 core functions and only two relate more or less to climate change. The climate change focal point and DNA for CDM projects. There is a need to strengthen the climate change office and delineate the climate related roles of NEMA and MENR
KMD Kenya Meteorological Department	Government Institution	Provides meteorological data and information for regional and national socioeconomic activities.	Custodian of weather and climate information critical for climate variability and change activities and studies. KMD hosts a Global Atmospheric Watch Station on Mt. Kenya to monitor pollution, ozone depletion and other atmospheric changes.
NOC National Operations Centre	Govt. National Disaster management	Co-ordinates response and relief during emergencies and disasters as well as disaster response preparedness.	Agencies responsible for early warning systems inform NOC in case of emerging disasters. A policy (National Policy on Disaster Management) to develop the activities of NOC was formulated in 2002 but has never been formally adopted. It is being re-drawn to take into consideration climate change and Tsunamis.
NCCACC National Climate Change Activities Coordinating Committee	Govt. National Climate change mgmt	Co-ordinates activities of the GoK on climate change.	Has membership from Ministries of Agriculture, Environment, Energy, Planning, Finance, Industry and research and Technology, together with Local Authorities, universities the private sector and NGOs. Specific mandate covers: <ul style="list-style-type: none"> ▪ GHG inventory ▪ Vulnerability and adaptation ▪ Mitigation and education ▪ Training and public awareness So far they have developed a climate change policy paper and a CDM policy paper and are working with other stakeholders to enact local environmental policies.
PANERECC Parliamentary Network on Energy and Climate Change	Parliamentary committee	Awareness creation and policy influence relevant to climate change and renewable energy targeting Parliamentarians	Objectives are to: <ul style="list-style-type: none"> ▪ Facilitate deeper understanding of climate change issues and their link with national development ▪ Strengthen understanding on new and renewable energy technologies ▪ Improve information on financial and investment opportunities for promoting adaptation to climate change.

Annex 8: Climate change impacts and adaptation response of future Danida programmes

Danida Priority Sectors	Possible impacts of climate change to be addressed (Managing risks)	Potential adaptation responses to be addressed (Reducing vulnerability)
Natural Resource Management	<ul style="list-style-type: none"> ▪ Rural-rural migration with livestock in ASAL shifts resource pressure ▪ Reduced food security due to increased risks in agricultural production (pests, drought and floods). ▪ Reduced access to renewable energy sources from biomass ▪ Reduced flow and seasonality of water from five 'water towers' and reduction in glaciers (impacts on agriculture, wildlife and tourism) ▪ Forest and bush fires due to drought 	<ul style="list-style-type: none"> ▪ Early warning systems on extreme weather and long term weather forecasts. ▪ Sustainable land-use planning and vulnerability assessments ▪ Sustainable forest management, reforestation and protection of sensitive locations and for supply of fuel and fibre. ▪ Sustainable charcoal production and rangeland management ▪ Integrated water resource management including local water harvesting, irrigation etc. ▪ Plans and preparation for natural disasters and food security
Health sector	<ul style="list-style-type: none"> ▪ Increased prevalence of vector-borne diseases (malaria, rift valley fever, dengue, bilharzia, meningococcal meningitis and West Nile fever). ▪ Malnutrition due to changes in food security and quality. ▪ Increased mortality due to extreme weather events, and health related stress ▪ Access to health facilities 	<ul style="list-style-type: none"> ▪ Information and awareness on health impacts and immunization programmes. ▪ Improved access to primary health care and preventive care (e.g. mosquito nets) to reduce overall vulnerability ▪ Early warning and monitoring of diseases and nutritional health. ▪ Location of health stations facilities.
Private sector	<ul style="list-style-type: none"> ▪ Reduced availability / scarcity costs of water, energy and raw materials for processing sectors. ▪ Impacts of private sector infrastructure from extreme weather events ▪ Increased risks may reduce level of foreign investments ▪ Increased cost of production, e.g. for insurances ▪ Reduced potential for tourism, e.g. due to changes in wildlife population from droughts 	<ul style="list-style-type: none"> ▪ Support to development of a low carbon path, e.g. with wind turbines and 2nd generation biofuels. ▪ Revised building codes for private homes and commercial buildings. ▪ Inclusion of climate risk assessment and contingency plans in business plans and feasibility assessment. ▪ Improved access to markets and credits in order to reduce short term vulnerability ▪ Options for inclusion of carbon finance from mitigation projects, e.g. fuel switching etc.

Note: Structure adapted from USAid (August 2007) guidance for manual for "Adapting to climate variability and change".

Annex 9: Selected donor funded or planned climate change activities

Activity	Scope	Agency and time frame
Climate Screening of development portfolio		
Kenya Climate Screening and Information Exchange	Scientific facts about climate change in Kenya and screening of selected programmes. Information exchange, methodology development and assessment of adaptation costs.	DfID (no GoK partner). Ongoing since September 2007 and until February 2008.
Climate Screening of the Danish Development Cooperation with Kenya	Climate screening of Danida ongoing projects and development of follow-up actions and methodology.	Danida (no GoK partner) Field visit October 2007 and climate screening report in November 2007.
Awareness Projects		
PANERECC	Awareness for the Parliamentary Committee on Energy, Communications and Public Works on climate change and renewable energy.	GTZ with ESD and the Parliamentary Committee on Energy, Communications and Public Works. Ends in April 2008 but follow-up expected.
Adaptation Projects¹⁵		
KACCAL (Kenyan Adaptation to Climate Change in Arid Lands) project	GEF project with emphasis on medium to long term reduction of climate change vulnerability. Embedded in World Bank ASAL project (ALRMP).	World Bank / GEF Special Climate Change Fund (USD 6.0 Million). Implementing agency is the Special Programmes under the Office of the President. PID prepared September 2007 and expected Board date December 20, 2007.
Reducing vulnerability to drought in Kenya	Pilot project with mixed farming in Kisumu Division, Makueni District in eastern Kenya (ASAL) in partnership with the ALRMP.	UNEP/GEF (USD 0.4 Million) in 2005 - 2009. Implemented by the African Centre for Technology Studies (ACTS)
Mitigation Projects¹⁶		
Regional Capacity Development for CDM in Kenya, Tanzania and Uganda	Workshops and consultant input but target of capacity development to be developed. Other regional CDM capacity development, e.g. www.cd4cdm.org	SIDA and Swedish Energy Agency with NEMA in Kenya. 2007-2008. Budget for three countries is SEK 13.5 Million. Finland prepares a separate CDM capacity development project.
CDM projects in forest and land use sector	Afforestation and renewable energy.	World Bank BioCarbon Fund with Green Belt Movement and NEMA
CDM projects in energy sector	Development of CDM eligible investment projects (purchase not ODA eligible).	For example, French Development Agency with KENGEN
Voluntary emission reductions agreements	Capturing carbon finance for tree planting and cooking stoves	For example, TIST supported by USAid.

¹⁵ Most programmes dealing with rural livelihoods and natural resource management could become relevant for adaptation. This potential is exposed with a climate screening. World Bank, SIDA, Danida, Finland, UNEP, AfDB, JICA and others active on natural resource management.

¹⁶ Carbon trading is on the demand side and project development is more driven by private sector actors than donors. Role of ODA is to pilot and build capacity in order to facilitate to a sustainable capture the potential carbon finance.

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Annex 11: List of Persons Met

MENR and NEMA

1. Prof. Kames L. ole Kiyiapi : Permanent Secretary, MENR
2. A. Muusya Mwinzi : Director General, NEMA
3. Ayub Macharia Ndaruga : Director, (Environment, Education, Information and Public Participation), NEMA
4. Emily Massava : Climate change focal point, NEMA/MENR
5. Flemming Monberg Mouritsen : Environment Policy Adviser, MENR (Danida EPS)
6. Reuben K. Chirchir : Programme Officer, MENR (Danida EPS)
7. Salome Machua : EPS component manager, NEMA
8. Ties van Kempen : Adviser, NEMA (Danida EPS), Euroconsult Mott MacDonald

Ministry of Planning

9. Joseph N. Mukui : Director, Rural Planning Directorate, Ministry of Planning and National Development
10. Ken Nyochiro : Principal Economist, Rural Planning Directorate, Ministry of Planning and National Development
11. Lawrence M. Nziuka : Rural Planning Directorate, Ministry of Planning and National Development
12. Pauline Mwangi : Economist, Rural Planning Directorate, Ministry of Planning and National Development
13. Sarah Muui : Principal Economist, Rural Planning Directorate, Ministry of Planning and National Development
14. Yusuf Mbuno : Principal Economist, Rural Planning Directorate, Ministry of Planning and National Development

Ministry of Health

15. Dr. Sergon : Head of HMIS dept. of Health
16. Dr. Were : Deputy Head DSPM, Ministry of Health
17. Mr. Muchiri : Head of DPPP, Ministry of Health
18. Svend Erik Muller : Senior Health Plannig Adviser, Danida

Other Public Sector

19. B.K.Njenga : Deputy Director operations, Department of Environment, City Council of Nairobi
20. Isaac Muraya Kimani : Asst. Director of Environment, Department of Environment, City Council of Nairobi
21. N.N. Munyi : Admin. Officer, National Disaster Operations Centre, Office of the President

22. Peter G. Ambenje : Assistant Director, Kenya Meteorological Department
23. Rana Tiampati : Clerk to the Parliament Committee on Energy, Communications and Public Works
24. S.K. Sane : Operations Officer, National Disaster Operations Centre, Office of the President

Non-government and Civil Society Organisations

25. James T. Kiplimo : Funding Manager, Action Aid International, Kenya
26. Josie Buxton : ASAL Programme Coordinator, Oxfam
27. Joyce Umbina : Country Director, Action Aid International, Kenya
28. Makena Mwobobia : Programme Development Manager, Action Aid International, Kenya
29. Michael Gachanja : Coordinator, Kenya Forest Working Group (KFWG)
30. Munaweza Muleji : Head of Finance, Action Aid International, Kenya
31. Rudolf Makhanu : Project Officer, Kenya Forest Working Group (KFWG)
32. Shem Ochola : Parliamentary Liaison Programme Officer, Action Aid International, Kenya

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33. Georg M. Wachira : Petroleum Institute of East Africa (PIEA)
34. Martin Mueti : Consultancy Manager, Practical Action Consulting
35. Moses Kiambuthi : Executive Officer, Kenya Association of Manufacturers
36. Raphael G. Mwai : Private Sector Development Adviser (PSDS)

Embassy of Denmark

37. Bo Jensen : Ambassador of Denmark to Kenya, Embassy of Denmark
38. Charlotte Just : 1st secretary, Embassy of Denmark
39. Hans Henrik Madsen : Counsellor, Embassy of Denmark
40. Henning Nøhr : Counsellor, Embassy of Denmark
41. Jacinta Oichoe : Programme Officer, Embassy of Denmark
42. Mogens Laumand Christensen : Counsellor, Embassy of Denmark
43. Rhodah Njuguna : Programme Officer (health), Embassy of Denmark

Bilateral donors:

44. Andre-Thomas Eid : Counsellor, Dep. Permanent Representative to UNEP & UN Habitat, Royal Norwegian Embassy
45. Antti Erkkilä : Counsellor (Forests), Embassy of Finland
46. David Otieno : Regional Adviser, GTZ Nairobi Office
47. J.K. Kiara : Programme Officer, Agricultural & Rural Development, SIDA, Embassy of Sweden
48. Jukka Ålander : Counsellor, Energy, Embassy of Finland
49. Michael Franz : Consultant for GTZ (climate change and renewable energy)

50. Mike Harrison : Deputy Head, DfID Kenya and Somalia
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Multilateral organisations:

52. Cynthia B. Awuor : Research Fellow, African Centre for Technology Studies
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54. Judi W. Wakhungu : Executive Director, African Centre for Technology Studies
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57. Michael Makokha : Kenya National Coordinator, FAO-Netherlands Partnership Programme, FAO
58. Nancy Chege : National Coordinator, GEF Small Grants Programme, UNDP
59. Tim Kasten : Chief, Natural Resources Branch, Division of Environmental Policy Implementation, UNEP
60. Yuko Kurauchi : Consultant, World Bank Office, Kenya

International NGOs

61. Alice A. Kaudi : Regional Director, IUCN
62. Caterina Wolfangel : Programme Officer, Drylands Programme, IUCN
63. Charles Ehrhart : Coordinator, Poverty-Climate Change Initiative, CARE International
64. Eva Kassara : Programme Officer, EIA programme, IUCN